The Platform Organization: Recombining Strategies, Structures, and Surprises

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This paper is an attempt to shoot a moving picture of an organization and its strategy in action, which are fluidly changing to cope with chaotic environments and therefore cannot be captured by existing organizational models. The author presents a new conceptual lens that helps us look at the elusive, complex process of organizational transformation.

Ikujiro Nonaka

Abstract

The global technology strategy of Olivetti, a leading European computer firm, is analyzed over the last decade in order to illustrate how high-tech firms undergo transformations which not only tend to destroy their best core competencies, but also affect their very business identity. Task uncertainty is so pronounced that conventional ways of looking at the organizational structures and processes, such as the transaction costs approach or the strategy-structure link, need to be amended in favor of a more dynamic perspective. Such a perspective looks at organizations as platforms, or contexts, out of which specific structures are extracted, tried out and discarded in a pragmatic manner. A platform is a meta-organization, a formative context that molds structures, and routines shaping them into well-known forms, such as the hierarchy, the matrix and even the network, but on a highly volatile basis. Hence, the platform organization may appear to be confused and inefficient but its value lies in its readiness to sport whatever organizational form is required under the circumstances. Platforms are characterized by surprises, and organization members, no matter how they see themselves after the fact, are busy improvising and tinkering. Drawing on similar studies carried out in Silicon Valley, one can draw the conclusion that high-tech firms can survive if they are smart at doing what "savages do daily," i.e., bricolage.

(*Change*; *Tinkering*; *Structure*; *Surprises*)

> In searching out the truth be ready for the unexpected, for it is difficult to find and puzzling when you find it.
>
> Heraclitus

> Men and women confronting change are never fully prepared for the demands of the moment, but they are strengthened to meet uncertainty if they can claim a history of improvisation and a habit of reflection . . . . Learning to savor the vertigo of doing without answers or making shift and making do with fragmentary ones opens up the pleasures of recognizing and playing with pattern, finding coherence within complexity, sharing within multiplicity.
>
> Mary C. Bateson

> When the artists and sculptors I know work, there's a sort of free play idea. You try things; you experiment. It's kind of naive and childish, it's like kids in a playpen. Scientists work that way too—for example genetic scientists that I have been involved with seem to work similarly. It's kind of like throwing things out and then following the ideas, rather than predicting where you're going to go.
>
> Frank O. Gehry

1. Introduction

At the heart of industrial development, in the new knowledge economy, is our ability to play with a virtually limitless set of possibilities in order to find ever better ways of doing things (Romer 1986). What generates economic growth are such notions as the interchangeability in product parts, and organizational activities, as well as the capacity to continuously try out new combinations of resources. Indeed, radical shifts in the organization of work from the factory system to mass production to flexible manufacturing have led to quantum leaps in productivity (Smith 1922). Today, such modern forms of economic organizations as alliances or networked and federated firms, are considered to be at the forefront in terms of combinations of routines and transactions which can deliver higher effi-

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ciency in the new economy (Miles and Snow 1986). However, one should not ignore that uncertainty, as well as speed and frequency at which recombinations take place, are equally important issues to the particular efficient configuration of resources emerging at a given point in time. On the one hand, the birth rate of new organizational forms which populate the industrial landscape can be measured in decades, if not half centuries. On the other, the current pace of competition and technological development requires a much quicker generation (and elimination) of new arrangements, at least in the high-tech industries. To wit, in a rapidly changing environment none of the well-known organizational arrangements may work to optimize resource utilization. We submit that, at best, one can only settle for a shapeless organization that keeps generating new forms through frequent recombination. Using a real case scenario from a high-tech firm, we put forward a model of a chameleonic organization, the platform, conceived as a laboratory for rapid structuring (Giddens 1984, Weick 1993a). The platform turns out to be an unrecognized source of productivity in the high-tech industries, because of its intrinsic potential to efficiently generate new combinations of resources, routines and structures which are able to match the present, turbulent circumstances (Kogut 1991).

From a *structural* point of view the platform is the resilient outcome manufactured from the ingenious reconciliation of existing organizational mechanisms and forms, picked by management according to subjective and situated plans and interpretations ("bricolage"; see Lévi-Strauss 1966, Weick 1993b). Its most distinctive qualities are its flexibility, movement and transformation obtained from intersecting, penetrating and collating different organizational arrangements, such as the network, the matrix, and even the hierarchy. As a result, it looks fragmented and intertwined; still it may be the only form capable of surviving in a high-tech industry where a monolithic, rigid business identity would not seem as able to cope with the frantic pace of technological change. In contrast to any traditional form, we have here the celebration of all the qualities of the random, the apparently incidental, the seemingly oppositional, as well as the surprising, and like the concept of "building-as-landscape" in deconstructivist architecture (Vidler 1989), the platform emerges as an exciting mixture of ready-made arrangements and interpretations, and of half-realized, not-yet-made solutions and visions. From a *cognitive* point of view the platform works as a collective, cognitive engine enacted by a pool of flexible human resources for exploring and trying out multiple combinations of old and new organizational arrangements. It is a model which turns upside-down our beliefs about what is structural and permanent in the strategy-structure dyad, as well as what is subjective, informal and ephemeral (Lanzara 1983, Hedlund and Rolander 1990, Bahrami 1992). It does so, simply because its job is of a different nature: to meet frequent, sudden and radical changes, not just in products, markets and technologies, but in the very business identity and industries to which it temporarily belongs. Specifically, its purpose is to support managers when facing frequent surprises, that is to say, events which appear to be incomprehensible or inconceivable (Weick 1993a).

Our empirical case is Olivetti, a leading European computer vendor which has undergone innumerable organizational changes in the last 30 years. As an example of "network corporation," Olivetti represents an exciting setting for exploring how a strategy-in-action unfolds, as its "unique management style" gives rise to policies and strategies which are often called into question or criticized. This Italian multinational is regarded as an "unpredictable giant," one which does not belong to the same world as the American and Japanese manufacturers who dominate the computer industry, and who, while understanding each other, still find it to difficult to forecast and make sense of Olivetti's strategic moves.

The unveiling of the platform organization has required a different analytical approach from the one common in industrial organization research. In fact, new forms like the network corporation are currently explained by referring to established concepts in organization theory, business policy, industrial organization and economics of information (Teece 1992). Though different in perspective, all these disciplinary explanations share the same basic assumptions: there are goals which guide the agents' decisions; there is a complex problem to be solved or task to be executed; a corresponding strategy is deployed to achieve the goals and solve the problem; and a new structure is put in place to implement the solution. Hence, unitary, multidivisional, matrix, or networked organizational structures are seen by scholars and practitioners as the rational responses to support such moves. To be sure, decision makers would admit that day-to-day management is run in a more organic, ad hoc fashion, and that textbooks and journal articles seldom capture the actual intertwining of market events and managerial responses. They (especially in their ex post rationalizations), would also willingly concede to using schemes and models, such as the network, derived from studies

of business organization and competitive analysis. The gap between what theoretical, ex post explanations and models can deliver and the actual "garbage-can" style of managerial choice (March and Olsen 1976) is considered to be a fact of life by practitioners, and as an unavoidable result of the limitations of any modelling approach by scholars. In order to allow the new concept of the platform organization to emerge and to contrast it with kin concepts, we have taken instead an alternate approach. First, the difficulties which appear when one endeavors to reconcile business practices with the actual choices in strategy formulation and structural design are attributed more to the oversimplification of the current conceptual models than to a supposedly natural divide between theory and practice, knowledge and action. Second, using first hand evidence from the deployment of Olivetti's global technology strategy in the last decade,[1] we conclude that current organizational models tend to focus only on snapshots of a complex, evolutionary process. This, then, may be one of the reasons why observers and competitors who rely on those models remain puzzled. Snapshots can be relevant for actors and scholars to make sense of a complex process, and can provide reference for ex post reconstructions of what happened. On the other hand, they represent "postcards" which can hardly capture, let alone help interpret and explain, the forces behind the constant evolution, revolution, and de-volution of managerial action. And since such postcards are repeatedly relied upon and used by management when recounting events and rationalizing choices, they easily get embedded into the scholarly interpretations and grounded theories. Actions, or better rationalizations of actions, and theories reinforce each other, and become "natural" explanatory frames, retrieved when facing events or explaining phenomena, but also reproduce a self-sealing blindness to the new, and to the extant (Argyris 1990). As a consequence, it is only by reading between the lines that usually annotate the stylized explanations, in their "wrinkles" and especially in the interstices between practice, current interpretations, and what is left out, or explained away by referring to the obvious background that both business practitioners and researchers are supposed to share, that one can find the true limits of current models and interpretations, and the roots for alternative ones.

The paper unfolds as follows. Background information about Olivetti is outlined in §2. The formulation and implementation of its global technology strategy in the last decade are analyzed in §3, while in §4 the ways in which Olivetti has struggled to maintain its identity across sudden and radical changes are described. Section 5 focuses on some major and minor alliances and acquisitions that the company has established in the eighties and the surprises they have generated. Section 6 discusses the origin, nature and main characteristics of the emerging platform organization that has resulted from the more recent Olivetti's strategic moves and restructurings, and compares the platform with other kin concepts drawn from the literature on new organizational forms. Section 7 shows the internal functioning of the platform as an engine for organizational improvisation, bricolage and recombination. The conclusions indicate relevant directions for further research.

2. Snapshots from the Recent Olivetti History (1977–1990)

In 1989 Olivetti ranked ninth among the top world computer manufacturers. It was sixth at the beginning of the decade, eighth in 1982, and it managed to survive during a period of great technological change and industry shake up (McClellan 1985). In Europe, it has trailed IBM and jockeyed with Siemens and Bull in the first placements. Though strongly rooted in Italy, only less than 40% of its turnover is sold on the home market, making Olivetti the most "international" of the European computer manufacturers. The number of employees has gone from 70,000 in 1976 to 47,000 in 1984, and up to 57,000 in 1989 following the acquisition of Triumph-Adler. Returns on revenue had been increasing up until mid-80s, but are now steadily declining. By the 1980s, turnover per employee had more than doubled. At the beginning of the 1970s Olivetti was *not* a computer manufacturer: 80% of its sales consisted of mechanical and electrical calculators, typewriters, and office supplies, including furniture. But by 1977, computer equipment had come to already represent 43% of sales. By 1982 it had reached 71%. In 1984 Olivetti launched its first personal computer with the MS DOS standard and became, for a couple of years, the world's second-largest producer of PCs. Thus, towards the end of the 1980s, computer products had come to represent a steady 84% of all sales. Today, Olivetti remains a manufacturer of personal computers and workstations, minicomputers, printers, electronic typewriters and word processors, as well as being a provider of software services and system integration. Since the 1970s the Italian company has crossed at least two technological discontinuities: from mechanics to electronics in its traditional products, typewriters and calculators, and from electronics to microproces-

sor-based personal computers and workstations. Correspondingly, radical changes have taken place in the work organization, from the mechanical assembly lines to work groups, and to the adoption of highly sophisticated factory automation. In the last decade the number of employees in R&D has steadily increased, from 4.8% of the total work force to 7.4% in 1989. In the 1970s researchers were mainly mechanical engineers, while lately they have become, almost exclusively, software specialists. What has become of Olivetti in the early 1990s? An investment research report submits the following, concise description:

> A huge distribution company constantly in search of new products, through both its own R&D and external means. Once found, it then sells these products through the various distribution channels that it has either developed internally or acquired for profit. In some ways, it can be envisioned as a combination of Tandy (electronic retailer), NCR (financial and retail computer systems and minicomputers), and Epson (personal computers and peripherals) (Goldman Sachs 1987).

3. Devising and Implementing a Global Technology Strategy

In a systematic comparison aimed at evaluating the correlation of the R&D intensity of firms in various industries (measured in terms of firms' own funded R&D spending as a percentage of sales revenues) to worldwide corporate sales growth and company gains in world market share, Olivetti stands out in the computer industry for spending relatively less than competitors like Digital or Bull, but having an above average growth (as opposed to Bull) (Franko 1989). Correspondingly, the task for the Italian multinational in defining its global technology strategy can be identified as follows: what is the combination of moves and technology acquisitions needed to bolster what otherwise may be a weakness in product breadth and technology, in order that its aggressive distribution channels may be constantly replenished with competitive end products and services? A boundary condition, not to be underestimated, for the resolution of such a problem is the management of the dramatic changes required to transform and adjust the internal organization (skills, work force size, work organization, R&D, production processes, management and marketing cultures) each time a new technology is internalized (Emery and Trist 1970). Despite its not stunning economic performance, Olivetti's number of attempts and successes in managing such a technology strategy is judged as one of the highest in the world, and a key to its longer-term survival (Goldmann Sachs 1987).

To the outside observer, Olivetti's technology strategy-in-action has presented two faces in the last decade. First, in the articulated mix of moves deployed to give substance to an opportunistic technology acquisition strategy one recognizes the wisdom that Olivetti's management presents to the outside world. Its "darker" side is the idiosyncratic and unique style of management which continues to baffle competitors and allies alike when they deal with the Italian company. One may find it difficult to follow the logic of the continuous changes in structures, the debilitating see-saw of hopes, failures and unexpected successes of many strategic moves, (especially the alliances, see below) and the sudden shifts in conduct that seem more the result of a day-to-day myopic search, than the outcome of the grandiose plans evoked whenever a new global move is announced. In what follows a qualitative account is given of how Olivetti has defined its technology strategy, together with the interpretations as put forward by the company's top decision makers.

The Vice President for Strategy concedes that the technology strategy has developed mostly in an *implicit* way during the period that led from typewriters to PCs. Take, for example the latter technology: the PC. Initially, Olivetti was a minor player, not only in terms of volume, but also R&D. For one thing, its location was geographically marginal to the *loci* where crucial innovations in hardware, software and systems were taking place. Also, the overall thrust remained unclear. Initially, when one is only a minor player in the computer industry, there is the temptation to rapidly become a global competitor, and thus to spread R&D resources over many directions. Yet, this tends to dilute efforts considerably, as many European computer manufacturers were made to realize in the 1970s. The implicit, emerging strategy was to focus instead on only some areas of strength, such as distributed or personal data processing, abandoning the whole mainframe business with a much-debated disinvestment. In these areas a series of interventions were thus carried out to support internal R&D. Strategic choice depended upon circumstances. It could have been the acquisition of a company that had a low market value, but which gave access to a niche in an important country, as for Acorn computers in the UK; or, a joint venture with a technologically more advanced competitor in order to revamp a product line and rescue what was left of an internal design team, as in the case of OCI, the successful joint venture with Canon Italy.

Looking back at the technology strategy emerging over the years, the Strategy managers have mentioned with confidence two factors that account for its inner logic:

1. The *product life cycle* (from emerging technologies to mature products):

- global alliances are established in order to secure growth, by having access to markets, capital, new technologies and joint product development;
- joint R & D with key suppliers (e.g., Intel, Microsoft) is pursued in order to tap the sources of innovation for products yet to come, the development of which falls largely outside the control of Olivetti. This implies placing bets on who the key suppliers will be at the next round of innovation (see below for the ramifications of this point);
- pre-competitive research (for example through projects funded by the EEC) is aimed at collecting resources for basic research and new applications;
- venture capital is selected to identify opportunities and access new technological developments in a focused way;
- joint ventures are built to revamp old businesses or re-enter markets previously abandoned;
- and finally, acquisitions are pursued to gain market share in established businesses and mature products.

2. The *product complexity* and the company's relative strength:

- for surviving alongside technology leaders joint ventures are sought;
- in order to gain access to specific, sophisticated technologies venture capital is deployed;
- less complex products may simply require to increase market share through acquisitions.

The global technology strategy is enacted through a number of organizational units within the company. The Strategy Department is mainly responsible for the definition and launch of the technology strategy, and coordinates the activities related to their implementation. Within its boundaries separate units deal with each of the strategic directions identified above, from collaborative research projects to venture capital, and acquisitions. The Strategy Department has its own corporate R&D, which has enlarged and shrunk over the period considered. The various lines along which the technology strategy has been developed over time and the shifting definition of the supporting organizational structures point to the complexity of the process. But do not be deceived: the neat systematization and rationalization that Olivetti's top managers provide during seminars and interviews should not conceal the pragmatic nature of the entire process and its inherent uncertainty, nor should the role that surprises have played during implementation be underestimated.

4. Identity Building across Discontinuities

In general, then, top management at Olivetti links, at least ex post, their global technology strategy to the product life cycle, or better, to the various generations of products that have been put on the market in the last 30 years. However, as mentioned above, two conflicting accounts must be reconciled. On the one hand management point to an approach whereby a set of strategic responses is deployed to meet a set of technological changes. On the other, they admit that no implementation plan could match the actual sequence of actions: tactics have it over strategy. We submit that a reflection on the role played by management and business identities at each technological turning point can contribute to the linking of such opposing views. To begin with, one should realize that Olivetti is constantly dealing with successive "technologies' life cycles" rather than mere product generations, to the extent that the company originally assembled mechanical typewriters, then electrical ones, then electromechanical systems, electronic typewriters, PCs and minis, while today it is assembling generic computer platforms. During each period, when a technology was clearly prevailing over the others, management had a more focused product life cycle approach in setting a technology strategy. However, in order to implement such policies, Olivetti management needed an identity, first as a firm operating in the mechanical industry, then as an office equipment vendor which sold a variety of office systems and products ranging from typewriters to photocopiers, then as a computer manufacturer which sold PCs and minis, and lately as a system integrator operating predominantly in the software industry. The key issue during each "technological stage" has been to build the identity (culture, mission, market position, design skills, relationships with customers and suppliers, etc.) as a major player in that industry. Once such an identity is acquired, the management of the life cycle of specific products follows suit. During each stage, owning an identity or not matters, as lacking one can severely hamper managerial action, even when good knowledge of the market and the technology is available. To wit, entering into a new industry makes you feel marginal, and in lacking self-confidence one may be excessively coy in trying out new policies and

products. This becomes less and less the case when the new identity builds up, although other problems may emerge, such as excessive arrogance, sometimes accompanied by bureaucratization, which works to stifles flexibility and effective response capability to new situations. Of course, this has always been the case for firms in industries which have gradually changed their product range or initiated a diversification strategy. The distinctive aspect, however, for Olivetti and other companies which operate in the same industry and share similar histories, for example NCR, is that the technology—as distinct from the product—life cycle is extremely short and is becoming increasingly shorter. Thus, these companies must migrate from one industry to another, and even create new ones, at a pace which would be very fast even for simply implementing product changes within a stable technological horizon. The most frustrating implication of this identity building process is that a new identity must be trashed when one would like to keep it, i.e., when, after a painful learning process one has become not only a pioneer, but a leader. On several occasions, Olivetti had to give up the idea of being a pioneer (as in the case of mainframes, 30 years ago, or the multimedia workstation a decade ago), but this has not exempted the company from the necessity to implement "strategic exit" (Burgelman 1994) given the shifts of technological paradigms and their close succession (less than three years, lately). For example, Olivetti reached a very high level of perfection in mechanical "calculators" (their performance could compete with the early electronic ones), precisely when it was time to abandon that technology to embark in the more uncertain job of assembling electronic "systems." Similarly, when it was still proficient in VDUs and minis, it had to try out the PC, and while the M20 was one of the first models to appear on the market, Olivetti had to discontinue it, because IBM was quickly imposing the MS-DOS standard. At each discontinuity the competencies acquired in a given field became in part useless, given the competence-destroying character of many innovations (Anderson and Tushman 1990).

In such a perspective, the problem of defining the mission and direction of R&D, and in general terms, the global technology strategy, does not consist in choosing an alternative among various product lines or markets, but more radically, in repeatedly asking the question, "what business are we in," i.e., what is the identity of the product, the market, the production process, and the boundaries between what should be done internally and what has to be procured externally, knowing that many of the core innovations are in the hands of external suppliers. The subjectivity factor also should not be overlooked in this regard. Though the technology strategy could be seen as the outcome of objective forces, such as market pull and technology push during a given technological stage, the subjective, interpretive element represented by management perception is what shapes the ultimate thrust to action. Even for a given product technology, the strategist has difficulties in finding objective features on which to develop a plan for action. For example, at the end of the 1980s one could consider the PC as a product being pulled by the market. And indeed the PC could be looked at just as a commodity, a box, for which vendors should acquiesce for low margins and, if anything, scramble to find new means to increase market share and production volumes. But, another perspective can be envisaged: one of the PC as an engineering workstation in a nutshell. According to the latter perspective, management should turn their attention to the core of workstation technology, i.e., chips and their architecture, present and future. What will be the new standards? The subjective element seems to suggest that in searching for an identity across a technological or business discontinuity requires determination and commitment, quickness and passion, but also wisdom and detachment. Indeed, in such a fluid industry, extreme confidence, caution or attachment may hinder curiosity and openness, while an attitude tolerant of knowledge and ignorance may improve adaptability (see the notions of "negative capability" in Unger (1987); and "wisdom" in Weick (1993a) and Bateson (1994)).

The organizational structures which support the technology strategy must be able to cope simultaneously with the management of discontinuities and incremental innovation. This has put, over time, a premium on the firm's ability to develop multiple, often inconsistent competencies, to deal with the emerging, divergent technological and organizational requirements (Burgelman 1983). As a result, existing structures, procedures, and schemes which influence action are usually under severe strain, and managers end up feeling they are operating in a very fuzzy organizational environment. For instance, even if structures are in place to guide behavior and there is an effort to revise them radically every year, everyone knows that they are only marginally relevant at the moment of action, and what really matters is the possibility one has of relying on a personal network of colleagues located in the various units of the organization. Thus, while functional departments come and go, and may well represent formal changes in authority and communication, still decision making occurs through a set of arrange-

ments (network, hierarchy or clan, or mixture thereof) which evolves according to a logic difficult to capture, for no written record is available and no formal memo sanctions the actual changes. Only crucial events which form the background memory of the organization members can provide insiders with a record of the evolution of such latent structures. As an example, consider the formal shifts in the organization of the corporate R&D unit Dor, to whom it reports, its management and its direction, with the relatively little impact they seem to have on the company's conduct:

- the changes in the assignments, responsibilities and mission of Dor are so radical, but also so temporary.
- some aspects which were fuzzy, like its true mission and its relationship with the rest of the organization, probably continue to stay fuzzy after each change. One mainly relies on individual personalities to make the unit shift (drift) in a direction reputed to be the most suitable; the rest of the organization knows it, and top management know that the rest of the organization knows; hence, who needs to be officially informed?
- actual decision-making involves very much the previous network and everybody seems to be aware of it; this further confirms that formal modifications are marginal, and that true changes will emerge from surprises along the present, inevitable drifting route, or will continue to be enforced by the old boys' network.

To conclude, the degree of complexity required to operate in the computer industry does not only affect the nature of the primary task to be accomplished, but the very identity of the business. Coping with identity uncertainty requires responses which are at least one order of magnitude higher than dealing with "simple" task uncertainty. Note that such a distinction may blur during action, when events and circumstances present themselves as a melange difficult to disentangle, and actors cope with them by retrieving established models, but at the same time discarding them pragmatically. Though managers picture themselves as busy in decision making (forecasting, planning and selecting alternative courses of action) according to the strategy models in good currency, they would be better described as engaged in "sensemaking" (Weick 1979), i.e., in relentlessly picking up the pieces and left-overs of the "broken cosmologies" (past plans, marketing choices, goals, and outlooks) and trying to paste them together in order to make a new sense of the emerging technologies, markets and industries they are enacting. The rapid succession of identities puts a strain on the strategy-structure link (Chandler 1962) and, as a result, formal structures appear continuously revised, fragmented and trumped up. However, since an underlying continuity is maintained (e.g., the top management group is relatively homogeneous and stable), there must be then a hidden context which keeps providing sense to managerial action. In order to unveil such an underlying context, it is interesting to analyze how Olivetti copes with major breakdowns, or surprises, when implementing its technology strategy.

5. Alliances, Acquisitions and Surprises

The ability to implement a global technology strategy by setting up alliances of various sorts and exploiting them more for their unexpected outcomes than for their original goals has become, over the years, one of Olivetti's core competencies, a capability which other computer companies, such as Apple, DEC, and even IBM (now in a period of dramatic change after years of undisturbed leadership in their own markets), seem eager to imitate. Partnerships have been sought for two main reasons: access to capital and know-how in order to achieve rapid growth. Growth is needed to survive during the ongoing computer industry shakeout, when a rather fragmented industry structure gives way to an oligopoly with only a few major players left. In this scenario, Olivetti has tried to become a global competitor, in terms of sales volume, geographic scope of operations and product range. Internal growth would be the preferred alternative, but the required speed of transformation is so high compared to the resources available that alliances are often sought instead. The economics of growth and change is characterized by many unexpected, paradoxical manifestations (Knight 1921), and Schumpeter remains unsurpassed in qualifying it as a process of "creative destruction" (Schumpeter 1942).

As a first example, take the main strategic alliance Olivetti was involved with during the past decade, the one with AT&T. Established in 1983, it was a very asymmetric partnership given the size of the companies (AT&T was roughly ten times larger than Olivetti), type of core technology (telecom vs. office equipment), type of culture, history, location and markets served. Originally the agreement included an equity participation of AT&T by about 24% of Olivetti capital, but it had a broader scope for which the equity participation was supposed to indicate a formal commitment. In general, it is possible to classify the main goals of that alliance as follows: (Ciborra 1991)

- those aimed at governing competition, by creating a constellation of anti-IBM firms; to impose a new operating system standard (Unix) in Europe and to ease the access of both companies to each other's markets;
- those related to enriching the partners' competencies, such as mastering the convergence between telecom and computer technologies; transferring complementary managerial skills, for AT&T had public monopoly savvy, while Olivetti was strongly marketing oriented; sharing R&D projects and results; and perhaps, most importantly, the need for the two corporations to be global competitors both geographically and technologically. AT&T wanted to become, after the deregulation, an "information company," rather than a just telecom operator. Olivetti aimed at overcoming once and for all the narrow boundaries of the European market.

The global agreement represented a framework for collaboration in various sectors including R&D; reciprocal sales of each other's products; joint development of new ones; up to the cross-transfer of personnel. Now the alliance is history, for AT&T got out of Olivetti in 1989. Yet, even before reaching the breakdown point, at which time the two companies gave up the systematic development of a common strategy, the alliance had a hilly evolution, one where only a few of its stated goals were attained. On the other hand, there were also some positive surprises obtained. For example, Olivetti, as a supplier to AT&T, became almost immediately a major vendor of PCs to the American market. It also found itself in the best position to jointly develop Unix-based systems with the Bell Labs. AT&T investment was a success because Olivetti stock value almost quadrupled. The transfer of personnel reached its peak when the head of Olivetti of America, Mr. Cassoni, went to manage the troubled AT&T Information Systems division. To be sure, there were disappointments on both sides; joint R&D never went beyond Unix, for which AT&T maintained an undisputed leadership and the delivery of PCs was later discontinued because AT&T did not seem to be able to sell them in large quantities. In general, the management of the US company became gradually wary of wanting to become an "information company" and retrenched to its core business, to what it knew best, that is telecommunications and networking. Consider what happened during the daily management of the alliance. Most likely, power games, procedures and practices to curb opportunism were the stuff of which continuous renegotiations of the alliance were made (Williamson 1985). But these were relevant only for mundane aspects of the partnering process. The alliance constituted a general framework, a declaration of common intents: the content of the alliance was given by detailed agreements, for example on the development of new products or the formulation of common projects. In the absence of such detailed agreements, the alliance could still work very smoothly, i.e., be a satisfactory investment when it involved equity acquisitions or a satisfying subcontracting arrangement that might even deliver lower transaction costs compared to the market. Nonetheless it was a failure, since it did not allow one or both partners to reach their stated goal of rapid growth and diversification. In other words, efficient alliances may be ineffective and meaningless. In retrospect, this may in fact be the major flaw in the Olivetti-AT&T strategic partnership. The collapse of the alliance was not due to fears of being robbed by an opportunistic partner, but rather to the lack of appropriate learning skills in exploiting the alliance as a new resource. Thus, organizational inertia rather than patent preoccupation turned out to be a determining failure factor (Argyris 1982).

In this respect, compare the successful acquisition of Acorn, a small, innovative UK computer firm, with the problematic relationship with AT&T's Bell Laboratories. In the former case, while preserving the autonomy of Acorn, top researchers of the British firm were transferred to Olivetti's R&D department, Dor (Garney and Roberts 1992), among them Dr. Hauser, who revolutionized that department. New products based on Risc technology introduced by the British company were jointly developed, and a new direction of research in multimedia workstations was established. In accordance with Olivetti's partnering policies Acorn had been originally acquired to gain market share in the UK and a strong foothold in the education market. After the acquisition both of these objectives lost their importance due to the very troubled financial situation of the company. However, it came as a surprise that Acorn's labs contained a wealth of people, skills and ongoing projects which turned out to be of strategic relevance, putting Olivetti on a new track (at least as far as corporate R&D was concerned). More precisely they envisioned for Olivetti the option to be a leader in workstation technology instead of being just a follower of IBM. Under Dr. Hauser, and for a period of five years thereafter, Dor emphasized an autonomous development activity in multimedia workstations, by "second guessing" through prototypes and exploratory products the features to be included in future portable office systems. Dor was thus restructured as a network of laboratories, each developing

specific functionalities of an advanced workstation: image, speech recognition, multimedia, artificial intelligence, etc. An e-mail network connected the laboratories situated in Ivrea (Italy), California, UK and Germany, and nearby research, university and industrial innovation centers. To be sure, all this did not happen automatically, but was the result of circumstances joined with the capability of Olivetti's Vice President for Strategy, to "detect" the weak signals that the small, financially troubled British company was sending out. He was able to interpret them and value the invisible assets existing there, by taking the bold move of having a senior scientist of the newly acquired company head corporate R&D. With a further implication: recall that at the time, Dor reported to and advised the Strategy Department, thus the new ideas brought in by Dr. Hauser reached directly to the locus where global and sectorial technology and partnering strategies were conceived and implemented.

Olivetti, through its different partnering moves towards AT&T and Acorn obtained two important results, though in serendipitous ways: first, to be part of the "club" to set the standards in the PC and mini market (for example, the relationship with AT&T greatly simplified the choice to adopt Unix as a new standard); second, to accelerate internal learning and absorption of new knowledge through a marked deprovincialization of management. Almost for any alliance then the elements of surprise and bricolage seem to play a role at least as important as the specific contractual arrangement selected. Sometimes, as in the Acorn case, an acquisition is carried out to appropriate certain standardized assets, which turn out to be volatile, or simply not there; invisible assets are discovered subsequently and appropriated. The specific contractual form, far from being selected intentionally, happened to be there to allow the transfer of skills and know-how. In the AT&T case the global agreement paved the way to a pure supply transaction, i.e., the sales of PCs to AT&T. When the US company first decided to sell PCs, Olivetti was not even thought of as a potential supplier; it was the existence of the recent alliance which suggested AT&T should procure the boxes from Olivetti rather than from a low cost manufacturer in the Far East. Nor did Olivetti plan for such a supply contract. The newly designed, automated factory (located in Scarmagno), able to assemble, in a flexible way, varying volumes of different PCs, had to quickly be modified and transformed into a rigid assembly line producing very large volumes of just one model. Surprises, rather than technology strategy, seem to determine structure. Structures happen to be there, or, if not ready at hand, they are the outcome of the artful recombination of what is at hand under the specific circumstances. Again, what are the qualities of an organizational context which lets such recombinations take place without too much stress? We suggest that such qualities can be found in the structure of Olivetti's new products, the computer platforms. Namely, the design of the product has always had some influence on the design of the organization manufacturing it. For example, in Olivetti when the first electronic and modular typewriters were introduced, the job design also shifted towards semi-autonomous production units, or "modules." Since the structure of "hard" products impacts the analysis and design of the tasks and the production process, the influence of the dominant product design on the organization tends to stay within operations. In the case of information technology, and its "soft" abstract and systemic artifacts, the influence of the dominant design of a system can encompass the organization as a whole.

6. The Organization as a Platform: An Emerging Comparison

Two major findings have emerged so far. First, in a case like Olivetti ex post rationalizations do not do justice to the richness, contingency and unpredictability of managerial action in defining a technology strategy and its implementation. Secondly, one major source of uncertainty in defining a strategy is given by the rapid succession of technological discontinuities, which require not only the dismantling of assembly lines or product teams, but a deeper transformation of the bundle of cognitive frames, cultural views and structural arrangements linked to the very technology that has to be abandoned. In brief, the shift in technology paradigms, especially when they are, as in this case, competence-destroying (Anderson and Tushman 1990), requires the exit from the extant "formative context" (Unger 1987) which generates the prevailing identity, i.e., design approaches, production organization, and marketing strategies, and the rapid establishment of a new one. Note that such a transformation can never be achieved completely. With each new technological generation, management and the organization do not start from scratch: the company which today manufactures PCs cannot be considered a grassroots start-up in relation to the company that until yesterday used to build typewriters. Since the extant, dominant designs are difficult to dislodge, the prevailing organizational arrangement at a given point in time is a pasted-up combination, a sedimentation of successive formative

contexts, whereby the people who sell PCs and minis may be still imprisoned in the typewriter salesman "mind-set." Or, specialists who design standardized computer platforms may be subtly entangled with the attitude prevailing when proprietary operating systems were being developed. Within the boundaries of such a trumped-up combination of frames and organizations, where the old can hardly be distinguished from the new, surprises are bound to appear. The managerial competence in strong demand is the ability to quickly respond to and learn from surprises, combined with the artful courage of exposing oneself to situations which may trigger knowledge creation (Nonaka 1994), as for example, through the various forms of external linkages that Olivetti management has been busily setting up and dismantling in the last couple of decades. A first consequence is that the paramount criterion in evaluating Olivetti's past and current organizational arrangements put in place to support its global technology strategy is flexibility, rather than efficiency of coordination structures, or alignment with the diversification strategy selected. Take, for instance, the sweeping change in organizational structure which took place at the end of the 1980s, whereby the holding was created, and separate companies were set up to sell office products, systems and networks, software and peripherals, splitting functions like R&D, and most importantly, the up-to-the-moment unified sales organization. The reorganization was an attempt to smash internal management bottlenecks and increase the response to vertical market needs. At the same time, however, a due concern for efficiency would have pointed out that there were overlappings and rivalries between similar departments in the separate companies which formed the holding, given the basic homogeneity of the underlying technology, the chips and the boxes. What, then, are the implications of that and other restructurings that preceded and followed it?

As mentioned above, an interesting clue can be found in the emerging technological discontinuity characterized by the computer platform: we submit that, in the period considered, the organization of Olivetti replicates, in some important respects, the design and the functioning of the platform.[2] Consider how organizational structures are designed and redesigned. Management pick existing models prescribed by organization theory and established management practice, or imitate solutions implemented by competitors. This concerns the broad architecture or configuration of the formal organization, the one modified by fiat and thus always in want of legitimation (hence the adoption of prevailing management thinking). As far as the real organization, as opposed to the formal organization, is concerned management proceed in the same way, that is as a magpie (Brown and Duguid 1991). But this time the relevant perceptions, imaginations and solutions, are much more subjective, local and ad hoc, i.e., carried out under the influence of the extant formative context. In such a culture bed of practices and visions, the impacts of market forces, new approaches and solutions are often mediated by the characteristics and functions of the technologies embedded in the product. In a computer firm the design of the technological systems becomes easily a focal point where problem solvers look to find the most appropriate solutions. "Archetypal" technological designs will lurk in the back of their minds when trying to cope with a new challenge, or will appear as a self evident, familiar, and thus reliable concept, to be employed as a "leading metaphor" in attacking a new problem that needs a "creative" solution (Greenwood and Hinings 1988). The platform even found a formal representation in the organizational chart of the main operating company, OS & N, and was understood by management in a first instance as an arrangement able to offer performances that were analogous to the ones of computer platforms. The single *components* of the organizational platform may represent the well-known organizational arrangements: departments, functions, divisions, etc. Each unit so defined increases clarity of mission and facilitates reporting and control at least at a local level. The *integration* of the different components is flexible and cannot be read by the chart alone. Depending upon the technological mission, functions like R&D, which are repositories of generic competencies, can be recombined towards the goal of the moment (market driven applications, firmware, data communications, etc.). Operations are shaped simultaneously to serve the new markets. Integration deals also with the units and organizations outside the boundaries of Olivetti. Thus, venture capital, joint R&D projects and global alliances are set up and dismantled according to circumstances.

The platform concept influences also the product and technology strategies and it appears to be a formidable trigger for recombinations at the firm and industry level. Thanks to the existence of platform standards, technologies are developed independently from products: "at the last minute" technologies can be bundled into specific products required by the market, or as a response to competitors' moves. Correspondingly, the relationships between R&D and the marketing function become much tighter. Development tends to be more closely geared to marketing: sales forecasts

and marketing evaluations for a new product tend to be swiftly transferred and hardwired into platforms. Platforms and their shortened life cycle tend to elicit industry leaders that prevail only temporarily with one product; for example, Compaq had been the early leader for the 386 platform, while Olivetti arrived among the first with the 486 family. The best boards are exchanged by the computer vendors through OEM agreements and other forms of alliances aimed at cutting development time, time to market and volume. To be sure, such agreements and alliances last for the product life cycle, i.e., one chip generation. At an industry level the net result is a growing externalization of the sourcing of many components. The industry itself is becoming a modular platform, in the sense that a vendor can avail itself of many small and large suppliers for the different standardized components. These are then assembled in a unique product: a standardized platform with a certain number of add-ons and pluses.

A second clue which can be useful to make sense of the "erratic" structural transformations in Olivetti lies in the recombination processes which change the plastic configuration of the platform in response to environmental changes. Bahrami (1992), studying a sample of high-tech firms in the Silicon Valley, suggests that they must cope frequently with "kaleidoscopic change," where a small, apparently insignificant variation can dramatically alter the entire action set (the task, the market, the business) of the organization. Growth patterns are volatile; it is hard to capitalize on early success, periodic readjustments will not do, and crises cannot be solved once and for all. In such an environment the firm must sport a variety of flexible responses: ability to react quickly; resilience in front of disturbances, and being capable to face the consequences of chaotic change (Stacey 1991), i.e., radical surprises. The platform organization can be seen as the "arrangement" suited to cope with chaotic environments, where sudden events can tilt established patterns of identity, organization, culture, routines and capabilities.

After the classic descriptions of structural configurations aimed at generating sophisticated innovation, such as the adhocracy (Mintzberg 1983) and the self-renewing organizational "tents" (Hedberg et al. 1976), three organizational forms have been recently discussed in the literature to capture the dynamics of the flexible firm operating in highly turbulent environments. A due consideration of their features allows us to pinpoint the special traits of the platform. Miles and Snow (1986), and Thorelli (1986) were among the first to identify the *network*, as a flexible cluster of firms or specialized units coordinated by market mechanisms instead of a vertical chain of command. Indeed, Olivetti presents itself as an example of network corporation, and can be regarded as a "dynamic network" like today's IBM and Apple, relentlessly building an "undecipherable maze of international agreements and alliances to protect market share, enter new arenas, seek technical innovations, and promote the adoption of technical and/or systems standards" (Miles and Snow 1992). The platform organization differs from the network because it functions at two distinct levels: the structural one of the routines and transactions, (similar to the network corporation) and the one of the higher order context where the re-architecturing of structures is frequently carried out. At this level, the dynamic recombination of bundles of routines and transactions matters, rather than the properties of a specific, albeit new arrangement, such as the network. Boyton and Victor (1991), in their model of "dynamic stability" envisage a subtle, yet crucial modification in the definition of what a firm is: a "treasury of process knowledge." Management is able to apply organizational knowledge to a variety of end products (Teece 1983, Prahalad and Hamel 1990, Kogut and Zander 1992), and this allows to decouple the process know-how capabilities from the generation of a whole array of product innovations. Since the product life-cycles become shorter and more unpredictable, it makes sense to rely on process capabilities which serve a general purpose, and are flexible, generic and relatively stable. Thus, the resulting model of the dynamically stable organization contains two levels: one of the products (frequently changing) and one of the processes (which change more slowly). Boyton's perspective, however, does not seem to deal explicitly with the issue of organizational arrangements and their change. Finally, Bahrami (1992) comes closest to the platform idea in her study of high-tech firms in the Silicon Valley, organizations described as "structured and yet chaotic." These firms have developed "dualistic organizational systems," made up of a "bedrock" and temporary arrangements. The bedrock is the formal structure which only periodically undergoes major transformations. What is changing frequently are the overlays of temporary project teams and multifunctional groups. Such dualistic arrangements enable high-tech firms to deal with a crucial issue: how to create a relatively stable setting within which people and resources can be flexibly deployed. However, Olivetti seems to be a case which begs for a different explanation: its formal structures change very frequently and abruptly, while, we

submit, the informal networks remain relatively stable. Hence, the platform organization cannot be identified with the formal structure: it is a much more elusive bedrock, harder to recognize and analyze as an organizational arrangement.

7. The Platform as a System of Schemes, Arrangements and Resources

Organizational structures can be compared on the basis of their efficiency in dealing with transaction or coordination costs. The multidivisional form, the matrix and also the hybrid arrangements such as the network can be selected on the basis of their relative ability to coordinate businesses at the lowest cost (Williamson 1975, Teece 1992). The efficiency perspective, however, assumes implicitly that the technology of products and processes remains relatively stable, so that there is time to set up a new structure, fine-tune it and evaluate its results; that is, if the technology and the task are known and stable, one can engage in exercises of vertical integration versus market externalization, and then compare the results at the margin (Coase 1937). In the industries where Olivetti operates, however, the rules of the game are quite different. We enter the world of dynamic technologies: (Ciborra and Lanzara 1990) it is hard to tell what operating system will prevail in two years time, or what chip architecture will be the industry standard. Firms are uncertain about the technology trajectory they are on, (Dosi 1984) and consequently about their industry and business identity. Whenever perceptions change, the very business mission and primary task can shift abruptly: is Olivetti in PCs or computer platforms; should it become a low cost manufacturer or a system integrator? In such a turbulent environment, plans to vertically integrate or disintegrate in order to lower transaction costs may miss the point. The issue may be not so much whether to integrate or not but with whom, in what industry: with a telecom company, a chip maker, a large software vendor, a media company, a consumer electronics giant, or a mix thereof? Schemes which prescribe how to set up efficient organizational structures around a complex, primary task lose part of their normative relevance, for one cannot know in advance the complexity of the task, nor its precise nature and contours. Specifically, analyzing and evaluating the platform organization at a fixed point in time is of little use: it may look as a matrix, or a functional hierarchy, and one may wonder how well its particular form fits the market for that period and what its level of efficiency really is. What should be appreciated, instead, is the whole sequence of forms adopted over time by the organization, and the speed and friction in shifting from one to the other. A useful way to look at the platform organization may be as a "string," that is, the sequence of forms it is able to display, and the temporal links between them. The platform can be studied longitudinally, as a bundle of trajectories punctuated by stations. At each station, one may find a familiar organizational structure (the matrix, the network, etc.) that somehow does the job, usually in an inefficient way, for circumstances keep changing and leave little time to fine-tune. And there are tracks: riding on them means for the organization members to change their formative contexts while passing through instabilities, turmoil, experimentation, and doubts about structures, design criteria, technologies, missions and identities. The platform organization retains all that: the static and dynamic mechanisms, the certainties and the doubts, the visions and their smashing, the ready-made junk routines and the not-yet-made ones.

How do top managers take the organization from one station to another along the trajectories which define its evolving business identity? In other words, how do managers go about the job of recombining structures? The Olivetti case shows rather vividly that in the computer industry strategic management mainly consists in placing bets about what will be its next primary task; all the other choices, such as alliances, vertical integration and so on, follow the provisional outcome of such bets. The platform, being easily reconfigurable, is particularly suited to supporting the practice of betting and what it entails, i.e., high flexibility in exiting when one is losing or moving in rapidly to reap the ephemeral benefits, or adapting to the new circumstances that require a commitment to a new risky move (Ghemawat 1991). Betting can hardly be planned in advance. Something deeper is involved at each turn, especially if the previous bet has been successful: the identity of the business may have changed as an outcome of a particular move, so that past experience or consequentiality are of little use. The platform is a context which supports such opportunistic, semi-blind strategic betting: its identity and mission are allowed to drift in order to keep them open to networking with the most appropriate constellation of partners dictated by the need of the moment. Because of its fuzziness and intertwined structure, the platform seems also to defy any attempt to make sense of standard approaches to gain a competitive edge, for example by pursuing the competitive strategies identified by Porter

(1980). On the one hand, the platform organization upsets such sort of neat prescriptions, because it looks hybrid, blurred, and often "stuck in the middle." On the other, it can be swiftly set up to respond to a competitor's move in a given industry according to the rules of competitive advantage. It is chameleonic: thus, for example, if Olivetti were facing a threat by NCR, rather than Compaq, it could rearrange its internal resources in order to sport the appropriate, competitive attitude, and stage an attack against the specific rival firm or class of firms. Indeed, one of the striking characteristics of the platform consists in being programmed for perpetual transformation, for generating new organizational arrangements and cognitive frames, and for constantly branching out to other, radically different businesses, identities and industries.

How do managers make their daily decisions in such a complex and elusive organizational context? The unpredictability due to the strategic betting, the mimetic behavior and the sedimentation of arrangements due to the ineradicable inertia of preexisting routines and structures all conjure to picture the platform as a generic context, full of junk organizational routines that can be harnessed depending upon the needs of the moment. Traditional organizations, even the newer forms, come with a bundle of requirements and expectations that create a reference context for managerial action. In the platform organization management have to enact the context while they act, make choices and envision strategies (Daft and Weick 1984). In conventional organizations the landscape is given, and management are the foreground figures. In the platform, background landscape and foreground actions are painted both simultaneously and disjointedly, each giving meaning to the other in the process. Managers have to adopt multiple standards in order to move around the redundant parts of the platform. They may have to behave according to a hierarchical context (arrangement and mind-set) in some parts of the organization, or as network operators (again organizationally and cognitively) in a network setting. As improvisers and "bricoleurs," they stay creative in the face of surprises, because they are accustomed to operate in chaotic conditions and pull order somehow out of the resources and routines at hand (Weick 1993a). In this perspective, the platform works as a metaorganizational context that creates simultaneous dependencies and belongings (Hedlund 1986). While in a matrix a manager reports to two bosses; in the platform a manager may operate within two or more organizational forms at the same time. Note that such metaorganizational context is not "designed," rather it emerges as the result of the managers' situated rationality and actions, while they busily recombine those very arrangements, and artfully operate them, reproducing the conditions for which the betting and recombination processes can be tried out once more.

In sum, the platform is far from being a specific organizational structure, where one can recognize a new configuration of authority and communication lines. Rather it is a virtual organizing scheme, collectively shared and reproduced in action by a pool of human resources, where structure and potential for strategic action tend to coincide in highly circumstantial ways, depending upon the transitory contingencies of the market, the technology and the competitors' moves. Schematically, the platform can be regarded as a pool of schemes, arrangements and human resources. First, it is a virtual and collective cognitive scheme (Weick and Bougon 1986, Sewell 1992) which governs actions of recombination. It is an "habitus" (an habitual mind-set) (Bourdieu 1977) unique to Olivetti top management, composed of organizing principles such as "betting," "opportunistic deployment of partnerships," "pragmatism," "fast learning from emerging technological architectures," and so on. These principles are rerun in the heads of managers and surface in their acts of improvisation: being shared collectively they maintain coherence in an organization where structures are continuously eroded. The Olivetti "habitus" allows managers to cope with unpredictability, even if formulation and implementation of plans are carried out in a traditional fashion: the "habitus" gets into action when facing surprises and often leads to the unexpected utilization of existing resources. Secondly, the platform is supported by a composite bedrock of practices, that consists of pasted-up routines, transactions and other organizational arrangements. In the platform one is continuously confronted with the coexistence of a multiplicity of organizational structures. Flexibility is achieved in practice by pasting up structures that have a high potential for action in response to chaotic events. Finally, the platform is based on a community, the pool of human resources, which can be described in the Olivetti case as the old boys' network at top management level. Those managers are improvisers in the sense that they are able to reinterpret *ex novo* given resources in terms of schemes, which may differ significantly from those that led to the acquisition of those very resources.

8. Concluding Remarks

Our study confirms what the trade press and academic scholars suggest: the global technology strategy has

been vital for Olivetti and has produced an array of moves and organizational interventions that have made it a "network firm." But our attention has been also attracted by the fact that strategy and the resulting organization emerged implicitly rather than being laid out at the outset. Although management and industry observers tend to give a systematic, ex post reconstruction, where each step of the technology strategy finds precise reasons and justifications, our study suggests that behind the charts shown on the official transparencies, what prevails is a pragmatic muddling through. Even when there were precise goals and plans, e.g., in setting up alliances and acquisitions, these have not met the target: surprises appeared instead. Such surprises and the relevant organizational responses have become the main object of our investigation. We have concluded that evaluating success or failure of strategic moves by the attainment of the goal for which they were originally set up misses the point. What does matter is the process, its stations and tracks; often, the sheer engaging in a move has contributed to push Olivetti along new technology trajectories in the making. Furthermore, the study of the consequences of surprises reveals that the organizational outcome of the technology strategy in practice, as opposed to the one in theory, is a pasted-up organization where elements of the old are intertwined with trials of the new. The overall picture is a fuzzy organization, which differs from the formal charts and their modifications, but is sufficiently responsive to the new. In such a context, learning from surprises turns out to be a valuable core capability as much as being able to analyze technologies and competition. In order to capture such emerging organizational features, we cannot rely on traditional models, or even on newer ones such as the network firm. They all suffer from the fact of being too tidy and preplanned, given the high levels of uncertainty management has to face. We have used the notion of computer platform as a metaphor to capture what goes on in an organization that operates in the highly turbulent computer industry. On the surface, the platform organization looks as a stable pool of "junk" resources, "badly organized" according to efficiency criteria, but ready to be deployed when the technology or marketing strategy requires it. At a deeper level it is a collective cognitive scheme which allows managers to try out relentlessly new organizational combinations.

Further (action-) research is needed to ascertain the impact on management of such "revelations" about the way of operating of the platform, whereby what is considered important when reconstructed and communicated in public is looked at as marginal, and what they know members would take for granted as the shared, muddy operating background experienced everyday is brought to the surface and celebrated as "foundation." Indeed, the disturbing confusion which permeates Olivetti's internal organization is made the center of the theoretical notion of platform, while the chart in which the company is portrayed as a network firm, is taken just as a "nice" ex post account. Another research theme regards the extent to which it is possible to systematize the way of operating of the platform, to find a more detailed model, or even the underlying "laws" of such a happenstance organization. Can strategic tinkering be governed (Mintzberg 1991)? Once again, the analogy with architecture may suggest here a positive answer (Nadler et al. 1992). Deconstructivist "buildings-as-landscapes" obtain movement through the artful display of shifting masses, collapsing solids, juxtaposed and twisted volumes (Johnson and Wigley 1988). They seem to disregard the rules established by modern architecture, still they stand stubbornly solid and make a unitary stylistic statement over their environment, precisely because behind their deceptive disorder lies a deeply thought answer to some of the canonical problems of architecture. For Olivetti, what would be required is to go back to its roots and find such stylistic unity embedded in its present organization. The concept of platform could contribute to let such unity emerge in front of the observer and the practitioner.

Finally, the platform with its emphasis on fragmentation, fuzziness and displacement, should not be discarded, even by those who enact it, as the inevitable outcome due to high environmental uncertainty and imperfections in the formal organization. Rather, it should be appreciated as a necessary culture bed for experimentation and recombination, that provides the decision maker with an almost infinite variety of elements (schemes, visions, mechanisms and arrangements) to compose new temporary solutions faster and more efficiently. Top management in high-tech firms like Olivetti ought to admit that their job in coping with technological discontinuities is not to make decisions at the center of a "network firm," rather they should acknowledge that what they do is tinker at the periphery of that pasted-up organizational platform they constantly enact. Being smart bricoleurs makes business sense, especially when business itself appears to make very little sense.

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Endnotes

[1]The field research has been conducted by the author in 1989–1991 and has consisted of 25 in-depth interviews. The research has followed a clustered hierarchical design. This approach is particularly appropriate for examining and interpreting ongoing processes in real-world contexts, especially when the processes to be studied are not sharply separable from their organizational contexts. The highest level of the design has been the Vice-President for Strategy, Elserino Piol. A dozen of managers of the Strategy Department and nine divisional managers in the areas of R&D and Integrated Circuit Design have been targeted for one or more interviews. Each interview lasted more than two hours on average. The Vice President for Strategy has been interviewed at various points of the field study, including the final feedback sessions on earlier drafts of this paper.

[2]The present trend in CPU technology is given by the possibility of hardwiring more and more functions on a single chip, and devolving part of the extra computing power to managing applications such as large data bases, sophisticated user interfaces, etc. Thanks to downsizing, a PC manufacturer can, in principle, compete with vendors of mainframes and minis, to the point that chips are not simply components, but platforms. Platforms based on a chip can host and reconfigure a whole stream of technologies: they can be used as the core component of a mini, a powerful PC, a server or a workstation, i.e., they are a technology independent from the classes of products of which they are a part. Each use depends upon adding new functions, specializing others and adapting their performance to selected criteria such as robustness or speed.

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