UNIVERSITÀ COMMERCIALE «LUIGI BOCCONI» - MILANO

Ph.D. in Business Administration and Management

XX CYCLE

COGNITION, ORGANIZATION AND BROKERAGE
IN THE CREATION OF MILLENNIUM PARK
IN CHICAGO

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Introduction

This Ph.D. dissertation is an organizational analysis of the processes that led to the design of Millennium Park, a new urban park recently built in downtown Chicago (1997-2004) through a $475 million private-public partnership.

The creation of Millennium Park design is the story of a radical change and innovation in the aesthetic features of a complex artefact. Originally envisioned as a classic *beaux-arts* garden replicating the architectural repertoires of Chicago 20th century public park design (best exemplified by Grant Park, Chicago' most celebrated landmark park) and endowed with a modest art program, the design of the park was later turned in a outdoor art museum, featuring an unprecedented combination of global *avant-garde* architecture, monumental sculpture and landscape designs into a new concept of 'cultural event space'[1]. Hence the broad empirical puzzle inspiring this dissertation: *why and how did this radical change in the design of the park occur?*

In the dissertation, I investigated several factors explaining this puzzle, articulating the contributions of the case study to theories of innovation in three separate papers, corresponding to different research streams in the organization and management literature and addressing the phenomenon at different levels of analysis.

The first paper, titled *Mechanisms of Aesthetic Exaptation in Artefact Design*, uses the concept of exaptation – e.g. the co-optation of a feature for its present role from some other origin (Gould and Vrba 1982)[2]- to connect the case study to broader debates on the connection between cognitive and evolutionary processes of radical innovation. Indeed, the concept of exaptation has been recently borrowed from evolutionary biology to explain creative re-use phenomena in technology, markets (Mokyr 1998; Dew et al. 2004) and artefact production (Villani et al. 2007), becoming a candidate mechanism to explain the changes resulting from radical innovation processes more in general (Grandori 2007; Kogut 2007).

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[1] To visually appreciate the extent of this radical change, please compare the pictures of the original and final park design reported at the end of the introduction.

[2] The references quoted in the introduction are provided at the end of the papers.

In artificial settings, exaptation has been often associated with the unforeseen connection between an existing feature or tool and a new function or domain of application, for which the tool or feature was not originally designed or selected for. Despite this widespread conception links exaptation to serendipity, there is scarce empirical evidence on the actual cognitive processes leading to exaptation events in real practices of artefact design: *are exaptation events only due to serendipity or are there any sorts of contingent regularities in the cognitive mechanisms producing them*? The paper tackles this question by identifying empirically two exaptation events punctuating the evolutionary trajectory of the design of Millennium Park. Specifically, the particular type of exaptation detected is labeled "aesthetic exaptation", defined as *"the use of an aesthetic feature for a function or context different from those for which the feature was originally selected or designed for"*. Based on a detailed longitudinal study of the decision-making processes unfolding in the organization developing the park, the paper builds a model of the cognitive processes leading to exaptation events.

Findings show that exaptation can be produced by a combination of two distinct types of cognitive processes. The first is a process of making connections among different problem domains. This process gave rise to new interdependencies among formerly disconnected elements, thereby increasing the *exaptive possibilities* inherent in the evolutionary trajectory of the artefact (e.g. possibilities that an artefact feature is later re-used for a different function than the originally envisioned one). The second set of processes consists in the re-interpretation of the relationships connecting the parts that have been combined together. This re-interpretation is described as a process of changing the perspective from which the interactions among the parts are perceived and evaluated. In the specific case examined, this change in perception is achieved through visual manipulation and experimentation on the visual interfaces between the modules of the artefact (e.g. the walking paths connecting the different areas of the park).

While the cognitive logic underlying the former set of re-combinatory processes is found to be consistent with calculative and strategic reasoning, the latter process of boundary re-interpretation emerged as an adaptive response to the new interdependencies created by the combination of different elements. This second set of cognitive processes is rooted in a change in the capacity of *seeing* and *perceiving* relationships more than in an increased capacity of *calculating*. These findings place the cognitive micro-processes producing exaptation in a sort of middle-way position in an imaginary continuum going from random serendipity to strategic foresight.

Overall, the case study illustrates that the traditional notion of innovation as pure re-combinatory play, commonly accepted since Schumpeter (1934) on, may need to be expanded in order to account for innovation-by-exaptation, including micro-processes of adaptive re-interpretation as well as process of re-combination. Indeed, while re-combination was essential to provide the raw material from which exaptation originated in the first place, the new uses envisioned for the exapted aesthetic features ultimately emerged as the result of perceiving the interactions among elements from a perspective different from the one envisioned at the moment of the generation of the combination. This process is qualitatively different from the pure integration or re-combination of elements -as usually intended- because it involves the consideration of *new relationships* between the combined elements.

The paper concludes with a discussion of the implications of the study for the application of two distinct models of cognition –the classic information-processing view (Newell and Simon 1972) and the emerging distributed cognition approach (Hutchins 1995)- to evolutionary theories of radical innovation.

Whereas the first paper examines the cognitive processes of artefact innovation, the second paper, titled *Knowledge Governance in Cultural Production*, focuses on the organizational-level mechanisms for the production of new knowledge. Specifically, the paper investigates the forms of organization underlying the dynamics of visual knowledge –e.g. visual models, design maps, icons- produced by the project organization developing the design of the park. The focus on visual knowledge – intended as non-verbal systems of symbolization and aesthetic communication through visual languages (Barthes 1977; Gagliardi 1996)- is particularly interesting and appropriate given the case is a prominent example of a complex project of cultural production (e. g. architectural design production). Indeed, despite the centrality of these forms of knowledge in cultural production settings, a review of organizational studies in the area suggests that the micro-organizational mechanisms underlying the production of visual knowledge are remained rather under-specified in this research, typically more concerned with institutional- or industry-level influences on the content of symbolic production (e.g. Jones and Thorthon 2005). As a result, the research question at the center of the second paper is: *what organizational mechanisms underlie the evolution of visual knowledge in cultural production projects?*

Given the question is relatively unexplored in studies of cultural production, the paper elaborates on a different stream of organization literature as theoretical foundation to explore the organizational dynamics of visual knowledge in cultural settings. Specifically, I build on an adapted version of the classic evolutionary model of variation-selection-retention (Campbell 1960) and on current debates on forms of knowledge governance (Grandori 2001; 2009; Pedersen and Foss 2002; Zenger and Hesterly 2004; Foss 2007) to develop an analytical framework linking mechanisms of knowledge governance to knowledge evolution. The workings of this analytical framework are then illustrated through an examination of the visual knowledge produced by the project organization developing the park design and the micro organizational mechanisms used to produce that knowledge.

Findings show that dynamics of visual knowledge have been influenced by different combinations of differentiated and integrative organizational mechanisms in the various stages of knowledge evolution, going from an original visual prototype of the park (e.g. the classic beaux-arts design plan mentioned above) and converging towards a radically different visual model. Specifically, in a first phase, the formation of differentiated committees -integrating the diverse set of competences of architects, engineers, public officials and art patrons- coupled with the intervention of third-party authorities (solving disputes and disagreements among committee members) have been the primary organizational mechanisms leading to the generation of novel visual ideas (e.g. models of sculptures, sketches of garden designs, etc.) to be 'added-on' the initial visual model of the park. However, this process of knowledge variation produced a set of 'visual tensions' and design contrasts in the visual prototype. These tensions have been resolved via the intervention of crucial *knowledge system integrators* (Prencipe 1997; Brusoni 2005), using their higher-level understanding of the design of the entire park (e.g. architectural knowledge) to re-frame and incorporate the 'adds-on' design ideas into a new visual model of park. Finally, the retention of the new knowledge produced has been made possible by the external liaison role of the fund-raisers of the project, providing the legitimation, support and resources necessary for the approval and implementation of the new design ideas introduced in the original model of the park. Coordinating the endorsements flowing on the new design ideas from important constituencies, both external (e.g. donors, art experts, etc) and internal (e.g. committees) to the project, these actors mediated among the often different interests of the actors in

the project and facilitate the approval of new design ideas by the owner, thereby acting as *preference system integrators*.

In terms of organization design methodologies, the findings point at the value of modeling hybrid organizational forms –such as project organizations- as different combinations of the same basic micro-organizational mechanisms (Grandori 2004), rather than conceiving them as 'discrete structural alternatives' embodying a particular type of coordination mechanism (such as, for example, a new hybrid type of organization to be added to the classic dichotomy of market versus hierarchy proposed in transaction cost economics). This methodology has been conceptualized and tested in studies of organization design (Grandori 1997; 2001; Grandori and Furnari 2008) and knowledge governance (e.g. Grandori 2001; 2009; Foss 2007). The case study extends this combinative conception of organization by providing an analysis of the constitutive dynamics of organization and knowledge, and by detecting complementarities among different coordination mechanisms in project governance. From a more substantive standpoint, the study confirms and further develops the basic finding of classic organization theory that the creation of new knowledge needs both differentiation and integration roles (e.g. Lawrence and Lorsch 1967), linking these mechanisms to specific phases in the cycle of knowledge production and detecting the complementarities among them across these different phases of knowledge evolution.

The third paper, titled *Playing Brokerage,* focuses more narrowly on one of the organizational roles detected as crucial for accomplishing the design changes at the artefact level: the role of the fund-raiser broker mediating between the interests of two disconnected parties potentially conflicting between each other, the architects producing design ideas and the philanthropic donors sponsoring the design ideas. Specifically, the paper analyzes the concrete actions of this broker in mediating two transactions regarding the design of two artefacts to be located in the park (e.g. the landscape design of a garden; the design of a performing arts complex).

The paper analyzes this topic from the perspective of theories of brokerage (e.g. Burt 1992; Gould and Fernandez 1989), connecting to current debates in network theory on the dynamics of structural position and on how action relates to the evolution of structure. Traditional resource-based theories of brokerage focus on the advantages accruing to actors occupying a broker' structural position bridging two otherwise disconnected parties, such as superior access to information and more opportunities for

control (Burt 1992). In doing so, these theories did not consider the fact that brokers can mantain their advantageous structural position to the extent the disconnected parties will rely on them for information exchanges and communication. For example, Fernandez and Gould (1994) showed that a broker taking public stands on issues will be ceased to be treated as broker by other actors in the system because considered unreliable as mediator. In this perspective, action enters at the center of the picture: depending on his/her behavior in the eye of the disconnected parties, the broker will be more or less able to maintain his/her structural position. Despite theory indicates brokerage actions as a crucial variable of interest, direct empirical evidence is scarce on how different types of broker' actions affect the resulting dynamics of brokerage roles. As a result, the research question examined in the third paper is: *what exactly are the micro-behavioral mechanisms (e.g. actions, tactics, strategies) through which a broker can mantain his/her advantageous structural position?*

In order to identify brokers' actions in a reliable and comparable manner, the paper builds on the model of brokerage developed by Gould and Fernandez (1989), elaborating a theory-based typology of brokerage actions -labeled 'brokerage plays'- that a broker can perform while bridging a structural hole. Three different brokerage plays are identified on the basis of the degree of impartiality communicated by the broker to the disconnected parties (*liaison brokerage play; gatekeeper/representative brokerage play; coordinator brokerage play*). The impact of these different plays on the dynamics of brokerage roles is explored through detailed longitudinal observation of two transactions brokered by the same broker and unfolding in the same organizational context (e.g. the project organization developing the park). Empirically, the actions of the broker have been identified through a strategic narrative approach (Stryker 1996; Stevenson and Greenberg 2000), starting from full historical narratives of the events surrounding the selected transactions and transforming the narratives into sequences of actions. These actions have then been coded into the three brokerage plays defined in the theory-based typology and linked to data on the evolution of the brokerage roles (e.g. the extent to which the two disconnected parties rely on the broker for their communication exchanges over the duration of the transaction). Indeed, while being similar on most dimensions, the two selected transaction differ in the final outcome of interest in the study (e.g. the change in brokerage role): in one transaction the broker was dis-intermediated by the initially disconnected parties, whereas in the other transaction the broker preserved his advantageous structural position over time.

Findings show that the overt simultaneous performance of a coordinator and representative brokerage role may lead the disconnected parties to communicate directly, thereby making the broker lose his advantageous structural position. In more general tems, the case study show that the occupancy of a broker' structural position is contingent on the behavior of the broker and the extent to which this behavior is consistent with the expectations of the mediated parties. Specifically, the iterative performance of roles consistent with the expectations of the disconnected parties contributes to keep a brokerage system in equilibrium, allowing the broker to maintain his structural position. In contrast, the simultaneous performance of contradictory roles may lead one or both the disconnected parties to consider the broker unreliable as a mediator, starting to communicate directly between each other. In this sense, the study is an exploratory, first-stage, attempt towards a dynamic theory of brokerage behavior, in which structural position is not assumed as given by the theory, but it becomes itself a variable of interest. Accordingly, the contributions of the case study are interpreted consistently with recent action-oriented network research aimed at investigating the link between action and structural dynamics (Stevenson and Greenberg 2000 ; Obstfeld 2005) as well as with network theories emphasizing behavioral expectations as one important engine underlying network formation and evolution (Leifer 1988 ; Podolny 1993; 2001; Padgett and Ansell 1993; Zuckerman 1999).

The data used in the three papers are drawn from an extraordinarily rich archival dataset built during my two-year field work in Chicago from September 2006 to August 2008. The bulk of the dataset is constituted by two complete archives provided by the project manager and the chief fund-raiser of the Millennium Park project. These archives are longitudinally extensive, covering the entire lifespan of the project (from early 1998 to 2004) and containing the thousands of meeting notes, attendance sheets, communications, design maps/plans and construction documents used by the members of the project during its development. Archival sources have been integrated with extensive interviews with all the key players of the project and with in-depth historical research on secondary (books, newspapers, videos, etc.) archival sources on the development of Millennium Park. In the each of the three papers, I will provide details on the research methods followed to analyze this data and on how the dataset has been selectively used to tackle the specific research question addressed in each of the papers.

Picture 1 – The Initial Model of the Park Design (Visual Prototype, July 1998)

Picture 2 – The Final Design of the Park (July 2004)

First Paper

Mechanisms of Aesthetic Exaptation in Artefact Design:

How a *Beaux-arts* Garden evolved into an *Avant-garde* Art Park

Mechanisms of Aesthetic Exaptation in Artefact Design:
How a *Beaux-arts* Garden evolved into an *Avant-garde* Art Park

Abstract

The concept of exaptation – the co-optation of a feature for its present role from some other origin- has been proposed as an important mechanism of radical innovation in technology and market evolution as well as in the design and production of artefacts. However, empirical evidence is lacking on the cognitive processes leading to exaptation events in the evolutionary dynamics of artefacts: are exaptation events only due to serendipity or are there any sorts of contingent regularities in the cognitive mechanisms producing them? Based on the findings of a longitudinal case study on the radical change of the aesthetic features of a complex artifact –e.g. the design of a public park- this paper builds a model of the cognitive processes leading to exaptation events in artefact design. The model emphasizes both calculative processes of re-combination across problem domains and adaptive processes of re-interpretation of the relationships among combined elements. Implications for the use of information-processing and distributed-cognition models of cognition in evolutionary theories of radical innovation are discussed.

Mechanisms of Aesthetic Exaptation in Artefact Design:
How a *Beaux-arts* Garden evolved into an *Avant-garde* Art Park

Introduction

Most commercial products developed for particular markets and functions began life as something different. Microwave ovens started life as radar magnetrons, Edison' phonograph was born as a recording device for dictation; internet was a military communication exchange network. Creative re-use of artefacts' forms and functions is even more pervasive in contemporary cultural production settings -such as art, architecture and fashion- where we assist everyday to the 'esthetics of innovation through re-use' (Beunza 2007): warehouses transformed into offices, factories into lofts, carwash locales hosting art galleries; urinals as artistic fountains in museums (Duchamp 1917); anarchists' political symbols as icons of prominent fashion-houses' collections (Eleuthera 2008). Despite the pervasiveness of re-use in innovation and creativity, our social science theories still lack a systematic theoretical understanding of this phenomenon.

Recently, the concept of exaptation –the co-optation of a feature for its present role from some other origin- has been borrowed from evolutionary biology (Gould and Vrba 1982) to explain creative re-use phenomena in technology, markets (Mokyr 1998; Dew et al. 2004) and artefact production (Villani et al. 2007) as well as instances of collapse and resurgence of economic clusters (Andriani et al. 2007). More generally, exaptation has been advanced as a candidate mechanism to explain the changes resulting from radical innovation processes (Grandori 2007a; Kogut 2007)[1]. In both biological and artificial settings, innovation-by-exaptation has been contrasted to innovation-by-adaptation, which assumes incremental evolution of structure towards better function. In contrast, exaptation has been associated with the unforeseen connection between an existing feature or tool and a new function or domain of application, for which the tool or feature was not originally designed or selected for.

The intuitive link between the definition of exaptation and serendipity, and the commonsense interpretation of the phenomenon as an unintended consequence of action, has obscured a crucial question: *are exaptation events only due to serendipity or*

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[1] Processes related to the dynamics suggested by the concept of exaptation are described by the concepts of *technological pre-adaptation* (Cattani 2006) and *transposition and re-functionality* (Padgett et al. 2006).

are there any sorts of contingent regularities in the cognitive mechanisms producing them? Despite the practical relevance of the question -given the widespread diffusion of practices of re-use in the artificial world- empirical evidence is scarce on how exaptation events actually occur in real instances of artefact design and production. Recent studies have contributed novel insights into the organizational and environmental pre-conditions of exaptation (Villani et al. 2007). However, without direct empirical evidence on the underlying micro-processes leading to this creative 'tinkering', our understanding of the phenomenon is doomed to remain rather weak.

The above question is also theoretically relevant because the concept of exaptation is likely to challenge the model of cognition underlying our established theories of evolutionary change and innovation in artificial settings. Simon (1962)' classic claim about the hierarchical structure of human cognitive processes provided a solid micro-foundation for the mechanisms of gradual evolutionary change (e.g. Darwinian incremental differentiation by specialization of sub-systems) in artificial settings (e.g. contributing to explain phenomena such as organizational changes and product and technology innovation). However, while Simon envisioned cognitive processes as organized into a hierarchically-ordered sequence of 'boxes' (e.g. sub-problems composed of more elementary sub-problems), the permutation of forms, functions and contexts suggested by exaptation seems to violate this hierarchical structure, pointing to the importance of crossing the boundaries of modular domains, of making connections across "qualitatively different" domains. However, despite the phenomenon of exaptation has the potential to challenge our conventional understanding of the cognitive processes underlying innovation, the cognitive micro-foundations of exaptation have remained theoretically obscure and poorly articulated.

The relative unexplored nature of the phenomenon of exaptation in artificial settings calls for an inductive exploration of its antecedents in real practices of artefact design. In the last three years, I embarked on such an exploration conducting an in-depth field study of the micro-processes leading to the exaptation events observed in the aesthetic features of a new public park recently built in Chicago. The particular type of artefact exaptation analyzed in the case study is labeled "aesthetic exaptation", which, on the basis of the definition of exaptation provided by Gould and Verba (1982), is defined as *"the use of an aesthetic feature for a function or context different from those for which the feature was originally selected or designed for"*. The evolutionary trajectory of the aesthetics of the specific artefact considered in the case study (e.g. the

design of the park) is particularly well-suited to shed new light on the phenomenon of interest. Indeed, the history of the park has been punctuated by two major exaptation events, which led to a complete revolution of the aesthetic repertories proposed in an original prototype of the park developed by the architect of the project in the form of a master plan and visual model of the park. Specifically, although it was originally envisioned as a classic *beaux-arts* garden in continuity with Chicago traditional park design repertoires and endowed with a modest art program, the park design was later turned in a global outdoor art museum, featuring an unprecedented combination of global *avant-garde* architecture, monumental sculpture and innovative landscape designs into a new concept of 'cultural event space'.

Through a detailed historical analysis of the co-evolution of the park design and the project organization developing the park, I first identified two crucial exaptation events in the history of this radical aesthetic change. Second, I linked the occurrence of these exaptation events to the decision-making processes of two committees in the project –charged with the responsibility of selecting some adds-on artistic enhancements (e.g. sculptures, garden landscape designs) to be located on an original prototype of the park- and to the crucial activity of several project brokers operating in-between the committees. I then analyzed the details of the meeting minutes and communication exchanges among the project brokers and committees' members, reconstructing the cognitive dynamics leading to exaptation at the artefact level.

My detailed analysis of internal communication and committee meetings' minutes has been made possible by an extraordinarily rich archival dataset built from primary (e.g. two complete archives of the project files provided by the project manager and by a key project broker) and secondary (books, newspapers and archival material on the park) sources. This dataset is longitudinally extensive, covering the entire lifespan of the project (from early 1998 to 2004) and containing the thousands of meeting notes, attendance sheets, communications, design maps/plans and construction documents used by the members of the project during its development. Archival sources have been integrated with extensive interviews with all the key players involved in the project. Methodologically, I used a longitudinal case study design (Eisenhardt, 1989; Pettigrew, 1990), adopting an historical perspective to understand the phenomenon as it unfolded over time (Lawrence, 1984; Kieser, 1994). In the analysis, I followed the iterative qualitative data analysis techniques defined by Miles and Huberman (1984).

The case study shows that exaptation events can be produced by the combination of two basic types of processes. The first is a process of making connections among different problem domains. This process gave rise to new interdependencies among formerly disconnected elements, constituting an important antecedent of exaptation. The new interdependencies provide the raw material from which exaptation events may later originate, increasing the *exaptive possibilities* inherent in the evolutionary trajectory of the artefact. The second set of processes consists in the re-interpretation of the relationships connecting the parts that had been combined together. This re-interpretation is described as a process of changing the perspective from which the interactions among the parts are perceived and evaluated. In the specific case, this change in perception is achieved through visual manipulation and experimentation on the interfaces connecting the modules of the artefact (e.g. in my case the walking paths bounding the different areas of the park). Two types of these processes are detected and labeled: *radial association*, a process through which a focal feature is established as a central element around which the interfaces with adjacent features are re-configured; *orthogonal association,* a process through which the position of two or more non-adjacent features is used to define a perspective (e.g. in my case, a visual perspective such as an axis, a sight line, a diagonal), which serves to detect relationships of symmetry/asymmetry (or complementarities/substituabilities) between the features, on the basis of their relative position on the perspective. Both these types of processes can be labeled as *positional* (or "network") cognitive processes since the interfaces (or "boundaries") among the elements of a structure are redefined on the basis of the position of one or more elements in the structure.

While the cognitive logic underlying the former set of re-combinatory processes is found to be consistent with calculative and strategic reasoning, the latter process of boundary re-interpretation via visual experimentation emerged as an adaptive response to the new interdependencies created by the combination of different elements and it is rooted in a change in the capacity of *seeing* and *perceiving* relationships more than in an increased capacity in *calculating*. This finding places the cognitive micro-processes leading to exaptation events detected in the specific case study in a middle-way position in an imaginary continuum between random serendipity and strategic foresight.

Overall, the case study illustrates that, in order to account for innovation-by-exaptation, the traditional notion of innovation as a pure re-combinatory play, commonly accepted since Schumpeter (1934) on, may need to be expanded to include

more detailed micro-processes of adaptive re-interpretation. Indeed, while re-combination was essential in providing the raw material from which exaptation originated in the case examined (e.g. generating new interactions among different elements combined together), the new uses envisioned for the exapted aesthetic features ultimately emerged as the result of perceiving the interactions among elements from a perspective different from the one envisioned at the moment of the generation of the combination. This process is qualitatively different from the pure integration or re-combination of elements -as usually intended- because it involves the consideration of *new relationships* between pre-combined elements.

These findings can be interpreted consistently with recent decision-making reserch identifying new methods for the design of novel solutions (Grandori 2007b; Liedtka 2000; Sarasvathy 2001). In addition, with specific reference to the processes of visual manipulation and experimentation of prototype models, the findings can be interpreted consistently with the distributed cognition approach (Hutchins 1995), highlighting this approach as a possible complementary model of cognition underlying evolutionary accounts of radical innovation (Lorenz 2001).

The remaining of the paper is structured as following. In the first two sections, I provide an introduction to the concept of exaptation and to the theoretical challenges that this concept posits for the model of cognition underlying our evolutionary theories of change and innovation. Then I turn to an illustration of the methods and the findings of the case study, which are analyzed and used to build a process model of cognition and exaptation in artefact design. Finally, the implications and contributions of the findings to classic and emerging literatures on cognition are discussed.

Exaptation in Biology, Technology Evolution and Artefact Design

The concept of exaptation originates from the domain of biology, where it appears for the first time in Gould and Verba (1982) who referred to species evolution as the mechanism complementary to Darwinian adaptation. The following definition provided by Ceruti (1995) gives insight on the main idea of exaptation: *'the processes whereby an organ, a part, a characteristic (behavioral, morphologic, biochemical) of an organism, which was originally developed for a certain task, is employed for carrying out tasks that are completely different from the original one'*. The typical example provided by Gould (2002) is represented by a line of feathered dinosaurs, arboreal or runners who developed the capability to take advantage of feathers for

flying, when originally they were intended for thermoregulation purposes. Different from adaptations, which present functions for which they are selected, the exaptations generate effects that are not subject to pressures from the current selections, but potentially relevant later on[2].

More recently, the concept of exaptation has been used to explain the changes resulting from innovation processes and the rise of new technologies. For example, Mokyr (1998) defines the phenomenon of exaptation saying that '*it refers to cases in which an entity was selected for one trait, but eventually ended up carrying out a related but different function*'. Such a definition captures the idea that exaptations are those characteristics of a certain technology that are co-opted by another origin or utility because of their current role. In this respect, exaptation can provide a key to interpret the serendipity that characterizes the generation of new products, emphasizing that the functionalities for which a technology has been selected are only a subset of the consequences generated by its introduction. In many cases, the number of consequences generated by a new technology, a product, or a process can be incredibly large and thus, its exaptive potential practically unbounded. A classical example of technical innovation illustrating both adaptation and exaptation is the Compact Disk (CD). The CD was originally developed in 1960 in the Pacific Northwest National Laboratory in Richland, WA and it was designed for a specific task: solve the problem of the sound quality deterioration of the classical vinyl records. Its inventor, J.T. Russell, developed a system based on the idea of using light to carry information, avoiding the usual contact with mechanical parts of the recording device. The CD-ROM was patented in 1970 as a digital-optic system for recording and reproducing sound. Later, researchers used the technology of the CD-ROM for a different purpose: storage media for computer data. Although the latter represented a function not originally intended for the CD-ROM, it became very clear that it was indeed effective. As a result, during the 1970s, the Laboratory refined the CD-ROM technology commercialising a product that could be usefully employed for different purposes and improving some of its characteristics (increment of memory capacity, recording speed, recording and reproduction sound quality).

The concept of exaptation has been most recently applied to explain radical innovation in the context of the design and production of artefacts by Villani et al.

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[2] Another important aspect of the phenomenon of exaptation is represented by what Gould (2002) defines as 'exaptive pool', that is, the potential allowed for future selection episodes.

(2007). The authors propose a model postulating a continuous interaction between producers and users: the artefacts are transferred from the producers to the users and subsequent feedback messages are sent from the users to the producers. The aim of the model is to analyze the effects of the ambiguities present in artefacts and categories on the exaptation phenomena. Exaptation originates from the interplay between the artefacts and the functionalities, which agents attribute to them through their categories. Exaptation events are understood as shifts in terms of the 'leading attributions' (attributions corresponding to highest reward) that the agents assign to the artefacts[3].

The Theoretical Relevance of Exaptation: Questions to be Explored

The empirical observation of exaptation phenomena posits a number of interesting open questions for our available theories of innovation and change in the production and design of artefacts.

First of all, most of artefacts are conventionally understood as hierarchical structures composed by sub-systems that are approximately independent in the short term, but connected by a global behavior in the long term (i.e., the notion of near-decomposability, introduced by Simon (1962). Despite we know that the structure of artefacts is inherently connected with their evolutionary behavior in general, we still lack a systematic evaluation of how different artefact structures may be more or less 'permissive contexts' for exaptation events to occur. For example, in a recent paper Dew et al. (2004) directly connected the near-decomposability of artefacts with the structure of exaptive possibilities, declaring that *"non-adaptive subparts within an adaptive whole are usually taken as a sure sign of a hierarchical architecture…as a result, the raw material for future exaptations is everywhere"*. However, we may find other reasons to counter-argue that modular or near-decomposable architectures are actually an impediment to exaptation events, since interface standardization and component decoupling –the twin cornerstones of modular systems- are likely to hinder the transformation and re-use of features across functions and contexts. Thus, the

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[3] Specifically, the producer supplies the user only with the best functionality value among all the values computed using all the categories it owns. The category that furnishes such a best value during one interaction is likely to have a large value also in the next interaction, and so forth. In a sense, such best category is, for the user, the 'leading' category for this particular artefact. Sometimes, but quite unlikely, another category reaches a functionality value larger than that of the leading category. In a sense, this can be interpreted as a variation of the utilization context of the artefact under exam; in this case, we are observing an exaptation event.

relationship between the structure of the artefact and the likelihood of exaptation events need further theoretical elaboration and direct empirical evidence on the specific mechanisms connecting these two variables. At the same time, although we have a general understanding of the connection between exaptation and radical innovation, we do not have sufficient empirical evidence to distinguish whether and how single exaptation instances in the evolutionary history of an artefact cascade out to re-configure the entire system of sub-parts or when exaptation events remain 'bounded' into specific sub-system of the artefact.

These questions about the structure of the artefact and its relation with exaptation lead directly to wonder about the cognitive micro-foundations of the exaptation phenomenon. Indeed, the concept of exaptation is likely to challenge the established model of cognition underlying our theories of evolutionary change and innovation in artificial settings. Simon (1962)' classic claim about the hierarchical structure of human cognitive processes provided a solid micro-foundation for the mechanisms of gradual evolutionary change (e.g. Darwinian incremental differentiation by specialization of sub-systems) in artificial settings (e.g. contributing to explain phenomena such as organizational changes, product and technology innovation). While Simon envisioned cognitive processes as organized into a hierarchically-ordered sequence of 'boxes' (e.g. sub-problems composed of more elementary sub-problems), the permutation of forms, functions and contexts implied by the exaptation phenomenon seems to violate this hierarchical structure, pointing to the importance of making connections across "qualitatively different" sub-domains.

However, despite the widespread empirical phenomenon of exaptation in artefact design has the potential to challenge our conventional understanding of cognition, the cognitive processes leading to exaptation have remained obscure and there is a surprising lack of empirical evidence on this topic. As a consequence, the cognitive micro-foundations of exaptation have remained theoretically obscure and poorly articulated. This is the case, despite the fact that the parallelism between natural processes of evolution and cognitive thought processes -long acknowledged in our social science disciplines (Campbell 1960)- seems now attracting a rejuvenated attention by scholars interested in the phenomenon of radical innovation in human-devised artificial systems, such as products and organizations (Grandori 2007a; Kogut 2007; Augier and Savarasthy 2007). Indeed, an increasing number of social science scholars are indeed interested in the key problem of understanding the origins of radical

innovations, both at the level of the cognitive micro-processes and of the macro-level evolutionary mechanisms underlying the emergence of novelty.

At the micro-level, Simon' (1962) claim is increasingly questioned from a number of different perspectives. First, while the hierarchical *structure* of the problem space has been proved to be an efficient heuristic for computationally-limited problem solvers (Newell and Simon 1972), this efficiency argument *per se* can at most explain the decomposition of the problem into modules, not the fact that such modules need to be ordered into a hierarchical system (Egidi and Marengo 2003: 343). This assumption becomes even more problematic in the face of empirical evidence on the distributed structure of cognition across the members of an organization or between internal and external representation devices (Hutchins 1995). Second, several recent studies contrasted the cognitive repertoires inherited from the Carnegie School tradition (e.g. local search, linear decision rules, routines, etc.) with new processes and methods better suited to describe the design of radically innovative solutions (Liedtka 2000; Hatchuel 2001; Savarasthy 2001; Grandori 2007b). For example, Grandori (2007b) suggested a set of rational heuristics for the design of actions, options and objectives, extending the known methods proposed in the behavioral tradition of bounded rationality. Liedtka (2000) emphasized experimentation, hypothesis-testing and conjectural thinking as inherent properties of any design activity, while Hatchuel (2001) focused on the design of learning devices (e.g. models, mock-ups, and prototypes) as a key heuristic for creative design. These contributions suggest that research on cognition and radical innovation strongly needs new methods going beyond the traditional limited-problem-solving heuristics suggested in the Simonian tradition (Grandori 1984; 2007b).

As the cognitive processes inspired by the bounded rationality paradigm are increasingly questioned at the micro-level and the classic mechanisms of evolutionary change are increasingly debated in both biology and social science disciplines (Padgett and McLean 2006; Villani et al. 2007; Cattani 2006), the need for elaborating the link between these micro-macro mechanisms becomes more pressing. Both these new cognitive and evolutionary models of radical innovation are animated by a common aim and effort at understanding radical novelty and creativity going beyond the conventional views of innovation processes. However, no systematic attempt has been made to date to link these new emerging models empirically, detecting, for example, what the consequences of design-oriented cognitive processes are for the evolution of complex artifacts. As a result of this disconnection in these emerging research streams, the new

evolutionary models of radical innovation may remain without an adequate theoretical micro-foundation, whereas studies of micro-level processes may loose the 'big picture' of what the dynamic consequences of new design methods can be.

Research Setting and Case Study

As mentioned in the introduction, architecture and design are especially relevant settings for studying the occurrence of exaptation events. A now classical example is quoted in Gould and Lewontin (1979) which explained how spandrels in Venice' San Marco Cathedral -initially designed as empty spaces between the vaults and arches- have been later used as a support for paintings and mosaics: while their initial role was that of structural elements, spandrels thus became a key aesthetic feature. This study took inspiration from this and other prominent examples of re-use in architecture. Despite the pervasiveness of this phenomenon in architectural design, no study to date has systematically explored the cognitive determinants of exaptation in the filed of architecture. Thus, given the contrast between the relevance of the phenomenon in practice and our lack of theoretical understanding, I decided to explore exaptation in the setting of public architecture.

Specifically, to explore these under-investigated topics, I analyzed the complete history of a complex architectural artefact, a new public park recently built in Chicago through a $475 millions private-public partnership. Two features of the history of this park make it an especially relevant case to investigate the phenomenon of exaptation in artifact design. First and foremost, the case constitutes an instance of radical innovation in the design of an artefact. Specifically, during the development of the park there has been a radical change in the aesthetic elements featured in the design of the park with respect an initial design master plan devised in the early stages of the project. Originally envisioned as a classic beaux-arts garden in continuity with Chicago architectural heritage and endowed with a modest art program, the design of the park was turned in a global outdoor art museum, combining avant-garde architecture, monumental sculpture and innovative landscape designs in a new concept of cultural park[4]. Second, the history

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[4] The case can be interpreted as radical innovation also at a more general level. Indeed, the first design of Millennium Park is an example of low creativity in architectural practice. Indeed, this design closely resembled the architecture of the existing Grant Park, Chicago historical landmark park. Conversely, the final design of Millennium Park has proven to be very innovative, as testified by the more than fifty prestigious awards received as outstanding contribution to urban public design, and by the millions of new visitors that the park has been attracting since its completion in 2004.

of the development of the park is characterized by more than one exaptation event, providing material to compare and analyze the different determinants of the emergence of this phenomenon. I'll illustrate in detail these exaptation events in the following paragraphs.

Data Collection and Analysis

In the analysis, I used a longitudinal case study design (Eisenhardt, 1989; Pettigrew, 1990). I adopted a historical perspective to sharpen my understanding of the phenomenon of interest as it unfolded over time (Lawrence, 1984; Kieser, 1994). MY primary objective was to identify the micro-cognitive and organizational processes and evolutionary forces (internal and external to the project organization) responsible for the occurrence of exaptation events identified in the evolution of the specific artefact under observation. The data collection spanned over more than two years, from the late spring of 2006 to the late 2008.

The overall research process was highly iterative (e.g., Miles and Huberman, 1984). The identification of specific exaptation events influenced the type of data collected in subsequent stages of the research process. In addition, framing the study as an empirical inquiry into the cognitive processes of exaptation led to on gathering data at the level of the decision-making processes of specific actors and organizational units in the project organization (e.g. the design and fund-raising committees, that is, those units more involved into the exaptation events, as explained in detail below). However, the data collection was not purely influenced by the concept of exaptation or theories of cognitive models defined in the literature. In the process of interpreting the data and studying the micro-processes and evolutionary forces underlying the phenomenon of interest, not only did I wrestle with the challenge of establishing a clearer link between those processes and forces and the various stages of exaptation, but during that process I also defined more precisely the theoretical constructs underlying my account of how exaptation occur.

I started my data collection conducting extensive interviews with the key players involved in the project and assembling publicly available data on the history of the development of the park (newspapers, books and archival material). While doing that, I have been allowed to access the complete files archive of the non-profit organization that managed the development of the park. This archive is a unique and invaluable source of data for several reasons. First, the archive is longitudinally extensive, covering

the entire lifespan of the project, from early 1998 to present. Second, the type of files contained in the archive (including thousands of meeting notes, attendance sheets, communications and design maps and plans) provide very detailed information on the decision-making and coordination process allowing the new design to come about. Finally, the archive has never been accessed by a researcher and encompasses micro-level data that are typically difficult to access in social research.

FINDINGS

In the following paragraphs, I expose the findings of the case study in three steps. First, I synthetically describe the artefact examined (e.g. the design of the park) and its evolutionary trajectory in order to define and operationalize exaptation events in the specific context of the case examined. Second, I synthetically describe the organizational context in which the exaptation events occurred. Third, I provide detailed case histories of the cognitive and organizational micro-processes leading to the two exaptation events observed in the case study. The case histories are followed by an analysis of the cognitive mechanisms detected.

Defining and Identifying Aesthetic Exaptations

On the basis of the definition of exaptation provided by Gould and Vrba (1982) - the co-optation of a feature for its present role from some other origin- in the context of the case study I defined the concept of "aesthetic exaptation" as *"the use of an aesthetic feature for a function or context different from those for which the feature was originally selected or designed for"*.

According to this definition, identifying exaptation events in artefact design requires understanding not only how a feature links to its *current* role in the artefact structure, but also why and how the feature was *originally* selected or designed for the artefact in question. For this reason, I embarked in a retrospective analysis of the evolutionary trajectory of the park design, with specific reference to the dynamics involving the aesthetic features of the design.

I start analyzing the composition of the current design of the park, operationalizing the two basic concepts constituting the definition of aesthetic exaptation provided above: the concept of "aesthetic feature"; the concept of "function" (or "context") for which the feature is used. Operationalizing the concept of aesthetic feature bounded my unit of analysis for the identification of exaptation events. Indeed, I

first identify the contexts and functions for which each aesthetic feature is used in the current design of the park. Second, I analyze retrospectively the evolution of the design of the park to examine whether the same aesthetic feature was selected for the same or for a different context or function of the park design. Thus, an exaptation event has been recorded when the function or context in which an aesthetic feature is used in the current design of the park is different from the function or context envisioned for the same aesthetic feature in previous stages of design development.

To introduce my analysis of the current design of the park, let me first show below picture 1, depicting the design of Millennium Park as it currently stands.

Components of the Final Design of Millennium Park

The circles in the picture identify different areas of the park as envisioned by the architects and planners of the park. Indeed, the architects of the project envisioned the design of Millennium Park as composed of separated "rooms" (e.g. geographically-bounded areas), each characterized by particular technical, design and aesthetic features and each serving specific functions or uses. Empirically, I identify these areas relying on the design narratives, promotional brochures and newsletters describing the design of the park. The areas of the design are identified by separate headings or chapters in these

texts.[5] Thus, these headings represent the 'cognitive classification structure' through which architects of the park saw and categorized the design of the park, constituting a reliable source of data to identify the components of the artefact, their functions and aesthetic features.

The aesthetic features of the artefact have been identified by coding the textual description of the areas of the park. The concept of 'aesthetic feature' was empirically operationalized using the name of architects or artists as proxies of different aesthetic styles. When the name of an artist/architect was mentioned in the description of the park' areas, a corresponding aesthetic feature was coded. Similarly, the concepts of "function" and "context", from which an aesthetic feature can be exapted, have been operationalized as the design functions ("function") or the areas of the park ("context") characterized by the aesthetic feature in question. For example, the context of the aesthetic feature 1 ("Frank Gehry") was the area identified as "Performing Arts Complex", which, in turn, corresponds to a specific set of design functions.

The results of this coding work are reported in the figure below, reporting a table and a schematic diagram of the park in which the detected aesthetic features are numbered and graphically illustrated by the areas ("contexts") and design functions ("functions") for which they are used in the current design of the park.

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[5]   For example, <u>Heading 1: THE GREAT LAWN</u>: *"At the heart of the park there will be a Great Lawn, an open space for family play, picnicking, etc"*. <u>Heading 2: PLAZA</u>: *"Behind the stage, there will be a new plaza marked by a pool…"*

The Current Design of the Park:
Aesthetic Features, Contexts and Functions

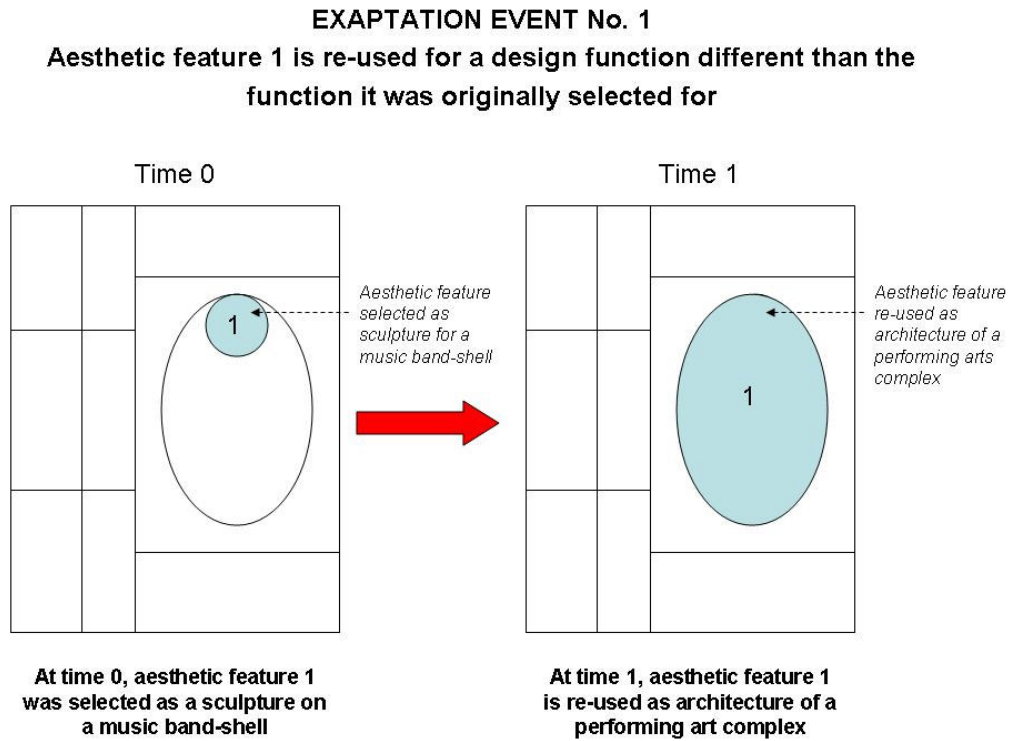| ID Aesthetic Feature (Architect or Artist)*	Context in which the Feature is used (Physical Area of the Park)	Design Functions for which the Feature is used
1	Performing Arts Area	Architecture of Performing Arts Complex
2	Theatre Area	Architecture of Theatre
3	Main Garden Area	Landscape Design of Main Garden
4	Promenade Area	Landscape Design of Promenade Area
5	Central Plaza Area	Sculpture located in Main Plaza Area
6	Galleries Area	Landscape Design of Galleries Area
7	Fountain Area	Architecture of Fountain
8	Ice-skating Rink Area	Architecture of Ice-skating Area
9	Monumental Area	Architecture of Monument

* = ID number indicates the specific architect/artist designing the corresponding area

Figure 1.1 - Aesthetic Features, Contexts and Functions in the Final Design of the Park

Next, in order to identify whether any of the above aesthetic features detected in the design of the park have been exapted from different contexts and functions, I asked myself where the aesthetic features come from (e.g. how have they been selected and why? What use the features were originally thought for?), for each of the aesthetic features identified. I discovered that the aesthetic features used in the current design of the park emerged gradually from an initial master plan of the park designed by the architect of record in the early stages of the project.

By tracing back the origins of the aesthetic feature in the current design of the park, I identified two crucial exaptation events in the evolution of the design of the park. In the first event -labeled exaptation event no. 1, the aesthetic style of architect Frank Gehry (coded as 'aesthetic feature 1') is exapted from the function it was originally selected for (sculpture on a music band-shell) to another deign function (the architecture of the entire performing arts complex). In the second event -labeled exaptation event no. 2-, the aesthetic style of sculptor Anish Kapoor (coded as 'aesthetic feature 5') is exapted from the context (e.g. the physical area of the park) it was originally selected

for (the main garden in the park) to a new context (the central plaza in the park). These exaptation events are represented graphically in the figures below:

EXAPTATION EVENT No. 1
Aesthetic feature 1 is re-used for a design function different than the function it was originally selected for

Time 0   Time 1

Aesthetic feature selected as sculpture for a music band-shell

Aesthetic feature re-used as architecture of a performing arts complex

At time 0, aesthetic feature 1 was selected as a sculpture on a music band-shell

At time 1, aesthetic feature 1 is re-used as architecture of a performing art complex

Figure 1.2 – Exaptation Event no. 1

EXAPTATION EVENT No. 2
Aesthetic feature 5 is re-used in a context different than the context it was originally selected for

Time 0   Time 1

Aesthetic feature selected as sculpture in the main garden

Aesthetic feature re-used as sculpture in the central plaza

At time 0, aesthetic feature 5 was selected as a sculpture in the main garden

At time 1, aesthetic feature 5 is re-used as sculpture in the central plaza
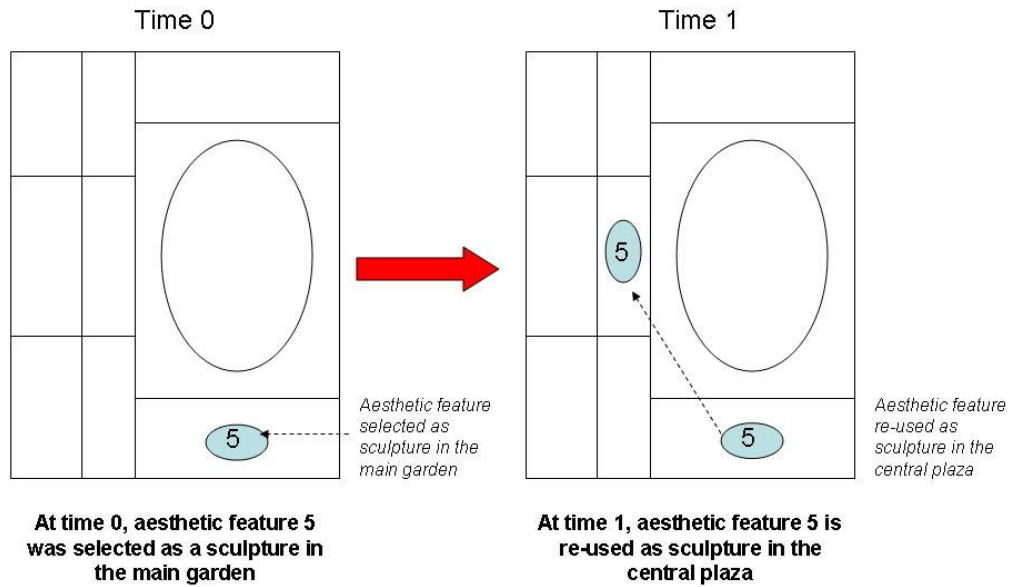
Figure 1.3 – Exaptation Event no. 2

The Processes leading to Exaptation Events

In the context of the case examine, the occurrence of the two exaptation events is connected to the decision-making processes of two committees in the project (charged with the responsibility of selecting some adds-on artistic enhancements –such as, sculptures and garden landscape designs- to be located on the original prototype of the park) and to the crucial activity of several project brokers operating in-between these committees. In the next two sections, I first provide a synthetic description of the project organization developing the park, describing the committee structure and composition to contextualize the decision-making processes leading to exaptation events, and illustrating a description of the major design changes made by the committees before the occurrence of the exaptation events. Second, I'll provide a full narrative of the decision-making processes leading to the two cases of exaptation identified.

The Project Organization Developing the Park and the Role of the Committees

The Millennium Park project was initiated in the fall 1997 with the idea of the Mayor of Chicago of celebrating the new millennium by extending new park land to a 24.3 acre vacant site. The formal organizational structure of the Millennium Park (MP) project was the typical one of many public construction projects: several specialized sub-contractors (such as, architectural, landscape, engineering and construction firms) reporting to a project manager/general contractor firm, which in turn reported to a specialized government agency as the client. As said, in these early stages of the project the architect of record devised a visual prototype depicting the master plan of the park. The master plan envisioned the design of the park as composed of separated "rooms" (e.g. geographically-bounded areas), each characterized by particular technical, design and aesthetic features and each serving specific functions or uses.

There was an exception to the standard organizational structure of the Millennium Park project: right before announcing the project to the public on March 30 1998, the Mayor directly appointed two corporate CEOs to lead a private citizens' committee in order to: 1) to select a few artistic enhancements (e.g. sculptures, landscape designs) to be put on the top of the devised master plan of the park; 2) to raise the private money necessary for funding the selected artistic enhancements. Given their expected role as intermediaries between private donors and the public organization of the project, I label the two CEOs appointed by the Mayor as 'fund-raisers' or 'fund-raising brokers'. The fund-raisers formed several fund-raising and design committees in order to mobilize Chicago philanthropists, art experts and members of notable art and cultural institutions in the project. Specifically, the fund-raisers formed two types of committees:

1. *Fund-raising committees,* charged with the responsibility of identifying major naming opportunities on areas of the master plan of the park and 'sell' to private donors naming rights on these areas in exchange of donations;
2. *Design committees*, charged with the responsibility of providing guidance and direction for the selection of sculptures (Art committee) and landscape designs (Garden committee) for the park;

The mission statement of the committees was to provide guidance and direction for the selection of art and sculpture (and garden landscapes/designs) to be located in the master plan of the park designed by the architect of the project. Committees' members start meeting between July and August 1998 to identify initial lists of artists and garden designers to be contacted for the submission of artistic proposals to the project. Subsequently, in a series of meetings between October and December 1998, art and garden committee members reviewed slides and working models of the sculptors and the garden designers selected out of the original lists identified in the first meetings and respecting the criteria defined in those meetings (internationally-known and contemporary artists). Following these procedures, in less the three months of activity the art and garden committee members identified four major sculptural and design additions to the initial master plan of the park: 1) a new sculpture to be located in the central plaza of the park; 2) a new sculpture to be located in the main garden of the park; 3) a new sculpture to be located on the music band-shell of the park; 4) a new landscape design for the main garden of the park. As anticipated above, the two exaptation events detected in the evolutionary trajectory of the park design concern two of these design additions (specifically, the sculpture to be located on the music band-shell -*exaptation event no. 1*- and the sculpture to be located in the main garden of the park –*exaptation event no. 2*). In the next two paragraphs, I will turn to a detailed case history of the processes leading to these specific exaptation events, which are the focus of my analysis.

Narrative 1: Processes leading to Exaptation Event no.1

The origins of exaptation event no. 1 can be traced back to the fund-raising domain. Indeed, fund-raiser brokers had decided to identify a small group of donors (e.g. philanthropic families, corporations, foundations) to be contacted for a major donation in exchange of a naming opportunity on an area of the park and 'getting them involved' in the definition of the artistic enhancements. Fund-raiser brokers had their target donors well-defined in mind. On his way back from the White House –where it was celebrated the award of the 1998 Rawls Architecture Prize, recognized worldwide as the "Nobel Prize for Architecture", the chief fund-raiser declared: *"We need to figure out some way to get Amanda Rawls* –member of the Rawls family, sponsoring the Rawls prize and internationally renown for cultural philanthropy- *involved in the Park project"*. He later approached Amanda Rawls *"to have the benefit of your views…as we*

consider who the outstanding sculptors and artists of our time might be, your views and expertise would be of enormous benefit to us and the City needs your help". In addition, fund-raiser brokers know well their 'key prospects'. For example, they were well aware of a social connection between the Rawlss and the world-renowned architect Frank Gehry, a former recipient of the Rawls architecture prize and a close personal friend of the Rawls family.

The name of Frank Gehry was in the list of potential artists to be contacted prepared by the Art Committee in its first meeting on July 9, 1998 (see above). Specifically, Frank Gehry was recommended as a potential candidate for doing a sculpture to be located on the music band-shell planned in the master plan of the park. Thus, when, in between the first and the second art committee meeting, fund-raiser brokers set up a summer meeting with the donor, it was "a natural" to explore a donation for a naming opportunity on a Gehry-designed sculpture on the band-shell.

However, the donor was perplexed about the overall aesthetics of the park and about the idea of juxtaposing contradictory aesthetic styles: *"we would put a piece of sculpture on this side and another sculpture on that side so that we could be artsy, I immediately thought that was a really dumb idea"*. As reported by the fund-raiser brokers, the donor *"wanted to be sure that Gehry "will have full latitude" in the project, what she told us was: "If you guys are serious to get such an internationally acclaimed artist like Gehry involved in this project, let's not get him just to decorate this side or that side of the proscenium, let's get him to really do something here, to do both decoration and proscenium…if you really want an artistic statement for the pavilion, why not ask Gehry himself to design it? If you get somebody like him, the music pavilion itself will be the art and you don't need all of this stuff….and if you are serious about that, my family and I will pay for that"*. The chief fund-raiser immediately "lit up" at the idea of using Gehry: "*because he is rather sculptural... I thought the idea of attracting Gehry to make a more significant artistic statement in the park would have the potential to transform the park into an iconic symbol of the city at the turn of the millennium. I, as many others, considered Gehry the most important, if not the greatest, architect of the time"*.

However, meeting the donor' requests required re-thinking the original use and function planned for the aesthetic style of Frank Gehry: from a sculptural piece to an architectural piece. This, in turn, required thinking about the design scope to be eventually assigned to Frank Gehry and to revise the existing naming opportunity

offered to the donor. The fund-raisers attempted to meet the requests of the donor by enlarging the area to be designed by Frank Gehry to the entire music band-shell instead than commissioning simply a sculptural ornament on the existing band-shell.

Specifically, they sat down with the project manager of the project and mayor representative in order to define the exact design scope to be proposed to Gehry *"It was important to ensure the architectural integrity of the Performing Arts Complex, avoiding to give the impression that two conflicting design styles –the classic beaux arts framework of the master plan and the post-modern design of Gehry- had been juxtaposed by mistake. For this reason, we thought to enlarge the area to be re-designed by Gehry by including both the music band-shell and the entire oval defined by the great lawn, the sound system and the amphitheatre"*. In this context, fund-raisers and the city project manager started debating about the radiation waves of the sound system. The circular image of the sound waves shaped the visual perspective from which the relations among the areas of the park were to be interpreted. They re-interpreted the boundaries between the three separated areas of the plan –the great lawn, the music band-shell and the amphitheatre- visually, circling on the map of the plan the radiation of circular waves produced by the music sound system, thereby progressively including all the elements included in the oval, formerly envisioned as composed of three functionally separated elements.

The circles made on the master plan by the project manager and the fund-raisers are illustrated in the figure below, together with the final proposed scope for the aesthetic style of Gehry:

PROCESS LEADING TO EXAPTATION EVENT no. 1
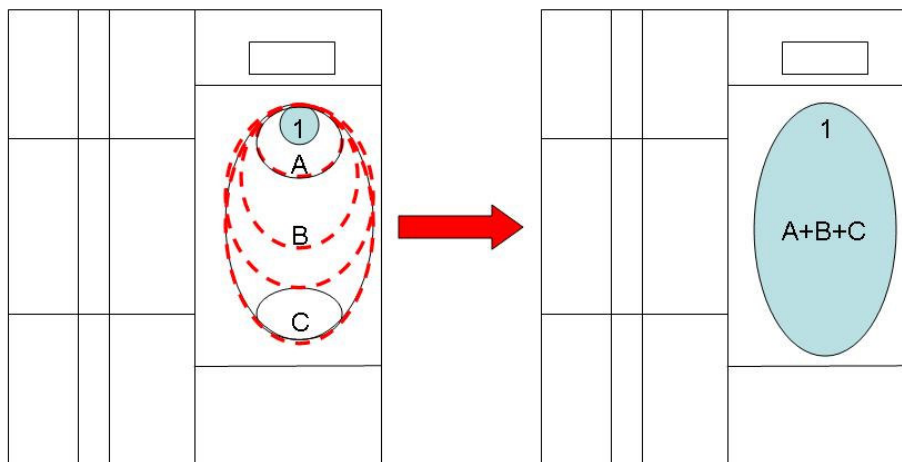
Red Dotted Lines = Radial Perspectives Drawn by Fund-raisers and City Manager

1 = Aesthetic Feature 1 (Style of Frank Gehry)

A, B, C = Areas of the Park → A = Music Bandshell, B = Great Lawn, C = Amphitheatre

Figure 1.5 – Process Leading to Exaptation Event no. 1

Narrative 2: The Processes leading to Exaptation Event no. 2

The garden committee had commissioned a elliptical stainless-steel sculpture by sculptor Anish Kapoor to be located in the main garden. His work was selected for the *'visual excitement' created by his gigantic stain-less-steel mirror-like elliptical sculptures. We thought these almost object-less objects could beautifully reflect their surroundings, so they were a perfect fit for the main garden in the park, since they could have reflected the surrounding flowers and landscape, creating a great color-full effect"*, declared an architect member of the art committee. Committee members were then called to evaluate the scale, size and concrete details of the artists' submissions.

On March 21, 1999, in one of these meetings, including members of both art and garden committee, the working model of the sculpture by Kapoor -to be located in the main garden- was reviewed together with the schematic design of the new garden design. In looking at pictures and models of the sculpture in the context of the new garden design, committee members determined that the massive elliptical sculpture was

just too large for the design of the garden: *"we felt that putting that gigantic piece of sculpture in that setting does not do justice to the piece, which needs a larger setting. Additionally, it dominated the flower garden. It just didn't work. The question was: can the sculptor design something of dramatically smaller scale? Otherwise, it will have to be located somewhere else"*.

Subsequently, on April 20, 2000, a special meeting for reviewing garden and sculpture issues was called to examine alternative options to solve this problem. The options considered were: 1) to decide against the sculpture in the garden; 2) to let the sculptor to do a gallery-size piece dramatically reducing the size of the piece (this option was suggested by the landscape architect Deborah Evans). In case of 1), a new problem would emerge of where to locate the sculpture by Kapoor in the park. It was advanced the idea of locating the sculpture in the central terrace, where another piece of sculpture was planned and almost finalized. In this case, should both pieces of sculpture be maintained?

The first to talk was Peter Rood, the president of the Art Museum. His remarks, as reconstructed from a recollection of various transcribed meeting notes: *"We may have already too much sculpture in the park. Gehry work is phenomenal, but it would probably be a gigantic piece of sculpture by itself. One other unique piece of sculpture is fine. Sometime "Less is more"…also, we got to consider these visual axes crossing the park (INDICATING IN THE MAP)…if we move the Kapoor' sculpture to the main terrace we would have a clear sculpture-axis crossing the park from west to east vs a clear north-south music-garden axis….now, the first axis can be thought as in the direction of the flow of people entering in…it could actually guide the flow of people entering from Michigan Avenue…they will be attracted by this gigantic stainless-steel kidney bean, which will draw them all into the park, we all already know that, the bean is stunning and fascinating to everyone…and then, they will be looking at this other gigantic piece of sculpture, being slightly moved towards the central room of the park, almost by a visual force made of subtle mirror-like resemblances"*. The stunning opening comment of Peter Rood anchored most of the subsequent discussion around this visual perspective argument, emphasizing the importance of the axes to take a decision. Thus, the architect of the master plan followed: *"any sculpture located on the music-garden axis does inevitably compete with Frank Gehry…the quality of Kapoor should be refined and revised to see how Kapoor can compete with Frank…"*. Mike Rasch, director of the public art for the City of Chicago, *"Kapoor and Gehry are a*

superb combo…it depends from which perspective the combination of the two is more interesting… we may loose a clear sight line connecting the elements of the park".

On the basis of these considerations, committee members decided to move the Kapoor bean sculpture in the main terrace –the location planned for the another sculpture, which was eventually rejected- and start over again with the design of the garden. The process is illustrated in the figure below:

PROCESS LEADING TO EXAPTATION EVENT no. 2
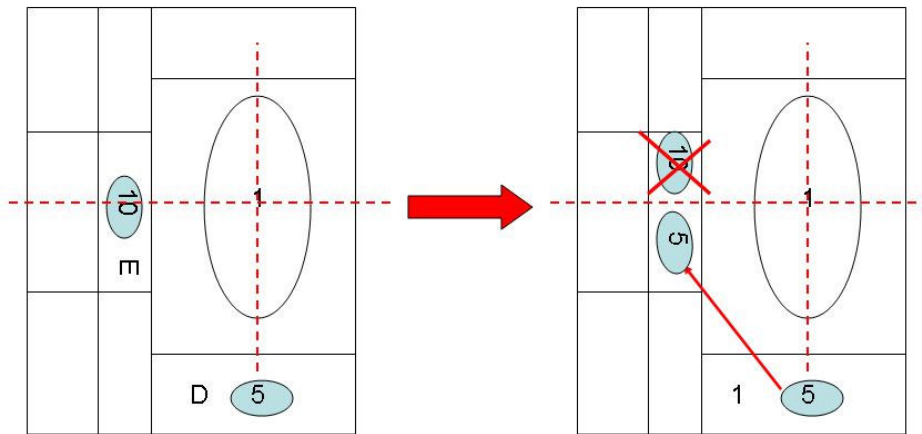
Red Dotted Line = Visual Axes Perspective Drawn by Committee Members
1, 5, 10 = Aesthetic Features
D, E = Areas of the Park

Figure 1.6 – Process Leading to Exaptation Event no. 2

Analysis: A Process Model of Cognition and Exaptation

In this section I'll elaborate from the case history illustrated above to identify in abstract terms the processes that may lead to exaptation events in artefact design. Let me start by sketching in a table the events leading to the exaptations observed in the case history.

Description of Exaptation Event	Events Leading to Exaptation Event
Aesthetic style of architect Frank Gehry is exapted from the function it was originally selected for (sculpture on a music band-shell) to other functions (the architecture of the entire performing arts complex and the bridge)	• Name of architect Frank Gehry is proposed in Art Committee for a sculpture on the Music Bandshell planned in the master plan of the park • Fund-raiser brokers contact a donor to propose the sponsorship of the sculpture from architect Frank Gehry. In exchange of a donation, the donor requests Gehry to do more (*"have full latitude"*) than just a sculpture. • Working on a visual model of the master plan, fund-raisers and the project manager re-think and adapt the boundaries separating the band-shell, the great lawn and the amphitheatre (defined as 3 separated areas of the park) in the master plan to re-define a new area (e.g. the Performing Arts Complex) to which the aesthetic style of Gehry can be used for. • While talking with Gehry, the project manager noticed Gehry' interest in designing a bridge and proposed him to design also the bridge.
Aesthetic style of sculptor Anish Kapoor is exapted from the physical space it was originally selected for (the garden) to a new area of the park (the main terrace)	• The working model of a sculpture by artist Anish Kapoor selected to *"reflect beautifully the flowers of the garden"* depicts a sculpture too large for the garden area where it was supposed to be located. • By looking at the visual axes and interdependencies that the sculpture and the Gehry-designed performing arts complex are likely to create, a selected group of art and garden committee members determined to move the sculpture.

Both exaptation events originated from some sort of tension and conflict between design elements. In exaptation event no.1, the tension concerns the scope of the aesthetic style of Frank Gehry and the interactions among the areas of the park adjacent to the music band-shell, where the original functional feature (e.g. an ornamental sculpture) was planned to be located. In exaptation event no. 2, the design tension concerns the interaction between the size of the Kapoor sculpture and the design of the main garden, for which the aesthetic feature was selected.

Despite similar in nature, these complex interdependencies in the design domain came from different sources. In the case of the Gehry-designed sculpture, the design tension originated from the involvement of a new 'stakeholder' in aesthetic choices, that is, the donor contacted by the fund-raiser brokers to fund the Gehry' sculpture. What was initially planned as a fund-raising strategy –e.g. getting donors involved- had the (unexpected?) consequence of changing the way the use of Gehry' aesthetic style was evaluated in the design domain. For example, the way in which the aesthetic style of Frank Gehry was evaluated in the context of the Art Committee discussions was substantially different from the way the same style was considered and evaluated in the context of the interactions between the donor and the fund-raisers. Indeed, as we saw, the donor considered inappropriate to use the aesthetic style of Gehry only for a sculpture on the master plan (e.g. *juxtaposition of two contradictory design styles was a very dumb idea)[6]*. Thus, in exaptation event no.1 the design tension originating exaptation emerged as a by-product of the connection between fund-raising and design domains made by the fund-raiser brokers.

Differently, in the case of the Kapoor-designed sculpture, the design tension emerged from an interaction between two design elements (e.g. the garden and the sculpture) which was actually envisioned ahead by the members of the garden and art committees. However, while committee members thought the aesthetic features of the two elements as complementary (e.g. *flower garden and the mirror-like surface of the sculpture would have reciprocally reinforced their visual power*), as it turns out, the schematic design of the garden and the working model of the sculpture revealed a design conflict between the two elements (e.g. compared to the size of the garden, the scale of the sculpture would dominate the garden, visually obscuring the flowers).

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[6] More generally, in the hybrid sub-problems created, the works of an artist are evaluated not only with respect its artistic value and its fit with the design but also with respect the preferences, requests and opportunities represented by the donor that has been tied to the artist).

In both exaptation events, the emergence of these design tensions prompted a re-consideration of the relationships between the aesthetic style selected, the function it was selected for, and the other design elements of the park.

In the case of the Gehry-sculpture, the fund-raisers went back to the map of the master plan of the park, visually manipulating the boundaries of the areas, attempting various schemes to accommodate the aesthetic style of Gehry into new functions and areas as provided in the plan. Through visually experimenting various decomposition patterns in the visual model (e.g. representing the representation of the overall problem at the artefact level), fund-raisers, with the help of the city project manager, discovered and understood new relationships between the elements of the park that were not envisioned in the first master plan. Specifically, as illustrated above, fund-raisers and the city project manager started debating about the radiation waves of the sound system and on various sound issues into the debate on how to define the design scope (e.g. the new function) for the aesthetic style of Frank Gehry. The circular image of the sound waves shaped the visual perspective from which the relations among the areas of the park were to be interpreted. They re-interpreted the boundaries between the three separated areas of the plan –the great lawn, the music band-shell and the amphitheatre-visually, circling on the map of the plan the radiation of circular waves produced by the music sound system, thereby progressively including all the elements included in the oval, formerly envisioned as composed of three functionally separated elements.

This process can be labeled as a process of *radial expansion*, through which a feature is established as central category around which the interfaces with adjacent features are re-interpreted in order to envision a new area or function. In the specific case analyzed, this process led the design elements adjacent to the focal feature (e.g. the music Bandshell irradiating the sound waves) to be progressively subsumed by the focal feature, generating an exaptation of the aesthetic style feature into the functions of the adjacent design elements. Via visual experimentation and this adaptation process unfolding within a (visual) perspective, fund-raisers were able to re-define a new space and function for the aesthetic style of Gehry, which was formerly selected for another, more limited, function.

The process leading to the exaptation event no. 2 –the change of space for the sculpture originally selected for the garden- was similar in many respects. Confronted with a problem of increasing interdependence in the design domain (e.g. the size of the

sculpture was too large for the space defined by the garden), the committee members started using the map of the master plan in order to examine various options (see case history above) to resolve this design conflict.

Again, the map of the plan was used as cognitive device to change the visual perspective from which the relationships between the components of the park had been re-interpreted. In this instance, however, the 'lines of tearing' had been identified by drawing two visual axes that had never considered before in the design of the master plan. One axis connected the performing arts space with the garden area, crossing one quadrant of the park over the north-south direction. Another axis –labeled the sculpture axis- connected the sculpture in the main terrace with the performing arts space, by crossing the park over the west-east direction. As said, neither of those axes had been thought before, as they cross-connected components of the park that were geographically distant and functionally unrelated. Using these axes, committee members evaluated the 'aesthetic value' of the location of the sculpture in the garden, discovering similarities and contrasts between elements of the park, previously considered un-connected. Precisely, the sculpture was envisioned as an aesthetic element competing with the sculptural shape of the architecture of the Performing Arts Complex *if* located in the garden; whereas the same sculpture was evaluated as a complementary element to the Performing Arts Complex *if* located in the main terrace. Thus, the position *on the axes* became the discriminating variable to ascertain the aesthetic value of the sculpture. In addition, the visual work on the map led committee members to more generally re-interpret the use of the space surrounding the park and the walking paths within the park. For example, one of the members of the committee suggested the attractive concept of a "visual force", bringing people into the park and making them move from one component to the other (see narrative above). This concept completely re-shapes the original idea of walking paths and how people were envisioned moving in the park by the architect of the original master plan framework.

This process can be labeled as *axial association,* since aesthetic associations (symmetries/asymmetries) among distant elements are detected by identifying their positions on a perspective defined by visual axes connecting the elements (e.g. features are evaluated as complementary or conflicting in terms of design on the basis of their position on the axes). Although similar in the basic procedures (e.g. use of the map to change the perspective) found in the Gehry case, these processes featured also an important difference with the *radial expansion* mechanism examined above. While in

the Gehry case the aesthetic style was exapted to new functions by gradually taking over the *adjacent* components whose boundaries had been re-interpreted through the change in perspective, in this case the axes become a tool to see relationships and associations between *distant*, and functionally disconnected, objects in the park (such as the main terrace and the Performing Arts Complex).

In sum, the case study shows that exaptation events can be produced by the combination of two basic types of processes. The first is a process of making connections among different problem domains (e.g. combining alternatives generated in the domain of fund-raising with alternatives generated in the domain of design). In the case analyzed, this process gave rise to new interdependencies among formerly disconnected elements. These processes constitute an important antecedent of exaptation because, as we saw, the new interdependencies constitute the raw material from which exaptation events originated in the first place. Thus, by creating new interdependencies between elements previously disconnected, this process increases the *exaptive possibilities*. The second set of processes consists in processes of re-interpretation and change of perspective (in my case visual perspective) from which the interactions among the elements of the new problem are evaluated. This process emerges as an adaptive response to the new interactions among elements generated from the first set of processes.

This two-step model of the cognitive processes leading to exaptation emerging from the case study is graphically represented in figure below:
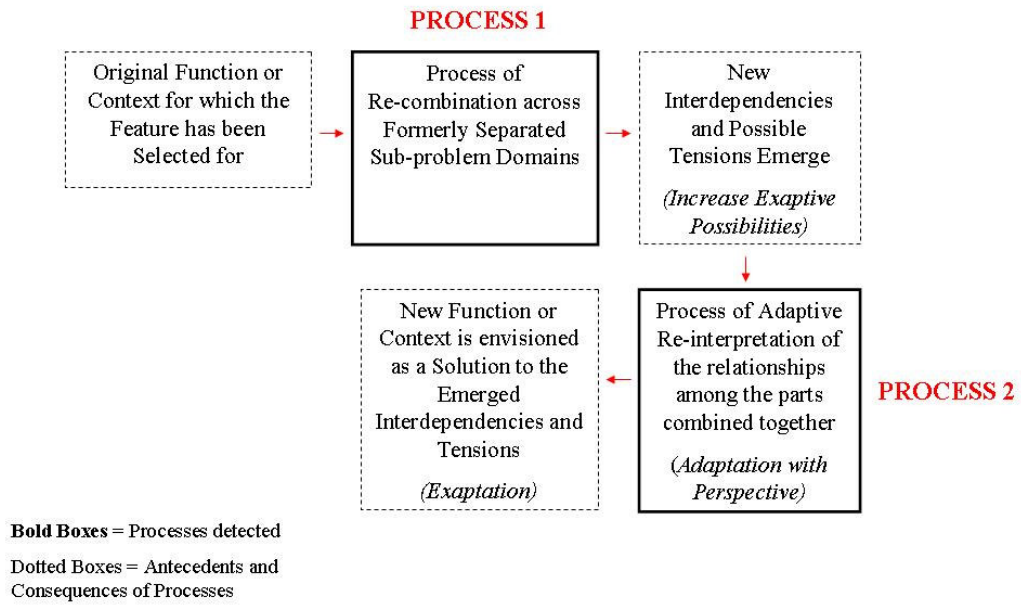
A Model of the Cognitive Processes Leading to Exaptation

Figure 1.7 – A Model of the Cognitive Processes Leading to Exaptation

Discussion and Contributions to the Literature

In order to show the contributions of the case study to the literature on cognition and innovation, in this section I'll map the two processes detected in the case on two relevant research streams.

In the first paragraph, I'll illustrate how the first set of combinatory processes are consistent with the model of cognition underlying the information processing (or physical symbol system) approach, whose foundations had been laid down in the work of Newell and Simon (1972) and translated into the realm of organization theory by March and Simon (1958), Cyert and March (1963), Nelson and Winter (1982) and more recently developed in what has been labeled as the "Neo-Carnegie approach" (see, for instance, Gavetti et al. 2007 and references quoted therein). At the same time, I will illustrate how the findings of the case study contribute novel insights into these developments, by identifying the detailed micro-processes underlying the re-configuration of problems and a rational heuristic underlying this re-combinatory process. These novel insights are consistent with recent studies on the decision-making processes underlying innovative phenomena such as entrepreneurship (Sarasvathy 2001) as well as design and radical innovation in science (Grandori 2007b), design (Romme et al. 2006; Liedtka 2000; Hatchuel 2001) and technology (Ciborra 1996).

In the second paragraph, I'll show how the second set of processes are more consistent with the distributed cognition approach pioneered by Ed Hutchins (1995) and recently advocated as an alternative cognitive foundation for understanding processes of radical change and innovation (Lorenz, 2001).

Similarities and Contributions to Information-processing Models of Cognition

In order to show the similarities and contributions of the case study to the information-processing model of cognition, I'll first represent the re-combinatory processes illustrated above in terms of combination across sub-problem domains.

The organization of fund-raising and design activities into specialized committees represents how the fund-raisers initially decomposed the overall problem they were faced with at the founding of the project. As illustrated in the case history, the fund-raiser was charged with the responsibility of developing a fund-raising campaign and of selecting artistic enhancements of the park (e.g. sculptures, garden landscapes) to be funded with the private philanthropic donations raised. By forming three separated organizational sub-systems (e.g. the specialized committees), the fund-raisers

decomposed the initial problem into three separated sub-problems, which can be labeled as: SUB-1: find money; SUB-2: find sculpture; SUB-3: find garden design[7]. In the early meetings of the design committees, committee members generated initial lists of alternatives (e.g. sculptors, garden designers, donors to be contacted) using simple selection heuristics, such as, baseline criteria and repertoires of previous experiences[8]. The resulting decomposition of the problem is represented in Figure 1.8 below:
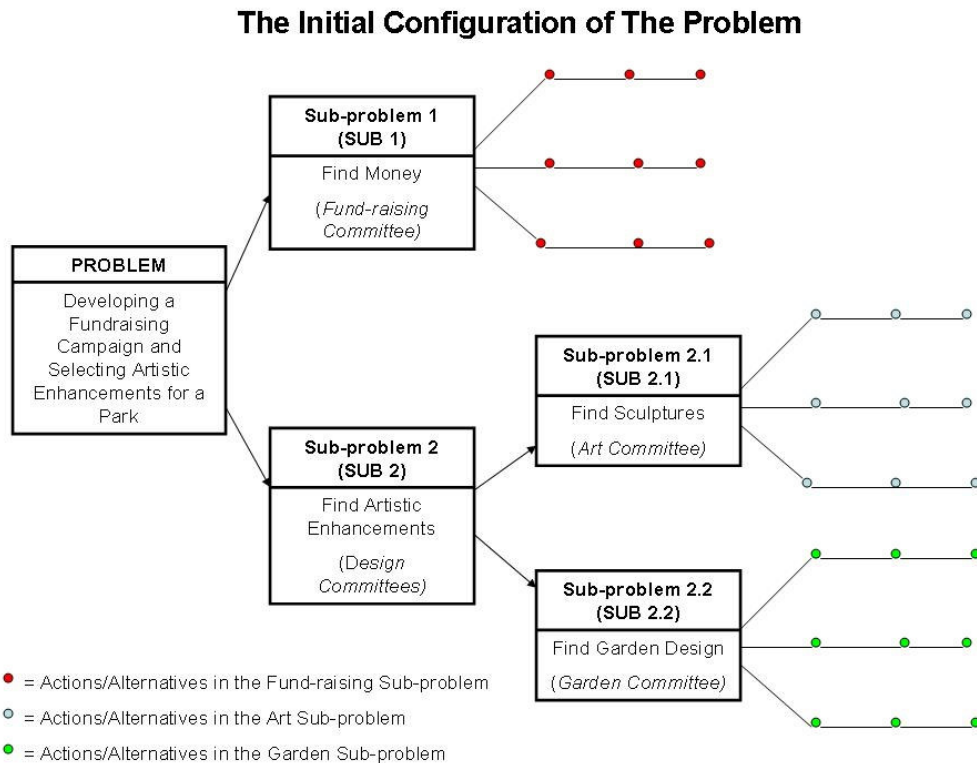
Figure 1.8 – The Initial Configuration of the Problem

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[7]Another possible way to organize the problem-solving process, for example, would have been to start by examining fund-raising and design issues together, determine an overall scheme (e.g. how much money we expect to raise, what type and how many pieces of art/garden we can raise) and then, within the constraints of that overall scheme, start the search for the alternatives. A crucial difference with the actual decomposition observed case is that in the case the selection of artists and garden designers by the committees has been done with almost no budget constraints.

[8]Specifically, the basic selection heuristics used as "efficient generators" by committee members to generate the corresponding lists are: eestablishing baseline criteria (e.g. the international reputation and contemporary design style of artists); repertoires of successful actions; previous experience; direct (candidate artists come visit to show their works/ideas and look at the site) or vicarious learning (knowledge of artists works by committee members). These heuristics can be interpreted consistently with the heuristics commonly identified in the classic Carnegie School approach.

The initial decomposition of the problem had a modular hierarchical structure envisioning each sub-problem as composed of smaller sub-problems. For each sub-problem, a "tree" of alternatives (e.g. names of sculptors, garden designers, etc.) was identified. Had the actual decision-making process followed this plan, the problem solver would have separately –through independent processes- searched for solutions to the three sub-problems (find art, find garden, find sculptures). The solutions found for each sub-problem were then envisioned to be 'matched' and combined into the final solution at the end of the process, following an upward logic (from sub-problems to final solution of the problem). Thus, in this case the problem solver would have independently produced three sets of solutions (e.g. total amount of money raised; art pieces selected; garden design selected) to be integrated (e.g. matching and allocating funds and donors to art pieces) once the solutions of the sub-problems had been found.

Despite the structure of the problem was envisioned as a hierarchical nesting of modular sub-problems, individuals brokering between the fund-raising and design domains envisioned new interdependencies across these separate sub-problems. Indeed, as we saw, in later meetings, while committee members were searching and evaluating the set of alternatives generated, the brokers started making connections between alternatives generated in different sub-problem domains. For example, as we saw, they connected the name of Frank Gehry –identified as potential sculptor in the art sub-problem- with the name of a donor identified in the 'fund-raising sub-problem'. They followed the same procedure for the garden sub-problem, connecting a potential donor with a landscape architect identified in the list generated by the garden committee.

The making of connections across sub-problems led to a re-structuring of the former decomposition of the problem, creating two new sub-problems (SUB-3, SUB-4), each connecting elements of both the, formerly separate, sub-problems (e.g. donors-artists). In this sense, the newly created sub-problems can be thought as "hybrid" problems, that is, problems including elements coming from formerly distinct sub-problems. I illustrate this process in the Figure below. The red arrows represent the connections across sub-problem domains made by brokers.
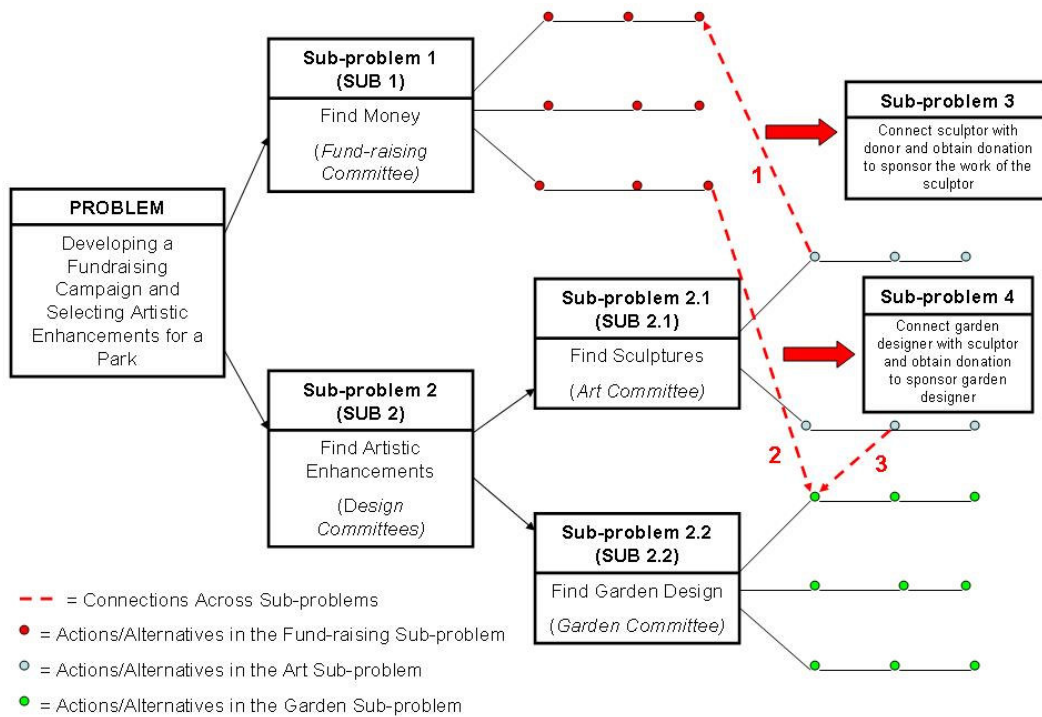
Figure 1.9 – The Reconfiguration of the Problem

These processes can be interpreted consistently with models of cognition expanding and developing the information-processing approach pioneered in the Carnegie school tradition (Newell and Simon 1972; March and Simon 1958). Recently, these models have focused on the patterned interactions among decisions in complex organized systems, formalizing these interactions via computational models based on Stuart Kauffman NK model of "rugged landscapes' (Rivkin and Siggelkow 2007). However, while contributing to the formalization of search processes in instances of incremental innovation, these studies have been criticized of being rather slow in introducing into their modeling *cognition: "a forward looking form of intelligence that is premised on an actor's beliefs about the linkage between the choice of actions and the subsequent impact of those actions on outcomes"* (Gavetti and Levinthal 2000: 113). The case study contributes to this research stream by illustrating how increasing the interdependence between sub-problem domains may lead to the creation of a new landscape –intended, by itself, as a cognitive phenomenon reflecting an actor's understanding of what might matter and it is worth attending to- giving rise to the

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emergence of new sub-problems, which will reframe the entire structure of the original problem.

More generally, the findings are consistent with an emerging body of research aimed at detecting new processes and methods for the design of novel solutions, suggesting that research on radical innovation needs new cognitive models extending the traditional limited-problem-solving heuristics (Grandori 1984; 2007b; Liedtka 2000; Hatchuel 2001; Sarasvathy 2001). In general terms, these studies suggests that in conditions of Knightian uncertainty search processes may be described as processes of *design, experimentation* and *scientific hypothesis testing* on alternatives having multiple consequences and a multiplicity of cause-effect relations (Grandori 2007b)[9]. For example, Grandori (2007b) emphasizes how variation in knowledge processes may be guided by the generation of multiple hypotheses, by modifying problems and cause-effect relations on elements of existing problem models and that *"problem shifts and new hypotheses are generated in the directions that are guided by experimentation (real or mental), by the very process of solving them"* (Grandori 2007b: 154) This strategy of "opportunistic multi-purposedness" can be detected also in Campbell (1960: 394) which describe the thought processes of scientists: *"in the pure science to which they were accustomed, if they were unable to solve problem A they could turn to problem B, and while studying this with perhaps small prospect of success they might suddenly come across a clue to the solution of problem C"*.

In the case study, exaptation events emerge out from processes consistent with these accounts of discovery. For example, in both events decision-makers re-envisioned the relationships among the existing elements of the master plan opportunistically, on the basis of the emerging uses and consequences of the aesthetic feature (e.g. the Gehry-designed sculpture; the Kapoor sculpture) initially selected for another use. Similarly, in the case of the elliptical sculpture originally commissioned to be located in the garden in order to reflect the flowers in the garden, the consequences of this alternative have been opportunistically evaluated, so that a new use (reflecting skyscrapers vs reflecting flowers) seemed to be more appropriate. A central heuristic used in this phase was that of re-usability: *"Now I got this, what else can I do with this? Is this re-usable in some*

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[9] More specifically, a number of new heuristics and processes have been advanced in these studies. For example, the concept of bricolage (Ciborra 1996; Baker et al. 2005) and effectuation (Sarasvathy 2000) in studies of entrepreneurship; circular experimentation and design rules in studies of architectural design (Romme et al. 2006: Liedtka 2000; Hatchuel 2001); hypothesis testing procedures in models inspired by the scientific method (Grandori 2007b).

other context? Is this necessary or redundant if seen in the context of the other solutions?" This heuristic reverses the typical design process followed by professional architects and moving from functional requirements (e.g. what element could we think of for serving a transportation/mobility function?) to aesthetics/design. In contrast, committee members followed a process going from the aesthetic feature available at hand (e.g. the style of Gehry) to function (e.g. we do have the possibility of hiring Frank Gehry, what can we do with him?). This evidence is consistent with an idea of innovation as stemming more from "*resources and artefacts in search of use and consequences rather than from a use in search for a resource or artefact that satisfies it"* (Grandori 2007a: 155).

Central to these processes is the fact that the problem solver may look for "robust alternatives"[10], alternatives that may be solutions in multiple sub-problems at once, following a heuristic that could be labeled *"kill two birds with one stone"* (e.g. get two solutions with one action)[11]. For example, the selection of Gehry and Deborah Evans out of, respectively, the lists of sculptors and landscape artists identified in the committees, followed this path: both Gehry and Evans were solutions to two different sub-problems at once (e.g. solutions to both the fund-raising and to the design sub-problem).When a robust alternative was identified by making connections across sub-problems, the brokers stopped searching the alternatives included in the set within the sub-problem.

The logic followed by brokers in carrying out this process was calculative: they planned ahead to connect the domains of fund-raising and design. Fund-raiser brokers targeted certain types of donors, spent time and effort in developing naming opportunities and strategically planned the right timing for approaching the targets at a specific moment in time. In sum, the cross-connection of fund-raising and design domains was a purposeful, calculative, strategy devised by the fund-raiser brokers.

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[10] The notion of robustness originates in biology and in the science of complex systems (see Jen 2005 for a review). It has been extensively developed in engineering and design methods by Genichi Taguchi. Grandori (2007b) has been the first to explicitly use the notion of 'robustness' to develop a theory of rational decision-making under Knigthian uncertainty, defining 'robust alternatives' as "*having multiple functions and therefore entailing positive consequences independently from the state of the world"* (ibidem: 18).

[11] Differently from the heuristics defined in the Carnegie school approach –that are typically based on the hierarchical structure of the problem- this heuristic can be better described as a "network heuristic" (e.g. making connections across separate elements of a problem independently of their positions in the sequence or hierarchical structure devised).

The use of this heuristic suggests to rethink the conceptualization of how information is used in search. While the classic model typically assumes that this information is used to assess differences between a specific sub-problem and the final solution (*At any node in a path, the problem solver is faced with a single question: 'what action shall I try next?'*), in the empirical case this information is used to assess and evaluate interactions (e.g. complementarities, synergies) across separate sub-problems *(the question asked implicitly is "what other sub-problems can this action be a solution of?")*. This difference in conceptualizing search was acknowledged by Simon himself (1969: 148): "*search processes may be viewed as processes for seeking a problem solution, but they can be viewed more generally as processes for gathering information about problem structure that will ultimately be valuable in discovering a problem solution: information obtained along any particular branch of a search tree may be used in many contexts besides the one in which it was generated. This latter is an important direction for research in the theory of design*".

In sum, while the findings of the case study are consistent with the basic understanding of cognitive processes (in terms of hierarchical structures of sub-problems) defined by the classic information-processing view, they also contribute new insights into the dynamics of problem re-framing and re-configuration, identifying new calculative heuristics (e.g. the heuristic of robustness) as the cognitive engine behind processes of recombination across formerly separate sub-problems. These insights are consistent with an emerging stream of research aimed at extending the classic insights pioneered by the Carnegie school tradition.

Similarities and Contributions to Models of Distributed Cognition

One crucial difference between the problem-solving approach and the distributed cognition model concerns the role assigned to the environmental and material world in cognitive processes by the two approaches (Hutchins 1995). In the information processing approach, the environment and the material artefacts surrounding the problem-solver have a peripheral role with respect the internal processes of symbolic manipulation happening inside the individual mind. Their role is that of acting as stimuli, whereas the individual mind is intended as a passive representational engine whose primary function is to create internal models of the external world. In contrast, in the distributed cognition approach, the material world take on a central role, acting not only as external support to internal memory, but also as

computational medium, thus becoming an integral part of the cognitive system under observation. In this respect, in the distributed cognition approach the central phenomenon under observation is "*the complex ways in which external environments interact with internal ones, involving coordination between internal resources – memory, attention, executive function- and external objects –the objects, artifacts, and at-hand materials constantly surrounding us (e.g. work materials become elements of the cognitive system itself rather than just stimuli for a disembodied cognitive system)*" (Hollan et al 2000: 174-175)

This assumption seems most appropriate to analyze the processes through which the boundaries of the map of the master plan have been manipulated in order to resolve the design conflicts emerged in the previous phase. In this context, architectural design skills and park design concepts (e.g. envisioning visual axes and people flows; studying the patterns of diffusion of the sound waves) are coordinated with the manipulation of objects in order to establish a particular state of coordination between the boundaries of the areas and the aesthetic object (or style) being considered that can be a solution to the design conflict emerged. Here, the contribution of my case study is to identify two specific processes that can achieve this coordination between the material world and internal cognitive processes: a process of *radial expansion,* through which a focal feature is established as central category around which the interfaces with adjacent features are re-interpreted (e.g. in the specific case, this process led the design elements adjacent to the focal feature to be progressively subsumed by the focal feature, generating an exaptation of the feature into their functions); a process of *axial association,* through which symmetries and asymmetries between distant features are detected on the basis of their position of some axes (e.g. features are evaluated as complementary or conflicting in terms of design via the use of some visual axes, on the basis of their position on the axes). Consistently with the distributed cognition approach, both processes point to the value of visual tools for changing the perspective from which relationships of complementarities and substituabilities among elements are evaluated. Second, consistently with the descriptions of cognition provided in this approach (e.g, Hutchins 1995; Hollan et al 2000), these processes have been *adaptive* in nature, following a non-calculative cognitive logic entrenched into a perceptual change of the relationships among the components of the park occurred through a change of the visual perspective from which these relationships were formerly seen and perceived. Thus, both processes point to a change in the capacity of *seeing* relationships among

pre-existing objects and features, more than a difference in the capacity of *calculating*. Key to this process is the identification of crucial 'lines of tearing' (to use a term Simon (2002) borrowed from the work of the brilliant engineer and eccentric, Gabriel Kron) connecting the areas of the park envisioned as separated by the architect. Indeed, every system could conceivably have multiple lines of tearing, that is, it can be decomposed in multiple ways into different pieces by the designer (Augier and Sarasvathy 2004). In both exaptation cases, the identification of these lines of tearing occurred through the visual manipulation of the interfaces separating the components of the park. Identifying these 'lines of tearing' has been a fundamental step to envision the new use or function for the feature to be exapted.

Conclusion

Starting from Schumpeter (1934), a long tradition in the innovation literature has viewed innovation as the combination of parts that did not previously go together. Consistently with this research stream, the case study illustrates how recombination and brokerage are important notions to explain how exaptation events –as instances of innovations- occur. Indeed, this process of cross-connecting different domains generates the raw material from which the core exaptation events originated.

However, the case study illustrates how processes of re-combination needs to be substantially expanded and further elaborated to include more detailed micro-processes for exaptation events to be explained. Innovation-by-exaptation can not be explained only drawing on the mechanisms of pure recombination and network brokerage. There is something more to those mechanisms in the exaptation phenomenon. Key to the exaptation events detected there is also a process of re-interpretation of the parts that are re-combined together. In the case study, this process of re-interpretation is described as an adaptive response to the emergence of the new interdependencies created by the combination of elements of different type. Specifically, in the case study, re-combination changes the context for evaluating alternatives, prompting to re-think the use for which the feature was originally selected.

From a substantive standpoint, this re-interpretation process is described as changing the perspective from which the interactions among design elements are evaluated. The new use/function (e.g. the new location for the bean, the new envisioned design scope for the aesthetic style of Gehry) emerges as a process of evaluating the interactions among elements based on a perspective (e.g. what interactions are relevant)

different than that considered before. This process is substantially different than pure integration or re-combination because involves the consideration of *new relationships* (new operators) between pre-existing elements.

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Second Paper

Knowledge Governance in Cultural Production:

Combinative Organization and Dynamics of Visual Knowledge

in the Design of a Public Park

Knowledge Governance in Cultural Production: Combinative Organization and Dynamics of Visual Knowledge in the Design of a Public Park

Abstract

The creation of visual symbols –such as icons, images and artefacts- is central to value creation in cultural production industries. However, research mainly focus on institutional- and industry-level influences on symbolic production, leaving under-investigated the micro-organizational mechanisms through which new visual knowledge is created. This paper builds on the classic variation-selection-retention evolutionary model and on knowledge-based theories of organization to develop an analytical framework linking mechanisms of knowledge governance to knowledge evolution. The workings of the framework in cultural production settings are explored through a longitudinal case study of the evolution of the visual knowledge –e.g. visual models, design maps, icons- produced by a project organization developing the design of a public park. Findings show that knowledge dynamics have been influenced by different combinations of differentiated and integrative organizational mechanisms in the various stages of knowledge evolution.

Knowledge Governance in Cultural Production: Combinative Organization and Dynamics of Visual Knowledge in the Design of a Public Park

Introduction

The creation of visual symbols –such as icons, images, and artefacts- able to evoke social and cultural meanings is a core process in cultural production industries. As competition in these industries shifts from the functional value of artefacts to the 'sign-value' embodied in their design and aesthetic forms, understanding how players can manipulate visual and material signs becomes crucial to cultural innovation.

This paper examines one factor affecting the ability of an organization to create symbolic value in cultural production: the organizational mechanisms used to produce visual knowledge, intended as non-verbal systems of symbolization and aesthetic communication through visual languages (Barthes 1977; Gagliardi 1996; Ewenstein and Whyte 2007). Despite research on cultural industries is considerably increasing in recent times (Lampel et al. 2000; De Filippi et al. 2007), the micro-organizational mechanisms of visual symbolic production have remained rather under-specified in these studies, more concerned with industry- and institutional-level influences on cultural production (Peterson and Berger 1975; Jones and Thorton 2005; Thorton et al. 2005). As a result, a central question has remained under-investigated in current organizational research on cultural production: *what organizational mechanisms underlie the evolution of visual knowledge in cultural production projects?*

Given the relatively unexplored nature of the question in studies of cultural production, this paper elaborates on a different stream of organization literature as theoretical foundation to explore the organizational dynamics of visual knowledge. Specifically, I build on an adapted version of the classic evolutionary model of variation-selection-retention (Campbell 1960) and on current debates on forms of knowledge governance (Grandori 2001; 2008; Pedersen and Foss 2002; Zenger and Hesterly 2004; Foss 2007) to develop an analytical framework through which the dynamics of knowledge and organization can be examined.

The workings of this analytical framework are then illustrated through a longitudinal case study of the visual knowledge produced by a project organization and the organizational mechanisms used to produce that knowledge. Specifically, I

investigated the evolutionary dynamics of a project organization operating in a cultural production setting (e.g. the production of architectural design) and involving the design of a public park serving multiple functions (e.g. music and performing arts venue, recreation, outdoor museum). In the context of this setting, I operationalized 'visual knowledge' as the design ideas (such as the design plans, drawings, maps and names of artists) proposed by the members of the organization. I illustrate how the design knowledge evolved during the development of the project and what the specific micro-organizational mechanisms underlie the trajectory of knowledge evolution detected, distinguishing -on the basis of the framework developed- the mechanisms used to generate new design ideas *(mechanisms for knowledge variation)* from those used for the integration (*mechanisms for knowledge integration)* and implementation of the new knowledge produced.

Findings show that the visual knowledge of the project evolved through three distinct phases starting from an original visual prototype of the park, converging towards a radically different visual model. In a first phase, the formation of differentiated committees -integrating the diverse set of competences of architects, engineers, public officials and art patrons- coupled with the intervention of third-party authorities (solving disputes and disagreements among committee members) were the primary organizational mechanisms leading to the generation of novel visual ideas (e.g. models of sculptures, sketches of garden designs, etc.). This process of knowledge variation produced the overlay of contrasting 'adds-on' visual elements on the initial visual prototype, thereby complexifying the knowledge structure underlying that original model of the park.

These tensions have been resolved in the second and third phase, in which several organizational mechanisms led to the selection, integration and retention of some of the design ideas introduced in the first phase. Specifically, the project manager and a specialized architectural committee served the role of *knowledge system integrators* (Prencipe 1997; Brusoni 2005), using their higher-level understanding of the design of the entire park (e.g. architectural knowledge) to re-frame and incorporate the 'adds-on' design ideas into a new visual model of park. In addition, the liaison role of the chief fund-raisers has been fundamental for the retention of the new visual knowledge introduced, providing the legitimation, support and resources necessary for the approval and implementation of the new model of the park. These actors mobilized resources and endorsements from important constituencies external to the project (e.g.

notably, philanthropic donors) on the new design ideas generated and integrated in the park model. Inside the project organization, these actors served also the role of *preference system integrators* mediating among the different interests of the actors in the project and facilitating the approval of design changes by the owner of the project via the endorsements of important constituencies both external (e.g. donors, art experts, etc) and internal (e.g. committees) to the project.

The findings confirm and extend the design methodology underlying the knowledge governance (e.g. Grandori 2001a; 2008; Foss 2007) and combinative approach (Grandori 1997; 2001b; Grandori and Furnari 2008) to organization. They point at the value of modeling organizational forms as combinations of basic micro-organizational mechanisms of different type instead than conceiving them as 'discrete structural alternatives' embodying only a particular type of coordination mechanism (for example, hierarchical control in transaction cost economics, or automatic coordination, based on common identity, norms and rules, in classic knowledge-based theories of the firm). The case study extends this combinative conception of organization by providing a dynamic analysis of how organizational mechanisms influence the production of knowledge and by detecting the complementarities among organizational mechanisms in project governance. From a substantive standpoint, the case study confirms and further develops the basic finding of classic organization theory that the creation of new knowledge needs both differentiation and integration roles (e.g. Lawrence and Lorsch 1967), linking these mechanisms to specific phases in the cycle of knowledge production and detecting the complementarities among them across these different phases of knowledge evolution.

With respect to available organizational studies of cultural production, the case study illustrates the value of a more theory-based, design-oriented, approach to project organization, in contrast with the currently dominant approach of identifying empirically new organization archetypes or hybrid forms of organization (e.g. typically, network or project-based organization forms) proven to be effective for knowledge management in cultural industries' settings. By specifying ex-ante the types of organizational mechanisms -on the basis of available theories of organization, such as the knowledge governance approach- and by focusing empirical inquiry on the different combinations of these basic mechanisms detected in practice, this paper contributes a methodology useful to discover new organizational configurations valuable for the organization of knowledge in cultural settings.

Visual Knowledge and Organization in Cultural Production

Cultural production comprises those economic activities in which symbolic and aesthetic attributes are at the very core of value creation. Competition in these activities, broadly speaking, shifts from the 'use-value' of products to the 'sign-value' embodied in design and branding (du Gay 1997; Lash and Urry 1994: 122). Despite many industries are involved in the production of goods and services with considerable symbolic dimensions, there is still widespread consensus that for a subset of sectors in the economy, the symbolic dimension clearly outweighs other dimensions. This cultural economy involves artistic core sectors such as art, theatre, publishing, music, photography, film, video-games, but also craft and design industries such as clothing, fine furniture or jewelry and services like architecture, advertising, software and new media (Hirsch 2000; Scott and Power 2004). Thus, the cultural industries may be defined as consisting of those organizations that design, produce, and distribute products that appeal to aesthetic or expressive tastes more than to the utilitarian aspects of customer needs (Peterson and Berger 1975; Hirsch 1972; Lampel et al. 2000).

These industries are typically driven by creative workers and professionals and governed by organizing principles generally rooted in knowledge and aesthetics. The natures of the symbolic, creative, and knowledge-based assets of cultural industries posit at center-stage the processes through which organizations create symbolic value in cultural industries (Ravasi and Rindova 2004). Indeed, as competition move from price and functionality towards the creation of effective designs, aesthetic styles and visual properties of artefacts, organizations focus on activities of symbolic value creation, imbuing artefacts with social and cultural meanings through the manipulation of material and visual signs. These activities, in turn, are likely to require organizations to develop special processes to manage new types of resources (Olins, 2000).

A central component of these processes is constituted by the creation of visual knowledge, intended as non-verbal systems of symbolization and aesthetic communication through visual languages (Barthes 1977; Gagliardi 1996; Ewenstein and Whyte 2007). Scholars of cultural production have emphasized how this type of knowledge is fundamental to imbue products with symbolic meanings able to evoke positive cultural and social meanings. For example, duGay et al (1997) stressed product design and advertising as primary means through which meanings are attached to products by representing a set of meanings through the use of language and form. Similarly, Hargadon and Douglas (2001) introduce the notion of 'robust design' to

explain how product form mediates between a firm's technology and the cultural milieu of its market, combining functional and symbolic concerns. In this perspective, design embodies meanings into products by creating a form, which communicates the underlying technological functionality of the product in a way that fits with existing frameworks for interpretation. Similarly, visual communications about the product – such as advertising- are aimed at associating a set of meanings with a product and evoking certain cultural categories. Likewise, consumer behaviorists use the concept of brand to describe the set of signs (name, logo, color, etc.) that carries meaningful associations for subgroups of consumers, and acts as a symbolic medium through which constituents identify with a company (Keller, 1998). This research suggests that at the root of symbolic value creation activities there is the production of symbols (e.g. words, images, artefacts) and that symbolic production is likely to require the creation of new design, visual and aesthetic knowledge.

However, little research has been done in the organization and management literature to explore the exact organizational mechanisms through which visual knowledge is produced in cultural production enterprises. As a result, there is a lack of empirical evidence on the organizational processes and dynamics through which organizations generate, transmit and manipulate symbolic value through means of visual communication, designs and aesthetic styles.

Indeed, a review of the studies in the cultural industries suggests that research on the organizational creation of symbolic value has predominantly focused on the industry- and institutional-level antecedents of symbolic value creation. For example, the now classic production of culture framework (Peterson and Berger 1975) investigates how the symbolic elements of culture are shaped by the systems within which they are created, distributed, evaluated, taught, and preserved. In doing so, however, this approach focused mostly on macro-level facets of production, such as law and regulation, industry and structure, occupational careers, and technology, devoting only residual attention to the micro-dynamics of symbolic creation in single organizations (see also Ryan 2000 and special issue on the production of culture in *Poetics*). Similarly, research in the sociology of organizations focused mostly on the ways in which market and industry changes influence institutional and organizational change in cultural production (Jones and Thorton 2005; Thorton et al. 2005).

The few studies of cultural production focusing on the organization level typically are descriptive and conceptual pieces illustrating a particular organizational form well-suited to the organization of activities in a specific cultural industry and examining the impact of the detected organizational form on outputs at the micro-level, such as careers in the movie industry (e.g. Jones 1996; Zuckerman 2005) or at the macro-level, such as product differentiation in the music industry (Mezias and Mezias 2000). Powell's (1990) discussion of the convergence of biotech, high tech, film, music, and book publishing as network organizations, and Jones et al.'s (1997) examination of similarities among semiconductors, auto manufacturing, airplane outsourcing, and film for the application of network governance are early examples of this research on network forms in cultural settings. More recently, organizational studies of cultural production focused on the quintessential project-based nature of organization in industries such as movies (DeFilippi and Arthur 1998; Jones 1996), advertising campaigns or software (Grabher 2004) and music (Lorenzen and Frederiksen 2005). Finally, the cultural economy has been also a privileged setting to investigate the interaction between forms of project-based organization and the broader social infrastructure surrounding projects constituted by communities and networks of creative professionals (e.g. Cohendet and Simon 2007).

This research has contributed fresh and insightful perspectives enhancing our understanding of the organizational aspects of cultural creativity. However, as this brief review shows, the micro-organizational dynamics leading to the creation of the raw material produced by cultural organizations in their everyday practice –e.g. texts, images, icons, artefacts, genres of music- are remained considerably less investigated. For this reason, to shed light on this topic, I will now turn to a different organization literature, which can provide a solid theoretical framework for examining the dynamics of organizational and symbolic production in cultural settings.

Knowledge Governance and Knowledge Evolution: An Analytical Framework

In this section, I examine the extensive debates in organization theory concerning the organizational mechanisms for knowledge production. My purpose is to build on these debates in order to develop an analytical framework, which can provide a solid theoretical basis to explore knowledge and organization dynamics in cultural settings. I will distinguish between two different methodological approaches available in the literature in order to identify specific organizational mechanisms for producing and exchanging knowledge. I will argue for the advantages of one of these two approaches in order to examine knowledge dynamics in cultural settings. Finally, I will adapt the classic evolutionary model of variation-selection-retention to incorporate into the framework some consideration of the dynamics of knowledge processes, an aspect relatively under-investigated in both the methodological approaches reviewed below.

In the last two decades, a substantial body of research has been devoted to discover organizational forms suited to facilitate processes of knowledge exchange and transfer (Kogut and Zander 1992, 1996; Grant 1996; Nahapiet and Ghoshal 1998). This work has cut across a number of traditionally separated fields in business administration such as strategic management, international business and network research so that research on knowledge management has been recently characterized as a 'knowledge movement' (Foss 2007). To our purpose, however, within this movement we may distinguish at least three rather different methodological approaches to the identification of the organizational forms generating knowledge-based benefits.

A first approach typically identifies a specific organizational form or type of coordination mechanism –e.g. a 'discrete structural alternative'- better suited to effectively carry out knowledge transactions, typically contrasting these forms with other standard alternative organizational forms (e.g. firms, markets, etc.). For example, in the classic formulation of the knowledge-based theory of the firm (Kogut and Zander 1996; Grant 1996), a specific set of coordination mechanisms –variously labeled as "knowledge-based', identity-based or communitarian mechanisms- has been identified as a distinctive characteristic of firms in contrast to markets. In this perspective, firms are understood as knowledge repositories and identity-building mechanisms, enjoying special advantages (such as providing employees with more possibilities to access each other's knowledge) in organizing knowledge-based activities that can be effectively performed on the basis of shared knowledge and common identity. The same argument

underlies the identification of other discrete structural alternatives defined as 'communities of practice' and characterized by deep relations of experiential and vicarious learning (Brown and Duguid 1991), which facilitate effective knowledge transfer and exchange. Network forms of organization characterized by reciprocal patterns of lateral communication and exchange (Powell 1990) have been also highlighted as another effective organizational form for innovation in knowledge-intensive sectors like biotechnologies (Powell 1996), semiconductors (Saxenian 1990) and telecommunications (Schrader 1991).

Despite these studies contributed important insights into the discovery of new organizational forms for the production of knowledge, the methodological approach underlying these studies has also some drawbacks. Indeed, as it has been observed by Grandori (1997; 2004), this methodological approach is especially limited in terms of variety of the organizational mechanisms considered. The discrete structural alternative view leads to observing mostly the historically frequent combinations of coordination mechanisms rather than the rare, and perhaps not even yet realized, forms of organization. In doing that, the approach is rather conservative –being able to formalize only what has been discovered in the past- limiting the possibilities to discover new combinations of resources and activities that can be more unique and valuable in terms of value creation. This observation is all the more true in cultural production industries typically characterized by knowledge and creative assets that are distributed among a number of specialized actors (e.g. creative professionals, producers, distributors, etc.). In these conditions of high organizational complexity and highly distributed knowledge, it is more difficult to organize creative activities by choosing among a short list of pre-packaged organization forms. It seems that a more fine-grained repertory of organizational mechanisms is needed. For this reason, I will turn now to illustrate another approach to the identification of organizational forms for knowledge production, which can be more suitable to analyze knowledge and organization dynamics in cultural industries.

On the basis of the above observations, a more fine-grained view of organizational forms for the production of knowledge has been developing in recent years (Grandori 2001a; 2008; Pedersen and Foss 2002; Zenger and Hesterly 2004; Foss 2007). In the general domain of organization design, this approach has been labeled as 'combinative approach' (Grandori 1997; 2001b; see also Grandori and Furnari 2008 for a recent empirical application), whereas in the specific context of knowledge processes

this approach has been recently addressed to with the label of 'knowledge governance approach' (Foss 2007; Foss and Michailova 2008).

The main differences with the approach illustrated above concern the unit of analysis to be adopted for the identification of organizational mechanisms and the variety of organizational mechanisms considered. Typically, studies in the knowledge governance approach start out examining a unit of analysis more micro than an organizational form, investigating specific combinations of organizational mechanisms *within* each organizational form. Of course, what is the preferred unit of analysis depends on the relevant research problem. Generally, however, the most applicable unit of analysis has been showed to be the 'knowledge transaction', that is, the transfer of an identifiable 'piece' of knowledge from one actor to another one (Foss 2007). Starting from these micro units of analysis, the knowledge governance approach considers various kinds of governance and organizational mechanisms governing the transfer, sharing and integration of knowledge within and between firms. For example, Grandori (2001a) defines a portfolio of coordination mechanisms, such as price-based (market-like) contracts, decentralized decision-making procedures, communities, teams and knowledge integrators. The objective of the analysis is then to match specific knowledge transactions with the various kinds of organizational mechanisms identified on the basis of theory (Foss 2007), as showed by recent empirical applications of this approach (Heimann and Nickerson 2002; Macher 2006; Mayer and Argyres 2004).

From a substantive standpoint, studies in this research stream have detected a variety of knowledge governance mechanisms cutting across the discrete structural alternatives identified in the other approach. Typically, the bulk of these mechanisms are identified on the basis of the vast research on information-processing between and within firms building on the classic Carnegie school tradition (March and Simon 1958) and on the information-processing view of organizations following from that school (Lawrence and Lorsch 1967; Thompson 1967; Burns and Stalker 1961). One basic finding in that tradition -further developed in the knowledge governance approach- is that differentiated and integrated organizational forms are more effective in carrying out knowledge-intense activities (Burns and Stalker 1961; Lawrence and Lorsch 1967; Mintzberg 1979) and that bureaucratic organization -intended as the formal structuring of activities- is ineffective in the governance of knowledge activities characterized by high uncertainty. In these conditions, coordination by a central authority has been

showed to leave the way to decentralized allocations of decision rights, where coordination is achieved in a 'team-like' way (Burns and Stalker 1961). This finding has been confirmed in more recent studies on the internal organization of knowledge-intensive firms (Laursen and Mankhe 2001; Ichniowski et. al. 1997), in which teamwork and decentralized mechanisms have been showed to be complementary with another type of organizational mechanisms typically considered 'market-like', such as prices, economic incentives and pay for performance practices (see also Zenger and Hesterly 1997).

Such decentralized multi-party decision-making structures –such as teams, committees, communities, etc.- are certainly included in the category of community- and identity-building organizational mechanisms defined in the classic knowledge-based theory of the firm mentioned above (Kogut and Zander 1996; Brown and Duguid 1991). However, it has been noticed (Grandori 2008) that this category of mechanisms has been defined in a rather coarse-grained fashion, encompassing *"at least two governance mechanisms that differ in kind and governance properties: rule-like and team-like mechanisms"*. Thus, in line with its micro unit of analysis, the knowledge governance approach aims to further refine this broad category, by distinguishing between these two classes of knowledge-based organizational mechanisms and by providing an assessment of what rule-like mechanisms are more conducive to the production of knowledge. Indeed, rules can be distinguished depending on the level of generality versus specificity in terms of prescriptions of actions contained in rules (Grandori 2001b). For example, substantive and detailed rules can be contrasted with procedural and more general rules (Simon 1976), allowing more flexibility of action and decision that is needed in activities characterized by high uncertainty, as confirmed by studies of knowledge governance in innovative alliances (Grandori and Furlotti 2006a; 2006b).

The organization design methodology underlying the knowledge governance approach overcomes the deficit of variety (e.g. identifying only frequent combinations of coordination mechanisms) addressed above. Indeed, the approach emphasizes a conception of organizational forms as combinations of the same basic elements, which, as in chemistry, give rise to different forms mainly thanks to different combinative possibilities (Grandori 1997; 2004; Grandori and Furnari 2008). For these reasons, this

approach is suited for the more fine-grained exploration of organizational mechanisms needed for an analysis of the knowledge dynamics in cultural production settings.

However, the knowledge governance approach is rather static and to date empirical applications of this approach in a dynamic perspective have remained relatively unexplored[1]. To overcome this limitation, I rely here on an adapted version of the classic evolutionary model of variation-selection-retention (Campbell 1960) in order to connect the organizational mechanisms identified for the governance of knowledge transactions with the cycles of knowledge evolution (see also Zollo and Winter (2002) for a use of the variation-selection-retention to explain the origins of dynamic capabilities). Knowledge is here described as evolving through a series of stages chained in nested, recursive, cycles. The starting point for each cycle lies in the variation stage, where individuals or groups generate a set of ideas on how to approach problems in novel ways. These sets of ideas are then subject to selection pressures aimed at the evaluation of their potential and at the integration of the ideas in the existing knowledge base of the organization and in the context of established power structures and existing legitimization processes. Finally, some of the initially ideas will be retained and implemented enriching the existing knowledge assets of the organization. A schematic diagram of this framework is illustrated in Figure 2.1 below.

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[1] An example of analysis of knowledge dynamics is the analysis of the evolutionary trajectories of technological knowledge provided by Carnabuci (2005). However, this research is at the industry-level rather than at the meso- organizational level, which is the focus of my analysis here.

A Dynamic Knowledge Governance Framework:
Knowledge Governance and Knowledge Evolution

What Knowledge Governance Mechanisms for Knowledge Variation?

Knowledge Variation/Generation

Scanning
Re-combination
Hypothesis-generation

What Knowledge Governance Mechanisms for Knowledge Selection?

Knowledge Selection/Integration

Evaluation
Hypothesis-testing
Legitimization

Knowledge Retention

Routinization
Implementation

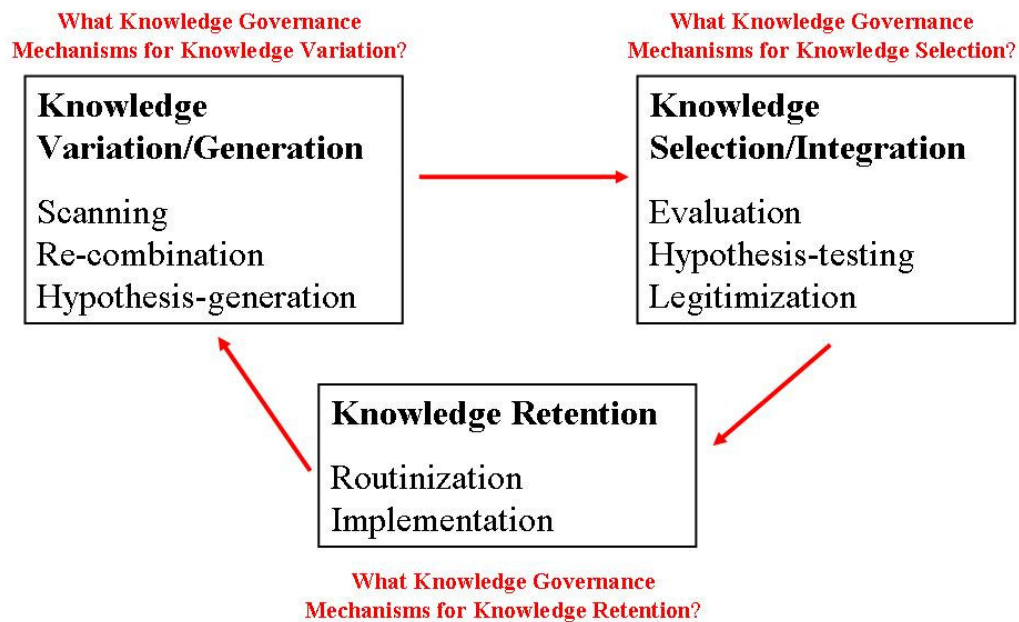**What Knowledge Governance Mechanisms for Knowledge Retention?**

Figure 2.1 – A Dynamic Knowledge Governance Framework

Research Setting, Case Study and Data

As a research setting, I chose to study the production of architecture as one proto-typical example of cultural production. The functions of the symbolic, creative, and knowledge-based assets of cultural industries are particularly prominent in design services, where designers manipulate the visual properties and aesthetic styles of artefacts in order to create desirable outputs for single clients or the community.

In order to investigate the organizational mechanisms behind the evolution of visual knowledge in architecture, I conducted a longitudinal case study of a project organization developing the design of a public park recently built in Chicago through a $475 million private-public partnership. In this setting, I operationalized 'visual knowledge' as the design ideas (such as visual models, sketches, pictures, etc.) proposed and discussed by the members of the project organization. On the basis of the framework developed in the theory section, I illustrate how visual knowledge evolved

during the project and what the specific micro-organizational mechanisms underlie the evolutionary trajectory detected, distinguishing the mechanisms used to generate new design ideas from those used for the integration and retention of the new knowledge produced.

This case has been selected primarily because of the particular evolutionary trajectory of the park design. Indeed, the history of this complex architectural artefact has been punctuated by major design changes, providing an exceptionally well-suited case to analyze the dynamics of visual knowledge over the seven years (1997-2004) that span the development and completion of this project. Additionally, the history of the park is well documented by a book (Gilfoyle 2006) and rich archival and historical material on the development of the project.

Data for the case study are constituted by a rich archival dataset built from primary (e.g. two complete archives of the project files provided by the project manager and by a key project broker) and secondary (books, newspapers and archival material on the park) sources. This archival dataset is longitudinally extensive, covering the entire lifespan of the project (from early 1997 to 2004) and containing the thousands of meeting notes, communications, design maps/plans and construction documents used by the members of the project during its development. Archival sources have been integrated with extensive interviews with all the key players involved in the project.

Methods and Data Analysis

In the analysis, I used a longitudinal case study design (Eisenhardt, 1989; Pettigrew, 1990) to analyze the co-evolution of the park design and the project organization developing the design. Specifically, I first investigated the dynamics of visual knowledge in the project by mapping the evolution of the design maps and the visual design ideas (e.g. pictures, working models, sketches) proposed and discussed during the development of the project. Next, I linked the introduction of new design ideas to the evolution of the project organization structure and processes.

The overall object of my analysis was to illustrate whether and how the analytical framework defined above would fit the evolution of knowledge and organization detected in the case study. Framing the study as an empirical inquiry into the micro-organizational processes of knowledge governance influenced the selection of the unit of analysis and the collection and interpretation of data. Following the framework defined above, I focus on the 'knowledge transaction' as my elementary unit

of analysis. In the specific context, I operationalized 'knowledge transaction' as the design ideas and visual images discussed and shared by the members of the project organization. For each of these design ideas, I first identified empirically the specific organizational processes leading to the generation of the idea (*knowledge variation phase*), the integration/selection of the design idea into the overall design of the park (*integration/selection phase*) and the retention of the idea into the final implemented design *(retention phase)*. Finally, I map the organizational processes detected in the data on the types of organizational mechanisms suggested on the basis of knowledge-based theories of organization reviewed above.

Despite the overall research process was focused on the empirical exploration of the workings of a theory-based framework, data interpretation was not purely influenced by the organizational mechanisms defined in the literature reviewed above. In the process of interpreting the data and studying the micro-processes underlying knowledge dynamics, not only did I wrestle with the challenge of establishing a clearer link between organizational processes and the cycle of knowledge evolution at its various stages, but during that process I also defined more precisely the theoretical constructs underlying my account of how organizational mechanisms influenced knowledge production in the specific case analyzed.

Case History

Mirroring the procedures adopted in data analysis, I divided the following exposition of the case history into three meaningful temporal windows, in order to present the empirical evidence coherently while keeping its underlying historical continuity in mind. The first temporal window –exposed in the next paragraph- introduces the key players of the project, illustrating the formal organizational and knowledge structure at the beginning of the project. This phase constitutes the starting point of my historical account of knowledge and organization co-evolution, providing a context to understand the dynamics described in the following phases. The next two paragraphs of the case history describe in detail the dynamics of the organizational structures of the project and the consequences of these dynamics on the visual model of the park. Finally, the case history will be followed by a detailed analysis and discussion of the specific organizational mechanisms of knowledge evolution detected in the case.

Phase 0: the Initial Organizational Structure and the First Visual Prototype

The Millennium Park project was initiated in the fall 1997 with the idea of the Mayor of Chicago of celebrating the new millennium by extending new park land to a 24.3 acre vacant site. Initially, the formal organizational structure of the Millennium Park (MP) project was the typical one of many public construction projects: several specialized sub-contractors (such as, architectural, landscape, engineering and construction firms) reporting to an engineering consultancy firm serving as project manager/general contractor firm, which, in turn, reported to a specialized government agency as the client -in this case, the Department of Transportation within the City of Chicago, the owner of the land and client of the overall project. Specifically, a single, no-bid, construction contract for the overall project was awarded to the engineering consultancy firm, which hired a team of local Chicago firms constituted by 12 subcontractors (architect, landscape designers, and construction contractors). Thus, the engineering consultancy firm was responsible for the overall project management of the project, while being also in charge of several functional areas, such as the engineering of the park infrastructure. A schematic graphic representation of this organizational structure is provided in the Figure 2.2 below. As it is clear from the figures, the organizational structure was a classic functional structure, where each firm in the project was modularly specialized by technical activity (design, construction, structural engineering, etc.).
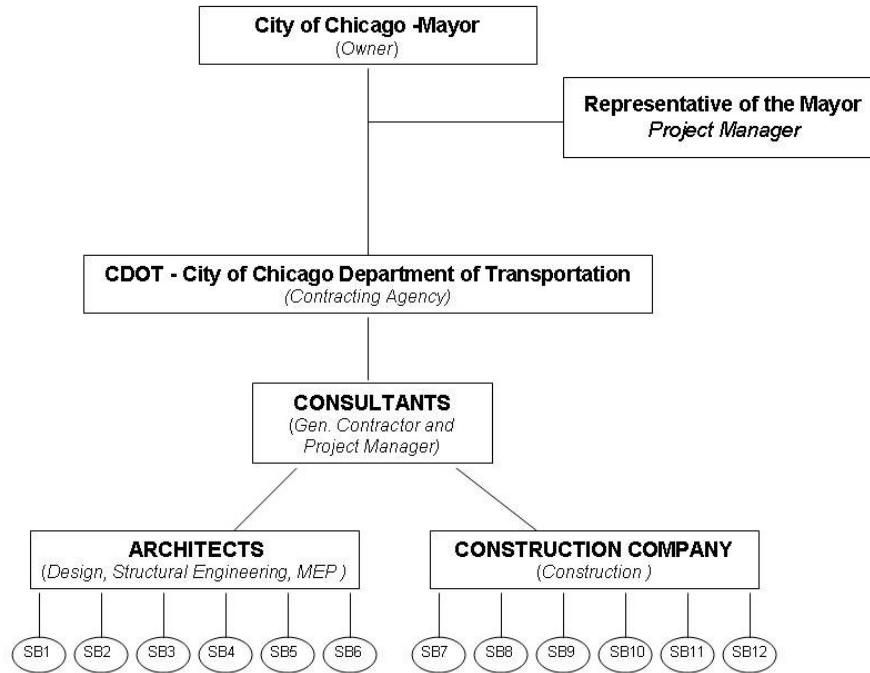
Formal Organizational Structure of The Project

Figure 2.2 – Formal Organizational Structure of the Project

In these early stages of the project, the architect of the project devised a visual prototype depicting the master plan of the park, which serves the role of the initial 'stock' of visual knowledge in my account of knowledge and organization co-evolution in the project. The master plan envisioned the design of the park as composed of separated "rooms" (e.g. geographically-bounded areas), each characterized by particular technical, design and aesthetic features and each serving specific functions or uses.

Phase 1: The Formation of Committees

In a second phase, the Mayor appointed two corporate CEOs to form a private citizens' committee in order to select a few artistic enhancements (e.g. sculptures, landscape designs) to be put on the top of the devised master plan of the park. In addition, the two CEOs were requested to raise $30 million dollars for funding the selected enhancements.

The two CEOs[2] were directly appointed by the Mayor with an informal call. Their task was not operationalized in terms of fund-raising procedures and targets (e.g. how, and from whom, to raise the money); specific areas or functions of the existing design to be enhanced; nor was it prescribed what the exact relationship between fund-raising and design was supposed to be. As the chief fund-raiser recalled: *"the Mayor never said anything about how we had to raise the money and what we should do, I mean, that wasn't prescribed…the general idea though was that in addition to seek corporate donations we may want to raise funds in small increments by "selling" bricks of the park, and that we may want to add to the existing design some sculpture, landscape ornaments and this kind of stuff"*. No formal reporting line to the existing organizational structure of the project was defined for the fund-raising group. It was maintained he was directly responsible to the Mayor. There were, however, some 'general ideas' clearly circumscribing upper and lower boundaries for the organizational role of the fund-raiser both in terms of fund-raising and design. In terms of fund-raising, the target amount of money to be raised was set to $30 Million. In terms of design, the impact of privately-selected enhancements on the existing design was intended to be narrow (enhancements were intended to be 'adds-on' elements of the existing design, such as sculptures or design ornaments).

The brokers decided to form two specialized committees for the selection of two types of adds-on enhancements (sculptures and landscape ornaments) to be constructed in planned areas of the park:

1. *Art Committee,* charged with the responsibility of providing guidance and direction for the selection of sculptures in the park (Art committee);
2. *Garden Committee,* charged with the responsibility of providing guidance and direction for the selection of landscape designs in the park

In addition, the brokers formed a private non-profit organization for the purpose of receiving the philanthropic donations and coordinating the fund-raising activities and a specific fund-raising committee to devise a fund-raising strategy (e.g. identifying major

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[2] Given their expected role as intermediaries between private donors and the public organization of the project, I label the two CEOs appointed by the Mayor as 'fund-raisers' or 'fund-raising brokers'.

naming opportunities on areas of the master plan of the park and 'sell' to private donors naming rights on these areas in exchange of donations).

In terms of formal membership, the two types of committees were specialized, featuring only two members connecting the fund-raising and design domains. The two members sharing memberships in both types of committees were the fund-raisers themselves acting as brokers between the two domains. In terms of composition, however, the two types of committees differ markedly. The internal composition of the design committees was non-modular in terms of competences, integrating the competences of a diverse set of actors in the project (such as, architects, engineers, and city officials but also philanthropists, art experts and members of notable art and cultural institutions in Chicago). Some of these people were already in the project since the beginning (e.g. architect, engineer, city officials), while others were involved for the first time in the project. In contrast, the internal structure of the fund-raising committee was strictly modular in terms of composition and competences, including only business people previously not involved in the project. Figure 2.3 below illustrates the structure and the difference in composition of the two committees. The colors of the nodes connected to each type of committee reflect the differences in composition: while members of the design committee are marked with different colors (different competences of the members), nodes connected to the fund-raising committee are marked with the same color (same competences).

Structure and Composition of Design and Fund-raising Committees
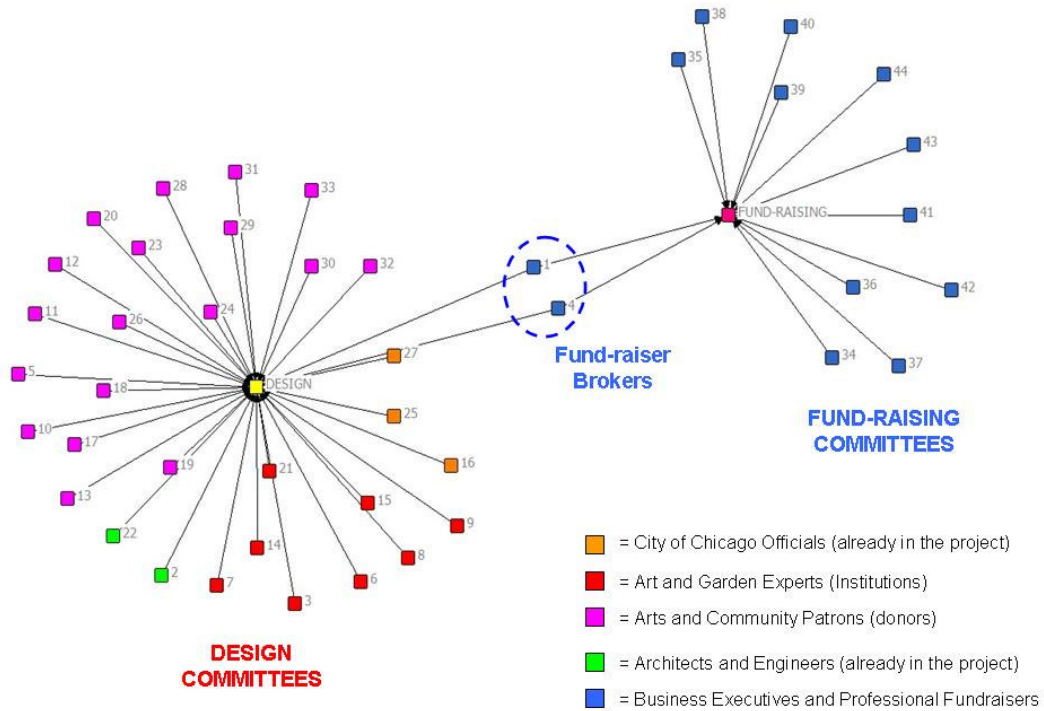
Figure 2.3 – Structure and Composition of Design and Fund-raising Committees

Phase 2: The Workings of the Committees and the Generation of New Design Ideas

Between July and August 1998, the art and garden committee met for the first time in order to identify initial lists of artists and garden designers to be contacted for the submission of artistic proposals to the project. The mission statement of the committees was to provide guidance and direction for the selection of art and sculpture (and garden landscapes/designs) to be located in the master plan of the park designed by the architect of the project. More informally, in its opening remarks at the first meeting, the chair described the committees as *"a bunch of people getting together to talk about contemporary artists and making lists"*.

Indeed, the first problem faced by art and garden committee members was to identify a list of artists to be contacted in order to review their works for commissioning sculptural pieces to be located on the park. In their first meeting on July 10, 1998, art committee members discussed three issues on how to bound this initial list: 1) whether or not the proposed artists should have significant *international reputation and should*

be contemporary or not; 2) the *number of art pieces* to be included in the park; 3) the *selection process of the art pieces* (open competition vs commission). On the first issue, the members of the art committee gradually converged on the idea that some form of worldwide distinction was a requirement for inclusion in the lists and that *"given the place of the project as the premier Millennium undertaking in America, this is an unprecedented opportunity to commission works by the outstanding artists and sculptors of our time"*.

On the second and third issues, the members of the committee were not able to find agreement due to different and sometimes conflicting aesthetic interests. Thus, since the list of the artists grew up to 81 artists, committee members empowered the president of the Art Museum of Chicago (probably the more respected art cultural institution in the city of Chicago) to make recommendations to the committee for the next meeting. The president of the Art Museum drafted a pre-selected list of 10 artists (out of the original 81 ones) that art committee members had to review in the subsequent meetings. Similarly, the focus of garden committee members in their first meeting was on drafting a list of landscape architects with an international reputation that can be contacted to enhance the ornamental garden of the main garden.

In a series of meetings between October and December 1998, art and garden committee members reviewed slides and working models of the sculptors and the garden designers selected out of the original lists identified in the first meetings and respecting the criteria defined in those meetings (internationally-known and contemporary artists). In this temporal window, art and garden committee members identified four major sculptural and design additions to the existing master plan of the park out of the defined lists[3]:

1. A New Sculpture in the Central Plaza (area 5 in figure 1)

    The work of a contemporary sculptor was proposed and recommended by one of the sculpture experts in the art committee and by the president of the Art Museum –who drafted the pre-selected list of artists- especially in light of the recent art works by the sculptor, receiving worldwide attention at the time.

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[3] As said, the list of artists examined by the art committee was pre-selected by a third party (e,g. the president of Art Museum of Chicago).

Pictures of the work of the sculptor were reviewed by art committee members and he was invited to introduce his design ideas to art committee members.

2. A New Sculpture in the Main Garden

Pictures of the work of a sculptor were reviewed and he was later suggested by Art Committee members for a sculptural piece to be located in the main garden. Differently from the artist of the sculpture to be located in the plaza –who was strongly recommended from influential members of the art committee- this sculptor was an almost unknown 'outsider' to most of committee members. His work was selected for the *'visual excitement' created by his gigantic stain-less-steel mirror-like elliptical sculptures. We thought these almost object-less objects could beautifully reflect their surroundings, so they were a perfect fit for the main garden in the park, since they could have reflected the surrounding flowers and landscape, creating a great color-full effect"*, declared an architect member of the art committee.

3. A New Landscape Design for the Main Garden of the Park

Out of the list of candidate garden designers identified in the first meeting of the garden committee, it was selected the name of a landscape designer to be contacted for doing a new landscape design for the main garden of the park. The selection of the name of the landscape architect was facilitated by the fact that the fund-raiser had convinced an art and community patron to endorse and sponsor a new landscape design for the main garden. In return for financially supporting the garden, the donor was given the authority to choose a landscape architect. Next, garden committee members reviewed various schemes developed by this architect and approved a new landscape design in the main garden.

4. A New Sculpture on the Proscenium/Music Band-shell (Area 3 xxx)

Among the artists suggested for doing a sculpture in the pre-selected list prepared by the Art Committee, the name of an architect and sculptor received particularly favorable mention by committee members for the commission of a new sculpture to be located on the band-shell. The idea of a sculpture was then discussed by the fund-raiser brokers with an art and community patron in

Chicago in order to explore her willingness to endorse and sponsor with a donation the commission of the new sculpture on the Bandshell.

In sum, by December 1998 –in less than 3 months of intense debate and activity- committee members had already decided to commission four major additions to the original visual model of the park.

Phase 3: The Integration of New Design Ideas in the Visual Prototype

In a third phase -between February and May 1999- a set of design tensions between the new design ideas introduced and the architectural style of the master plan emerge. Typically, these tensions emerged when committee members started reviewing the working models produced and submitted by the sculptors and artists selected. Indeed, up to this moment, committee members had chosen the artists and designers to be involved in the project by looking at slides of their previous works. Instead, from February 1999 to May 1999, in a series of subsequent committees meetings, they started reviewing concrete working models of the sculptures and designs submitted by the selected artists. The focus shifted from aesthetic style to implementation of a concrete art- or design-work in the context of the existing master plan. Committee members were then called to evaluate the scale, size and concrete details of the artists' submissions. In this phase, a new logic emerged: committee members started talking about the interactions among the works submitted by the artists for the different areas of the park and about regulatory, technical and symbolic constraints on artists' proposals. I will report below the design tensions emerged, illustrating how the members of the project organization resolved these tensions.

1. The Size of the New Sculpture for the Main Garden was "out of scale"

On March 21, 1999, in a meeting including members of both art and garden committees, the working model of the sculpture to be located in the main garden was reviewed together with the schematic design of the new garden design. In looking at visual models of the sculpture in the context of the new garden design, committee members determined that the proposed massive elliptical sculpture was out of scale in the context of the main garden area.

To solve this problem, the fund-raiser broker –in his role of chair of the garden committee- started to consult the sculpture and landscape experts in the

committees, concluding that: "*we felt that putting that gigantic piece of sculpture in that setting does not do justice to the piece, which needs a larger setting. Additionally, it dominated the flower garden. It just didn't work. The question was: can the sculptor design something of dramatically smaller scale? Otherwise, it will have to be located somewhere else*".

Subsequently, a new special committee was formed including these art and garden experts to review the issue. In the committee there was also the city project manager and representative of the Mayor who had followed the design of the park since the early stages. Based on a consideration of various visual options, it was concluded that the proposed sculpture was going to be moved in the main plaza (where the other new sculpture was supposed to be located), whereas the proposed new landscape design was retained for implementation in the final design of the park. This option was brought to the Mayor by the city project manager in order to obtain his final approval.

2. The Aesthetic Style of the New Sculpture on the Band-shell was in Conflict with the Architectural Style of the Master Plan

The artist/architect selected to do a sculpture to be located on the proscenium and band-shell (see design idea no. 3 above) had a particularly signature contemporary architectural style, which was conflicting with the classic beaux-arts style of the overall plan. This problem was addressed by the project manager and the fund-raiser brokers without any involvement of art and garden committee members. In a series of meetings, they start thinking about the possible location of the sculpture, ending up enlarging the area to be commissioned to the artist/architect to the entire music pavilion and great lawn areas (component xx in figure above). "*It was important to ensure the architectural integrity of the Performing Arts Complex, avoiding to give the impression that two conflicting design styles –the classic beaux arts framework of the master plan and the post-modern design of Gehry- had been juxtaposed by mistake*" –states the city project manager- "*For this reason, we thought to enlarge the area to be re-designed by Gehry by including both the music band-shell and the entire oval defined by the great lawn, the sound system and the amphitheatre*".

Analysis: The Organizational Mechanisms of Knowledge Evolution

Findings show that the visual knowledge of the project evolved through four distinct phases, starting from an initial visual model of the park, going through a phase of progressive sophistication via the generation of new design ideas, and converging towards the integration of these new ideas into the initial model of the park. In this process of knowledge integration, the new design ideas initially generated have been modified and changed, giving rise to a new visual model than the one initially designed.

This process can be synthetically described as in Figure 2.4 below:
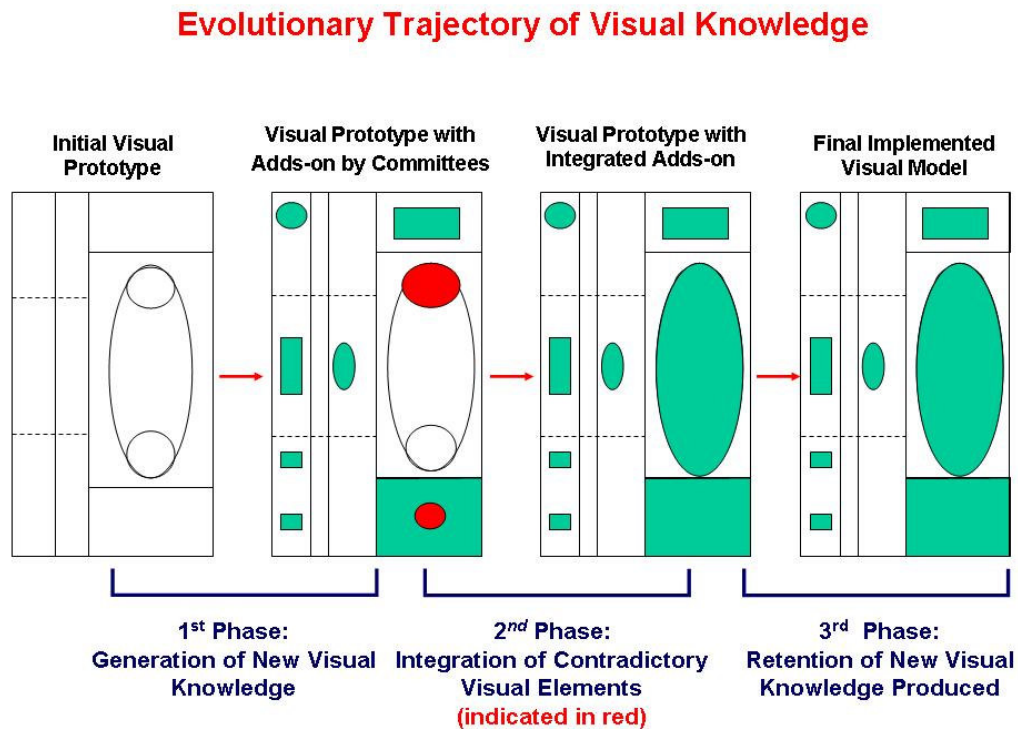

Figure 2.4 – Evolutionary Trajectory of Knowledge Evolution

Drawing on the analysis of the empirical evidence exposed in the case history, we can identify a set of organizational mechanisms for each of these phases, serving the different purposes of generating new knowledge, that is, new design ideas (*organizational mechanisms of knowledge variation*); selecting and integrating the new design ideas into the existing master plan of the park (*organizational mechanisms of knowledge selection and integration*); and implementing the final version of the design (*organizational mechanisms of knowledge retention*). I provide this analysis below.

The primary organizational engine behind the generation of new ideas in the project is the formation of specialized committees in the domain of design. All the four new design ideas developed in the project grew up from discussions occurred in the art and garden committees and were picked up from the lists of artists and architects identified in the early meetings of those committees. Here, it is worth emphasizing the differentiated composition of both the art and garden committees (see above), integrating a diverse set of competences, some of which were already in the project (e.g. engineers, architects, city officials) and some new to the project (e.g. arts and community patrons).

While being an important source of novelty in the project organization, the differentiation of cognitive orientations and expertise of committees' members sometime led to decisional *impasse*s. For example, this is the case when art committee members were not able to find an agreement on the number and location of sculptures to be selected in the park. In these cases, the intervention of third-party authorities was crucial to solve the divergence of opinions and disagreements among committee members. For example, the short list of artists pre-selected by the president of the Art Museum –an important cultural institution- represents such an intervention of a third-party, competence-based, arbiter (in this case, an authority based on aesthetic knowledge and competence in the domain of sculpture). Similarly, the coordination role of the two internal brokers bridging the two disconnected committees was important to facilitate the selection of design ideas among those proposed by committee members. For two out of the four new design ideas selected, these brokers attract the endorsements and financial contributions of donors willing to sponsor and endow the new design ideas generated in the committee discussions while the committee discussions were in place. Here, again, there is a intervention of a third-party into the multi-party decision-making structures in order to facilitate the approval of alternatives and avoid decisional impasses. Differently than the first case of third-party intervention, though, the role of the third-party here was to report the endorsement of an idea from important constituencies and providers of resources (e.g. philanthropic donors committing financial resources to sponsor the new design idea proposed).

Finally, according to the interviews with project participants (see case history above), an additional factor promoting the generation of new knowledge in this stage has been the nature of the 'contract' between the Mayor and the fund-raiser brokers. Indeed, as it is clear from the case history, fund-raisers were given only 'general

principles' to accomplish their task and were left relatively autonomous to define their scope and strategies of action both in terms of design and fund-raising.

Thus, findings show that the first phase of generation of new design ideas in the project has been characterized by three primary organizational mechanisms: 1) procedural control (e.g. the contract between the Mayor and the fund-raisers); 2) multi-party decision-making devices (e.g. committees), integrating an heterogeneous set of preferences; 3) intervention of third-party arbiters in committee discussions (where the third-party authority was based either on competence or on relationships with external providers of resources). Table 2.1 in the appendix reports in detail how these mechanisms were used for each of the four new design ideas generated in this phase (see also case history above).

However, the differentiation of competences of committee members led to generating different design elements visually contrasting with the initial visual prototype. As a consequence, as illustrated in the case history, two tensions emerge in the design of the park due to the introduction of the new design ideas. These tensions and contradictions have been resolved in the second phase, where the new design ideas - generated in the first phase- were incorporated into the visual model of the park.

In this second phase, the role of multi-party committees has been especially important, with specific reference to the design tension emerged around the garden and sculpture issue. However, the composition of the special committee formed to solve that tension was rather specialized, including only art, architecture and landscape experts. Thus, differently from the committees involved in the generation of new knowledge, the committee used to integrate the new ideas was more homogenous in terms of specialized architectural competences.

Moreover, the case history shows that in this phase it has been crucial the role of the city project manager and representative of the Mayor, acting as a broker between the public organization (and the architects, engineers, contractors in the project) and the fund-raiser brokers. For example, in solving the design tension emerged around the sculpture to be located on the band-shell, the role of the city project manager has been instrumental in re-defining the extent to which the new design idea (e.g. the aesthetic style of the selected artist) could be extended to other areas of the park. In sum, the role of the city' project manager is to facilitate this process by providing fund-raisers with

crucial architectural knowledge on the overall design of the park crucial for implementing the design ideas.

In this sense, both the specialized committees and the city project manager served the important role of integrating the higher-level understanding of the different areas of the park with the specific 'adds-on' design ideas introduced by the committees in the first phase. In this perspective, the role of these actors can be described as that of 'knowledge system integrators', that are, actors coordinating specialized and distributed bodies of knowledge. The notion of knowledge system integrator has been advanced in the technology and innovation management literature, in which all-round knowledgeable firms have been showed to play a crucial role in coordinating the specialized bodies of knowledge in networks of technology suppliers (Prencipe 1997; Brusoni 2005). For example, Brusoni (2005) addressed the cognitive advantages of inter-organizational projects characterized by the presence of knowledge-integrating firms (e.g. 'modular networks') in a case study of engineering design activities in the chemical industry.

The fund-raising brokers played a fundamental role in the phase of legitimation of ideas, acting as liaisons with the outer social environment surrounding the project organization. As we illustrate above, these external liaisons negotiate with philanthropic donors the endorsement and commitment of donations on the new design ideas proposed by the committees, coordinating the distribution of 'naming property rights' across the different areas of the park to attract donors' financial resources[4]. As the case history well illustrates, once the liaisons obtained the endorsement of the new design ideas by donors, they negotiate the design changes –often with the help of the city project manager- with the Mayor, relying on their high level understanding of the demands and requests expressed by the different actors in the project, such as the committees, the donors, and the creative designers. For example, once the city project manager and the fund-raiser brokers solve the design tensions surrounding the scope for the sculpture to be located on the music band-shell, they obtained the endorsement by

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[4] Specifically, in the context of the fund-raising domain (see case history above), these brokers developed a series of 'major naming opportunities' on the visual prototype of the park (e.g. circling on the visual prototype of the park separated areas to be 'sold' to donors in exchange of a naming right on the area). In addition, fund-raising brokers segment the philanthropic market, targeting only the high-elite, first-tier, donors. Thus, fund-raising brokers typically did an operation of 'matching' coupling names of prominent Chicago philanthropists (to be invited for a donation) and an area of the park to be proposed as 'naming opportunity'.

the donor to the extended scope and subsequently negotiate with the Mayor the design change on the basis of the endorsement of the donor. In this sense, these external liaisons in the project served the role of '*preference system integrators*', mediating between the different interests of the actors in the project. The role of these actors was crucial to obtain the final approval and legitimation of the new design ideas via the endorsements of important constituencies, both external (e.g. donors, third-party authority) and internal (e.g. committees) to the project organization.

Figure 2.5 below summarizes the specific organizational mechanisms detected for each of the phases of the knowledge evolution cycle.
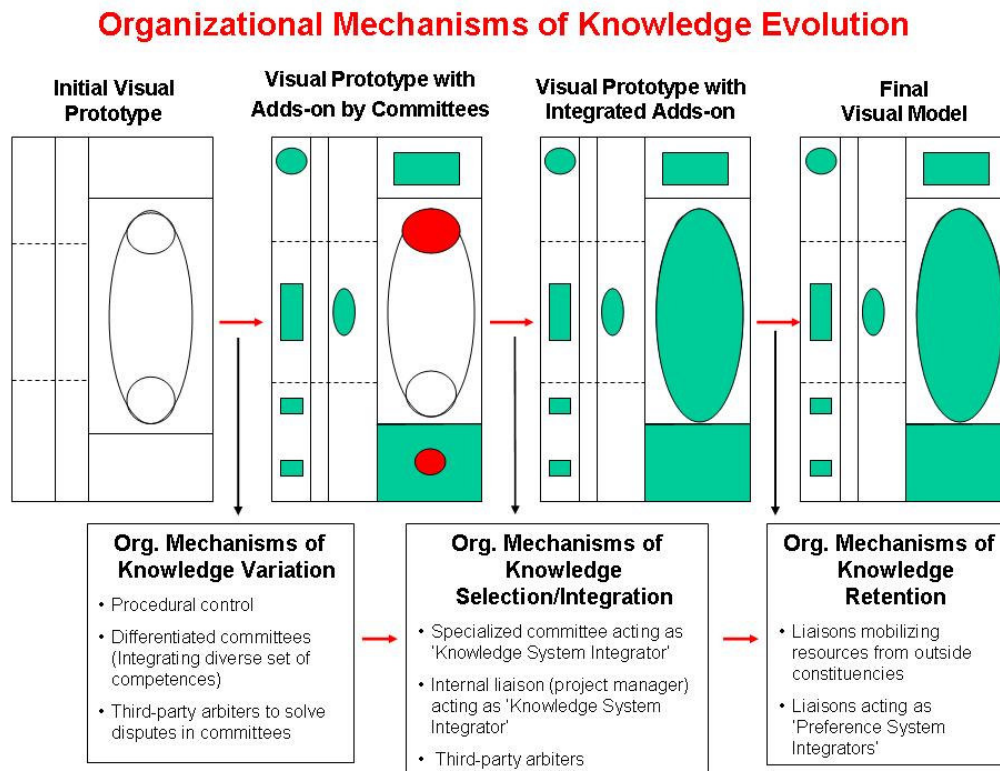
Figure 2.5 – Organizational Mechanisms of Knowledge Evolution

Contributions and Limitations

The findings confirm and extend the current predictions of a knowledge governance approach to organization (e.g. Foss 2007 ; Foss and Michailova 2008). Specifically, they extend this approach in two ways. First, the case study constitutes probably the first empirical application to cultural production projects, where, as we illustrated, a more fine-grained analysis of micro-organizational mechanisms is much needed. Second, the case study extends the knowledge governance approach in more general terms, providing a dynamic analysis of how organization and knowledge co-evolve in project-based enterprises, and detecting the complementarities among different organizational mechanisms in project governance.

With respect to available organizational studies of cultural production, the case study illustrates the value of a more theory-based, design-oriented, approach to project organization, in contrast with the currently dominant approach of identifying empirically new types of organizational forms (e.g. discrete structural alternatives) proven to be effective for the management of knowledge in cultural settings. By specifying ex-ante the types of organizational mechanisms -on the basis of available knowledge-based theories of organization- and by focusing empirical inquiry on the different combinations of these basic mechanisms, this paper contributes a methodology useful to discover new organizational configurations valuable for the organization of knowledge in cultural settings. In addition, a single case point in time has been considered, so findings are limited in terms of generalizability and further research is needed to explore the extent to which this methodology can be applied consistently across different cultural projects and industries.

The implications of the case study for our understanding of the organization of symbolic production process are limited by my narrow focus on one factor shaping this process, namely the purposeful attempt of organizations to produce visual objects and symbols. However, as it has been emphasized, *"the creation of symbolic value, therefore, involves a set of interrelated processes and practices that are only partly under the control of a firm. While firms purposefully try to attach meaning to products through processes of production and representation, how the media represents products, how consumers spontaneously manipulate them and use them to construct social identities, and what social mechanisms arise to regulate their distribution and use in society may substantially affect the cultural value and significance they eventually acquire"* (Ravasi and Rindova 2004:8). Despite I acknowledge these other

set of processes as crucial to a more complete understanding of the processes of value creation, this paper is focused on *one* crucial aspect of the process of symbolic creation, that is the generation of new visual and aesthetic knowledge useful to embody meanings into product design. As illustrated in the review section, this aspect is arguably a rather under-investigated topic in studies of cultural production.

In terms of contributions to the more general knowledge approach to organization, the case study extends the contributions of this approach in dynamic terms, by linking the cycle of knowledge evolution to the micro-organizational mechanisms producing knowledge. Empirical evidence show how these mechanisms vary in the different phases of knowledge generation detected in the specific case study investigated. Additional research is needed to detect possible 'dynamic complementarities' or substituabilities among organizational mechanisms in terms of knowledge benefits, such as mechanisms producing more value if used in sequences, or mechanisms that need to be changed together (or separately) moving across the different phases of the knowledge evolution cycle. A further limitation of the case study concerns the degree to which the visual knowledge produced in the project can be considered valuable in terms of symbolic value creation. As illustrated above, this would require an evaluation of the quality of the design of the park in the context of the broader community for which the design has been produced. My focus in the case study has been different, that is, connecting a specific evolutionary trajectory of knowledge production detected in the case study with the organizational mechanisms underlying that trajectory. This type of analysis can arguably provide important cues to better understand how knowledge and organization co-evolve in creative enterprises.

TABLE 2.1 – NEW DESIGN IDEAS AND ORGANIZATIONAL MECHANISMS OF KNOWLEDGE VARIATION

ORGANIZATIONAL MECHANISMS OF KNOWLEDGE VARIATION			
ID	**New Design Idea**	**How the Idea has been Generated**	**Organizational Mechanism of Knowledge Variation**
1	*New sculpture in the central plaza*	Art committee members identify sculptor in an initial list of artists defined on two basic criteria	Multi-party decision-making device (e.g. committee) Integration of heterogeneous set of competences (e.g. differentiated composition of committee)
		Sculptor is approved in a second round of review by President of important cultural institution in the city Artist is recommended by sculpture experts external to the committee	Intervention of third-party arbiter (*authority of third-party is based on competence*)
		Art committee members meet and interview the artist and commission him a sculptural work	Multi-party decision-making device (e.g. committee) Integration of heterogeneous set of competences (e.g. differentiated composition of committee)

2	*New sculpture in the main garden*	Art committee members identify sculptor in an initial list of artists defined on two basic criteria	Multi-party decision-making device (e.g. committee) Integration of heterogeneous set of competences (e.g. differentiated composition of committee)
		Sculptor is recommended by sculpture experts external to Art committee	Intervention of third-party arbiter (*authority of third-party is based on competence*)
		Art Committee members recommend artist by reviewing slides of his work Garden Committee Members identify sculpture by artist as a 'perfect fit' for the main garden location	Multi-party decision-making device (e.g. committee) Integration of heterogeneous set of competences (e.g. differentiated composition of committee)
3	*New landscape design for main garden*	Garden committee members identify landscape architect in an initial list of architects defined on two basic criteria	Multi-party decision-making device (e.g. committee) Integration of heterogeneous set of competences (e.g. differentiated composition of committee)
		Fund-raiser broker propose donor to sponsor one of the landscape architects identified in the list	Intervention of third-party arbiter (*authority of third-party is based on endorsements and resources received by constituencies external to the project*)

		Donor-sponsored landscape architect is proposed for approval to garden committee members, which commission a new garden design to landscape architect	Multi-party decision-making device (e.g. committee) Integration of heterogeneous set of competences (e.g. differentiated composition of committee)
4	*New Sculpture on the Proscenium/ Music Band-shell*	Art committee members identify sculptor in an initial list of artists defined on two basic criteria	Multi-party decision-making device (committee) Integration of heterogeneous set of competences (see committee composition above)
		Fund-raiser broker propose donor to sponsor one of the artist identified in the list	Intervention of third-party arbiter (*authority of third-party is based on endorsements and resources received by constituencies external to the project*)

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Third Paper

Playing Brokerage:

Brokering Behaviour and Dynamics of Brokerage Roles

in Two Mediated Transactions

Playing Brokerage:
Brokering Behaviour and Dynamics of Brokerage Roles in Two Mediated Transactions

Abstract

Resource-based theories of brokerage do not take into account the possibility that brokers may lose their advantageous structural position because considered unreliable as mediators by the disconnected parties. This paper hypothesizes that brokers' ability to maintain or enhance their structural positions depends on the fit between brokering behavior and the expectations attached to different brokerage roles. Building on the models of brokerage developed by Gould and Fernandez (1989), a typology of brokers' actions (or 'brokerage plays') is advanced. The impact of these different plays on the dynamics of brokerage roles is explored through detailed longitudinal observation of two transactions brokered by the same broker and unfolding in the same organizational context. Findings show that the overt simultaneous performance of a coordinator and representative brokerage role may lead the disconnected parties to communicate directly, thereby making the broker lose his advantageous structural position. Implications for a dynamic theory of brokerage behavior are discussed.

Playing Brokerage:
Brokering Behaviour and Dynamics of Brokerage Roles
in Two Mediated Transactions

Introduction

Network research has long focused on the question of what structural positions are most beneficial to their occupants. For example, Granovetter (1974) emphasized the importance of a position characterized by weak, bridging, ties; Burt (1992) refined the argument demonstrating the benefits accruing to egos occupying brokering positions in networks rich in structural holes. Despite this research provided fundamental concepts to think about the structural sources of individual advantages and outcomes, less attention has been devoted to understanding why and how actors reach, maintain or enhance their structural positions which are themselves receptacles of rewards. As a consequence, we have today overwhelming empirical evidence that networks matter for a number of outcomes, but we are often not necessarily sure about why and how they do matter (Galaskiewicz 2007).

The dynamics underlying network formation are particularly interesting in the case of the network position occupied by brokers -individuals located in between two otherwise disconnected parties. Based on Ronald Burt (1992)' argument that a network rich in structural holes provide more opportunities of information and control, research consistently showed that brokers are more likely to achieve individual and collective outcomes, such as team innovation and change (Hansen et al. 2001; Reagans and Zuckerman 2001; Reagans et al. 2004). However, this research typically assumes that an actor is not incurring into the risk of losing his advantageous structural position once located in there, thereby adopting a rather static conception of structural position.

In contrast with this image of relative stability, brokerage positions may well be inherently unstable because a broker will maintain its advantageous structural position only to the extent that the disconnected parties rely on the broker for information and communication exchanges. Previous research showed that the reliance of the disconnected parties on the broker as mediator will depend on the behavior of the broker. For example, Fernandez and Gould (1994) demonstrate that a broker taking public stands on issues will be ceased to be treated as broker by other actors in the

system because considered unreliable as mediator. In this perspective, the actions of the broker enter at the center of the picture: depending on the behavior of the broker in the eye of the disconnected parties, the broker may be more or less able to maintain or enhance his advantageous structural position. Despite theory indicates the actions of the broker as a crucial variable of interest, direct empirical evidence is scarce on how exactly different types of broker' actions affect the resulting dynamics of brokerage roles. This lack of empirical evidence posits at center stage the following research question: *what exactly are the micro-behavioral mechanisms (e.g. actions, tactics, strategies) through which a broker can maintain his/her advantageous structural position?*

The point of departure of this paper is to address this question by investigating the concrete actions of brokers in the pursuit of the opportunities provided by their advantageous structural position. In order to the detect brokers' actions in a reliable and comparable manner, the paper builds on the model of brokerage developed by Gould and Fernandez (1989), elaborating a theory-based typology of brokers' actions -labeled 'brokerage plays'- that a broker can perform while occupying a brokerage structural position. The typology identifies three different brokerage plays on the basis of the degree of impartiality communicated by a broker to the disconnected parties (*liaison brokerage play; gatekeeper/representative brokerage play; coordinator brokerage play*).

The impact of these different plays on the dynamics of brokerage roles is explored through detailed longitudinal observation of the behavior of a broker in two well-matched transactions identified with a comparative case logic (Ragin 1987). The goal of the analysis has been to detect how the role of the broker evolved over the time of the transaction –e.g. whether he lost his structural position or not- depending on the different plays performed in the mediation of the disconnected parties. Consequently, the two selected transactions are similar on most dimensions but the final outcome of interest (e.g. the change in brokerage role). Both the transactions have been mediated by the same broker and unfolded in the same organizational context, that is, a private-public partnership project involving the design of a park. However, in one transaction the broker was dis-intermediated by the initially disconnected parties, whereas in the other transaction the broker preserved his advantageous structural position over time.

Data for the study are drawn from an extraordinarily rich archival dataset built from primary (e.g. two complete archives of the project files provided by the project manager and by a key project broker) and secondary sources (books, newspapers and

archival material on the project) collected as a part of a larger historical case study on the evolution of the project in which the transactions occurred. The historical and archival material gave unprecedented information –reported in a detailed appendix at the end of the paper- on the social context and the role expectations surrounding the activity of the broker in the selected transactions. Drawing on this detailed data, the actions of the broker have been identified through a strategic narrative approach (Stryker 1996 ; Stevenson and Greenberg 2000), coding the full historical narratives of the events surrounding the two selected transactions and transforming the narratives into sequences actions. These actions have been coded into the three brokerage plays defined in the theory-based typology and linked to data on the evolution of the brokerage roles (e.g. the extent to which the two disconnected parties rely on the broker for their communication exchanges over the duration of the transaction).

Findings show that the overt simultaneous performance of a coordinator and representative brokerage role may lead the disconnected parties to communicate directly, thereby making the broker lose his advantageous structural position. In more general tems, the case study show that the occupancy of a broker' structural position is contingent on the behavior of the broker and the extent to which this behavior is consistent with the expectations of the mediated parties. Specifically, the iterative performance of roles consistent with the expectations of the disconnected parties contributes to keep a brokerage system in equilibrium, allowing the broker to maintain his structural position. In contrast, the simultaneous performance of contradictory roles –such as the role of coordinator and representative- may lead one or both the disconnected parties to consider the broker unreliable as a mediator, starting to communicate directly between each other.

The contributions of the study are discussed with reference to recent action-oriented network research aimed at investigating the link between action and structural dynamics (Stevenson and Greenberg 2000; Obstfeld 2005) and network theories emphasizing behavioral expectations as one important engine underlying network formation and evolution (Leifer 1988 ; Podolny 1993; 2001; Padgett and Ansell 1993). Implications for a dynamic theory of brokerage behavior are discussed.

Brokerage, Action and the Dynamics of Brokerage Roles

A turning point in the history of the concept of brokerage has been the publication of Ronald Burt (1992)' book *Structural Holes: The Social Structure of Competition[1]*. With this work, Burt established a powerful baseline specification as to how an actor's social structural position impacts on the opportunities and rewards to which the actor has access. Burt's argument is simple yet powerful: unique ties to other individuals or firms provide superior access to information and greater opportunities to exercise control. Since the publication of *Structural Holes*, an increasing number of studies incorporated the concept of network non-redundancy and structural holes in their own theories of the relationship between structure and outcomes, finding strong empirical support for the relation between individual networks rich in structural holes and a variety of individual outcomes, such as promotions, profits and rewards (see Burt (2005) for a complete review on the empirical tests of structural holes theory)[2]. Burt's theory is mostly concerned with explaining the benefits of one particular type of network structure, that is, network rich in structural holes. Thus, an understanding of how structural positions come about and persist over time is out of the scope of the theory. In this sense, structural holes theory shares with most resource-dependence, exchange-driven, accounts of networks (e.g. Marsden 1982) a focus on the advantages accruing to actors *once* they are located into network structure, leaving unexplored the question of how structural positions form and evolve over time.

In contrast with this static conception of network structure, a number of recent studies have questioned the failure of network research to connect the actions of individuals to their network position (Galaskiewicz, 1985; Emirbayer and Goodwin, 1994; Stevenson and Greenberg 2000; Obstefled 2005). For example, Stevenson and Greenberg (2000) used social movement concepts to explain the success and failure of

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[1] The concept of brokerage has a long history in the sociological, political science and anthropological literatures (see, for example, Gould (1989) and the references quoted therein).

[2] In this context, it is important to specify that a number of contingency factors have been found on the positive effects of structural holes on both individual and organizational outcomes. For example, the effect of sparse networks on individual social capital has been shown to depend on the content of the relationship, where the most salient differences in the effects have been observed on the dimension of authority and formal relations as contrasted to the informal or purely social ones (Podolny and Baron 1997; Tsai 2002; See also Burt 2005). Taken together, these evidences provide a number of reasons to suspect that, although brokers are more likely to *access* valuable resources (such as new information) - thereby having more opportunities to achieve outcomes- they may not be able or rightly motivated to use those opportunities toward the achievement of outcomes, due to contextual constraints, tasks specificities or the presence of bureaucratic and formal controls (Galaskiewicz 2007).

actors in a network of relationships trying to influence policies on environmental issues in a small city. They identified three different strategies of action (direct contact, broker, and coalition), whose effectiveness vary depending on the presence of opposition, the structure of political opportunity and the actor's position in the network. Obstfeld (2005) discovered that actions consistent with a *tertius iungens* strategy –e.g. a behavioral orientation toward connecting people in their social network- are an important network mechanism underlying the combination of novel ideas found in innovative efforts.

By and large, however, the important findings of this action-oriented network research has remained without a systematic theoretical framework, which can shed light on the underlying mechanisms connecting action to network formation. How can we make sense of the several action strategies empirically found in the literature? Is there any underlying common logic? Can these mechanisms be hypothesized *ex-ante* on the basis of a more general theory on the interaction between structure and action? In the following section, I will build on the model of brokerage provided by Gould and Fernandez (1989) to provide a useful starting point for developing such a theory-based account of the interaction between action and structure in brokerage roles.

Brokerage Plays: A Typology of Brokerage Actions

I developed a typology of broker' actions on the basis of the models of brokerage defined by Gould and Fernandez (1989)' formalization of mediated structures and Fernandez and Gould (1994) empirical application of this formalization.

These studies provided a more sophisticated conceptualization of brokerage than Burt (1992)' parsimonious model of structural holes, providing a powerful formalization to speculate on the interaction between structural position and action. Starting with Marsden (1982: 202) classic definition of brokerage as *"a process by which intermediary actors facilitate transactions between other actors lacking access to or trust in one another"*, Fernandez and Gould (1989) represent a brokered exchange as a *relation* involving three actors, two of whom are the actual parties to the transaction and one of whom is the intermediary or broker. However, the authors extended this traditional exchange-theoretic conception of brokerage by allowing for the possibility that actors in a social structure may be differentiated with regard to activities or interests, so that exchanges between some actors may have a different meaning or function from exchanges between other actors. Such distinction may be taken into account by partitioning the system into a set of mutually exclusive classes or subgroups

of actors and to distinguish flows within groups from flows between groups. When brokerage relations cross such boundaries, the subgroup affiliation of the broker is also relevant since brokers may play different roles depending on the group to which they belong (Adams, 1976; Friedman and Podolny 1992). Based on the possible sub-group affiliation of the broker the authors derive five structurally distinct types of broker (or equivalently five brokerage roles or brokerage relations)[3]:

1. Liaison Brokerage Role

   In this case, the broker is an outsider to both the initiator and the receiver of the brokerage relation. The role of the broker in this case is to link distinct groups without having previous allegiance to either. Examples include agents and free lancers in the entertainment industry, since performers and production companies, whose exchanges they mediate, are members of separate groups.

2. Itinerant Brokerage Role

   In this brokerage relation, the mediator is the only outsider while the two principals belong to the same group. As emphasized by Gould and Fernandez (1989: 92)*: "a stockbroker is an example of this sort of mediator: brokerage firms are generally set apart quite clearly from their clients, while buyers and sellers make up an undifferentiated group from the broker's point of view and from their own.*

3. Representative Brokerage Role

   A representative role is created when one member of a subgroup takes upon itself or is given the role of communicating information, or negotiating exchanges with, outsiders. In political negotiations for example, a member of one party may approach someone in a rival party through a fellow party member, which will act as representative attempting to establish a contact with an outsider.

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[3] As the authors emphasized in their paper, their linkage of the term *position* with the term *role* reflects their convictions that "*brokerage is inherently and inextricably tied to structural position in transaction networks*" (Gould and Fernandez 1989: 94). See also White, Boorman and Breiger (1976) for the link between roles and positions.

4. Gatekeeper Brokerage Role

    Typically, the gatekeeper role consists in an actor screening or gathering information from outside and distributing them to members of his or her subgroup. The gatekeeper –as well as the representative types of broker- have been central in research on "boundary-spanning" roles (Adams 1976; Friedman and Podolny 1992) because they typically perform both "information-processing" and "external representation" functions (Aldrcih and Herker 1977).

5. Coordinator Brokerage Role

    In this case all the three actors in the brokerage system belong to the same group so that the brokerage relation is completely internal to the group. Because this kind of exchange involves the services of an who is a member of the same group as the principals, an individual or organization who occupies this role can be seen as a local broker or coordinator.

The description and examples illustrated above emphasize the general point that the type of brokerage role assigned to an actor is contingent upon the criterion to which actors are grouped. This of course may well depend on empirical context. For example Fernandez and Gould (1994) assigned organizations to groups on the basis of shared interests given the highly political nature of the national health policy domains. Figure 3.1 below reports the five types of brokerage roles identified by Gould and Fernandez (1989), together with a structural simplified representation of these roles and some examples.

Five Types of Brokerage Roles

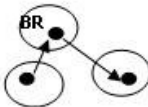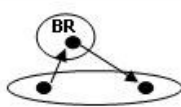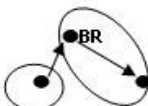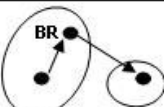*(Gould and Fernandez 1989; Fernandez and Gould 1994)*
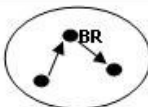
TYPE OF BROKER		EXAMPLES
Liaison Role		•Mediator/Arbitrator in negotiations •Agents in publishing and entertainment
Itinerant Broker Role		•Federation management organizations •Stockbroker
Gatekeeper Role		•Journal editors •Recruitment officers •Professional association
Representative Role		•Firm acting as spokesman for the industry •Trade association
Internal Coordinator Role		•Federal Reserve bank with respect to private banks

Figure 3.1 – The Five Types of Brokerage Roles identified by Gould and Fernandez (1989)

An interesting feature of Gould and Fernandez (1989)' typology is that it is useful to conceptualize brokerage actions in structural terms. This feature was acknowledged by the authors themselves, but it has remained rather under-utilized in subsequent studies: *"the five brokerage types we have described represent specific structural positions or, alternatively, concrete social* roles *that actors can occupy in system of exchange or network of resource flows (Note, though, that while any given brokerage* relation *falls into only one of the five categories, individual* actors *can* perform *any combination of the corresponding roles simultaneously)"* (ibidem: 93-94). Similarly, they stressed that the measures of brokerage proposed in the article *"do not necessarily measure the amount of brokerage an actor* actually performs. *Rather, they measure an aspect of an actor's structural position, namely, the extent to which an actor is capable of linking others in an indirect social relation"* (ibidem: 98, note 4).

Here, I build on this insight to develop a typology of brokerage actions –or what may be labeled "brokerage plays"- based on the five types of brokers illustrated above. The intuition behind the development of the typology is straightforward: as much as an actor may occupy one of the five types of brokerage roles described, he can actually perform or play one of this role while interacting with the disconnected parties. Thus, for example, a broker structurally located into a representative role, may well act as a liaison in interacting with the parties.

To operationalize these ideas empirically, however, we would need to know what it means to 'act as a liaison broker'. Fortunately, there is theory available to guide us in this operationalization exercise. Indeed, the five structurally defined brokerage types have been shown to differ in the degree to which an actor occupying the structural position is expected to act impartially in the eye of the intermediated parties. Here, the general point is that a fundamental characteristic of brokerage role is that *"a broker's power appears to be incompatible with the overt pursuit of his or her own interests"* (Fernandez and Gould 1994: 1456). This is because if brokers take public stands on issues, they will cease to be treated as brokers by other actors in the system because considered unreliable as mediators. For example, Podolny and Friedman (1992) showed how the simultaneous performance of gatekeeper and representative roles in boundary-spanning functions can lead to a "distrust cycle" (Adams 1976) against mediators in labor management negotiations. Gould (1989) showed that occupants of brokerage positions in a community elite only derived influence from their position to the extent that they were poor in mobilizing resources. Similarly, Padgett and Ansell (1993)

argued that Medici influence in 15-th century Florence depended on the inability of other elite Florentine families to discern Cosimo de' Medici's interests.

Given that impartiality is a general behavioral characteristic of the occupants of brokerage roles, we may also hypothesize that brokers' actions are subject to the constraint of impartiality to a different degree, depending on the type of brokerage role that brokers occupy. For example, Fernandez and Gould (1994) discovered that the relationship between impartiality and influence of brokers in policy domain arenas vary across brokerage roles. Building on their findings, we may hypothesize that a set of different behavioral expectations concerning the impartiality of brokers' behavior are attached to the five brokerage roles

1. Behavioral Expectations of Liaison and Itinerant Brokerage Roles
Occupants of liaison and itinerant roles –who by definition link actors with interests dissimilar to their own- are expected to refrain from taking public stands on issues (otherwise they will be considered unreliable as mediators);

2. Behavioral Expectations of Representative and Gatekeeper Brokerage Roles
Occupants of representative and gatekeeper roles are expected to take stands on issues, or at least will not be penalized if they do. Indeed, both the intermediated parties are likely to expect the broker to share the goals of the group to which he belongs, when he mediates communication between members of their group and other groups;

3. Behavioral Expectations of Coordinator Brokerage Role
Occupants of a coordinator-type brokerage position are expected to take stands on issues on the ground that these stands are serving the "public interest" of the group to which both the broker and the intermediated parties belong. Indeed, this way brokers will be seen as impartial from the perspective of the actors in the group, assuming that groups (defining

the affiliations of actors) are relatively homogenous with respect to the stands they take on events[4].

We can use this three-fold typology of behavioral expectations attached to brokerage roles in order to develop a typology of brokering actions following this simple principle: when a broker behaves accordingly to the behavioral expectations attached to a given brokerage role in the eye of an interacting party, we may say he is playing that role in the eye of that party. For example, if a broker behaves taking sharp stands on issues in favor of one party while meeting with the favored party, we may say he is playing the role of a representative of gatekeeper of the party. Notice how this definition of brokerage actions is analytically independent from the definition of structural position in which the broker is located. For example, a broker can be structurally located in a liaison position, but still behave as a gatekeeper of partisan interests.

Thus, the crucial variable to identify brokering behaviors are the action and communication repertoires matching the three-fold typology of behavioral expectations defined above on the basis of theory. In the figure 3.2 below, I report two tables. A first table, on the left-hand site of the figure, illustrates the five types of brokerage roles developed by Gould and Fernandez (1989), specifying the behavioral expectations attached to each of these roles. A second table, on the right-hand site of the figure, reports the three types of brokerage plays developed on the basis of my elaboration on the literature mentioned above. This table illustrates the proto-typical types of behavior for each of these plays (e.g. we can expect the communication and action repertoires of the broker to respect the prototypical behavior illustrated, in order to be reliably coded as instances of the corresponding play). Concrete empirical examples are provided through the empirical application of this typology to the analysis of the transactions (see coding table in Appendix 3).

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[4] This assumption may be more or less respected in an empirical analysis depending on how the researcher assigned actors to groups. If subgroup boundaries actually identify interest groups, then the assumption should hold true.

Brokerage Plays: A Theory-based Typology of Brokerage Actions
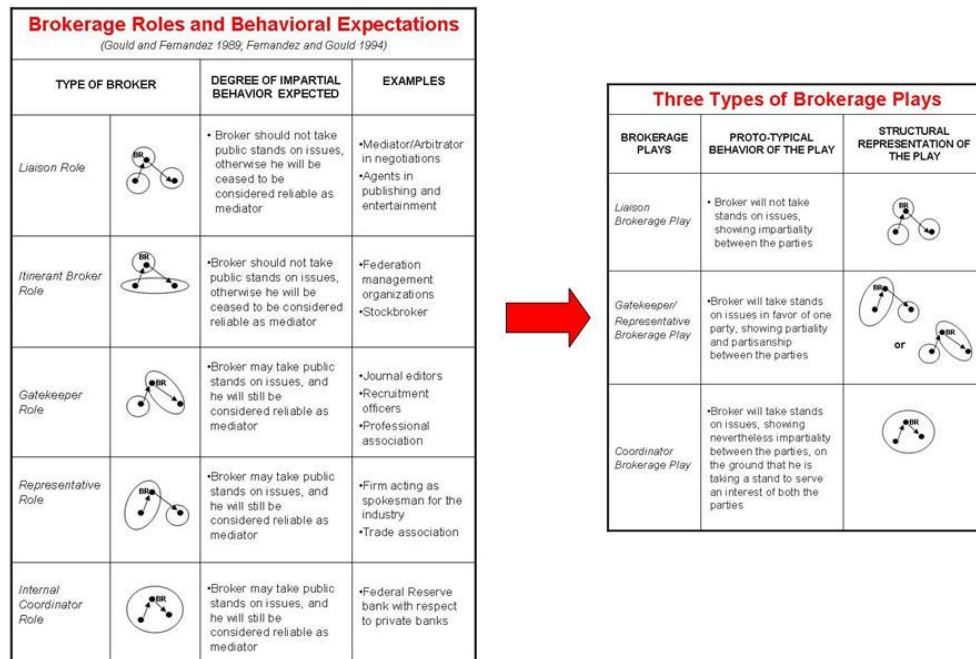
Figure 3.2 – Brokerage Plays : A Theory-based Typology of Brokerage Actions

Data and Methods

To explore the relationship between broker's actions and the dynamics of brokerage roles, I conducted an exploratory study of the behavior of a broker in two transactions occurring in the context of a private-public partnership project involving the design of a public park.

In the study, I used two basic types of data. Data describing the context in which the transactions occurred. Data describing the actual behavior of the broker and the other parties involved in the transactions. The selection of data reflects an important methodological premise of this study: an appropriate analysis of the constitutive dynamics between action and structural position in brokerage transactions requires an in-depth appreciation of the social and organizational context in which brokerage transactions are embedded. Studying the micro-processes underlying the dynamics of brokerage roles required a research setting in which I could analyze in detail not only how and why brokers' structural position evolves over time, but also how their

structural position originally came about. Thus, in selecting the case study and the research methods, I took into account the following two principles. First, I needed longitudinal observation of the actions of a broker and detailed information on how these actions affect the dynamics of broker' structural position. Second, I needed detailed information on the brokers' structural position itself (e.g. how it came about and why, what were the expected behaviors attached to the position in the eye of the parties transacting with the broker, etc).

Data are drawn from a larger historical case study on the evolution of the project in which the transactions occurred. Data are drawn from an extraordinarily rich archival dataset built from primary (e.g. two complete archives of the project files provided by the project manager and by a key project broker) and secondary (books, newspapers and archival material on the park) sources. This archival dataset is longitudinally extensive, covering the entire lifespan of the project (from early 1998 to 2004) and containing the thousands of meeting notes, attendance sheets, communications, design maps/plans and construction documents used by the members of the project during its development. Archival sources have been integrated with extensive interviews with all the key players involved in the project.

To define the salient characteristics of the context in which the transactions occurred, I developed a full historical narrative on the origin and development of the project in which the transactions are taking place. This narrative is reported in Appendix 1. The historical data on the project has been used to code the informal, purely social, relationships and the formal relationships surrounding the transactions and the behavior of the parties involved in the transaction.

To identify the two transactions, I began searching the archival records provided by two key players of the project that that had major responsibilities for critical issues in the project. By examining these records, I was able to identify two transactions that appeared to be important to the project and that became the focus of my study. Transactions were identified as important if they received attention from project members over multiple meetings and if determined significant changes in the development of the project, with specific reference to the design of the park. Specifically, I relied on a comparative case study logic to select two-well matched transactions: my intent was to choose transactions that were similar on most salient dimensions (e.g. structural position, context surrounding the transaction, expectations of parties, etc.), but the outcome of interest (e.g. the change in the structural position of the

broker). Consequently, I selected two transactions that were on most salient dimensions but the outcome of interest: in one transaction the broker was dis-intermediated by the initially disconnected parties, whereas in the other transaction the broker preserved his advantageous structural position over time. The two transactions identified through thise procedure are:

1. Transaction no. 1: A transaction between a broker, a donor and an architect concerning the scope of the design to be commissioned to another architect sponsored by the donor;

2. Transaction no. 2: A transaction between a broker, a donor and an architect concerning the content of the design of the architect sponsored by the donor;

To identify the actions of the parties involved in the two transactions, I used a "strategic narrative" approach to analyzing the development of issues over time (Stryker, 1996; Stevenson and Greenberg 2000). The term narrative describes a chronological, sequential ordering of events that focuses around a single coherent story. An event is a significant happening in the story. In a narrative approach, events are allowed to follow twisted, heterogeneous paths to their outcome, and the order and sequence of these paths determines the outcome of the narrative (Griffin, 1993). Through these events the researcher can begin to observe the relationship between social action and social structure as it unfolds (Abrams, 1982). I began constructing a full narrative history of the two transactions in the context of the project. To create the narratives for each transaction, I used interview data from the respondents, information from the archival minutes, memorandums and documents that referenced the transactions, memorandums and internal communications drawn from the archive. For each of the two transactions, I combined these data to create a chronological sequence of events (a narrative) that outlined from beginning to end how the transaction developed. For each event in the sequence, I identified the actions of the parties involve in the transaction and take notes of the attributions and expectations of parties when available. Second, I analyzed these narratives to determine causal sequences of events. Finally, I determined the multiple strategies and actions that were used in the course of these events. Individuals involved in the transactions were my unit of analysis. Specifically, as explained below, I focused my analysis on the actions of the broker and the intermediated parties in a particular narrative sequence. Finally, I coded the

identified sequences of actions in terms of the three brokerage plays defined on the basis of the typology described above (e.g. liaison role play; coordinator role play; gatekeeper role play).

Data Analysis and Findings

I divided the exposition of the findings in three major sections. I will first provide a synthetic description of the transactions analyzed. In the next two paragraphs, I'll describe the brokerage plays used by the broker and their effects on the dynamics of structural position in the two transactions. Both these analyses are based on the coding of narrative data which is reported in full detail in the appendix. Finally, I'll illustrate a comparison of the dynamics detected in the two transactions.

Description of Brokerage Transactions Analyzed

The two transactions selected involved the same broker, the chief fund-raiser of the private-public project organization examined. The two transactions involved the same type of resource exchange –the exchange of ideas and information on the design of a park- and the similar actors, an architect and a donor[5]. The role of the broker in the transactions was that of mediating between the two parties (the architect and the donor) o on the content of the design of two areas of a park, a garden and a performance space[6].

In terms of starting structural position, the brokerage role of the fund-raiser in the two cases is identical. The broker is located in an intermediate position between the architect and the donor, two parties that are disconnected –they do not communicate directly for the purpose of the transaction- with specific reference to the object of the transaction. The two parties can also be interpreted as belonging to different "interest groups", although the two transactions are somewhat different in this respect. In transaction no.1, since the beginning there is clear evidence of the different interests of the two parties to be mediated. In transaction no.2, the difference in interests and divergence of opinions among the architect and the donor emerge over the course of

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[5]These donors have been targeted by the fund-raiser as "key prospects" in the context of the "Mayor Gifts campaign" described in the full narrative history.

[6] As illustrated more in detail in the narrative, the role of the fund-raiser broker in the project was broader, encompassing the facilitation of exchanges of financial resources (e.g. specifically, philanthropic donations) between the two parties, the public organization of the City of Chicago and the private sector.

events. In addition, both the brokerage transactions occurred in the same organizational context and they are embedded in similar broader social structures. The Mayor constitutes an important form of bureaucratic control on both the transactions, since he has veto power on the outcomes of the transactions and he has the power of "firing" the broker (e.g. the occupancy of the brokering role depends on the Mayor). Finally, also the social relationships connecting the actors in the broader social structure are similar, since the donors in both cases are socially connected to the Mayor and had previous interactions with the architects, although their interests diverge in the specific transaction analyzed.

Starting from this basic setting, the objective of my analysis will be to illustrate how different brokerage actions from the same structural position conduced to different outcomes in terms of the dynamics of structural position. The results of this analysis are illustrated in the next three paragraphs.

Analysis I: Brokerage Plays and Role Dynamics in Transaction no. 1

The brokerage plays detected in the first transaction are reported in table 3.1 below. The last column of the table reports whether there were changes in the initial structural position of the broker, that is, whether the parties started to communicate and exchange information without the mediation of the broker. As explained in the methods section, the brokerage plays have been identified coding the actions and communications of the parties involved in the transaction. A full narrative of the transaction and the corresponding coding table are reported in the appendix.

t	Action	Parties Interacting	Brokerage Role Played by Broker in the Eye of Interacting Parties	Parties Interacting without the Broker
	TABLE 3.1 - Brokerage Plays and Dynamics of Broker Role in Transaction no.1			
1	Broker' first approach to donor	B-D	Gatekeeper of D	NO
2	Broker' visit to donor' house to show pictures of the park	B-D	Gatekeeper of D	NO
3	Broker informs architect about donor and idea of sculpture by a donor-selected artist	B-A	Liaison between A and D	NO
4	Broker asks architect to contact donor' preferred artist for sculpture and, eventually, a new design for proscenium	B-A	Liaison between A and D	NO
5	Broker meeting with donor to see the model	B-D	Gatekeeper of D	NO
6	Broker call to donor	B-D	Gatekeeper of D	NO
7	Broker meeting to donor	B-D	Gatekeeper of D	NO
8	Broker asks architect about contact with donor-selected artist	B-A	Liaison between A and D	NO
9	Together with representative of the Mayor, broker approaches donor-selected artist on behalf of donor	B-NA	Representative of D	NO

As it is most evident from the table, the broker preserved his advantageous structural position in mediating the flow of communication between the disconnected parties, since the donor and the architect kept relying on the broker to communicate between each other.

Drawing on the narrative reported in appendix 2, we can describe the dynamics leading to this result as following (see the narrative directly for more details). The broker first approached the donor by acting as gatekeeper of her interests (e.g. acting by taking a clear stand in favor of the interests of the donors group and showing flexibility about the extent to which the existing design plan could be modified on the basis of her requests). On the contrary, in reporting to the architect of the project the willingness of the donor to make a major donation, he remained rather impartial and neutral on the participation of the donor in the project, explaining to the architect the donor's requests and asking his opinion on how to involve the donor-recommended artist in the design of the park. In addition, in the context of a special meeting of the art committee, the broker –in his role of chair of the committee- went on asking the architect to contact Gehry to explore "his interest in collaborating", so they could discuss the extent of his participation in the project. In these occasions, the architect told the broker he was worried about the participation of the donor in the project and the extent of the involvement of the artist recommended by the donor, signaling to the broker that there was the potential for conflict between the two parties' demands[7].

From that point on, there are a series of interactions including only the broker and the donor, in which the broker is increasingly acting as gatekeeper of donors' interest in the eye of the donor. Simultaneously, he kept maintaining a neutral position with the architect, limiting himself to just reporting the donor's request and asking what was the status of his approach to the artist recommended by the donor.. At the same time, the broker was locked-in via the brokerage of the architect (e.g. he was waiting for news about the engagement of the artist from the architect). Then, the broker happened to know that the architect did contact the artist for doing only a sculpture, thereby manipulating the broker' original mandate to the architect. At that point, the broker decided to bypass the architect by co-opting the representative of the Mayor and

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[7] The broker was well aware of these conflicts, as demonstrated by the fact that, he strategically decided to take out the name of the artist recommended by the donor from the agenda of the art committee where there was also the architect, thereby disconnecting the two parties, with specific reference to the issue (see narrative).

'secretly' contacting the donor-recommended artist with his help. By directly contacting Gehry on behalf of the donor and with the help of the Mayor Representative, the broker was explicitly acting as gatekeeper of the donor's interests. The architect was informed of the decision of hiring the donor-recommended artist only once that was officially approved by the mayor.

Analysis II: Brokerage Plays and Role Dynamics in Transaction no. 2

     The brokerage plays detected in the evolution of the first transaction is reported in table 3.2 below. The last column of the table reports whether there were changes in the initial structural position of the broker, that is, whether the parties started to communicate and exchange information without the mediation of the broker. As explained in the methods section, the brokerage plays have been identified coding the actions and communications of the parties involved in the transaction. A full narrative of the transaction and the corresponding coding table are reported in the appendix.

TABLE 3.2 - Brokerage Plays and Dynamics of Broker Role in Transaction no.2				
T	Action	Parties Interacting	Brokerage Role Played by Broker in the Eye of Interacting Parties	Parties Interacting without the broker
1	Broker' first approach to donor	B-D	Gatekeeper for D	NO
2	Broker communicates the decision of the art committee to locate a sculpture on the new garden	B-A-D	Coordinator	NO
3	Broker coordinates the review of the	B-A-D	Coordinator	NO

	work of architect in the garden committee			
4	Broker coordinates the review of the work of architect in the garden committee	B-A-D	Coordinator	NO
5	Broker contacts the architect to discuss design	B-A	Liaison between A and D	NO
6	Broker reports feedback from donor to architect	B-A	Liaison between A and D	NO
8	Broker reports donor the decision of a committee to relocate the sculpture from the garden	B-D	Coordinator	NO
9	Donor calls architect to discuss design	A-D	Broker has no role	YES
10	Architect informs broker about the donor' call	A-B	Broker has no role	NO
10	Broker contacts donor to ensure she was comfortable with design changes	B-D	Gatekeeper of D	NO

11	Donor contacts architect to discuss design changes	A-D	Broker has no role	YES
12	Architect contacts the broker to report donor' requests	A-B	Broker has no role	NO
13	Donor contacts the architect to ask new design changes	A-D	Broker has no role	YES
14	Architect contacts the broker to report new design changes	A-B	Broker has no role	NO
15	Donor met with architect and Mayor	A-D-M	Broker has no role	YES
16	Broker contacts donor to ask her to withdraw the transaction	B-D.	Coordinator	NO

As it is most evident from the table, the broker lost his advantageous structural position in mediating the flow of communication between the disconnected parties, since the donor and the architect start to communicate between each other without the broker. More specifically, we may say that the broker himself became the intermediated party, since he was kept updated by the architect, who was in contact with the donor. The donor, instead, broke the communication tie with the broker, starting to communicate directly with the architect or relying on other mediators (e.g. the Mayor).

Drawing on the narrative reported in appendix 2, we can describe the dynamics leading to this result as following (see the narrative directly for more details). The broker first approached the donor on behalf of the Mayor by acting as a gatekeeper of her interests, by guaranteeing that her private money "*will not be used to augment the*

budget of the city of Chicago, to pay for the basic construction costs, but its will be used to elevate the design of those areas to a standard never before seen in any city of the world" and that the broker *"would control that well"*. In addition, the broker let the donor choose her preferred landscape designer, acting, again as gatekeeper of her (design) interests.

At the same time, however, the discussion on the new design proposed by the donor-recommended architect unfolded in the context of a civic committee (e.g. the garden committee, see narrative for details) formed by the broker *"to provide guidance and direction in selection of the landscape designs of the park"*. The broker was serving as chairman of this committee and the donor was included as a member. The designs submitted by the landscape architect selected by the donor were reviewed in the context of this committee. In these occasions, the broker can not overtly act as gatekeeper of donor interests. Indeed, in his role of chair of the garden committee, he needed to serve the "public interests" of the committee[8]. For example, in the context of the garden committee, the broker proposed and endorsed the collaboration between the donor-recommended architect and a sculptor, without having communicated this decision to the donor beforehand. In this and other similar instances, the broker was acting in the eye of the donor as representative of others' interests (e.g. the art or garden committee), in contrast with his previous role of gatekeeper of the donor interests. Despite the broker was performing these contradictory roles in the eye of the donor since the early stages of the transaction, in the first interactions the donor consistently relied on the broker for communication exchanges, although she started expressing to the broker some concerns on design and on the management of the transaction (see narrative).

The turning point of the transaction was marked by the emergence of design problems concerning the size of the sculpture to be located in the garden design proposed by the donor-recommended architect (e.g. the sculpture was apparently too big for the proposed garden design. This raised the question of whether changing the garden design or moving the sculpture). In this context, again, the broker was not able to act as

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[8]As an example of this role tension consider what occurred when the broker invited the donor-selected architect to present her work in the second garden committee meeting, when, instead, 11 landscape architects were supposed to be interviewed: the overt performance of the gatekeeper role in the eye of committee members provoked the reactions of disappointment of some committee members that expected the broker to act –in its position of chair of the committee- as impartial mediator and coordinator of a group that was intended to serve a public interest (e.g. the selection of the best possible landscape design).

representative of donors' interests to solve the emerging problems. He was serving the role of the representative of committee members, behaving impartially to serve the 'public interest' of the committee. Accordingly, the broker believed appropriate to move the discussion on the garden-sculpture issue was moved to another committee formed by art and architecture experts, in which the donor was not included.

As the narrative shows most clearly, at this point the donor started wondering if her interests were actually represented by the broker or not. She imputed to the broker most of the changes to the original design of the architect. Thus, she starts increasingly interacting directly with the architect. However, new design issues and tensions emerged on the garden in the interaction between the donor and the architect. The broker was left out from these interactions –thereby *de facto* losing his advantageous structural position- and was kept informed about the donor requests indirectly by the architect, which, instead, still considered the broker as a reliable mediator and coordinator. In other words, the broker here became the intermediated party and the architect the informational broker. A further attempt by the broker to act as gatekeeper of donor' interests was not considered credible by the donor, she kept relying on the architect and look also for the mediation of the Mayor in the transaction. Finally, when the broker happened to know that the donor was brokering by herself potential new design ideas for the garden, he understood he had lost control over the transaction and asked the donor to withdraw from the transaction.The broker felt he had lost control over the transaction and he was worried about the final outcomes of the transaction (e.g. the final design of the garden). Specifically, he feared the outcome of the transaction could have direct consequences on its structural position (e.g. he did not want to be responsible with the Mayor or the Garden Committee members –who can be thought as "controllers" or "observers" of the transaction- for something he had no control on). These concerns led the broker to ask the donor party –who had already committed a donation of 10$ million on the design of the garden- to withdraw from the transaction.

Analysis III: Comparing the Two Transactions

As the tables show, at the beginning the parties behave similarly in the two transactions. The broker started out by acting as gatekeeper of donors' interests as he had planned in the fund-raising strategy meetings (see narrative). The two intermediated parties relied on the broker for communication and information exchanges on the

subject matter of the transaction (e.g. the design of, respectively, the garden and the performance space).

However, the interactions among the three parties evolved in very different ways in the two cases. In transaction no. 1, both the parties kept talking to each other through the broker from the beginning to the end of the transaction, so that he preserved his advantageous structural position. In transaction no. 2, one party of the transaction (e.g. the donor) started interacting directly with the other one (e.g. the architect), excluding the broker from the conversation. The broker thus became the intermediated party since the two parties kept discussing between each other about the emerging design problems without involving the broker, which was kept informed about these conversations indirectly by the architect.

How can we account for these differences in the dynamics of structural position? In transaction no. 2, the donor started communicating directly with the other parties (e.g. the Mayor, the architect) once she observed the broker performing the contradictory role plays of coordinator and gatekeeper of her interests. The donor expected the broker to act as a representative of her interests –that's how the broker approached the donor in the first place, at the beginning of the transaction. However, the broker was expected to play the role of the coordinator and liaison by the architect and the garden committee members. For example, when design problems emerged in the context of the garden committee, the broker was expected to perform the role of the coordinator acting in the "public interest" of the committee. However, the play of this role contradicts the performance of the gatekeeper role in the eye of the donor. Thus, the donor started wondering where the broker stands in the mediation between the two parties (was he taking stands in favor of the art committee? Was he the representative of her interest in the discussion? Was he acting as coordinator of the garden committee? Was he acting as liaison between the architect and the donor?). This confusion about the role of the broker led the donor to start communicating directly with the architect and the Mayor in order to solve the emerging design problems. The visible performance of contradictory role plays in the eye of the donor in transaction no.2 led the donor to not rely anymore on the broker for exchanging information. Once the donor started communicating with the architect, the broker lost control of the information advantages opportunities in its position.

In contrast, in transaction no. 1 the iterative performance of roles consistent with the expectations of the disconnected parties kept the brokerage system in

equilibrium. On one side, the performance of the role of the gatekeeper in the eye of the donor made the donor keeping on relying on the broker for exchanging information and communication. Here, as in the case of transaction no.2, the donor was expecting the broker to act as gatekeeper of her interest (that's how the broker approached the donor in the first place). However, differently than in transaction no. 1, the broker was consistently performing the role of the gatekeeper of her interest, re-iterating this play in each interaction. Thus, the donor did not have any evidence of the broker performing other inconsistent roles, so she had no reason to suspect that the broker would mediate her requests in an unreliable way. At the same time, in his behavior in the eye of the architect, the broker conformed to the different expectations of the party. The architect expected the fund-raiser to serve the interests of the project, acting impartially in the mediation of the communication between the two parties. Conforming to this expectation, the broker consistently played the role of the liaison between the two parties in the eye of the architect. As a consequence, the architect was seeing the broker as an impartial mediator reporting the demands of the donor.

Thus, in transaction no. 2, the broker was able to maintain his structural position by iteratively performing a brokerage play that was consistent with the expectations of the parties. The broker's behavior in the eye of each party was consistent with the different expectations that each party had on the broker. Note also that in transaction no. 2 the parties had more than one occasion to interact directly, such as in the committees[9]. Despite they could interact, thereby discovering the contradictory behavior of the broker, they did not, keeping talking to each indirectly via the broker, relying on the broker as mediator. Thus, the performance of contradictory brokerage roles in the eye of separated parties affected the perception and attribution processes of the different parties, keeping the structural hole between the two conflicting parties open and allowing the broker' advantage to persist over time.

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[9] Except for the decision to take the alternative of Gehry out of the art committee agenda, I do not have evidence of an effort by the broker to keep actively separated the two parties nor do we see an opposite effort by the broker to unite the parties to resolve their potential conflicts.

Contributions of the Case Study

The contributions of the study can be interpreted in the context of the two theoretical approaches reviewed above. As illustrated, traditional resource-based theories of brokerage assume as a 'given' the structural position of the broker, focusing on the informational and control advantages accruing to brokers through the occupancy of their structural position. However, the case study shows that the occupancy of a broker' structural position is contingent on the behavior of the broker and the extent to which this behavior is consistent with the expectations of the mediated parties. In this sense, this exploratory study is a first step towards a dynamic theory of brokerage behavior, in which structural position is not assumed as given by the theory, but it becomes itself a variable of interest.

Specifically, the findings emphasize the importance of brokers' actions to elaborate a more dynamic conception of brokerage. In this perspective, the study can be interpreted consistently with recent network research aimed at investigating the mechanisms through which action connects to broader structural dynamics. Indeed, while traditionally network research has been criticized to neglect the possibility of agency -intended as the capability of actors to "*innovate upon received cultural categories and conditions of action in accordance with their personal and collective ideals, interests, and commitments*" (Emirbayer and Goodwin, 1994: 1442)- more recent network studies focused on how actors can reproduce or modify their network ties through action, leading to a theoretical blurring of the distinction between macro-structure and micro-action. This approach has been advocated by theorists of structuration (Giddens, 1984), power in organizations (Brass and Burkhardt, 1993), and network theory (Haines, 1988; Emirbayer and Goodwin, 1994) and it has been more recently explored empirically in a number of studies (e.g., Barley, 1986; Krackhardt, 1999; Stevenson and Greenber 2000; Obstfeld 2005). By developing the concept of 'brokerage plays' and by tackling empirically the relevance of brokerage plays to the dynamics surrounding network position, this study contribute a set of new conceptual and empirical tools to the study of the interaction between structure and action.

The findings go beyond simply highlighting the relevance of action to networks, emphasizing how expectations and identity concerns need to be explicitly modeled in structural explanations of resource-based advantages. Here, I use the distinction between logic of consequences and logic of appropriateness defined by March and Olsen (1989) and recently suggested by Podolny (2008) to interpret the basic underlying

difference between resource-based and identity-based approaches to networks. Traditional resource-based theories of brokerage may be interpreted as adopting a logic of consequences as underlying model of brokerage action: once brokers are located in their structural positions, they act "*by evaluating their likely consequences for personal or collective objectives*" (March and Olsen 1989), maximizing the benefits accruing via their advantageous structural position. The model emerging from the case study, instead, emphasizes how brokering behavior may also follow a logic of appropriateness. Once located in their structural advantageous position, brokers still remain aware of the risk of losing their structural position, so they nevertheless worry about the extent to which their actions will be appropriate to their positions, about whether the un-cautious management of others' expectations may force them to leave their positions.

This different logic of action seems to underlay most of the recent work on the relevance of networks to identity and status (Leifer 1988; Padgett and Ansell, 1993; Zuckerman 1999; Podolny 1993; 2001). Broadly speaking, this work may be interpreted as blending a logic of consequences and a logic of appropriateness: actors' intentionality is directed towards the maintenance and enhancement of position that are themselves the receptacles of rewards. Similarly, in the empirical setting of the case study logic of appropriateness and logic of consequences are deeply intertwined in the actions of the broker. The broker in the case study was well aware of two crucial facts: 1) he can occupy, maintain and enhance its structural position only to the degree to which his actions will be evaluated by others as appropriate to that position (*logic of appropriateness*); 2) structural position is the fundamental determinant of the exchange benefits he could achieve (*logic of consequences).* Awareness of the first fact guided the broker in playing the brokerage role of coordinator and liaison, behaving cautiously and judiciously in the eye of the garden committee members and the Mayor. Awareness of the second fact led the broker to behave as representative of donor interests in the private negotiations with donors, leveraging the negotiation/control advantages 'buried' into its structural position. Thus, the case study suggests to model action attending *simultaneously* to the fact that a fundamental preoccupation of actors concerns the appropriate actions they need to perform in order to occupy a position; and to the fact hat an actor's occupancy of a position if the fundamental determinant of rewards that accrue to an actor. This modeling approach to action can reconcile the tensions between rationalist and role-theoretic framings of action inherent in current structural explanation of organizational behavior (Galaskiewcz 2007; Podolny 2008).

Finally, this approach may shed new light on the intense debate concerning the relative advantages of a broker network position and the contingent effects of structural holes. Specifically, the relationship between the occupancy of a broker position and outcomes has been showed to depend on the organizational and institutional context in which the brokerage activity occurs. The most salient differences in the positive effects of structural holes on individual social capital have been observed on the dimension of authority and formal relations as contrasted to the informal or purely social ones (Podolny and Baron 1997; Burt 1997; Tsai 2002; Xiao et al. 2007).[10] Take, for example, the findings of Podolny and Baron (1997), in which the authors found that an individual's mobility chances improved if her information network was rich in structural holes (e.g. non-redundant) and her buy-in network was poor in structural holes (e.g. redundant). In effect, the information network followed the standard structural logic that Burt elaborated in *Structural Holes*. However, if an individual needs buy-in from individuals who are disconnected, that individual is less likely to be promoted than if those individuals are connected to one another.

One can make sense of this contingent finding, "*understanding the flows of buy-in as being about something other than* (resource or information) *"bits," as being about role expectations that are associated with individuals that are connected or not connected"*(Podolny 2008: 5)[11]. For example, one may hypothesize that, if those individuals are not connected, it is more likely that their role expectations are divergent. Similarly, the re-iterated finding that structural holes are less effective in formal and institutionalized contexts may be due to the fact that complex expectations and identities are embodied in those contexts. These identity-based factors are likely to influence the dynamics of brokerage roles and, as a consequence, the ways brokers can

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[10] Podolny and Baron (1997) report that the positive effect of structural holes on promotions did not occur in the individual's buy-in network (people you need to contact to 'get your work done'). Burt (1997) found a similar relationship among the senior people in a large technology company: early promotion was associated with brokerage in networks of personal relations (socialize, discuss personal matters, discuss exit) but there was no association in the authority network (supervision and essential sources of buy-in). Tsai (2002) study showed that the extent to which units in a formal organization share critical information depends on *both* social interactions among unit members and the level of formal headquarter-unit centralization (measured in non-network terms as the headquarters' influence on each sub-unit's decisions).

[11] Similarly, Galasckiewicz (2007) recently noted that the prediction of the positive effect of structural holes on outcomes depends on the presence of institutional and bureaucratic controls, which are likely to influence the behavior of the broker, his ability to extract value from its structural position and to preserve its advantageous structural position over time.

realize the potential opportunities embodied in their positions. My case study contributes to these debates by suggesting looking more in detail into the micro-dynamics of brokerage roles in organizations and institutionalized collectivities, specifically in terms of the different roles that can be performed from the same structural position.

APPENDIX 1: FULL NARRATIVE ON THE CONTEXT SURROUNDING THE TRANSACTIONS[12]

Background Information on the Project

The Millennium Park project was initiated in the fall 1997 with the idea of the Mayor of Chicago of celebrating the new millennium by extending new park land to a vacant site. The site was a 24.3 space in downtown Chicago, adjacent to the city most prominent commercial avenue, its historical art museum (e.g. the Art Museum of Chicago) and over-looking a wall of world-famous Chicago skyscrapers. In 1997, when the Millennium Park project was envisioned for the first time, the site was nearly forty feet under the level of the street and was occupied by an abandoned rail-road yard and a grass-and-gravel parking lot (see picture 1 below).


Picture 1 – The Site of Millennium Park before Construction

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[12] The names of people in the narrative are pseudonyms.

The historical and symbolic significance of the Millennium Park construction site was probably without any precedent in the history of modern construction in Chicago. Indeed, the site represented the last quadrant of land left undeveloped within the historical landmark park complex named Grant Park[13]. The position of the site as one of the blocks constituting Grant Park complex is shown in Picture 2 below.
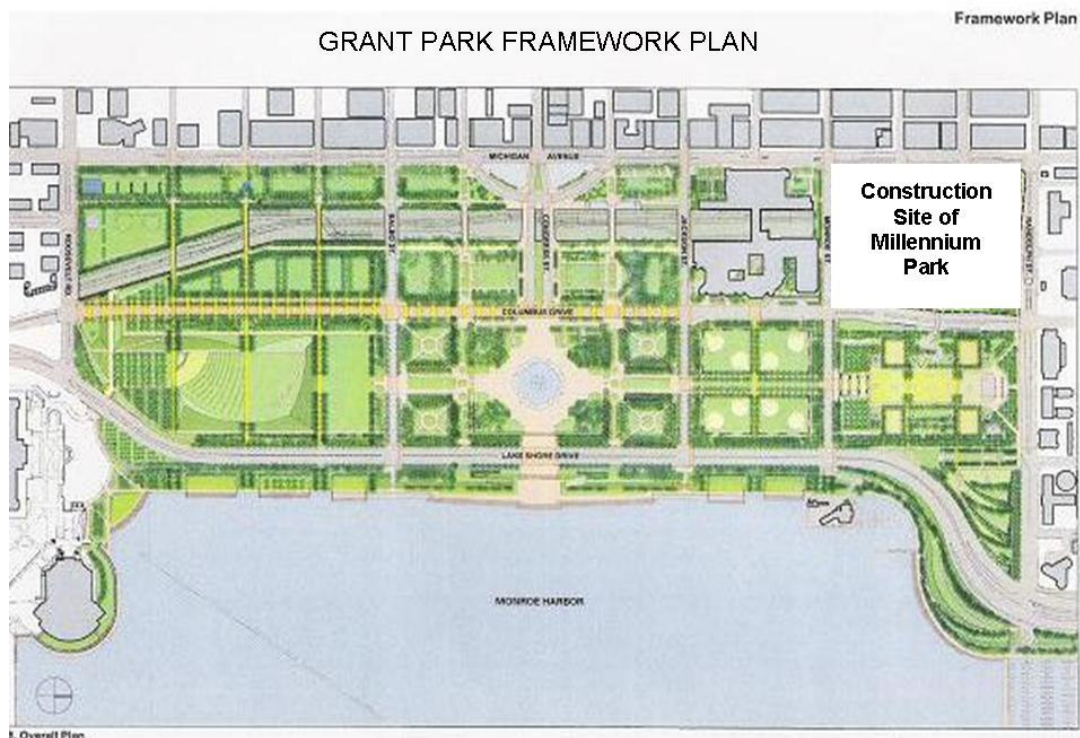
Picture 2 – The Historical and Symbolic Significance of the Millennium Park Site: The Last Quadrant Left Undeveloped in the Historical Grant Park Complex

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[13]The history of the Grant Park complex dates back to 1837, four years after the City of Chicago was incorporated. At the time, parcels of land were set aside from railroad and industrial exploitation to be devoted exclusively to public recreational use under the name of 'Lake Park'. In 1909, Daniel H. Burnham, a legendary figure of Chicago 20th architecture and the visionary urban planner leading the Chicago architecture renaissance after the 1871' fire, released the Plan of Chicago, a grand design that protected Chicago's lakefront from the industrial exploitation that blighted other waterfront cities of the world. *The lakefront by right belongs to the people.* He wrote. *Not a foot of its shores should be appropriated to the exclusion of the people.* A crucial component of the Plan of Chicago was an integrated design for the complex of Grant Park. In his grand design, Burnham incorporated elements of French formal, Versailles-style, park design, including geometric rooms so it could serve as Chicago's formal focal point and intellectual center. In later years, between the 1930s and the 1970s there had been several attempts to build a permanent concert venue in the Grant Park complex.

Introducing the Actors: The Mayor, The Architect and The Broker

The City of Chicago subcontracted the design of the new park to architect Adrian Peck, an internationally renown designer from, one of the world' largest and highly-reputed architectural studio (and probably the most prominent studio located in Chicago). Inspired by Daniel Burhnam -the urban planner known as one of symbols of Chicago 20th century architectural renaissance- Peck and his team envisioned master plan for the site featuring a classic *beaux-arts,* Versailles-style, formal garden emphasizing formality and symmetry in continuity with the historical heritage of Chicago early 20th century architecture[14] and including a new music band shell, a flower garden, an ice skating rink and a promenade area.

The social relationship between architect Adrian Peck and the Mayor of the City of Chicago was an esthablished one. At the time of the project, Peck had recently collaborated on a number of City-funded projects and in several occasions he had the opportunity to meet the Mayor directly. For example, the architect was commissioned the renovation of an important football stadium in Chicago (e.g. Soldier Filed and, right before the Lakefront Millennium Project started out, he had been working closely with the Mayor's office for the historical renovation of the one of the central commercial boulevard in the City (e.g. State Street). In the context of that project, the architect personally met several times with the Mayor and he had the chance to know the Mayor personal aesthetic taste for *"classic and linear architecture"*. As he revealed, *"in the deep of his heart, Mayor Daley is a very hard-core classic, he likes ....and all this kind of stuff"*. Similarly, when asked about the relationship between the Mayor and the architect of the project, all key informants answered: "*Oh, Adrian knows the Mayor well, he knows his clients well in general, but he is especially close to the Mayor, they*

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[14] SOM's master plan reflected various influences. Post Office Square in Boston served as a possible model for the under park garage. Both the classical beaux arts elements of Burnham and Bennett's *Plan of Chicago* (1909) and Robert Hutchins's 1988 design scheme for Lakefront Gardens provide guidance and inspiration for the SOM's design scheme for the park area topping the underground garage. As a result, SOM's first plan emphasized symmetry and formality conforming to the grid of the city by visually extending the streets (Washington and Madison) as promenades. While I'll return on specific features of SOM design in the next section, it's worth emphasizing here that the key component of the SOM plan was the garage. Indeed, as it clearly emerges from the analysis of SOM job memoranda and city officials' meetings minutes, *the dominant focus of planners at that time were transportation, infrastructure and parking issues rather than the park and the cultural amenities*. These concerns became even more pronounced with the inclusion of an intermodal transportation center below the park, which was planned to link automobile, bus and rail traffic. Thus, at its inception, the Lakefront Millennium Project was viewed more as a transportation project rather than as a cultural-oriented outdoor park space.

also travelled together in Paris to choose the landscape ornaments we see now all over the city".

Worried that taxpayers would not liked the use of municipal funds for an expensive park in downtown Chicago –given that most parks in Chicago poor neighbourhoods were still in bad conditions- the Mayor requested a moderately expensive basic park plan, to be funded with the revenues of the garage planned to be constructed below the park. The strict budget didn't give much degree of freedom to the architect so that in one of the meetings with the Mayor and his advisor, he was mourning the fact "*with this limited budget, we had no money to do anything else than a pretty much basic park…but this site deserved much more than this, much more than just a basic park"*. The architect suggested the Mayor and his consultants to involve the private sector, in particular, he suggested involving John H. Rowley, CEO of Food Inc, a large multinational corporation located in Chicago. On one side, John Rowley was a "natural choice" for the project. At the time, he described as *"the king of the business community in Chicago, he is the head man in the city with no rivals whatsoever and he is probably considered by everyone the civic fund-raiser no.1 in the city",* remarks Marshall Field V, the heir of a prominent business family in Chicago and now a well-known philanthropist and civic activist. Besides being a prominent businessman, John Rowley was a leading actor in the Chicago active cultural philanthropic community, seating on the board of directors of the most prominent Museums –such as the Art Museum of Chicago- and cultural institutions in the city (see Biographical account of John Rowley reported in the appendix). On the other side, Peck had more parochial motivations to recommend the name of John Rowley. An internal note by John Rowley –dated February 10, 1998, more than two months before the official kick-off starting date of the project- reveals most clearly the nature of the social connection between Rowley and Peck: *"I talked this afternoon with Adrian Peck. He will take a look at my thoughts regarding the Art Museum, and will keep it confidential. Adrian told me a meeting is being held today at the Mayor's office to discuss "Lakefront Gardens"…He plans to talk to him about engagement of the corporate community in the realization of the Gardens. They probably will also discuss a date for making an announcement. I expect we will be hearing from the Mayor's office soon",* the letter continues, *"Adrian then asked if I could help him become involved at the Art Museum. He would like for himself and the firm to be supporters, and he would like some role there".*

John Rowley and Peck happened to know each other personally some years before the starting of the Millennium Park project, in the context of a civic project that John Rowley was leading in order to build a new large performance center in downtown Chicago to provide a new venue for the Chicago Lyric Opera and the Chicago Symphony Orchestra. Curiously enough, in the context of that initiative Rowley had the chance to repeatedly interact with both the Mayor and the architect Adrian Peck, which will be major figures in the development of the Millennium Park project some years later. Rowley's memories of the story are not entirely good: *"when we started out, at the beginning, the initiative was strongly supported by the City, the Mayor was on board and enthusiastic…then at a certain point, I was recalled at the office of the Mayor and was told that the Mayor had changed his mind, he was worried about the project to become an ugly "Lincoln Center" in the middle of nowhere and we perhaps didn't even need a new venue, since we had our beautiful buildings* (the orchestra and symphony halls). *That was all of a sudden, we were already looking at plans and design schemes…at the beginning, I didn't understand why the Mayor did that.…later I discovered people inside the Lyric Opera were not happy about leaving the hall, the newspapers were writing articles about how we were going to have an ugly Lincoln Center here. So, I decided to redirect the whole thing[15]…in Chicago, you can't have Mayor Daley against if you want to do a public project this big."*

The performance space project was not the first occasion Rowley that had the chance to meet and interact with the Mayor. As liberal democrat (see biographical sketch), Rowley –both personally and in his role of CEO of one the biggest corporation headquartered in Chicago- was one of the early supporters of Mayor Daley for his first election victory in 1989. For example, Food Inc was one of the major sponsor of the Chicago National Democratic Convention in 1996 and Rowley himself helped the Mayor to organize the event. Since the Mayor' first election, Rowley recalled, *"the*

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[15] Specifically, discouraged from the withdraw of the Mayor's commitment, Rowley approached Adrian Peck from architectural studio ROS to determine if the existing buildings of the Lyric Opera and Symphony Orchestra could be renovated Then, Rowley set up to devise a fund-raising strategy to raise 100$ million dollars from the corporate community for the planned renovation, which was no easy task since in no other city in US so much corporate money was raised for cultural institutions. The campaign was a incredible success, in less than three days Rowley was able to adjudicate three major gifts of 10$ million dollars each from three big multinational corporations –in which he had close personal relationships with the CEOs or president of the board. This provided the starting basis for an upsurge of donations from the corporate community. In explaining the reasons for the success, Rowley will later re-call *"You go in and you tell them that organization is important to the definition of Chicago. You wrap that civic cloak around it."* But, adds Rowley, *"you've got to have people who respond to that, and we do; we've traditionally had that in Chicago."*

Chicago business community supported him generously and consistently over all these years (the Mayor is in office from 1989 to 2008)*, and I believe he has a genuine respect and feeling for the needs and interests of our group."* Given his prominent position in Chicago' business community, Rowley is often invited by the Mayor to serve as the official representative and "ambassador" of Chicago' business world both in local and international events.

However, as John Rowley described it, the relationship with the Mayor is not without frictions: "*…the Mayor is very determined, I would not say he is not hearing what people say, he is actually very open to new ideas and to what people suggest …but then <u>sometimes</u> he just doesn't <u>want</u> to hear you, he just goes all the way down his way… he can tell you one thing one day, gives you his word and the next day break it with no apparent reason…he suddenly changes his mind, and when you are there you never get to know why.…but, once he has changed his mind once, he will never change his mind again…you will never get him to go back…"* (emphasis in original). The social relationship between the Mayor and Rowley is also a personal one: *"My wife and I sometime invite the Mayor and Maggie (*the Mayor's wife*) to come over at our farm, and we had also traveled together in Paris and all over Europe",* Rowley recounts. At the same time, a number of other key informants interviewed, both close and not close to Rowley, highlighted that: *"I don't think John Rowley considers the Mayor a close personal friend of him and his family, he is just well-aware that the Mayor is a necessity in Chicago, you can't get things done in the city if you have the Mayor against you".* The power of the Mayor is remarked by a prominent Chicago philanthropist: *"you have to remember that Chicago is very special, because we don't have a Mayor, we have a king here…I always remember when after 9/11 George Bush wanted cities to cut their budgets and so the Mayor had a huge fight here over Meigs Field Airport (*a small but intensely used airport, especially from Chicago' business community)*, but we went to sleep a day and the airport was not there anymore the day later, he literally turned it down with bulldozers and all that stuff.…because the Mayor wanted a park to be there instead of an airport, he turned it down over night and then said "George Bush wanted me to do that"…I believe this is the most vivid example of his power, that time he really much wanted to show us that this is a one-man band and that you can't imagine to do anything in here without him.…".* Another leading philanthropist recalls this specific episode to describe the personality of the Mayor and his particular style of control: *"I would say the Mayor is an arrogant who is often right on things…he is very determined,*

he knows where is going and he wants to let you know that he has veto power on what you are doing…at the same time, when he is asking your help, he listens to you, and today we can' t deny that he made our city much better than it was before…at the same time, dealing with him made me mad some times….I can't forget the time we (intended as "the Chicago' business community") *offered our help to expand the O'Hare central airport, because we were in need of more infrastructure and all that, in exchange we asked to not turn down Meigs Field airport, that was so important for businesses here….he said OK, and then all of the sudden he broke his word and turned it down the airport overnight…I never understood why he did that and I still think it was a huge mistake…we almost didn't talk to each other for months for this reason…I'm sure he still firmly believes he was right…".* Similarly, I collected other episodes of the unpredictable character of the Mayor in a number of settings[16].

The Role of the Fund-raiser in the Project Organization

The involvement of John H. Rowley in the Millennium Park project – at the time named 'Lakefront Gardens' or 'Lakefront Millennium Project'- started in mid-March 1998 with a call from Mayor Richard M. Daley: *"one day I got a call from him specifically saying that he wanted to undertake this project to build this garage and a park and he'd like for me to be in charge of the enhancements on top of the garage. He thought it would cost about $30 Million to do those enhancements and if I could raise that money and do it all, he'd appreciate it. And I said, "sure".*

Despite its prominent role in both the business and the art/culture-oriented Chicago elite, the role of John Rowley within the Millennium Park project team was mostly confined to fund-raising (his task was to raise $30 million from the private sector and select some artistic enhancements on the top of the, already designed, park). Indeed, the Mayor announced also the constitution of a private donors group -led by John Rowley, CEO of Food Inc Corporation, serving as chief fundraiser and Tina Smith, CEO of a TV production company- with the objective of raising $30 million to finance the construction of the park. In the mayor' idea, garage revenues were expected to pay for the bonds floated by the city to construct the underground garage, while the aesthetics enhancements of the basic park were expected to be covered by the private

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[16] For example, the Mayor is described by his former advisor as *"he is a black or white type of person, who doesn't like very much grey areas…but at the same time, he is a flexible type of person who hears what people want and can occasionally changes his mind'.*

sector. Given their expected role as intermediaries between private donors and the public organization of the project, I label the two CEOs appointed by the Mayor as 'fund-raisers' or 'fund-raising brokers'[17]. The role of the two fund-raisers was that of leading a private citizens' committee in order to: 1) to select a few artistic enhancements (e.g. sculptures, landscape designs) to be put on the top of the devised master plan of the park; 2) to raise the private money necessary for funding the selected artistic enhancements. The fund-raisers constituted a non-profit 501(c)(3) organization, Millennium Park Inc., in order to receive funds. In addition, they formed several fund-raising and design committees in order to mobilize Chicago philanthropists, art experts and members of notable art and cultural institutions in the project. Specifically, the fund-raisers formed two types of committees[18]: 1) *Fund-raising committees,* charged with the responsibility of identifying major naming opportunities on areas of the master plan of the park and 'sell' to private donors naming rights on these areas in exchange of donations; 2)*Design committees*, charged with the responsibility of providing guidance and direction for the selection of sculptures (Art committee) and landscape designs (Garden committee) for the park;

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[17] In the analysis of the narrative provided in the paper the two fund-raisers are indicated with the label 'broker".

[18] More precisely, they formed 7 committees, which can be divided in the two broad categories mentioned above. Fund-raising Committees: 1) *Executive Committee*: this is the initial group set up to 'coordinate the efforts of the other fund-raising committees'; 2) *Public Campaign Committee*: this committee initially worked on the idea of 'selling bricks' of the park for less-than-a-million donations (from $100 up); this idea was abandoned in a later stage of the project, in order to focus only on million-dollar donations and major gifts for more than a million (>5 millions); 3) *Major Gifts Committee*: this committee worked on the idea of soliciting multi-million dollar gifts (>$5millions) for major naming opportunities on the park; 4) *Million-Dollar Campaign Committee*: this committee objective was to raise donations of one-million dollar each. Design Committees: 5) *Art Committee*: this committee purpose was to provide 'guidance and support for selection of artistic enhancements' of the park; 6) *Garden Committee*: this committee mission was to improve the main garden (located on the south-east corner of the park in the master plan of the park) with flower ornaments and landscape designs; 7) *Music Committee*: this committee mission was to discuss the enhancements of the sound system and facilities of the performance venue located at the center of the park in master plan of the park. Here, I'm considering only the major gifts committee for the fund-raising and the art and garden committees for the design committees, the other committees did not take any important decision in the project.

APPENDIX 2: FULL NARRATIVE OF THE TWO TRANSACTIONS

Transaction no. 1: Mediating between an Architect and a Donor on Gehry Design

As I illustrated above, the fund-raiser brokers had their target donors well-defined in mind. On his way back from the White House –where it was celebrated the award of the 1998 Rawls Architecture Prize, recognized worldwide as the "Nobel Prize for Architecture", the chief fund-raiser scratched in a memo to his assistant: *"We need to figure out some way to get Amanda Rawls* –a member of the Rawls family, sponsoring the Rawls prize and internationally renown for cultural philanthropy-*involved in the Park project"*. He later sent a letter to Amanda Rawls *"As we consider who the outstanding sculptors and artists of our time might be, and which would be the most appropriate for our park, I would love to have the benefits of your views. Your views and expertise would be of enormous benefit to us and the City needs your help"*. In a follow-up communication, the broker reiterated: *"I would also welcome the opportunity to review a large-scale model of the park with you that Adrian Peck has constructed, as I believe you would find it inspirational. Should you have a few minutes over the summer, please let me know, and we shall muse a bit."*

In the fund-raisers mind, the approach to Amanda Rawls was part of their broader fund-raising strategy, aimed to "get donors involved in the project", as an earlier fund-raising memo between the fund-raisers reveal: *"We will invite three of Chicago's leading families to launch the project by making the gifts to name these respective areas. These are once-in-a-thousand year's opportunities….In approaching donors, it is important to reiterate that the families will be selected and the invitations offered based on the fact that they are not being asked to pay for basic construction costs of the areas. The city is responsible for this cost. Donor's money will be used for the enhancements to create a standard never before seen in cities"*

In addition, fund-raiser brokers know well the aesthetic taste of their 'key prospects'. For example, they were well aware of a social connection between the Rawlss and the world-renowned architect Frank Gehry, a former recipient of the Rawls architecture prize and a close personal friend of the Rawls family. For example, in a recent interview Amanda Rawls jokingly refers to herself as *"Frank Gehry' second wife"*. The name of Frank Gehry was in the list of potential artists to be contacted prepared by the Art Committee in its first meeting on July 9, 1998. Specifically, Frank Gehry was recommended as a potential candidate for doing a sculpture to be located on

the music band-shell planned in the master plan of the park. Thus, when, in between the first and the second art committee meeting, fund-raiser brokers set up a summer meeting with the donor, "*it was kind of "a natural" to explore a Rawls donation for a naming opportunity on a Gehry-designed sculpture on the band-shell*".

On his way back from the donor' summer home, the fund-raiser, wrote: "*I think we need to follow-up quickly with Amanda Rawls. We need to arrange for her to see the model and to get her more involved with the art aspects surrounding the pavilion in Great Lawn*". In commenting on this letter, the fund-raiser remembers: "*It becomes immediately clear to us that Amanda was determined to make a more significant use of Gehry, and we were happy to accommodate her requests, at the beginning we weren't sure how... but I immediately "lit up" of using Gehry, because he is rather sculptural...I thought having Gehry here to make a bold artistic statement would was a unique opportunity to transform the park, almost overnight, into an iconic symbol of the city at the turn of the millennium. I, as many others, considered Gehry the most important, if not the greatest, architect of the time...*"

However, "making a more significant use of Gehry" run directly against the interests of the architect of the project, who devised the first master plan of the park and could, perhaps, be not happy about having a "bold aesthetic statement" from another architect in the park. When the broker informed the architect about the possibility of a donation from the Rawls, the architect showed his concerns quite clearly: "*I talked to Adrian* (the architect)*, tonight, to tell him about the prospects regarding the Rawlss. I also asked Adrian an opinion about an appropriate location for Gehry in the park. He has some worry about the prospect becoming "Gehry Park". Thus, he wants to talk about sculpture only. I think it is important for us to be able to call it "Gehry Band Shell". What we say in the letter to committee members about this is important*". In a private strategy meeting between the fund-raiser brokers, the broker decided that "*until we hear from Amanda Rawls and understand what she wants, it would be perhaps better to not bring the Gehry issue into the Art Committee. It could raise problems. We need first to talk with Amanda*". At the same time, in the context of a special meeting of the art committee, the architect was charged with the responsibility to contact Frank Gehry "*for a sculpture, and explore the possibility of a collaboration with him over the design of the proscenium*".

Nevertheless, fund-raisers kept debating the involvement of Gehry in separate meetings and conversations with the donor. However, the donor was concerned with the

idea of a sculpture and with the overall aesthetics of the park and about the idea of juxtaposing contradictory aesthetic styles: *"we would put a piece of sculpture on this side and another sculpture on that side so that we could be artsy, I immediately thought that was a really dumb idea"[19]*. As reported by the fund-raiser brokers, the donor told them: *"If you guys are serious to get such an internationally acclaimed artist like Gehry involved in this project, let's not get him just to decorate this side or that side of the proscenium, let's get him to really do something here, to do both decoration and proscenium…if you really want an artistic statement for the pavilion, why not ask Gehry himself to design it? If you get somebody like him, the music pavilion itself will be the art and you don't need all of this stuff.…and, if you are serious about that, my family and I will pay for that"*. To meet the donor' requests, fund-raisers *"went back to drawing boards and maps, we needed to think where to locate a Gehry-designed structure and that can fit with the existing plan"*. The transformation of the Gehry would-be design from a sculptural piece to an architectural piece could have be even more in contrast with the interests of the architect of the master of the park. In between September and December 1998, while there were ongoing discussions in the art committee for the selection of sculpture in the park, the broker met several times with the donor to further discuss the extent of the involvement of Gehry design: *"I spoke with Amanda this morning* –one fund-raiser wrote- *I reminded Amanda of her offer to call Gehry. She is happy to do so but she wants to be able to tell him that "he will have full latitude". Until we can assure her that she can say this, she wants to wait before calling him. I told Amanda that I would be with you and Ed Pollock* (the project manager representative of the Mayor) *and we would work it out. She asked to get back to her with "her marching orders". I detected no change in her interest level, but I feel that time is of essence"*.

In between September and December 1998, the broker was still waiting news about the engagement of Frank Gehry from the architect of the project. In august, the broker had entrusted the architect with the task of contacting Frank Gehry, but he did not receive any news up to December. He then wrote a letter to the architect: *"our private sector organization is prepared to fund the costs of Mr. Gehry' work and the services of*

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[19] The donor lamented with the fund-raisers: *"I dislike everything about this design* (talking about the original master plan), it's completely traditional" she said, objecting to the linear emphasis in the design, as well as to the sound system that she considered a little more than a series of poles sitting on the lawn, *"it is just awful"*, she concluded.

your firm…" In commenting of that letter, the fund-raiser explained: *"we wanted to be make Adrian sure we were interested in a true collaboration between the parties, and that we wanted him to coordinate and control Gehry work on design"*. Despite the request of the fund-raisers, the architect did not contacted Gehry: *"he* (the architect) *said he was fine if the donor contacted Gehry directly but he did not want to the donor to be Gehry's client. Moreover, Adrian wanted to know how we are going to handle the money, he asked to let him have a budget and he could contact Gehry"*.

Fund-raiser brokers grew concerned: *"Adrian was responsible for contacting and recruiting Gehry, but nothing had happened since then",* recalls the chief fund-raiser of the project, *"at that point, we decided that, in fairness to the donor commitment, we had to make a sincere effort to interest Gehry"*. Then, fund-raiser brokers directly flew to Gehry's studio in California together with the project manager and representative of the Mayor[20]. They convinced Gehry to participate to the project, despite the number of projects and commissions he was engaged at the time. *"The description of the site as one of historical importance and symbolism for the city",* remembers city project manager Ed Pollock: *"and the news of offer of the donor had a huge impact on him"*. The architect was informed of the commission of the new design to Gehry only later, after the Mayor had approved the Gehry' design, and, according to the city project manager *'was completely shocked, he could not believe we did that and wanted to know who took the decision of hiring Gehry and if the Mayor was aware of what design he was getting with Gehry in the park"*. Colleagues of the architect later declared: *"it never occurred to Adrian that donors could go so out of control…he trusted John Rowley and I knew he would not do that…but it never occurred to us that donors could have such a say in a public park design"*.

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[20] Before attempting to engage Gehry directly, however, fund-raiser brokers sat down with the project manager of the project and mayor representative in order to define the exact design scope to be proposed to Gehry *"It was important to ensure the architectural integrity of the Performing Arts Complex, avoiding to give the impression that two conflicting design styles –the classic beaux arts framework of the master plan and the post-modern design of Gehry- had been juxtaposed by mistake. For this reason, we thought to enlarge the area to be re-designed by Gehry by including both the music band-shell and the entire oval defined by the great lawn, the sound system and the amphitheatre"*.

Transaction no. 2: Mediating between a Donor and an Architect on the Design of a Garden

At the end of July 1998, the fund-raiser broker met the Mayor who suggested to involve in the project one landscape architect: *"I remember he gave me this newspaper article with a piece on this well-known garden designer, Deborah Evans* **(Deborah Evans is "the architect" in the analysis of the transaction provided in the paper)***, she has been doing gardens for "the rich"…she is from New York, but well-respected here in Chicago, she has done gardens for the Webers, the Rowls, etc* (all donor' families) *and apparently the Mayor liked her a lot"*.

The Mayor also suggested the Weber family as a potential key prospect donor for the garden. Jason Weber was the founder, CEO and executive chairman of AON corporation, a global insurance and risk management company that he founded as a small insurance agency of 5 persons in 1965 and grew up to over 500 offices in 120 countries. The Webers were personal friends of both John Byran and the Mayor: *"Our children grew up together, strolling in the same playground…we are also neighbours and Jason is a good friend of mine…"* -Rowley says- *"despite he is of a different political orientation, he is also very close to the Mayor, and this is a well-known fact in Chicago, he is a supporter of his campaign and his wife* (Patricia Weber) *works with the Mayor's wife at the Gallery 37* (a small non-profit organization in Chicago)*…they are very close friends, they often go out travelling together or at dinner…"*. Similarly, John Rowley and Jason Weber had also several social cross-connections in the business circles, being members of the same clubs. *"I knew the Webers were expecting a request for a donation from me…it was kind of a natural …. so when I approached Patricia* **(Patricia Weber is the donor in the analysis of the transaction provided in the paper)** *with the proposal of a Weber Garden in Millennium Park, she received my requests very politely and calmly and she told me she was very happy to join this historic undertaking"* –Rowley recalled- *"of course I also told Patricia that Rich* (the Mayor) *and Abby* (the Mayor's wife) *would be happy to see them involved"*. When asked about how they approached the donor and what was the initial agreement with the donor, the fund-raiser broker answers: *"basically we approached all the families we selected in the same way…with the Rawls, the Richards, the Webers, the deal was always the same, they would have naming opportunities of a area of the park sort of reflective of the price we are asking for…we will guarantee that that money will not be used to augment the budget of the city of Chicago, they will pay for the basic*

construction costs, donors' money will be used to elevate the design of those areas to a standard never before seen in any city of the world…and of course, there will be spaces for naming opportunities and we would control that well…" The name of landscape architect Deborah Evans as potential candidate for the new garden design was a very welcomed proposal by the Webers: *"Jason and I have a Evans-designed garden in our place in Lake Geneva...Debb is a very talented designer and she as an extraordinary gift for designing beautiful landscaped paths, which have also the advantage of being accessible to people with disabilities"* (the Webers have a son with disabilities). .

At the same time, a committee was being formed –e.g. the garden committee (see above)- with the mission of providing guidance and direction for the selection of landscape ornaments and garden designs for the main garden are of the master plan of the park. Patricia Weber - the prospect donor for the garden, was a member of this committee. In their first meeting on August 7, 1998, garden committee members discussed a pre-selected list of 11 landscape architects with an international reputation to be contacted for submitting design proposals for the new garden. In that context, the broker –as chair of the garden committee- asked committee members to submit their suggestions and they empowered the representative of the Mayor to *"develop a descriptive summary of the gardens project and a request for proposal to submit to 11 landscape architects identified".*

However, in between the first and the second garden committee on October 16, 1998, the broker contacted the garden designer Deborah Evans mentioning the interest and involvement of donor Patricia Weber in the project: *"Mayor Daley and the Webers appreciate your work and they very much support your active involvement in this historic endeavour".* Thus, the agenda of the garden committee meeting reported *"A principal purpose of the meeting will be to meet with the landscape architect Deborah Evans, and hear potential design ideas about the Park's main garden".* Not every committee member liked this change in the agenda from one meeting to the other. For example, Mrs Runtrock called the office of John Rowley to communicate she was unable to attend the Gardens committee due to travel commitments and that *"She felt that if she misses this meeting that she will be "outside of the process"* –the secretary of JHB reports in a note- *She was wondering if <u>Deborah Evans</u> has been chosen to do the gardens as she is familiar with her work and thought that <u>"Mr Rowley would be going a different direction"</u> than that. <u>I assured her that no decision on the landscape designer</u> had been made and that this meeting was called to review Ms. Evans' previous work*

and hear her vision of the gardens for the park. I also assured her a full accounting of the meeting would be sent to her to which she replied "meeting minutes just are not the same". A call or letter to Mrs. Runtrock assuaging her misgivings may be appropriate and necessary.

Despite these resistances, at the second meeting of the Gardens Committee, committee members agreed to retain Deborah Evans to design the park's main garden, as expected and agreed with the donor[21]. That meeting was the first occasion in which the donor and the landscape architect met directly in the context of the project. In that meeting, landscape architect reviewed her conceptual approach to the creation of new gardens and slides of her previous work, emphasizing the need "*of an evergreen structure of a great floral beauty which may link to multiple floral beds existing in the park*". The donor followed up the meeting with a thanksgiving letter to John Rowley: *"I wanted just to let you know how much Jason and I appreciate your leadership of this marvellous project…Deborah ideas for the park are terrific …it is wonderful to see this dream project growing and you are leading this visionary effort in defining Chicago to the world"*.

In addition, at that meeting, John Rowley –who was the only member of the Gardens Committee who seated also on the Art Committee- spoke about the sitting of sculpture in the park, distributing to Gardens Committee members a list of sculptors identified by the Art Committee. Two names of sculptors were listed for the garden area –where the new design of Deborah Evans should be located. Rowley suggested the Gardens Committee to recommend exploring the interest of these sculptors in collaboration with the garden designer Deborah Evans, adding also that they could start by contacting sculptor Anish Kapoor, since he had received especially favourable mention from the Art Committee.

The idea of involving a sculptor in the garden project was doomed to raise problems. On March 21, 1999, in a special meeting including members of both art and garden committee, the working model of the sculpture by Kapoor -to be located in the

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[21] The decision to retain Deborah Evans was not appreciated by every member of the Gardens Committee, though. For example, the director of the Chicago Botanic Garden wrote to the Rowley after receiving the acknowledgement of this decision: *"I have your letter of October 26 advising me of the decision that Deborah Evans will be retained to design the Park's main garden. I accept this decision, but express my disappointment that there was no report on any other landscape designers who may have been interviewed. I am particularly concerned that I have received no communication whatsoever with respect to my recommendation…"*. John Rowley reacted to these observations, again, by explaining that the Mayor suggested this garden designer and that there was the opportunity to obtain a major gift attached to it.

main garden- was reviewed together with the schematic design of the new garden design by Deborah Evans. Both the architect and the donor were present at the meeting. In looking at pictures and models of the sculpture in the context of the new garden design, committee members determined that the massive elliptical sculpture was too large for the design of the garden: *"we felt that putting that gigantic piece of sculpture in that setting does not do justice to the piece, which needs a larger setting. Additionally, it dominated the flower garden. It just didn't work. The question was: can the sculptor design something of dramatically smaller scale? Otherwise, it will have to be located somewhere else"*. In a private conversation with the broker, the donor expressed her concerns that such a commanding piece would obscure Evans characteristic style since everybody would be looking at the sculpture: *"it sounds like Deborah design is "intimidated" by the gigantic kidney bean…I believe Deborah can do much better than that, we should perhaps tell her we are looking for a Deborah Evans design in downtown Chicago and she should not feel reliant on the sculpture in her vision"*. Despite these concerns, at the time, the deal for the donation with the Webers was considered almost closed, as a memo in the fund-raising committee witnesses: *"John Rowley has met with both Pat and Patricia Weber to discuss a $10 million gift for the formal garden. Deborah Evans is preparing design proposals for the garden. The Mayor and John Rowley believe the Webers are on board. John Rowley will seek closure"*.

After the meeting, the broker started interacting separately with the architect of the garden (Deborah Evans) and the sculptor (Anish Kapoor) in order to sort out the possible solutions to the sculpture' size problem. Then, he asked opinions to art and architectural experts (mostly members of the art committee) and called a special meeting to decide what to do with the sculpture in the garden. They eventually decided to move the sculpture in another location and keep the new garden design by itself. This proposal was initially suggested by the garden designer. In this temporal window, there is no evidence of communication between the broker and the donor on these design issues. The donor was later approached by the broker communicating the decisions of the special committee: *"I'm writing you to bring you up to date on developments since the March 26 meeting of our Gardens Committee and to share with you current plans and design changes for the development of Millennium Park. At the time of our March 26 meeting, and during my consultations that followed, it was clear that there was great enthusiasm for the sculpture proposed by Anish Kapoor, yet also concern that the*

presence of such a commanding piece changed the formal garden from a destination flower garden to a sculpture garden. During subsequent deliberations with the Art Committee, it has became clear that we were, perhaps, trying to include too many design elements in the park…Thus, the Art Committee decided and Mayor Daley endorsed the position that we should have only one piece of sculpture in the park, and it should be sited along Michigan Avenue, rather than in the flower garden. ….We have already informed Deborah Evans (the architect) *of this decision and asked her to set a date as early as possible to review new design proposals with you, and later with our Garden Committee…..We believe this course will enable us to develop and maintain a dramatic destination garden to a standard never before seen. As you suggested, we re-iterated to Deborah that it is her design genius we are seeking, and that she should not feel her designs as reliant on the sculpture created. We so much appreciate your continued support and active involvement in pushing the development of this project on an international high-class level it deserves and on which the participation of our private sector organization is predicated. We will be in touch with you to propose a meeting date as soon as practical for Deborah Evans, given our changed requirements”.*

However, few days later, the broker assistant wrote in a note: *“Patricia reports that she is not happy with the idea of moving the sculpture out of the garden, she feels that perhaps the garden, by itself, is not permanent enough…”.* Around the same time, the broker happened to know via the architect that the donor had already contacted her directly *“wondering what happened to the garden proposal….she mentioned some ideas about a structure, some pergola on the hedges of the garden”.* The broker later contacted the donor: *“From the earliest days of the project, Mayor Daley has believed that Weber Garden should be located there, and he will be thrilled to hear news about your participation…Earlier this month, I spent more than an hour with and enthusiastic and proud Mayor. Your magnificent garden, the Gehry and the Anish Kapoor have created an enormous outpouring of enthusiasm for the park….I am delighted to hear that you are working with Deborah Evans, Patricia, as she continues to refine her design for the garden. It is a splendid, serene and altogether stunning space, and will be a wonderful testament of your generosity to Chicago at the close of a remarkable century”.* The broker later explained: *“we wanted to be sure that Patricia was comfortable with the scope of the design and with the sculpture decision…at the*

same time, we wanted let her know everybody was on board and all set to move forward".

Apparently, however, the donor was of a different opinion, as she kept interacting and meeting personally with the garden designer (over her home in Chicago or at the architect studio in New York) to review design issues and ask for new requests. The broker was kept informed by the architect who first reported *"I am making progress with Patricia Weber. We met in New York at my studio to review my schematic design drawings, Patricia appears comfortable with the new conceptual approach, she was wondering about accessibility issues….I will meet again with her in Chicago to show her my final proposed design for the garden, I believe everything is on track for the Weber gift."* Just a month later, the fund-raiser broker happened to know via the city project manager that *"Deborah visited with Patricia at her home and walked the garden Deb designed there to review access issues. Apparently, Patricia reported to Deborah that "they are getting more comfortable funding this project, but, she said, John Rowley "had asked for a lot of money, more, she felt, "than a garden should be". She told Deb that the amount was more than a garden should be".* Later, the broker assistant reported that the architect called to say: *"Patricia Weber asked me for more water in the garden. She told me "I want a lot of water in this garden". Deborah felt water can compete with the fountain, so she wanted let us know about Patricia's requests. The two discussed design options, like Deb's water tables, that would not compete with the fountain. Deborah is hopeful to have 15 minutes with you".* Subsequently, the broker was informed that "*Patricia Weber spent considerable time with the Deborah Evans while she was here in Chicago, at the presence also of the Mayor and the city project manager. As Ed reports, there seems to be a heightened degree of discussion between Patricia Weber and Deborah Evans about the project".* The broker attempted to solve the design conflicts issues emerging between the architect and the donor calling a small working meeting with the architect of record of the project, the city project manager and representatives from art and cultural institutions (e.g. the Art Museum of Chicago).

However, the broker happened to know that, after the meeting, the donor privately reported to a friend: *"Patricia was not feeling really comfortable to talk in that group, she said John Rowley has been changing his mind a thousand time along the way on the garden…she mentioned John wanted first to have a sculpture there and now he just wants a plain bed of flowers and no more than that..".* Next, the broker happened to know that the donor was having private conversations with another

architect to *"get him involved in the garden project instead than of Patricia"*. At that point, the broker recalls today, *"we decided we have to give up the $10 million donation, it's perhaps the first and only time it happened in my long career as fund-raiser…but I couldn't let Patricia do whatever she wants in a public project, she kept changing her mind, she wanted water, pergolas and all this stuff…perhaps she just didn't feel the garden was permanent enough in comparison with what we gave to the Rawlss, etc.…and, yeah, perhaps, at some point she felt excluded from the process, even if we have no intention whatsoever to exclude her, Patricia is a good friend of mine, I think she has good design taste and her views were important for us, I always want people to get involved, to have a feeling of ownership about the things they donate for… but I felt it was very weird she started fighting with her own architect and we simply could not deal with that anymore…we were hearing snippets of information all over, so one day I called Jason* (the husband of Patricia Weber, the donor) *and told him "Patricia is not happy, we need to start all over again", he understood it was a public project and that we needed to move on"*.

When asked about the story of the garden, the donor now recalls: *"I think the problem with the garden was that, since the beginning, John Rowley had no clear vision of what garden we should look for, what garden would represent the definitive millennium monument…we started out with a Deborah Evans design, Pat and I are familiar with her work…but, as it turns out, John first wanted a sculpture there, then he wanted to move the sculpture out of the garden because it was too big…so, we didn't know if we were talking about a flower garden, a sculpture garden or what else…it was, in my opinion, a mess, you didn't know whom to talk with, because everybody, you know, has different tastes and so…John was alerting us of changes in the park everyday, the design was changing continuously and you never managed to know who wanted to change and why…I think Deborah got increasingly uncomfortable with that, she got confused about the vision, we start talking about the design, to figure out some ways of making the garden more interesting…but, at that point, and Gehry was already there, the fountain was there, I believe John wanted the garden to stick with the original idea of a garden as a quiet "transition area" to the Art Museum…so, Jason and I started being less and less interested in the project…"*

		CODING TABLE FOR BROKERAGE PLAYS DETECTED IN TRANSACTION NO.1		
Date (t)	**Action of the Broker**	**Context/Background for Action**	**Content of Action**	**Coding of Action into Brokerage Play**
July 10, 1998 (1)	Broker' first approach to donor	*"We will invite three of Chicago's leading families to launch the project by making the gifts to name these respective areas. These are once-in-a-thousand year's opportunities….In approaching donors, it is important to reiterate that the families will be selected and the invitations offered based on the fact that they are not being asked to pay for basic construction costs of the areas. The city is responsible for this cost. Donor's money will be used for the enhancements to create a standard never before seen in cities"*	*"As we consider who the outstanding sculptors and artists of our time might be, and which would be the most appropriate for our park, I would love to have the benefits of your views. Your views and expertise would be of enormous benefit to us and the City needs your help".* *"I would also welcome the opportunity to review a large-scale model of the park with you that Adrian Peck has constructed, as I believe you would find it inspirational. Should you have a few minutes over the summer, please let me know, and we shall muse a bit."*	Gatekeeper on behalf of Donor
July 23, 1998 (2)	Broker' second approach to donor		*"I think we need to follow-up quickly with Amanda Rawls. We need to arrange for her to see the model and to get her more involved with the art aspects surrounding the pavilion in Great Lawn".* *"It becomes immediately clear to us that Amanda was determined to make a more significant use of Gehry, and we were happy to accommodate her requests, at the beginning we weren't sure how… but I immediately "lit up" of using Gehry, because he is rather sculptural…"*	Gatekeeper on behalf of Donor

August 3, 1998 (3)	Broker informs architect about donor and idea of sculpture by a donor-selected artist		*"I talked to Adrian* (the architect)*, tonight, to tell him about the prospects regarding the Rawlss. I also asked Adrian an opinion about an appropriate location for Gehry in the park. He has some worry about the prospect becoming "Gehry Park". Thus, he wants to talk about sculpture only. I think it is important for us to be able to call it "Gehry Band Shell". What we say in the letter to committee members about this is important".*	Liaison between Architect and Donor
August 4,1998 (4)	Broker asks architect to contact donor' preferred artist	Special meeting of the art committee.	the architect is charged with the responsibility to contact Frank Gehry "*for a sculpture, and explore the possibility of a collaboration with him over the design of the proscenium*".	Liaison between Architect and Donor
August 27 –Sept 14, 1998 (5)	Broker third approach to donor		*"I spoke with Amanda this morning* –one fund-raiser wrote- *I reminded Amanda of her offer to call Gehry. She is happy to do so but she wants to be able to tell him that "he will have full latitude". Until we can assure her that she can say this, she wants to wait before calling him. I told Amanda that I would be with you and Ed Pollock* (the project manager representative of the Mayor) *and we would*	Gatekeeper on behalf of Donor

			work it out. She asked to get back to her with "her marching orders". I detected no change in her interest level, but I feel that time is of essence".	
August 27 –Sept 14, 1998 (6)	Broker attempts to accommodate donor requests on design		To meet the donor' requests, fund-raisers *"went back to drawing boards and maps, we needed to think where to locate a Gehry-designed structure and that can fit with the existing plan".*	Gatekeeper on behalf of Donor
September, 14 1998 (7)	Broker contacted the architect to ensure collaboration and asks about the status of the contact with the donor-selected artist.	*"we wanted to be make Adrian* (the architect) *sure we were interested in a true collaboration between the parties, and that we wanted him to coordinate and control Gehry work on design".*	*"our private sector organization is prepared to fund the costs of Mr. Gehry' work and the services of your firm…"* Despite the request of the fund-raisers, the architect did not contacted Gehry: *"he* (the architect) *said he was fine if the donor contacted Gehry directly but he did not want to the donor to be Gehry's client. Moreover, Adrian wanted to know how we are going to handle the money, he asked to let him have a budget and he could contact Gehry".*	Liaison between architect and donor
11, Dec, 1998 (9)	Together with representative of the Mayor, broker approaches donor-selected artist on behalf of donor		*"at that point, we decided that, in fairness to the donor commitment, we had to make a sincere effort to interest Gehry".* Broker directly flew to Gehry's studio in California together with the project manager and representative of the Mayor	Representative on behalf of donor.

	CODING TABLE FOR BROKERAGE PLAYS DETECTED IN TRANSACTION NO. 2			
Date (t)	**Action of the Broker**	**Context/Background for Action**	**Content of Action**	**Coding of Action into Brokerage Play**
August 7, 1998 (1)	Broker' first approach to donor	Broker approached the donor, letting her choose her favourite garden designer for the design of the new garden	*basically we approached all the families we selected in the same way…with the Rawlss, the Richards, the Webers, the deal was always the same, they would have naming opportunities of a area of the park sort of reflective of the price we are asking for…we will guarantee that that money will not be used to augment the budget of the city of Chicago, they will pay for the basic construction costs, donors' money will be used to elevate the design of those areas to a standard never before seen in any city of the world…and of course, there will be spaces for naming opportunities and we would control that well…" ."*	Gatekeeper on behalf of Donor
Oct 16 1998 (2)	Broker communicates the decision of the art committee to locate a sculpture on the new garden	Garden Committee	The broker –as chair of the garden committee- asked committee members to submit their suggestions and they empowered the representative of the Mayor to "*develop a descriptive summary of the gardens project and a request for proposal to submit to 11 landscape architects identified*".	Coordinator
August 3, 1998 (3)	Broker coordinates the review of the work of architect in the garden committee	Garden Committee	Broker introduces the work of architect to garden committee members, asking for proposals and suggestions.	Coordinator

March, 26, 1999 (4)	Broker coordinates the review of the work of architect in the garden committee	Garden Committee	Broker introduces the work of architect and that of the sculptor to garden committee members, asking for proposals and suggestions, suggesting to ask for consultations on the problem of the size of the sculpture.	Coordinator
May, 14 1999	Broker reports donor the decision of a committee to relocate the sculpture from the garden		*"I'm writing you to bring you up to date on developments since the March 26 meeting of our Gardens Committee and to share with you current plans and design changes for the development of Millennium Park. At the time of our March 26 meeting, and during my consultations that followed, it was clear that there was great enthusiasm for the sculpture proposed by Anish Kapoor, yet also concern that the presence of such a commanding piece changed the formal garden from a destination flower garden to a sculpture garden. During subsequent deliberations with the Art Committee, it has became clear that we were, perhaps, trying to include too many design elements in the park…Thus, the Art Committee decided and Mayor Daley endorsed the position that we should have only one piece of sculpture in the park, and it should be sited along Michigan Avenue, rather than in the flower garden. ….We have already informed Deborah Evans* (the architect) *of this decision and asked her to set a date as early as possible to review new design proposals with you, and later with our Garden Committee…..We believe this course will enable us to develop and maintain a dramatic destination garden to a standard never before seen. As you suggested, we re-iterated to Deborah that it is her design genius we are seeking, and that she should not feel her designs as reliant on the sculpture created. We so much appreciate your continued support and active involvement*	Coordinator

			in pushing the development of this project on an international high-class level it deserves and on which the participation of our private sector organization is predicated. We will be in touch with you to propose a meeting date as soon as practical for Deborah Evans, given our changed requirements".	
Dec 4, 1998 (9)	Broker contacts donor to ensure she was comfortable with design changes		*"From the earliest days of the project, Mayor Daley has believed that Weber Garden should be located there, and he will be thrilled to hear news about your participation…Earlier this month, I spent more than an hour with and enthusiastic and proud Mayor. Your magnificent garden, the Gehry and the Anish Kapoor have created an enormous outpouring of enthusiasm for the park….I am delighted to hear that you are working with Deborah Evans, Patricia, as she continues to refine her design for the garden. It is a splendid, serene and altogether stunning space, and will be a wonderful testament of your generosity to Chicago at the close of a remarkable century".* The broker later explained: *"we wanted to be sure that Patricia was comfortable with the scope of the design and with the sculpture decision…at the same time, we wanted let her know everybody was on board and all set to move forward".*	Gatekeeper on behalf of donor

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