Dynamic Capability Seen Through a Duality-Paradox Lens:

A Case of Radical Innovation at Microsoft

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ABSTRACT

This article brings a new, broad conceptual framework to the quest for understanding dynamic capability in organizations (i.e." managing on the edge of chaos"). This approach rests on two major pillars: (i) a duality-paradox perspective and (ii) new typologies of organizational learning (OL) and individual action/thinking. A case of radical innovation at Microsoft provides a multi-level illustration; interpreting it requires a focus on two dualistic challenges. For use in future ODC research and practical assessment the broad new conceptual framework includes: (i) **collaboration** as a central concept; (ii) **duality-paradox** as a key source of conflicts that can threaten collaboration; (iii) five types of **organizational learning**, (iv) four types of **individual action/thinking**, including paradoxical thinking, and (v) the proposition that **"golden dualities"** can be created from once-troubling duality situations (where critical collaboration was in danger) which have been transformed from the (metaphorical) "odd (contentious) couple" into a "productive (collaborative) partnership".

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Dynamic Capability may have become the holy grail for organizational change theorists. Still bigger concerns lurk behind the survivability of organizations (DC) per se including the humanistic implications of the current economy and the sheer ability of our big organizations to safely manage the systems of unsurpassed complexity, speed and danger which have evolved. These vast concerns bring us back to a very basic question: **How do "successful" organizations succeed/function in current conditions?** This I suppose is the core quest or mission of our field and will address it right here, with a new approach that brings some new tools and a new conceptual map of this field.

A case study from Microsoft will introduce this approach. It tells the story of one project that pushed the boundaries of that company. The case combines close-up views of the creative product development process with big-picture views of this project as a pawn in the host company's larger strategy. It illustrates some success factors and some problems; it brings some surprises and anomalies, leading to a new framework that should be useful for organizational (especially OD&C) research and assessment.

The new approach depends on two sets of ideas. The first one involves **collaboration, organizational learning (OL), and conflict management.** Dynamic Capability (DC) requires organizational agility, which entails many disruptive changes, which upset some of the collaborative arrangements, which are essential to success. Conflict management (which involves OL) is required to restore collaboration but HOW that happens depends on WHERE in the organization this conflict/breakdown occurs. That affects the kind of OL required to repair the situation. While there are indeed some common elements to most forms of OL (as usually assumed) this framework introduces five types of OL.

The second part of this conceptual framework involves **paradoxical dualities.** Forming and leading an organization requires coping with important conflicting demands and pressures -- especially certain classic dualities. These deals or arrangement may be embedded in policies and work practices, including the collaborative links between teams and units. These are frequently disrupted and OL is needed to repair the situation. In order to renegotiate the terms of collaboration, to find a new win-win solution, paradoxical thinking may be required, ideally

resulting in a "golden duality" where the "odd (conflictual) couple" becomes "a productive partnership". This requires that the framework include an expanded (four part) typology of thinking/action styles.

At this stage of the quest we do not go outside the business sector, though other sectors can apply the same framework. In future research sector differences should be exploited for their insights. This framework attempts to synthesize key elements from prior research to form a practical conceptual framework, a cognitive map, a guide for case studies and assessments of dynamic capability.

Plan of sections

This chapter is organized in the following sections:

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Organizational Dualities

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Recap of Propositions and Practical Implications

Conclusion

Purpose and Approach

This chapter aims to contribute to the study of dynamic capability (DC) in human organizations, outlining a novel framework for case analysis rooted in several literatures of organizational learning (OL). This framework features an organizational learning approach that highlights collaboration and the learning processes that support it at various levels within a large organization. Data from one innovative product development project at Microsoft (an especially radical and creative venture) is explored, contributing to a new conceptual approach and framework for case analysis. The Microsoft case provides closeup data from several levels of that dynamic firm, focused on their interactions.

What does radical innovation in a dynamic high-tech company look like -- sometimes? That simple, basic question will initially ground this inquiry. This case is not claimed to be typical of radical innovation in large firms or to be representative of this company. This is, metaphorically, one exhibit in a virtual museum of organization studies, that can be examined to help us to see more clearly how things sometimes happen when a large organization hosts a radical innovation project, while operating several established businesses, all of them in turbulent, highly competitive environments. The main method of inquiry I use is exploration and discovery based on reports from the field (Yin, 1994). My purpose is to discover new insights and to construct a more sturdy conceptual framework, not to test hypotheses at this stage. This method and epistemology has an honored status in social science (Locke, 2011).

My main data source is a rich description (300 pages) based on one year embedded in the work area of Project Sendak, observed and written by Fred Moody (1995). A veteran business reporter, he wanted to produce a business best-seller. But although his book has excellent ethnographic material and makes good reading, it did not yield the kind of narrative that makes a best-seller. Moody even declares in print that he is baffled by what he has seen.
Quote: *"... the sad fact of the matter is that I left the company's campus more confused than I was when I entered. And looking back over these pages now leaves me even more perplexed... Yet I am convinced that the puzzle is woven into this narrative somewhere ..."* (Moody, p.xx)
With an academic partner there might have been a different outcome, I suspect. So now I am taking up that role, to re-analyze and reframe this material to produce new insights that can help in the creation of a better conceptual framework for further OD&C research.

In Moody's Microsoft case we get a detailed closeup view of product development for a highly novel product -- an interactive digital children's encyclopedia released in 1993. It was well-received in the marketplace. It was profitable and captured a leading role for Microsoft in (creating) a new industry, multimedia digital publishing. However that success came only after a hair-raising journey of project management mishaps and surprises. Almost out of time, running late, the project's group manager called for a ***Total Review of the Basic Design*** [my emphasis]. In the idiom of American football, with the outcome of the game hanging by a thread, he threw a high-risk "Hail Mary" pass. And it succeeded. I shall use this case and these remarkable, even puzzling events as an opportunity to try out a duality-based interpretation, illustrating the new approach and framework for studying the dynamic capability of organizations.

Conceptual Foundations

The ideas presented here emerge (as usual) from time spent pondering on experience and literature. Here I can acknowledge only a few of the earlier scholars whose work I have used. I start with the book that frames the topic (DC) as "Competing On The Edge", followed by several writers who also address DC. Some provide actual definitions and others label their contributions in another way (e.g. Hybrid Theories, Ambidexterity). Lastly, in this section and before the main case study, I briefly outline the typology of organizational learning (OL) that I shall use here in this new framework for OD&C analysis.

Competing On The Edge (Brown & Eisenhardt, 1998) analyzes fifteen companies with long-term business success to develop a view of strategizing and adaptation in fast-changing industries as "the result of a firm's organizing to change constantly and letting a semi-coherent strategic direction emerge from that organization." (Ibid. p.7). Instead of the traditional sequential approach to strategy (First, Where shall we go? and then How can we get there?), this approach requires simultaneously addressing the two questions (Ibid., pp.7-9). At the same time a related dichotomy (planning and implementation) must also be abandoned, they claim, and be replaced by a more urgent process of action learning where business units try many ideas, make mistakes and take care to learn from them -- a process that depends on innovations emerging from the business units more than from corporate HQ.

 These researchers use Microsoft as a successful example of this non-traditional, competing-on-the-edge approach to achieving dynamic capability. They characterize it as unpredictable, not centralized, inefficient, sometimes reactive but more often aggressively proactive, continuous, and based on diversity (pp. 9-10).

The case material we shall examine in this article comes from Microsoft and features one venture that was radically different from any of its previous product development innovations. It was also radical in a second sense; it was a bold bet on the future of what was at that time an unproven industry -- interactive multi-media digital publishing, for children.

Dynamic capability.

"We define dynamic capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic

capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions." (Leonard-Barton, 1992)

DC requires agility, including the ability "*to seize opportunities through the orchestration and integration of both new and existing assets[,] to overcome inertia and path dependencies ..." (*O'Reilly & Tushman, 2007).

DC must be validated by longterm survival through a series of organizational changes under changed external conditions. Core competencies are the arrangements in an organization which produce favorable results at a given time; DC is its ability to change these arrangements repeatedly.

"Dynamic capabilities, unlike ordinary capabilities, are idiosyncratic: unique to each company and rooted in the company's history. They're captured not just in routines, but in business models that go back decades and that are difficult to imitate...'signature processes.' They are "the way things are done around here' ..." (Teece, 2013). How is DC created? According to Teece, it is created through three types of managerial activities: (i) sensing external opportunities, (ii) seizing them (mobilizing your resources to capture value from them), and (iii) transforming the firm through continuous renewal (Teece, 2013).

Dualities and paradoxes.

"Paradox is the simultaneous existence of two inconsistent states, such as innovation and efficiency, collaboration and competition, or new and old. Rather than compromising between the two ... vibrant organizations, groups, and individuals change by simultaneously holding the two states. This duality of coexisting tension creates an edge of chaos." (Eisenhardt, 2000, p. 703.) Dualities and their associated paradoxes and conflicts have long been noted by commentators on management and organizational matters. In recent years they can be found more fully featured in the literatures of social and organizational theory (Lewis, 2000; Graetz & Smith, 2008; Sutherland and Smith, 2011; Easterby-Smith, et al., 2009). Nevertheless, dualism and paradox are still far from being widely used among ODC professionals. This is a different paradigm and while a high-level framework can be outlined (Smith & Lewis, 2011), how to apply it in research or practice remains puzzling. Hence the significance of the present study which links the duality approach to a revised OL framework and applies the combination to a case study.

All dualities need not be paradoxical but paradoxical dualities will be our prime focus here. Dilemmas are not paradoxical; they can be resolved (traded-off, optimized) in conventional ways, but paradoxical dualities require high levels of both A and B, where these are in conflict,

mutually incompatible -- or so it appears (Smith & Lewis, 2011). New thinking, however, can sometimes transform an "impossible" paradoxical conflict into something different and more manageable. For example, the quality movement introduced the idea that "quality is free" to replace the long-standing belief that higher quality must inevitably equal higher cost. But it's not really free since those who want this bargain must learn to think differently and to organize differently (Womack & Jones). Mark this paragraph: it is a central proposition in this entire conceptual framework.

The **Built To Last** research (Collins & Porras, 1994) found that one characteristic of the long-surviving (DC) firms was that their leaders grasped both sides of values dilemmas and established a leadership vision of Both/And instead of Either/Or. From the other direction, another study selected large firms which were highly successful but then failed, i.e. they lacked DC. They stayed consistently true to their initial formula, managing in the same characteristic fashion -- and then slumped. Each of these firms had become like a caricature of itself, holding faithfully to a single strategic emphasis and style, progressively exaggerated over time (Miller, D., 1990).

Hybrid theories contain dualistic insights, though not always identified as such. In an earlier study I contrasted Drive and Grow models of organizational transformation and argued that lasting success required a combination of both (Sugarman, 2007). Senge's earlier and highly influential formulation (1990) owes some of its power to its integration of two formerly separate bodies of knowledge: (i) systems dynamics (featuring intellectual rigor and a big picture perspective) and (ii) a humanistic OD perspective (including personal motivation and reassessment of mental models). Those two bodies begat (in effect) Senge's "five disciplines". That formulation proved popular as a stimulus and guide to change agents at many levels. It encouraged small groups to initiate change without waiting for upper management leadership (Senge et al., 1994; 1999). It also had appeal to some senior managers who were hoping to instigate sweeping change from the top. Once again, don't think the usual "A or B" -- it must be Both.

The **Grow** or **Learning Organization approach** takes root in small groups, often in middle and lower levels. Upper management teams (small groups too) can also embrace this approach ("learning-based leadership" -- Sugarman, 2001). Both ends can then collaborate, provided that the small groups accept the strategic direction of upper management and the latter appreciates the contributions of grassroots employees for improving operations and policy. By

contrast a pure **Drive** approach, traditionally associated with top management (depending on formal authority and controls, with top-down, arms' length, one-way communication) is not compatible with Grow. Yet hybrid arrangements (still paradoxical) combine participation and learning together (Grow) with the setting of broad goals and boundaries by managers (Drive). The process for reconciling this paradox may resemble the dialectical process of thesis-antithesis-synthesis (Van de Ven, 2000). Organizational ambidexterity is one approach (well researched) to managing successfully this process of integrating two necessary but opposing elements in one firm.

Organizational Ambidexterity is the idea that for long-term success firms need dual structures, one prioritizing *exploration* (innovation, R&D) and the other *exploitation*. This literature has a long history (March, 1991; Burns & Stalker, 1961; Lawrence & Lorsch, 1967). In the sequential version of ambidexterity, organizations shift from more organic structures for exploration (early stage) to more mechanistic structures (for exploitation) later. In the later phases, firms modify their structures to more machine bureaucratic or "mainstream" forms that prioritize consistency and efficiency over flexibility (Brown & Eisenhardt, 1998).

Another view of organizational ambidexterity argues for the simultaneous pursuit of exploitation and exploration, side by side in separate units with different business models. Ambidexterity, in this approach, requires separate structural units for exploration and exploitation, each with different competencies and cultures. The innovation unit needs protection from the dominant culture and systems of the host. Both new and old units need to be overseen and guided by the top management team with an overarching common strategy and values, and with linking mechanisms to leverage shared assets (Tushman & O'Reilly, 1997). Dynamic capability can be achieved through simultaneous ambidextrous management when this whole ensemble is integrated by a top management team whose members have developed their own team processes in a way that allows them to balance the inconsistent alignments (between the two sides) in a consistent fashion, making overall strategic tradeoffs and managing a common-fate incentive system (O'Reilly & Tushman, 2004; 2011; Smith & Tushman, 2005).

Amongst all the dimensions of dualistic conflict that will be identified here no other has been researched as thoroughly as this literature on ambidextrous management. It illustrates the work of OL at various levels of the firm in order to discover the conditions for

success and then to implement the necessary policies to make that success repeatable (Tushman & O'Reilly, 2007).

Types of Organization Learning

A recent review of much research on effective management in the 21st century declares that "teaming" (including OL) is the key to success , more specifically it is "organizing for learning" (which is typical of a "learning organization") rather than "organizing to execute" that can improve results (Edmondson, 2013). This assessment is in accord with a large literature which takes OL to be an important generic process, more than an individual trait, but a collaborative and adaptive process applicable in any area or level of organization. This is true and useful so far as it goes, but we need to take the definition further to cover differences that matter. For example, in a large firm attempting to develop a new venture alongside the established "cash cow" the managers of the new venture and the managers of the established business need to ensure that their employees are using OL to improve work processes in their respective businesses, which is very different from the OL required of top managers who are still learning how to integrate these two businesses and cultures under the same corporate ownership. At the grassroots or operational core OL is different from OL among upper managers -- though some features are similar (e.g. attention to data, testing mental assumptions, clarity of purpose).

Definition: ***Organizational Learning*** *occurs when some members, either acting on behalf of the whole or some part, draw meaning from some data or experience which seems relevant to their organizational role and interests, and they use that understanding to modify patterns of behavior, acting jointly with others.* (Sugarman, 2010-b). I hypothesize that OL looks different and functions differently when it happens in different levels and areas of an organization, defined by different functions.

INSERT Table 1   INSERT Figure 1

In the large "operational core" or "base" of the organization, usually comprising the majority of its employees, we find **continuous improvement practices**, involving experiential (hands-on) and action learning, after-action reviews, and data-based and statistical methods of process improvement. (OL-1). **Connecting Informally Across Units** consists of informal

interpersonal connections (networking) through which work units sometimes share their improvements and knowledge. This diffusion can transfer valuable learning from a few successful micro innovators into other similar units, raising the average performance closer to the best (OL-2).

Table 1   Types of Organizational Learning

Area of Organization	Main Organizing Task	Main Type of OL Involved
Core Operations *	Produce & deliver competitive customer-serving outputs.	Continuous process improvement, action learning. OL-1
Mid-Level *	Networking, informal **connecting** and sharing knowledge **across units.**	Informal diffusion of knowledge, problem solving, learning OL- 2
Mid-Level *	**Internal Integration** of value chain/network - formal roles & procedures	Designing & adapting formal structures & linkages OL- 3
Mid-Level *	**External relations**, scan environment, note changes, share .	Scan, select, share, interpret, alert key players OL-4, OL-3
Central / Top Management *	**External & internal Integration** of all components. Vision for whole. Balance ambidextrous organization. Longterm view.	Ensure capacity for innovation & all kinds of OL, incl. OL-1,2,3,4 Integrating the integrators. Listening & learning. OL-5

* *utilizing distributed leadership at all levels - participation*

        Internal Integration (Formal) manages the intricate value chains and collaboration networks needed to produce and deliver complex outputs. Typically this work is central to the

job specs of middle managers, both line and functional managers (OL-3). **External relations,** scanning and prospecting outside is OL-4.

   External and Internal Integration of the Whole Organization. The face of this area is usually the CEO and top management team, who typically play the key roles in this integration work, which depends on the participation of many others. Their job includes: setting the overall direction (mission, vision) and height of the bar; shaping the values and overall culture; ensuring that all divisions and units are continually improving their capabilities; instigating innovation and renewal (OL-5).

   In the Microsoft case we shall see a sample of behavior across several levels and areas of that company -- especially at Operational Core level (product development), but also including top management and concerns of Internal & External Integration. The original researcher (Moody) had total freedom from company review of his report; his portraits of these people at work are not airbrushed; he gives us a candid look into the proverbial "sausage factory" reporting, along with its eventual success, all the grease, guts, and garbage involved in the production process. Most of his account is set inside the product development team (core operations) but also includes some significant data on interactions of project leaders with middle and top management, including Bill Gates. All events took place at Microsoft around 1992-93. This company exemplifies dynamic capability; already it had achieved major business success which has been sustained for 20 years since then.

Project Sendak (Case, Pt.1): A Radical Innovation Project at Microsoft

   This case focuses on the development of one project that was highly innovative for its time and for this company. It launched in 1993. One year after Microsoft produced its successful CD encyclopedia (Encarta) it reached much farther into the unknown, producing the world's first interactive, animated, digital encyclopedia for children (released as Explorapedia, known during development as Sendak). This was the dawn of digital multimedia, several high-tech "generations" before today. At that time Microsoft was a newcomer to consumer markets, publishing and especially products for children, but it had strong IT expertise to leverage. This case has some features of ambidextrous management but not exactly the classic pattern. We start with an initial synopsis and some key context, an overview timeline, and a key point to watch in the narrative following.

Key context: Since Microsoft had pioneered and achieved dominance in PC operating systems then in office productivity software, this new project might be its most innovative venture up to that time (1993). This was before internet browsers, before Windows 3 and graphical interfaces became widespread. Of course, it was way before smart phones, i-pods, and tablets. Computer games were primitive (e.g. Tetris, Pong); modern gaming was unknown and gaming had not been applied to educational or child development uses. In various markets Microsoft entered late with large investments but did not pioneer (e.g. spreadsheets, internet). In digital interactive publishing it aimed to arrive first with a product good enough to dominate the new market -- which had not yet been proven to exist.

The basic timeline for this case consists of five phases:
Time 1 (T1) covers Gates' decision to invest in this pioneering venture by forming a (sheltered) multi-media group, on the Microsoft main campus. (1985)

Time 2 (T2) covers 5 years of exploration with a few bland publications (1985-1990), leading to Encarta (the CD encyclopedia), 2 years in development. (1990-92)

Time 3 (T3) covers the troubled first phase (design) of Sendak (the children's product) -- documented in detail by Moody. (6 months, late 1992)

Time 4 (T4) covers a change in project leadership and radical change in design, culminating in successful launch -- documented in detail. (6 months, early 1993)

Time 5 (T5) concludes the case with top management's reorganization that mainstreams all multimedia units, breaking up the division, and ending their sheltered status. (1993)

INSERT TABLE 3

We shall track shifts from one phase to another in the balance between top and lower levels of this organization -- shifts in the project's autonomy and (conversely) the dominance of the top, shifts across three levels (top, division, project). This reflects an important way of managing that area of conflict. At the outset (T1) Gates at the top makes the crucial decision to invest and where to place the new venture. In T2 a middle manager is hired to lead multimedia. In T2 and T3 it is established that the top will not micromanage this unit. Seven years of freedom for R&D follow. When the two encyclopedia projects come along each plan is closely vetted by Gates, well funded -- but with some strings attached.

This case focuses on the children's product (T3, T4) but it is clear that the Encarta experience which preceded it (T2) is very relevant to our understanding. Multimedia management is now in the driver's seat (T2-4) and they face the challenge of dual demands (make a great product; launch on time) -- right up to launch. Finally, in Time 5 top management reasserts its authority by restructuring the company, in effect harvesting its investment in this venture and ploughing the knowledge and profits back into the company to benefit the whole (or so they hoped).

When Microsoft released Explorapedia in 1993 it was the first interactive, multimedia children's encyclopedia. It was an example of radical innovation -- more so than Encarta, Microsoft's digital encyclopedia, the sister project that preceded it. Both products achieved their successes in the market only after a development experience that was unruly, even nightmarish for participants and their managers. Fred Moody (1995) closely observed the development team for the more radical (children's) product, and was overwhelmed by how badly managed and dysfunctional it seemed -- and how very unhappy the members of its core design team were, although well-paid, well-funded and deeply committed to the mission of the project. He declared this a mystery he could not explain. Now, using his fine-grain observational data, I shall continue the quest to understand this case and, through it, larger issues of OL and DC. This section is based on Moody (1995) unless noted otherwise.

While in development this project carried the code name Sendak (for the renowned children's author and artist). It was the most innovative part of the new multimedia (MM) division created at Microsoft back at the dawn of the multimedia age. Technologically that was a much more primitive time, of course: these products would be released on CD-rom discs to be played on a desktop PC. This venture reached far outside the established scope of this company. It was housed on the main campus but separate, sheltered, with its own budget, management, and mission. MM enjoyed a privileged status. While hiring was frozen across the whole company, MM was allowed major growth. Before project Sendak began the multimedia division enjoyed five years of exploration with little revenue -- until Encarta launched, immediately prior to the start of Sendak.

These events took place inside Microsoft in 1992-3, in the early days of the digital technology revolution -- before the success of Windows 3 and before Microsoft and the world embraced the internet/web. Microsoft had already achieved vast success (with annual revenues over $2 billion at that time) and major market influence (Cusumano & Shelby, 1995); and it was the early dawn of the multi-media age, carried then on compact discs (CDs). Bill Gates was

among the first to imagine how digital technology could revolutionize publishing **and** to invest in that vision. While Microsoft was clearly in the business of innovation, this project represented radical innovation. It was a gamble, outside the corporate comfort zone.

This project enjoyed the special interest and protection of Microsoft's powerful founder and chairman. Against the judgment of his board and senior managers, Gates invested significant company funds in creating a multimedia division in which this Project Sendak was the most innovative venture. Gates' personal involvement in the Sendak project is remarkable, given the size of Microsoft at that time -- with some 10,000 employees (Cusumano & Shelby, 1995). Unlike most top executives at comparable companies, he was directly overseeing some 200 products, as chief software architect. And, on the outside, he was pursuing an intense business courtship of Big Daddy IBM as a very high priority (Edstrom & Eller, 1998).

Back on Microsoft's internal agenda, there was a full-dress review meeting for the Sendak plan with Multimedia Unit leaders and Chairman Bill Gates. He gave the project full funding and full creative freedom. No micromanagement here. But he was adamant that this project must launch on time and demanded that they use shared software tools (which did not exist yet) -- instead of each project creating its own tools. That constraint would prove to be a major problem.

Gates saw the opportunity to leverage Microsoft's early competence in PC technology, while reaching into areas of knowledge unfamiliar to this company (e.g. publishing, early childhood learning, family consumer goods), hiring designers with publishing and educational expertise. For two reasons it must be considered a radical innovation: (i) It created a new type of product -- an interactive, multimedia encyclopedia, visually appealing, with playful ways of learning: and (ii) The product development process brought together talent from very different cultures, well beyond the experience of the host organization's main workforce.

Between software engineers and creative content designers (educators) conflict is to be expected. Add to that even more serious conflicts among the designers themselves. And there was no support in Microsoft at that time for managers experiencing trouble with project leadership. Many exceptionally difficult (interdependent) design choices were needed for the basic user interface, with no precedents for guidance. While the first TV shows could be modeled (crudely) on radio, and the first movies on theatre, Sendak designers had no comparable forbears to lean on. This would be the first product of this kind. What should a child-friendly screen look like? What kind of landscape? Should it be a Noah's ark, a spaceship, a house? What kind of "guide" or host character? Human, puppet, animal? Gender, if human? What metaphor for the search tools? These creative decisions were tightly interconnected and determined how the

software must be built. There were many ideas and disagreements, of course. Controversial decisions were long avoided or made without real participation. Decisions were unclear and they were changed abruptly. Members felt miserable about this, disrespected. Work was far behind their own schedule. The early phase (half of the timeline) looked like "The Project From Hell" (Moody, p. 282).

Product development took a year. Initially the plan allowed more time but Gates reduced it, as often happened at Microsoft. Around the half-way mark, far behind schedule, amid great disarray, everything changed. The lead designer (who was also project manager) left on maternity leave. By coincidence another lead member of the group also left around the same time. The two replacements (new to this project) were far more effective leaders. Losing no time, they interviewed all other members (as good listeners) and conducted a quick comprehensive review with their newcomers' fresh eyes. They saw some improvements that could be made in the design; already the project was starting to seem more focused. Then a thunderbolt struck, an e-mail from Sendak's group manager (Craig Bartholomew) sent them **back to the drawing board!** He decided that the basic design was not good enough. The fear level among Sendak staff, already elevated, soared even higher.

With his former design/project leader the group manager never took such a stand, though he did give her direct feedback critical of her leadership manner, especially the Sendak staff's need for more participation in decisions. He had more confidence in these two newcomers. In fact they pulled the team together and a revised, stronger design (in some ways simpler) was quickly made. But this change required that most of the software already built must be scrapped!! This is frightening. Very little time remains. This is taking a huge risk. But somehow it succeeds. They launch on time (with more down-scoping to compensate). Bottom line: The new product makes a big success in the market.

Reflection: Given Microsoft's insistence that this project **must launch on time,** and given this project's chronic lateness and indecisiveness over design policy, with very little time remaining, we might well expect from the new leadership an approach of extreme URGENCY and cautious risk reduction -- i.e. "hurry up and get something out there -- even if we are not completely happy with it". The pressure is on. Surely (we might think) the new leaders will be more decisive than the former regime and they will act swiftly to finalize the design specs and go "full speed ahead" on construction (coding software). But this is NOT what happens. The story

swerves in a different direction. The group manager decides without warning that the core design is not strong enough and must be fundamentally changed.

So the new project leaders reviewed the core design with the other key team members; they did find (agreed) problems and quickly came up with a new, third way on the core design, that had broad support. Finally the team was united behind a better design. BUT it required trashing most of the software development already completed, with only a few months left to deadline. It was a HUGE RISK -- and it was successful.

Recap: This is a situation of ambidextrous organization. Microsoft created a separate unit with the mission to create a radically innovative product. Two organizing/management principles are in play. Despite conflict between them, both need to be honored: (i) the creative principle -- design something radically new, functional, and distinctive, and (ii) the mainstream management principle -- launch on time, follow company policies, make a profit. This is a tough challenge, but this project was given extra resources and some organizational privileges (freedom from frequent progress reporting and exemption from the hiring freeze imposed on the rest of the company).

One strategy for honoring the two principles would be to plan for two phases: an early phase with priority on creative design and a later phase for construction (mainstream management). Another approach would integrate both principles throughout, perhaps switching back and forth several times. In effect that is roughly what happened in this case -- though it was not managed deftly. With more capable project leadership it might have swung back and forth, changing basic design, with more participative leadership and less interpersonal anguish for employees.

Ambidexterity theory focuses less on such internal (micro) matters within the new venture and more on the relationship between the new venture unit and the established business, each unit prioritizing a different side of the duality. This case, however, pays much attention to micro process within the innovation project and shows how managing the tension or conflict between the two principles is also an issue *within* such a unit. In addition there are also macro issues of importance -- in this case between the innovation unit and upper management. At five different phases of this case we can see Microsoft top management affecting this innovative unit in five different ways. See Table 3.

The entire Sendak case could be viewed in terms of the struggle for balance between two sides of a conflictual duality -- between (i) creative innovation process (make something beautifully functional, that charms and captivates customers) and (ii) mainstream management (launch on time, follow company policies, make a profit). Table 3 overviews the history of this project and its relationship to Microsoft's corporate level at five different time periods. What does this radical innovation (a slice of DC) look like? In this example there are two answers: one micro and one macro. The corporate-macro view looks like this five-phase narrative of a big company adopting a risky venture, giving it the resources and protection to be creative for some time with some constraints, getting a successful result, then sending it to join the Microsoft mainstream. During most of the Moody narrative (notably in Time 2, T3, and T4) focus is on the Sendak project itself and the struggles of its leaders to fulfill their idealistic vision and to satisfy their corporate masters. The burden of reconciling the dual demands of creativity *versus* corporation, magic *versus* management lay on middle managers, especially two: the project leader and the multimedia group manager (Bartholomew).

In terms of the duality between the two principles of (i) freedom for exploration and creative thinking and (ii) the demands of mainstream management, Table 3 shows several shifts in the balance over time. Before project Sendak (Time 2) the MultiMedia division was allowed full creative freedom to explore and dream, with no revenue targets or expectations. Then came Encarta (adult encyclopedia), followed by Sendak (for children) which had to reconcile both principles internally. These MM ventures operated in a sheltered situation created by Microsoft (T3 & T4). Although the process seemed messy and poorly managed (T3) in the end Sendak succeeded. End of experiment. Then came a big change, a shock to the MM division. MM at MS will be mainstreamed. Sendak leaders and their MM colleagues are very unhappy, convinced that this is not good for their careers and that their creative freedom would now be restricted by mainstream norms and demands at Microsoft. But Bill Gates and his top managers are acting (so they believe) in the interests of Microsoft as a whole. They want to diffuse the new multimedia publishing knowledge (and perhaps broader innovation skills) more widely across Microsoft. Instead of leaving that to informal cross-unit networking (if any) top management took action to uproot multimedia projects and transplant them into established (consumer) mainstream business units. Whether that move was successful we cannot tell but the new framework helps to map what was going on.

This case analysis requires us to shift our perspective periodically from that of the Sendak project and MM division to the perspective of Bill Gates and top managers of Microsoft Corporation. That switching of viewpoints, different priorities and values, is the way of dualism and paradox, a form of meta-theory needed to understand dynamic capability, organizational learning, and strategizing at the edge of chaos. In the present case the dominant duality was **creativity *versus* commerce and conformity,** overlapping with another one -- **local (project) autonomy *versus* central control.**

How can we come to terms with the paradoxical implications of these and other dualities for managing and organizing? When facing the practical issues on the ground, when collaboration links are broken and protagonists need solutions, diagnostic efforts may (hypothesis) be aided by these actors identifying the specific dualities related to their problems.

The duality that juxtaposed creative innovation *versus* mainstream management in the Sendak case, when viewed over five phases (one year), worked out fairly well. As shown in Table 3 there were shifts in the balance between project and top management, as well as between the two sides of the duality. In time 2 and time 3, for example, top management and the project staff both wanted creative work to take precedence; but in time 5 top management put the whole-firm and mainstream interests first. Some kind of balance was achieved by these shifts. Nothing broke down. A different situation is seen in the next section, which describes a duality-related issue very important to Sendak that was not at all well-managed -- spectacularly so.

Duality Conflict -- Not well-managed (Case, Part 2)

One vivid incident in the Sendak/Microsoft case illustrates a difficulty in duality conflict management that can resonate to almost any large company. It highlights the tension between central direction (from upper managers) and local (grassroots) autonomy, the conflict between local knowledge and the "big picture" from a distance. The problem here was not well managed but is well defined and useful material for our analytical purposes. Here is the conflict: Microsoft gave much freedom to all its product development groups (each within its charter) but Gates, with his (top management) birds' eye view of company costs saw a problem that he wanted to fix. He believed that a major cause of unnecessary costs was that too many software project teams built their own software development tools when they could share them, saving major costs and also gaining other benefits. At the Sendak initial review meeting Gates approved

their plan and budget but mandated that a common toolset for software development must be created and used for all multimedia projects. He provided extra funding for this. So Sendak would not be allowed to develop its own tools. This concerned Sendak's lead software engineer (Kevin Gammill) because this product needed more advanced technology than the other MM projects, involving animations, sprites, and other visual effects.

From a corporate point of view the purpose behind this mandate was very reasonable. A large firm with a family of products can have advantages in asset sharing and also in integrating one product with others through standard interfaces, including the user interface. The user's experience can be improved through simpler standard controls and operating conventions across the product family. Gates felt that product developers were not giving enough attention to these issues and that shared tools would help (Moody, pp.100-101). Back at the shop Kevin Gammill, Sendak's lead software engineer, warned that the developers of the shared toolset (to be called SPAM) would not be capable of meeting Sendak's critical needs and the project would be devastated. But their group manager, Craig Bartholomew, stood firmly with the mandate; he did not escalate the problem any further. Likely factors for his inflexibility might be: (i) Upper managers tend to believe that developers are divas who over-indulge in their own tailor-made tools, beyond what is technically necessary. (ii) Most Microsoft employees lived in mortal fear of an outburst of Gates' disapproval and Bartholomew himself had recently been severely chastised by him over his management of a related project (Encarta).

Alas, Gammill's assessment was correct this time. CRISIS. There were no animation tools for Sendak when time ran out. In desperation they found a solution that prevented total collapse of the project. But that solution was ludicrous and costly. To save this project from disaster Sendak managers resorted to hiring a temporary army of traditional (manual) illustrators to HAND-DRAW the thousands of detailed images that were supposed to be computer generated. And the further cost was that the content features of the encyclopedia had to be drastically cut to make up for the lost time and extra cost.

There is much irony and paradox in this story but, more significant, we see an inability to address an important disagreement about the risk that Sendak developers would not get the crucial tools they needed. We see a serious disagreement between developers and their group manager; and we see his decision not to escalate the alarm to some place where more options might be made available. Here was a conflict between autonomy for creative designers, trusting

their judgment on development risks and how to use resources *versus* the efforts of top (central) management to control costs and improve product integration. This was not an arbitrary, across the board budget cut but a strategic approach, based on assumptions about the capability of the Spam team and the commonality of needs. Kevin Gammill, the Sendak software leader, strongly disputed management's confidence in the SPAM tool development team. No data could resolve this dispute between Gammill and Bartholomew (his boss). Bartholomew was not willing to escalate the problem. It could have been worse -- not much. At least they did have sufficient autonomy and funds to pursue that desperate and ridiculous low-tech, archaic solution.

The practitioner's question is "How can conflicts like this be managed better?" The researcher's question is "What different ways are there to manage such situations?" Microsoft's HR policies and culture at that time did not pay any attention to work process management or conflict management. Microsoft addresses the (de-)centralization duality directly with its anti-bureaucracy policy (consistent with "hot groups" doctrine -- Lipman-Blumen & Leavitt, 1995) of giving all its product development groups freedom from close oversight -- and no resources to help groups having trouble with their work process. As we saw in the Sendak case, this can lead to "projects from hell" which have serious internal collaboration problems. This is not simply an HR policy that could easily be changed; there was also a strong Microsoft culture of anti-bureaucratic, macho, hacker-empowerment, apparently very unfavorable to process consultation or coaching

To summarize the case from Microsoft, I am suggesting that duality issues can help to understand it. In that case we see three important stories, each with a dominant duality issue. One story resembles the ambidextrous management model with top management sheltering the radical innovation (Project Sendak) during its period of design and development. The duality involved here might be labelled as "creativity *versus* the corporate schedule and strategy" and it was managed well enough, without serious fallout, aside from very high levels of employee stress and distress. The creative design team overcame major early problems of internal collaboration and produced an innovative product (on time) which made a hit in the market. Microsoft at the corporate level got a good return on its investment in this venture and the creative employees got the resources to create a noteworthy innovative product. From this angle, within this story it was a productive partnership, if not a perfect one.

The second story within the Microsoft case, by contrast, featured the shared tools fiasco,

an unresolved problem which involved the duality conflict between local project autonomy *versus* central coordination and control. Here there was a serious problem due to (top) management misjudgment and the company's lack of any procedure or process that allowed middle managers or critically affected employees to safely seek corrections to a top level decision that appeared to be heading for trouble. In general Bill Gates gave a lot of autonomy to project teams but he personally set their boundaries. He managed the company with minimal "bureaucracy", such as a committee which might have evaluated an appeal on this shared tools mandate.

The third important story within this case occurred all at the micro level, i.e. within the project team. Moody describes in detail many problems of ineffective project management during the first six months. This could be attributed to another duality and lack of success in managing the conflicting demands. This is the need among members/employees for authentic **participation** *and* the need for **leadership** in bringing the design to closure, on schedule. Closure on a good quality design (on schedule) was only achieved after a fortuitous change of project leaders (maternity leave) and the sudden, late intervention of their boss, who demanded design improvements at a very late hour. A very close call. They got some lucky breaks.

Those three dualities were fitted retrospectively to the case data. Many other dualities may show up in other cases, as other researchers have shown (Sutherland & Smith, 2010). In the next section we examine four "classic" dualities and a basic process for utilizing a duality to better understand and manage a situation.

Organizational Dualities

The case of the "shared tools mandate" (not well managed) highlights one of several inherent organizational conflicts or dualities that are well-known and documented. In this section we shall now identify some others which are important. With confidence we may expect to see them, often behind a trouble-spot and often, less obvious, behind a productive arrangement that extracts good value from the combination, while neutralizing its toxic potential. In the best situation "the odd couple" can become "an excellent partnership" -- at a certain cost/investment. This is the fundamental hypothesis or assumption behind the present framework for viewing DC through the combined lenses of duality and OL. We shall now review four classic dualities or dimensions to this view.

Ambidextrous management addresses the duality of radically new ventures being nurtured alongside the large, established businesses ("cash cows") which built the fortunes of the umbrella organization. Project Sendak and Multimedia Publishing at Microsoft presents an example. Top management is investing in **exploration** part of the company profits from its **exploitation** of known assets/formulas, in hopes of creating a new cash cow as (or before) old ones expire. The mission and expectations of the new project must be different from the prevailing culture of the host organization, shaped by the powerful cash cow divisions. The new venture needs protection; and the Top Management Team wants to enhance the overall innovativeness of its whole portfolio of businesses with help from the new project. Success requires careful oversight of this duality challenge by one of the TMT, with all its members committed to this ambidextrous (dualistic) strategy (O'Reilly & Tushman, 2004).

Central control *and* local autonomy is a duality tension seen widely in both business and governmental sectors. Federal government *versus* regional jurisdictions, mirrors issues seen in corporate management *versus* strong divisional businesses. Decentralization and more local autonomy for operating core units seem more fitted to frequent and rapid innovation, guided by closeness to each market segment. *So down with centralization and micromanagement!* But there are downsides to full autonomy, as Gates argued in the "shared tools" incident. His concern was over unnecessary duplication of costs, due to boundaries/silos. In other words, failure to benefit from knowledge already discovered by peers in other units. At HP, traditionally very decentralized, CEO Lou Platt lamented "If only HP knew what HP knows". This lowers the effectiveness of the organization as a whole and hence its competitiveness. But another aspect of this duality/dilemma can cripple it when critical strategic questions need strong central direection. Once again HP illustrates the point, along with the late DEC and Polaroid. After the legendary founders retired both companies' business results slumped and evidently a new business strategy was needed. But these once iconic companies floundered for years, with bitter conflict over a new direction. Due to long-term decentralization neither company had a TMT dedicated to **integration** and guidance of **the whole company.** Each CEO faced the task of redirecting this huge company in effect single-handed, without the collective thinking and support of a knowledgeable whole-company integration team. The much-admired founders, had

neglected to groom such a group (Schein et al., 2000; Malone, 2007; Fiorina, 2006). This problem could not be corrected quickly: the kind of TMT needed learns together (i) to think of the whole, and (ii) to work for needed change (Beer, 2011; Senge et al., 1999).

Central infrastructures provide powerful means for achieving certain kinds of central control and coordination -- indirectly. Support services can be centrally supplied and controlled for efficient use, cost control, and quality control. But operations units commonly want control of their services so they are responsive to their exact needs. Information systems (including HR, production, sales, and cost accounting systems) provide information for management at central and local levels. Their implications bore more deeply into the heart of operating systems due to their in-built fundamental assumptions about work processes, goals, reward systems, resource allocation, collaboration, etc., etc.. What credentials are required for hiring? for example. What are the criteria for rewards? -- for team results or only individually? These are all constraints on operating units that want freedom to be flexible and innovative, freedom to operate in ways different from what was assumed earlier.

This conflict between a new venture and the host firm's central infrastructures is identified in Ambidextrous Organizations and the new venture may be granted freedom from them during its early phases of growth. If high agility is needed in other core areas (besides new ventures) then new arrangements may have to be negotiated. Top management creates central infrastructures in the first place, then they grow larger and become centers of power in their own right.

Formal and informal methods. We gave already noted the significance of informal modes of information sharing and knowledge generating. In the context of debureaucratizing long-established, once-successful companies that are now failing, some informal networks may be acting to protect old patterns and privileges (resisting change) and others may part of an insurgency to open up new channels and patterns of OL -- perhaps even more than official change leaders were expecting! So when the two sides (formal and informal) find a way to work well together there can be a thrilling organizational transformation, a shift in thinking, culture, workplace processes, and performance (Sugarman, 2010 a).

Any of these and other dualities, when salient, may create conflict that threatens collaboration. Salience may be altered by various environmental factors, often changing. Patterns of adjustment, agreed role definitions established earlier may still hold up, with minor adjustments, informally arranged between peers. Or recourse to a formal process or procedure (OLM) may result in a solution. A new or modified pattern is agreed and established. We may call that OL or conflict management, though in popular usage the latter (CM) tends to be used when the solution is not so easy to find. Here I suggest using a broad definition for conflict management that includes, not just these easily solved situations, but also includes preventive efforts. These solutions, when they involve setting a new pattern, can equally be considered as CM or OL. In some simple situations using CM language may be clearer; other times we may need the features of OL and its related concepts. Some of these will be introduce in the next section.

Varieties of Organizational Learning

This essay in trying to understand dynamic capability (DC) in organizations employs two central assumptions. One concerns the prevalence of paradoxical dualities in all/most organizations -- pairs of principles which are both necessary but also in conflict. The second assumption concerns the potential for organizational learning (OL) to improve effectiveness and survivability.

We start with a high-level definition: *OL occurs when some organization members, either acting on behalf of the whole or some part, draw meaning from some data or experience which seems relevant to their organizational role and interests, and they use that understanding to modify patterns of behavior, acting jointly with others* (Huber, 1991; Argyris & Schön, 1996; Sugarman, 2010 b). This definition ignores the existence of an organizational context or it assumes by default that it is irrelevant. But those members who make changes in their own area or who have suggestions for change to others face an uncertain response. Sometimes they censor themselves because they expect an unwelcome response. Receptivity, absorptive capacity, and norms about what kinds of OL are more or less acceptable may be assumed to vary between organizations and within one to vary between different areas. Is it possible that a new framework could simplify this in a valid and useful way? I think so.

Here is a two-dimensional concept space for the new OL typology which associates each of the types with a different area of a contemporary archetype organization. It incorporates and goes beyond two polarized perspectives found in the literature -- (i) the top-down, strategic view for the firm as a whole and (ii) the grassroots, operations-based view in a local unit. More formally the basic framework is a two-dimensional (2x2) space. On one dimension we differentiate between (a) setting and reinforcing the **larger mission or goal-set for the whole organization** and (b) all the interconnected **means and methods,** structures, sub-structures, and processes (value chain/network) designed to achieve those collective goals. On the other dimension we differentiate between an **inside** and an **outside** focus as the priority for players' and observers' attention. The inside focus asks: How to make things work as well as possible inside our unit or boundary? and the outside focus asks: How to manage relevant **outside** factors -- e.g. investors, suppliers, rivals, dangers, and opportunities? This Inside-Outside factor can also include an option of **both**. Hence we stretch the 2x2 format into (2x2)+1. See Table 2.

<center>INSERT TABLE 2</center>

This framework maps five areas of any organization based on its distinctive systemic task. Each of these is associated with a characteristic type of OL. It is necessary to expand the Inside-Outside axis to add a Both option, since this duality (In/Out) must be overcome and integrated for success and survival (central assumption). For now this framework does not identify OL types with specific positions, ranks, or roles. That may vary between different organizations as some are designed to allocate these responsibilities in different ways. Ethnographic research could use this framework to observe and describe the actual practices, results, etc. seen, as opposed to what is inferred from interviews and documents.

It is the polarization between two literatures which suggests this five-fold framework. One is focused on the core operations level, where OL is treated as synonymous with continuous improvement in quality and work processes on the shop floor (i.e. OL=CQI); the other literature is focused on the organization as a whole, where OL refers to forming corporate strategy or leading bold, broad change. These two interpretations of OL are built into the new, five-part framework.

Another (more pictorial) way to visualize the framework is shown in Figure 1. The logic is identical in both but whereas Table 1 emphasizes the analytical distinctions between types, Figure 1 shows five types (from a 2x3 table) and represents them as movable shapes that can make contact with each other, or not; and they can be visited in any sequence. It suggests that other arrangements of those shapes that other analysts might wish to make in order are possible to emphasize different linkages and priorities. See Figure 1.

INSERT FIGURE 1

"Start at any point" (Figure 1) is important. The framework is impartial as between the major areas. That is why this figure is not presented in the usual form of a table or list, which tends to casually privilege the first-mentioned element over others. So start at any point and move in any direction. Organizational case studies often favor the viewpoint of top management. Even if critical of the latter's performance they still describe situations as if seen from the strategic apex, but this framework encourages taking varied viewpoints.

Now follows an outline of **five types of OL** as used in this framework. Firstly, at the "base" of the organization, in the large "operational core" usually comprising the majority of its employees, we find **operational learning and improvement practices**, involving experiential (hands-on) improvement and action learning, plus the application of data-based and statistical methods of process improvement. (OL-1 in this framework.) This type includes running repairs and fine-tuning of the machine bureaucracy and operational technology, performed mainly by those who operate the system -- not "re-engineering" by outsiders.) There may be formal programs of process/quality improvement and or after-action reviews. Team action learning . Indigenous, informal conversation among colleagues forms a seed bed for many kinds of informal socializing , discourse, and learning to meet the felt needs of participants, e.g. for answers to work-related questions, for relaxation, for more info about car pooling, for ways to game the bonus system, etc.. Initially this is OL with a very local and micro focus. Each work team, project, or department can conduct its own OL. Sharing will be considered a different area/ type.

Connecting Informally Across Units consists of the informal mainly horizontal, interpersonal connections through which work units sometimes share their improvements and learnings -- diffusion and leverage of knowledge. Helped by "knowledge activists" (von Krogh et al., 2000) this diffusion can transfer the learning from a few successful micro innovators into

other similar units, raising the average performance closer to the best. In large divisions this OL can multiply the gains many times over. Here the work of OL is less about discovery and more about brokering and broadcasting knowledge. Some of the players here are functional managers and discipline experts with this specific role of finding, filtering, and transmitting information they consider most important. Knowledge is promiscuous, but sticky (Szulanski, 2003); new combinations and off-spring can be expected and encouraged where creative innovation is needed (OL-2).

Internal Integration (Formal) manages the intricate value chains and collaboration networks needed to produce and deliver complex outputs. Typically this work is central to the job specs of middle managers, both line and functional managers. Traditionally, before the rise of participative forms of leadership, they and their superiors would consider this work their exclusive domain. *(Let's consider this a type of obsolete OL in current conditions.)* But **informal leaders and influential members of employee social networks, working together with middle managers,** can achieve more effective coordination between teams and units **(OL-X)** (Cross, Parker, & Sasson, 2004; Sugarman, 2010 a). "Working together" includes the sharing of information, sense-making together, designing and revising better solutions to issues that have escalated from grass-roots work units. Some of the tools and thinking used here are similar to those used for shop floor improvements (e.g. Lean Management, Womack & Jones, 1996) but the challenges at this middle management level can be more complex organizationally and may involve issues of managing tough duality conflicts. In some cases the attention of upper management will also be needed.

Proposition: *This form of OL where formal authority and informal networks work together (OL-X) has the highest level of importance for achieving better collaborative action, efficiency, and effectiveness -- and even transformative change in those areas*. When this kind of OL is missing, poor collaboration, organizational friction, and poor performance is likely.

OL-X is paradoxical. Managers still issue directives, setting goals -- after hearing, respecting, and weighing the input of various members. They still use formal "manager" thinking -- analytical, "design" oriented , and systemic (OL-3) sometimes. But with OL-X these managers have come to appreciate the role of social networks in the workplace -- how they facilitate the participation of employees in identifying and fixing problems. The new boundary between OL-2 and OL-3 gets mutually defined and adjusted, as a collaborative learning process. Managers can

support those networks, while giving them room to grow, without too much management interference that can make them turn defensive. As a culture of OL-X (alias the "learning organization") evolves, employees of any rank do more systemic thinking and share these insights. **Recap**: OL-2 = informal networking, knowledge sharing across units by employees of any ranks; OL-3 = managers addressing internal integration matters formally; OL-X = collaboration between OL-2 and OL-3.

External and Internal Integration of the Whole. In this area we shall see the participation principle (OL-X) once again, squared, even more powerful, since we can now integrate all the integrators. The face of this area is the CEO and top management team (TMT), who typically play the key roles in this integration work which also depends on the participation of many others. Before outlining the demanding tasks of this area we should note that the first and most important task of the TMT is to develop themselves as an effective, collaborative team with a collective learning capability, working on behalf of the organization as a whole -- not just as the heads of major divisions or components (Beer, 2011). This task-set (External & Internal Integration - OL-5) includes: setting the overall direction (mission, vision) and height of the bar; shaping the values and overall culture; ensuring that all divisions and units are continually improving their capabilities; instigating innovation and renewal.

This overall integration need not always be the exclusive prerogative of top management. A strong governing board may be a factor and may represent stakeholders other than investors. Another democratic alternative is based on the Search Conference which engages wide and deep participation of employees both in setting policy and strategy, as well as in implementation through Participative Design (developed by Fred and Merelyn Emery) described by Purser & Cabana (1998) in *The Self-Managing Organization.*

Some companies allow their heads of major divisions to act quite independently, almost like heads of separate companies, and do not create a tradition where the TMT acts as stewards who manage the healthy growth of the company as a whole. When that company needs to make a major change of strategic direction, the CEO may call for it and describe the vision but it will never happen because top managers only care about protecting their own divisions. There is no top level team working to integrate internal and external aspects of the company as a whole. This was a big part of the troubles at HP after the departure of its founders (Fiorina, 2006; Malone, 2007).

That example also provides an entry point to the topic of "**organizational politics**". Managers and earnest supporters of the official organizational strategy and culture are apt to use the term "politics" to disparage actions and words of others which they feel are not supportive of "the party line". The disapproved actions and words may be in support of a different decision, action, or policy; they may be seen as self-serving. These are the connotations commonly attached to "organizational politics". Perhaps they are appropriate to a one-party political system or cult -- but even there, there are differences of opinion among the faithful, those who are committed to the mission and values of the organization.

In a 21st century learning organization, aspiring to sustainability, those differences of opinion are precious -- some of them. They are systemically inevitable, given the different levels, areas, and roles -- as noted in the OL typology. Therefore, we must open up the concept of **organizational politics** to include, not only negative and self-serving views, but also the views of innovators who have not yet been recognized, and the ideas, comments, data, and opinions of many participants of which no-one know yet their eventual destiny. In other words, organizational politics, broadly defined is part of OL and part of the way that organizations, complex social adaptive systems, adapt to their environment, their history, and the aspirations of their members. This is one more paradoxical duality: needing diverse views of methods and strategies *but* needing alignment, shared understanding, and collaboration.

Having worked hard to establish OL as a more precise and differentiated concept, we are now ready to synthesize all five key ideas of this new approach into a working framework to guide further research. The center-piece for this construction will be the solid concept of **collaboration** (working together) on which we shall hang the five key elements that will form this broad new conceptual framework: (i) **collaboration** as a central concept; (ii) **duality-paradox** as a key source of conflicts that can threaten collaboration; (iii) five types of **organizational learning**, (iv) four types of **individual action/thinking**, including paradoxical thinking, and (v) the proposition that **"golden dualities"** can be created from dangerous duality situations.

Collaboration and Conflict Management

We now focus on **collaboration** -- a single concept, right at the heart of this not-so-simple framework. Collaboration is defined to mean cooperative and coordinated action between

individuals, teams, or other components (Edmondson, 2012; Bratton & Tumin, 2012). This could even include joint actions which benefit the collaborators at the expense of other colleagues or even the organization as a whole. But here our main focus will be on "loyal" collaboration, oriented to official organizational goals through the pyramid of value chains that culminate in outputs which are valued and rewarded by external customers or other stakeholders. In this section we recognize collaboration as a pervasive and necessary organizational phenomenon. We shall consider it from both positive and negative (conflict) vantage points. Like all process phenomena, collaboration and learning are not easily visible but as "problems" they get attention -- we call it "conflict management"-- and then they become visible.

Some collaboration conflicts are to be expected in any organization, even during any periods of relatively calm conditions. But sudden external changes, internal accidents, and abrupt changes in policy are all apt to cause significant disruption, involving extra stress on some collaboration links and even causing a collapse of collaboration somewhere. That major disruption makes it too hard for one party to provide its contribution without some compensatory change. What change? This can be explored and negotiated by the parties involved, through a process of problem solving and learning, or by management edict. And we may be sure to see **organizational politics**[1] here since this is another name for seeking to gain support for one's views about how workplace problems could better be solved or prevented.

Collaboration overlaps with the duties of "integration" specified in the five types/areas of OL. All collaboration counts as integration at some level of the organization, but integration has a broader scope. In addition to the value chains and value network within the Operational Core, where collaboration is clear and concrete, integration also oversees collaboration and conflicts between large units and between all operational units and central infrastructures (e.g. IT, HR, accounting, communications).

For any readers who are skeptical about the definition of Integration components used here, conflict management should be an easier sell, requiring fewer assumptions. Acceptance of

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[1] The term "organizational politics" is commonly used to refer to employees' attempts to advance their careers and gain competitive advantage over peers through impression management and currying favor with bosses. That is not part of the definition used here.

conflict management only requires the belief that collaborations sometimes fail due to a breakdown in the relationship on which they depend. Who could doubt that?

In an organization sailing on busy and stormy waters changes come often and without much warning; so do new opportunities. Many changes: some familiar, some new. Agility, the ability of teams to adjust quickly (hence collaboratively) can give a significant advantage in the race against rivals and the struggle to stay afloat and alive. DC requires capabilities specific to the situation (first order) and, regardless of those specifics, it requires (second order) capabilities for developing agility that center on high levels of OL in all five areas, which would include high levels of collaboration and well-developed processes for repairing and strengthening collaboration links in all five areas.

Here is a shorter and more catchy version: *Fast and friendly flexibility in collaboration links has major benefits for an organization's sustainability or DC.* Including "friendly" is not frivolous but significant. A tempting metaphor for collaboration is to imagine a complicated mechanical system which requires regular lubrication of its moving parts. Friction is the enemy of "fast and flexible" functioning and lubrication prevents friction. But clumsy ("unfriendly") lubrication can backfire; it spills oil and can cause fires, which cause total friction and worse, i.e. breakdown. The organizational equivalent of careful lubrication in the metaphor is good treatment for employees, comprehensive care in the cultivation of workplace relationships. "Friendly" means respectful and caring in Gittell's formulation (2003). This emphasis on the relational underpinning of work/business transactions appears throughout the literature and practice of OD in general and the learning organization in particular, but it has received special close attention in the literature of relational coordination (RC) theory, which explains how carefully cultivated caring relationships can improve collaboration and how they can be fostered by certain organizational practices and policies (Gittell 2003). The poster company that exemplifies the relational coordination (RC) approach is Southwest Airways (SWA), also noted for its sustained profitability (DC), unique in a troubled industry.

It is now time to reinstall our duality-paradox lens in order to conclude this section on collaboration and conflict management. Here are some basic assumptions about conflict management in social systems. (i) Organizations are full of conflicts (at the level of "friction"

raising costs) but most of them do not run out of control (to the level of breakdown). (ii) Some conflicts reflect an underlying duality, a pair of needs that are apparently incompatible. (iii) Conflict management refers to problem solving and other OL methods, used formally or informally. "OL Mechanisms" may exist with specific times, places, procedures, norms (Popper & Lipshitz, 2000) , e.g. After Action Reviews, Kanbans, Program Review Meetings, Grievance Procedures, Cross-functional Integrating Team (Mohrman, et al., 1995). (iv) Faced with a harmful collapse of collaboration it may be helpful to look for an underlying duality conflict. (v) Paradoxical dualities (independently of content) can be viewed in two ways: one way in which they are mutually complementary and another way in which they conflict. (vi) Leadership in situations of paradoxical dualistic conflict management seeks to exploit their complementarity and limit the impact of their conflict. This involves OL: it involves informal and formal leaders plus impromptu participants, utilizing the pathways, processes, and potentials provided. It involves being creative, to bring together the necessary players to use the relationships they have plus any other available resources to encourage a conversation in which OL can occur, to improve the situation, to create a precedent and new normative patterns that improve the likelihood of wiser actions in another similar situation.

This approach applies broadly to conflicts in any of the five areas of OL or between them; it applies to local as well as large issues. Of course, though, the specifics must be tailored/ managed according to the specifics of each situation -- within the established policies, procedures, and unstated cultural norms in place. Sometimes there are none and each one is a crisis that requires special handling or it incurs the costs of being ignored (for example the shared tools mandate/fiasco at Microsoft's Project Sendak).

Conflict can sometimes be managed by the two principals meeting in some heart-to-heart conversations, perhaps facilitated by a third party, from which they come to accept the paradox that both sides are valuable and necessary to the organization and the customers they serve. They may also be able to negotiate boundaries and working conditions that help each one to cope better with the most troublesome features of the other. Managing these conflicts, in other words, includes both modifying working conditions and changing thinking and attitudes. Workflow, resources, and technology are usually involved but the main elements are about how people

collaborate, about relationships and organizing. That is the generic Socio-technical Systems approach, which must be tailored to the specific situation, including what area of the organization it is found and hence the type of OL most affected.

Dynamic capability implies managing the organization through frequent disruptions which affect and unbalance many of the pervasive and necessary collaborative arrangements (in all five areas of OL and between them). An organization's resilience (DC) depends greatly on the effectiveness of its OL in each area -- especially OL-1 in core operations, and how well the other areas provide support (both currently for fire-fighting and for building capacity long-term). Effective OL and conflict management depends on both collective and individual factors. Collective factors (the learning culture of the organization) include OL-2, OL-3, OL-X, and the procedures and practices developed through earlier OL. It makes a difference whether this is happening in a firm like Microsoft or one more like Southwest Airways. All those collective factors are enacted, of course, by individuals, based on their abilities, understandings, aspirations, and styles of acting and thinking. That brings us to the final section of this conceptual framework where I shall present a revised and expanded typology of action-thinking styles in relation to the demands of OL and conflict management.

Types of Action, Thinking, and Learning Styles

Some OL literature may be criticized for being too individualistic but this chapter has gone to the other extreme. Our Types of OL are defined by where they are situated organizationally, and the main systemic task they support. Across all types, however, there are important differences in how the individuals involved may act and think, as they start to adapt and/or initiate some OL. We need a typology that goes beyond the single-loop, double-loop pair and we shall add two more types, one more primitive and one more complex.

Let's assume that OL requires (and goes beyond) individual learning – as most writers on OL suggest, for example (Huber, 1991; Senge, 1990; Crossan, et al., 1999). Let's also assume that experiential or action learning is an important form of individual learning (Kolb, 1984; Argyris, Putnam & Smith, 1987). Given that an organization is a complex social adaptive system (CSAS) comprised of many smaller, cohabiting CSASs, all of them populated by somewhat intelligent humans, and all existing in a rich but dangerous environment surrounded by many others (Antonacopolou & Chiva, 20005). Their survival (DC) requires behavioral

adaptation, i.e. survival of the fittest on a playing/battle field with some social/political regulation. Some forms of adaptation involve learning; in this section we define four kinds of action-thinking.

Primitive action systems exist widely in nature, most obviously in creatures with simple neural systems: worms, plants, etc. . Any living system, in an environment which contains the resources it needs for survival and growth, explores its environment until it finds something that it needs or likes – or it dies. If it learns to repeat actions that are rewarded, its chances of survival increase. It may also learn how to act in collaboration with others for greater or more dependable rewards (Darwin, 1859; Skinner, 1969; Capra, 1996, Miller, 1994).

The main action learning proposition for human systems (or any complex social adaptive systems) assumes feedback (reinforcement) loops. It is based on people taking intentional (goal-directed) action, working to solve problems that interfere with their plans, assessing those efforts and finding better solutions, sometimes through individual and/or collective reflection (Argyris & Schön, 1996; Revans, 1982; Watkins and Marsick, 1996). The concept of reflection has received attention from all these researchers and an influential distinction has been made between single-loop and double-loop learning (Argyris & Schön, 1996).

These two categories form the core of our typology of action learning but additional types are needed. Single loop and double loop learning are both data-system based and both employ a formal process of thinking. Single loop learning operates through applying set procedures and guidelines; if results are not adequate, apply the rules more carefully. Double loop learning, by contrast, questions the assumptions behind the rules. If better results are needed, improve the rules by finding more valid and fruitful assumptions. Large, stable organizations depend greatly on single loop thinking and learning, i.e. following the rules, i.e. bureaucracy. Process/quality improvement efforts such as lean management use double loop learning in the their attempts to raise efficiency. These two action learning types figure as types 2 and 3 respectively in Table 4.

Type A-1 behavior is found widely but not usually included in any typology -- except as the negative illustration of unprofessional management. It is informal and intuitive; its information is not carefully analyzed and studied for decision making. Management here is hands-on and personal. Many enterprises start out this way on a small scale, grow big and face big administrative problems. Reformers bring in formal, bureaucratic management methods. The reformers often condemn the former state as "flying blind". However, we should not assume that

type 1 can (or should) ever be eliminated. Small organizations without serious competitors may survive using type 1 learning and management but large organizations typically need/use formal information and decision making systems (Perrow, 1986).

Both single and double loop types of action learning imply a formal, explicit process for data collection and for reflection on the implications of that data. Organizational situations where the processes of data collection and reflection are mainly informal and intuitive represent a different category of action learning. That happens extensively, often condemned as sub-standard, but let's not rule out the possibility that it may be suited to certain situations. I label this informal form of action learning as Type A-1, while single-loop learning becomes Type A-2, and double-loop learning is Type A-3.

Type A-3 (double loop) is important for innovation - especially radical innovation; type A-2 can cope with some (but arguably not all) large scale management, providing consistency and stability -- but not flexibility or renewal. For radical improvement, for renewal, for tough problem solving, and for conflict management type A-3 (double loop learning) is needed -- but it may not be sufficient (hypothesis).

Proposition : The toolset of important action and thinking systems needs a fourth type. From a developmental viewpoint each type might be seen as an attempt to overcome the limitations of the previous one. Thus Type A-2 introduces formal structure with explicit rules and procedures to overcome the inconsistency and confusion that can result from the informality of Type A-1; Type A-3 introduces the questioning of assumptions to overcome the fixed and confining assumptions of Type A-2. Even Type A-3 has important limitations. One is that it often requires narrowing the mission scope in order to "simplify" a tough problem. That facilitates targeting efforts and sharpens focus – but at the cost of excluding other important goals and their stakeholders, i.e. missing the real problem. This may involve several organizations collaborating.

In effect we need to go "outside the box" not just for new thinking models but also for new ways of identifying the problem because it initially appears to be a vague but threatening blob, maybe over here, maybe over there, depending on which of the warring stakeholders is reporting. They are fighting among themselves and with any outsiders who get too close. It's too controversial to be managed through usual methods. What does conflict management mean in this context?

The troubles seen in the Sendak project reflect one of these problems but not the other. Their mission was clear and embraced by all but during the first six months they did not have a work process that was both participative and task-focused. That is a dualistic challenge for all team leaders, recognized in small group research going back to Bales (1951). Often this is managed through shared leadership, one leader mainly task-oriented and the other paying attention to personal and process concerns. But the Sendak team was missing one player and no-one took up the latter role. This dualistic leadership challenge (participation and task focus) is specially acute in creative design groups like Sendak, pioneering in areas where there is little or no knowledge of what works, what customers buy, and little chance to test prototypes. Kim Emery (Sendak's new, phase 2 design leader) made at least one crucial design change on "gut feeling" while rejecting contrary test data as invalid. (The results were good!) Trust-your-gut judgments, by players with deep exposure to situational specifics and experience with other cases, are exemplars of Type A-4.

While I can define the gap that needs to be filled by another type, I shall not attempt to prescribe how such a type would function. That is a work order for further research. Some pioneer/practitioner/theorists are already working on that challenge (Scharmer, 2007). Let it suffice for now that Type A-4 is a form of action learning that does not demand the narrowing of focus common to types 2 and 3; also unlike those two types it is not restricted to linear thinking but uses lateral thinking too; it does not insist on "well-formed" problems but tackles even "wicked problems" or vast, controversial conflicts, where the embattled stakeholders do not feel they have any shared goals as a basis for bargaining, and they do not even agree on defining the issues. It includes paradoxical thinking and creative, artistic ways of organizing and communicating ideas and data.

To summarize this section and how its fits into the whole conceptual framework, let's note that it brings the focus finally to the individual factors of thinking and acting involved. We identified four distinctly different individual styles of acting and thinking. They (A-1 thru A-4) may be applied within any of the six types of OL (OL-1 thru OL-5, plus OL-X) each associated with different systemic tasks within an organization. When functioning together (collaboratively) they can make an organization successful and sustainable, eventually establishing DC. However, "friction" exists widely, i.e. unresolved difficulties in collaboration. Many factors can cause such friction or conflict but here we emphasize duality-based conflicts. A general characteristic of

paradoxical dualities is that on one level they present conflict and trouble; yet we cannot solve the problem by removing one side (or both) because both are needed. But there can be a transformation to productive partnership, collaboration with negotiated conditions and costs. The ability to facilitate that discovery or shift may require leaders capable of type A-4 action/thinking plus organizational settings conducive to OL-X and OL-5. One essential part of that transformation is for participants to see and accept that the duality is necessary: it cannot be eliminated but it can be managed to be more tolerable and productive.

Recap of Propositions

"Golden Dualities". Certain inherent organizational **conflicts or dualities** may be found behind a trouble-spot and often, less obvious, behind a productive arrangement that extracts good value from the combination, while neutralizing its toxic potential. In the best situation "the odd (conflictual) couple" can become "a productive (and peaceable) partnership" -- at a certain cost/investment. New thinking is part of transforming an intolerable conflict based on a paradoxical duality into something different and more manageable.

Dynamic capability can be achieved through simultaneous **ambidextrous management.** This is the simultaneous pursuit of exploitation and exploration, side by side in separate units with different business models, different competencies and cultures for each. Both sides need to be overseen by top management with an overarching common strategy and values, and with linking mechanisms to leverage shared assets (Tushman and O'Reilly, 1997). This whole ensemble must be integrated by a top management team whose members have developed their own team processes in a way that allows them to balance the inconsistent alignments (between the two sides) in a consistent fashion, making strategic tradeoffs and managing a common-fate incentive system (O'Reilly & Tushman, 2004; Smith & Tushman, 2005).

Types of OL. OL looks different and functions differently when it happens in five areas of an organization: core operations (OL-1), connecting across units (OL-2), internal integration (OL-3), external affairs (OL-4), and overall, external and internal integration (OL-5). **Shifts** occur in the relationships between areas of an organization and in the relative dominance of the two sides in a salient duality, as seen in the situation of the Sendak project and Multimedia division in relation to top managers of Microsoft Corporation. This is one way that dualities would ensure dynamism, even if external forces did not.

Conflict management in social systems, some basic assumptions: (i) Organizations are

full of conflicts (at the level of "friction" raising costs) but most of them do not run out of control (to the level of breakdown). (ii) Some conflicts reflect an underlying duality, a pair of needs that are apparently incompatible. (iii) Conflict management refers to problem solving and prevention using OL methods, formally or informally. "OL Mechanisms" may exist with specific times, places, procedures, norms. (iv) Faced with a harmful collapse of collaboration it may be helpful to look for an underlying duality conflict. (v) Paradoxical dualities (whatever the content) have two sides: one where they are mutually complementary and another where they conflict. (vi) Leadership (or conflict management) in situations of paradoxical dualistic conflict requires exploiting their complementarity and limiting the impact of their conflict.

Some Practical Implications

When critical collaboration links are endangered and protagonists need solutions, diagnostic efforts may be aided by these actors identifying the specific dualities related to their problems. **"Golden Dualities".** Certain inherent organizational **conflicts or dualities** may be found behind a trouble-spot and often, less obvious, behind a productive arrangement that extracts good value from the combination, while neutralizing its toxic potential. In the best situation "the odd (conflictual) couple" can become "a productive (and peaceable) partnership" -- at a certain cost/investment. New thinking is part of transforming an intolerable conflict based on a paradoxical duality into something more manageable.

When planning an intervention be sure to assess basic OL in each of the five areas (core operations, connecting across units, internal integration, external affairs, and overall, external and internal integration) and how they interrelate. Beyond the presenting problem, consider how duality conflicts present themselves and how they are managed in each area. Study some of your golden dualities, noting the collateral costs.

Relationships between areas of an organization (including relative dominance) **shift periodically**, as seen in the situation of the Sendak project and MM division in relation to top managers of Microsoft Corporation. Get data for more than one phase. Notice how the shift between phases has been managed. (Researchers should also note this.)

DC requires two kinds of capabilities: (first order) specific skills, knowledge, and style native to the specific task and situation involved; and also (second order) more general, broader

capabilities for conflict management and OL (all five types) that can leverage first order capabilities more widely, more powerfully.

This framework, identifying dualities than underlie conflicts (both latent and potential ones as well as currently visible problems) and applying preventive or restorative forms of conflict management with OL adapted to the five different areas, can be applied on both large and small scales. When staffed with players capable of A-4 action-thinking this approach can be applied to large, wicked problems. This framework directs attention to both formal and informal efforts, with a special interest in situations where they are integrated (OL-X). OLMs, being formal, are more visible but their functionality cannot be taken for granted. Sometimes they represent the institutional adoption of a process developed informally. Their original effectiveness may be secured, expanded or ruined. Some were designed with certain intentions, which may or not be achieved (Mohrman, et al., 1995). Each OLM has its reputation, its customs and procedures, its "owners", critics, experts and manipulators, and the rest of its mini-culture[2]. Many take the familiar form of a formal face-to-face meeting, but less formal equivalents may be embedded in social activities; they may be conducted on-the-run during normal operations, or over various long-distance media. Each has certain limitations of bandwidth and types of interpersonal data and problems that are lost. But if they create more opportunities for useful communication than before they may have value.

Conclusion

In this chapter we took a close look at some ethnographic data from one especially innovative project at Microsoft, seeking to make sense of it and to learn something relevant to understanding **Dynamic Capability.** At the same time I developed and introduced a new conceptual framework designed for this purpose. It uses the lens of **Duality and Paradox** along with a new typology of **Organizational Learning** (OL). These abstract concepts got well grounded and tested a little by the Microsoft case, then further concretized by the introduction of **collaboration** as a mediating (and perhaps more accessible) concept. Collaboration and OL (various types, systemically linked) are both assumed to be requirements for DC. Breakdown in

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[2] See, for example, research on NYPD's once renowned OLM known as Compstat that was central to the transformation of New York City Police Department (Silverman, 2001; Sugarman, 2010-c).

collaboration or too much friction at critical points calls up the concept of **conflict management** (CM), both preventive and restorative. The new framework is synthesized around these **twin concepts OL and CM** which might be personified as (non-identical) twins who like to wear each others' clothes. Both identify similar processes which are shaped by individual and situational factors. Among the latter we have emphasized differences between five basic areas of any large organization with corresponding types of OL. This whole conceptual framework (OL, CM, and the dualities) is the major contribution here. Producing more case studies using this expanded toolset will be very productive for OD&C work, I believe.

Concretely there are two main take-away tools from this chapter. One is the OL typology (OL-1 through OL-5) and its related organizational area map, seen in Figure 1 and Tables 1 & 2. The other is the conflict management framework and process, using a duality-paradox lens for better understanding and managing disruptive dualities. Together these notions, under ideal conditions, can yield certain results which (most? most powerful?) participants consider **"golden dualities"**. (Later research may discover collateral costs and unintended consequences but that is another story.) Through applying paradoxical thinking (and helping the participants to do so) an "odd couple" (suffering from duality conflict and mutual intolerance) can become more productive partners who negotiate some conditions that help each of them to get over the complaints that formerly prevented good collaboration.

Most of these propositions are not new (Fisher & Brown, 1989; Argyris, et al., 1987; Senge, 1990; Schein, 1992; Mohrman, et al., 1995; Edmondson, 2013) but this arrangement highlights certain implications and a conceptual framework to help in uncovering further knowledge. Here is one major implication and pointer for further research. Results from past application of a "golden dualities" approach (however named or unnamed) becomes part of an organization's heritage (e.g. new OLMs) and get embedded throughout an organization, though it may take an ethnographer or investigative reporter to document the facts for outsiders. Many of these successful solutions become invisible (even to insiders) but some should be traceable, either because they leave major scar tissue or because they result in implementing a new OLM. In Moody's data from the Sendak project I do not (significantly) find any such traces, of course.

It appears that that part of MS at that time was quite lacking in any such process -- and we saw the price they paid -- in the shared tools fiasco.

An alarming thought jumps out to suggest that this entire conflict management (golden dualities) model might be a fairy tale, comparable to the rational decision models of some economists!! Let's consider the Grow *versus* Drive duality conflict so important to the field of OD&C. We know that some practical attempts at Grow/Drive hybrids after strong initial success, have been abruptly terminated by upper management (Kleiner, 1996; Roth & Kleiner, 2000) and that most successful quality improvement initiatives are dropped quite soon (Sterman, Kofman & Repenning, 1997). Using the new framework on this meta-problem, note that a salient part of the Grow *versus* Drive duality conflict now seems to be **Attention to Collaboration Process** *versus* **Total Priority on the Product and Speed** to Market -- as expressed in the "Hot Groups" belief that very smart technologists can always figure out how to manage the "socio-" part of socio-technical systems (Pasmore, 2001). So perhaps the most important implication of the Sendak case is to call into question the simple assumption that OL is an important requirement for DC! Implication: more research is badly needed into processes and procedures in organizations (OLMs and their informal equivalents) that allow them to manage threats to essential collaboration to a sufficient degree. This would include assessment of alternatives to the classical methods of OD.

That work has already begun, in two main areas: Ambidextrous Management (O'Reilly & Tushman, 2004; 2007; 2011) and Relational Bureaucracy (illustrated by Southwest Airways). SWA has survived fierce competition to become highly profitable and known for high employee morale -- i.e. another example of DC but by a different path than Microsoft (Gittell, 2003). Gittell and Douglass (2013) identify this path as a hybrid arrangement they call Relational Bureaucracy (RB). As seen at SWA it integrates (i) the "soft" relational culture (usually based on informal, grassroots patterns, often fragile over time) with (ii) the "firm" formal policies of the company that give durability to SWA's relational culture. On one side of the RB golden hybrid developed at SWA is a culture of mutual respect and caring among employees and between them and managers, which prevents much of the friction and conflict across occupational boundaries that frequently impedes smooth daily collaboration elsewhere. On the other side of the hybrid are

some formal factors which support that culture -- because top management ensure that. Caring and learning cultures are hard to develop and fragile when undermined by a company bureaucracy with other priorities. Here though, company policies are designed to support attention to process -- for example a formal HR policy that new hires are interviewed by current workers and need their approval to be hired.

This illustrates conflict management of the preventive kind. It is not a compromise but a "newpromise"[3], a rearrangement of the chess board to create important gains for both sides, and for their common mission. This is the kind of result that Action-Thinking of type A-4 aims to produce. It can sometimes -- as at SWA -- require years of work involving managers and leaders throughout the organization (OL-1, OL-2, OL-3, OL-X, OL-5) -- with accidents, luck, and surprises all playing a role (Freiberg & Freiberg, 1996; Gittell, 2003). A similar process can also work on a much smaller scale, I hypothesize. We must assume that there can be more than one path to DC, more than just the way exemplified by Microsoft, the authors of "Competing On The Edge" and those who believe in "Hot Groups" -- other ways that include attention to social process and human (f)actors.

This chapter started out to be part of a grand quest to better understand dynamic capability (DC), sustainable success for organizations. It ends up by posing big new questions, calling urgently for further research, but also by delivering an improved conceptual framework. This framework embraces a duality-paradox perspective and integrates it with new typologies of OL and individual action/thinking. It brings together five conceptual tools: (i) **collaboration** and conflict management; (ii) **duality-paradox** as a key source of conflicts; (iii) five types of **organizational learning**, (iv) four types of **individual action/thinking**, including paradoxical thinking, and (v) the process of producing **"golden dualities".**

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[3] The term "newpromise" (contrasted with compromise) was used by Irving Goldaber in conflict management work during the 1970's.

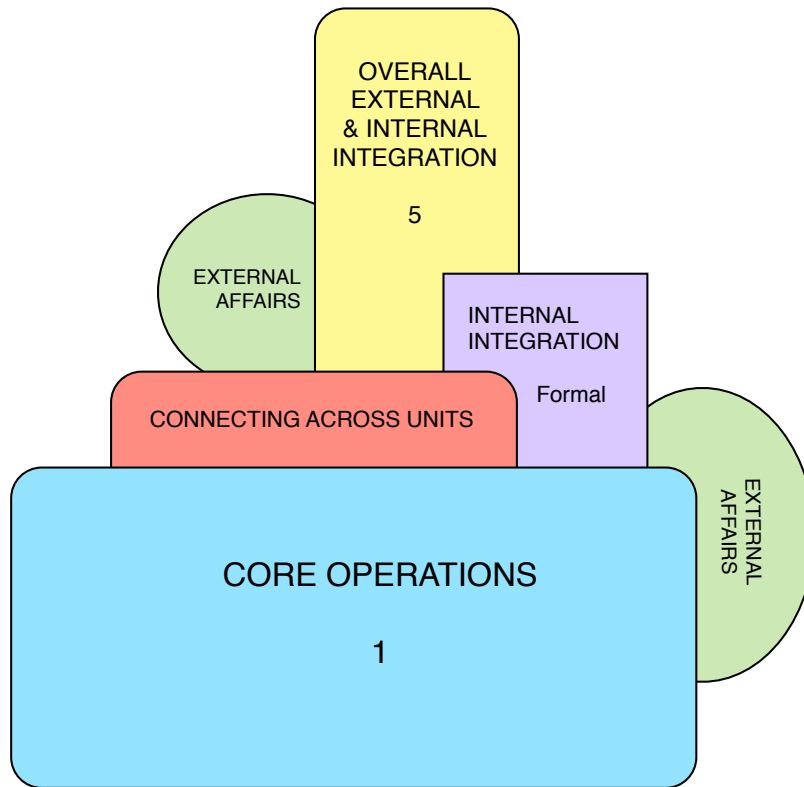Figure 1. Five Fundamental Areas of an Organization

Table 1   Types of Organizational Learning

Area of Organization	Main Organizing Task	Main Type of OL Involved
Core Operations *	Produce & deliver competitive customer-serving outputs.	Continuous process improvement, action learning. OL-1
Mid-Level *	Networking, informal **connecting** and sharing knowledge **across units.**	Informal diffusion of knowledge, problem solving, learning OL- 2
Mid-Level *	**Internal Integration** of value chain/network - formal roles & procedures	Designing & adapting formal structures & linkages OL- 3
Mid-Level *	**External relations**, scan environment, note changes, share .	Scan, select, share, interpret, alert key players OL-4, OL-3
Central / Top Management *	**External & internal Integration** of all components. Vision for whole. Balance ambidextrous organization. Longterm view.	Ensure capacity for innovation & all kinds of OL, incl. OL-1,2,3,4 Integrating the integrators. Listening & learning. OL-5

* *utilizing distributed leadership at all levels - participation*

Table 2   Five Areas of Organization & Organizational Learning.

	MISSION / STRATEGY FOR THE WHOLE	METHODS / COMPONENTS THE PARTS
INSIDE	INTERNAL INTEGRATION of parts & subparts into value / mission chains & networks (aligned). *Traditionally Middle Line Managers* OL-3	CORE OPERATIONS Grassroots of the org.. Producing the value elements that must be combined in value/supply chains. Output for customers. OL-1
OUTSIDE	EXTERNAL AFFAIRS Fully "outside" includes rivals, regulators, neighbors, etc. OL-4	INFORMAL, CROSS-UNIT CONNECTING Linking, brokering information & ideas across units. Informal networking. OL-2
INSIDE & OUTSIDE Traditionally the TMT.	EXTERNAL & INTERNAL INTEGRATION FOR THE WHOLE i) Sets macro strategy & vision. ii) Guides culture & capacity building, alignment of strategy, operations, and infrastructures. iii) Balances dualities, aligns internal assets & external OL-5	

Table 3

RADICAL INNOVATION IN A LARGE ORGANIZATION:
MACRO-MICRO PERSPECTIVES OVER TIME

	TIME 1	TIME 2	TIME 3	TIME 4	TIME 5
TOP MGMT. **C-suite**	**Bill Gates sees great opportunities in Multimedia (MM) publishing.** **Starts new "CD" unit.** Pure R&D Exploration. **Mainstream management model is "on hold" in this division.**	**Head hired for the new division.** **Gates continues to invest in expanding this unit for 7 years, while they figure out what to produce.** Free from pressures of mainstream management.	Top managers keep arm's length from MM projects (Times 2-4) no micro-managing; BUT Top mgmt sets rules. **Mandate on shared software development tools (Spam).**		**Top management restructures the company, scattering and embedding units of MM division.** Aim - to share the learning about MM with mainstream business units. (OL.)
MIDDLE MNGT. Multi-Media Division		**Period of exploration (R&D) - 7 years.** Just a few publications. Little impact on market until **Encarta** encyclopedia. Then **Sendak.** interactive MM encyclopedia for kids	**Conflict/issue over shared tools mandate.** Dire prediction by Sendak software leader is correct. **An unmanaged conflict.**	Phase (ii) Sendak. With NEW capable LEADERSHIP TEAM Bart intervened to order design review & change. He saw success would require respect for both **Design & Mainstream** principles. Took big risk. (see below)	End of special status for MM division. Future work less creative.
PROJECT SENDAK Product Development Unit		Core design staff for Sendak are idealistic, creative folk (arts grads.) unlike most MS employees - STEM grads wild hackers...	**Product dev. phase (.i) must create design for a product without any precedent...** **CREATIVE process.** Creative freedom. Great uncertainty, confusion & conflict avoidance. "Project From Hell" **LAUNCH ON TIME** pressure from above	**Phase (ii)** expected to build software based on phase (i) design & specs **MAINSTREAM closing in.** Must LAUNCH a great product ON TIME see above **Hail Mary pass** called by Group Manager (Bart.). **SUCCESS!** **The new product was well received.**	Now it's all MAINSTREAM.

Table 4.   Action, Thinking, and Learning Styles

Type A-1	Informal. Intuitive. Spontaneous. Hands-on. Improvisational. Little use of routines, guidelines, formal data or maps. Labeled "flying/driving blind" when more data-based, professional management is normative. Also appears as "creative process" e.g. in brainstorming and conceptual breakthroughs. Lateral thinking.
Type A-2	Formal, Rule-based decision-making. Exploitation of basic formulas. Single-loop learning. Logical. Operating manual. Often replaces type 1 - professionalizing management.
Type A-3	Formal but flexible. Frames and tacit assumptions are questioned. Exploration of some new possibilities. Double-loop learning and problem solving Often replaces type 2 when the operating manual fails
Type A-4	Uses many types of thinking lateral and linear, formal and informal thinking, Types A-1,2,3. Hears all versions of "the problem". Considers multiple priorities, including paradoxes/dualities. Avoids narrowing of focus basic to types 2 and 3. Openly considers the history and politics involved. From friction & conflict tackles paradox; seeks break-through idea that transforms problem with a new synthesis. Artistic sensibility helps. Visionary. Exploratory.

Glossary of Abbreviations

CM - Conflict management

CSAS - Complex social adaptive system

DC - Dynamic Capability

DEC - Digital Equipment Corp.

HP - Hewlett-Packard

HR - Human Resources

IT - Information technology

MM - Multimedia

MS - Microsoft

OD - Organizational Development

OD&C - Organizational Development & Change

OL - Organizational Learning

OLM - Organizational Learning Mechanism

SWA - Southwest Airways

STS - Socio-technical system

TMT - Top Management Team

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