Constructing buildings and ambitions – The Turning Torso case

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Abstract

Can buildings have ambitions? Or is it only humans that can? And how do ambitions emerge and become a possession? The aim of this paper is to inquire into this question on the emergence and distribution of ambitions. The inquiry is furthered by a case based investigation of the skyscraper Turning Torso in Malmö Sweden. The inquiry accounts for the performative role of devices like the design prototype and the budget in constructing the building. Four related roles are discussed; 1) Articulation, 2) Decision, 3) Control, and 4) Accounting. When put into circulation, the devices simultaneously perform different, sometimes conflicting work, notably in constructing the appropriate time for the building, and closely related - in negotiating the emerging ambition of the building. The puzzling deviations from and revisions of the budget (exceeding costs and prolonged time) can be further explained if the unexpected and negotiated relations between the devices are taken into account. In particular, the unexpected role of the prototype as a *narrated time-folding machine* deserves to be emphasized. Such unexpected instances of time-folding are important to emphasize because they profoundly challenge the traditional notion of linear calendar time inscribed into the budget, and more generally, into modern management controls. It is argued that keeping the budget and the design intact, i.e., without allowing for their negotiation, mutual adaptation and subsequent transformation; a project will - for better or worse, most likely disintegrate and end as a dead object.

Introduction

Can buildings have ambitions? Or is it only humans that can? And how do ambitions emerge and become a possession? The aim of this paper is to inquire into this question on the emergence and distribution of ambitions by drawing upon a case study of the construction of the skyscraper Turning Torso. In organization- and culture research, technologies and artefacts like a building have since long been treated as a '*symbol*' (Schein 1992) of an already given culture, and as a faithful means to reinforce its identity (Meyer et al.1994). Although sensitive to the value dimension, notions like symbol and means tends to treat the technology like a passive object that reflects ambitions already existing somewhere else (in society or culture). The technology is not allowed to make any difference. Architects have since long made similar claims regarding the role and significance of the high rising building. Cass Gilbert, the renowned architect of the 1913 Woolworth building claimed the skyscraper to be "a machine that makes the land pay" (Quoted in Höweler, 2003, p.9), first horizontally by occupying space on the ground, then vertically by means of spatial repetition and standardization capturing returns from economies of scale. Carol Willis (1995) claimed that 'Forms follows Finance', (Quoted in Höweler, 2003, p.9). Höweler (2003) goes along with the general assertions made by the cited architects and authors above by claiming the skyscraper to be "calibrated to market forces and technological efficiencies"(p.9). The skyscraper is considered "representative of the driving forces of the twentieth century" (p.9), and "serves as a barometer of contemporary culture" (p.8). As a barometre and instrument, the skyscraper cannot make any difference, except to faithfully represent the 'forces'. The claimed role for the artefact as being a faithful representation of already existing cultural and economic forces is a rather common one, but also one that deserves further discussion. What other roles might the skyscraper assume? Can it even assume more active (and unexpected) roles and participate in the production and transformation of cultural and economic 'forces'? As observed by Weick (1987), a technology may also make an unexpected difference, even in a situation in which goals and ambitions have become painfully clear. In Weick's example, the wrong map allowed a lost party in severe danger to be safely guided down the icy Swiss Alps without loss of life. It was not until the safe arrival that the discovery was made that the lost party had enacted the wrong map as the right one. What is important in Weick's intriguing example is the unexpected role a technology of representation can assume as a calming device and thus in holding the collective together: Without a map – any map, coordinated collective action would have been hampered and loss of lives would most likely

have followed suit. "Strategic plans are a lot like maps", the author wisely argues (p.222). The author's example rightly points to the important role of devices in accomplishing particular collective goals and ambitions. But the example does not take into account two possible complexifications. Both the goal and the map are kept stable in this example. In a construction project, the architectural drawing can perhaps assume a similar role as the map in Weick's example. Yet, the architectural drawing might also be revised along the way and there can also be several other devices involved in representing the construction, like the prototype model. To complicate the case even further, project goals might not be so stable and as clearly defined as in the example provided by Weick. As argued by March (1978), goals, ambitions and associated value expressions might as well be (re) constructed through the course of action. This recursive argument, on the emergent and endogenous nature of ambitions, deserves further attention. Dynamic notions like *re-symbolization* (Czarniawska, 1991), *narrative production* (Czarniawska 1998) and *re-enactment* (Latour 1987) points towards this issue. In the authors' performative perspective, technologies are allowed to play a more active role in (re)constructing collective ambitions, and hence to assume a more active role in the production of culture. The performative perspective is also well known in organization research (e.g. Czarniawska and Sevon et. al 1996, Holm 2001, Kreiner and Tryggestad 2002, Czarniawska and Hernes et al. 2005, Callon and Muniesa 2005) as well as in science and technology studies (e.g. Callon 1991, Latour 1991, Akrich 1992, Pickering et. al 1992, Law 1994, Latour 2005, MacKenzie 2004). The perspective urges both research and practice to consider in some more detail the unexpected role that technologies might assume. Rather than assuming the building to be faithful expressions of already given ambitions, the performative perspective suggests that buildings and technologies might participate in more active and unexpected ways in the construction and distribution of ambitions. It is in this recursive and explorative sense that the present paper aims to make a contribution.

Ambitions might be more or less global or strategic. But the question is how to explain such outcomes. In this work, the focus is on the emergence of particular ambitions and design strategies in construction. One important mechanism for setting design trends is the architectural competition (Kreiner, mimeo). As Höweler (2003) notes, the 1922 competition entries for the Chicago Herald Tribune building was decisive in defining the appropriate style for the future high-rise building. The entries were varied, and perhaps somewhat unexpected; it was the second-place entry that turned out to play the major strategic role in defining the future trend in skyscraper design. What is suggestive in this early case of skyscraper trend

setting is not so much the reliance on a competitive mechanism, but rather the uncertainties regarding the outcome. As the case turned out, more than one winner emerged, and even more judges. In the case of Turning Torso, the building, or more precisely, the "Sculpture-study for Santiago Calatrava's Turning Torso" (Höweler, p.115) is considered to be a representative of the *Kinetic* design strategy, that "visually and physically *inscribe* a process of movement and transformation into a static structure" (Höweler 2003, p.112. Emphasis added) [1]. Yet, there might be several design strategies at play in the Turning Torso case. For example, the "…glocal skyscraper is one trend that attempts to mediate and articulate the complex negotiations between universal building type and local cultural *associations*… becoming a large-scale signifier of identity and community." (Höweler, 2003 p.17-18. Emphasis added). The glocal skyscraper then, is one design strategy with a particular strategic ambition; to negotiate the relation between global and local identities in a unique innovative way[2].
The argument to be developed in the present work will seek to add to Höweler's (2003) account of design strategies by inquiring further into the mechanisms that might explain how ambitions emerge and transform so that the building can come to incorporate and represent *several related* design strategies, like the kinetic and the glocal. If design strategies are much like maps (recall Weick, 1987 above), then the researcher should pay close attention to the materials these strategies are made of. Further more, if these materials can participate in performing coordinated action, then the researcher should pay close attention to their particular roles. For example, does the architectural drawing perform the role as a calming device, in a way similar to the example of the map provided by Weick (1987)? Can architectural drawings also participate in changing goals and ambitions as well? Also the skyscraper's contextual conditions might perhaps change in the process of devising a design strategy. These are all questions concerning how particular design strategies emerge. They are also questions concerning the city as a *processs* (Czarniawska and Solli et al. 2001), rather than as a back-drop structure. As such the questions might further the exploration of how connections between processes of globalization and urbanization are established, perhaps even changed, as an integral task of local city management. As also noted by Short and Kim (1999), much work on globalization remains on a stratospheric level, while failing to pay much attention to how globalization *takes place*, i.e., the actual process of localizing the

[1] Kinetic: "movement, dynamics, bodies in motion" as opposed to static (Collins Dictionary and Thesaurus, 1988)
[2] By contrast, the notion of globalization emphasize the "*institutionalized construction* of the individual" (Robertson 1992, pp. 104-5. Original emphasis).

building in time and space. Perhaps a city management, being adequately equipped with a design strategy, can part of the answer.

The aim is not only to explore theoretical implications, but practical ones as well. For example, one crucial task for project management is to keep project costs under control. The budget is perhaps the single most important managerial tool to achieve and maintain such control. This assertion is widely shared by both practitioners and project management research (e.g. Gardiner 2005, PMI 2000) but also rarely discussed. In the present paper, the aim is to add some nuances to this assertion by inquiring further into the role of the budget in construction projects. Thus the question to be asked is empirical and rather straight forward: What other roles might the budget assume in addition to control? By attending to these questions it should be possible to explain deviations from project plans and budgets and draw some practical implications for success (and failure) in future projects. The study ends by tying the issue of project management and control to the materials and devices involved in the process of re-symbolization and narration. It is concluded that the issue of project closure is never finally resolved.

Methodology

The inquiry is furthered by a case-based investigation of the skyscraper Turning Torso, Malmö city Sweden. At present, the Turning Torso is one of the highest buildings for living in Europe. The building has been displayed at arts museums and exhibitions and received international awards for its innovative design. The building has also been contested and subjected to heavy critique, notably for the budget overrides and costs it incurred to the related housing association, the associated lack of managerial control, and still further, the lack of social responsibility when it comes to affordable housing for the ordinary citizen.

My first visit to the construction site occurred during the opening days of the European Housing Expo May 2001, locally better known as “Bo01”. The excavation for the building’s foundation had started a few months earlier. Back then, I had few if any ideas of turning this site into a case for research. However, the Turning Torso has its own way of making its existence present. As an inhabitant of Malmö city and regular reader of the city’s major newspaper, the Turning Torso became an important part of my breakfast routines: “Taking the first shovel for The Turning Torso” (eng. transl. *Sydsvenskan*, February 14 2001), “

Constructing for space and life" (eng. transl. *Sydsvenskan*, May 17 2001), "Art in the mudd (eng. transl. *Sydsvenskan*, May 18 2001) and further on in the article:

> "After being thrown between different opinions, I have become a warm supporter of Calatrava's Turning Torso, the 45 store skyscraper that will be finished within a few years. It is needed! The Western harbour [read: the site of the housing exhibition] is otherwise a visual cacophony of houses, some good, others less so. The Turning Torso fulfils the function that the public art once had, to define the space and place, to create a point of reference." (Pontus Kyander, Art critics)

I left home and headed for the site some ten kilometres down the road to see for my self what kind of needs the Turning Torso might fulfil once in place. Could it become this defining landmark and object of art when located in its proper place? The newspaper readings made me return to the site on several occasions in the immediate years, but it was not until October 2004, that Turning Torso became a case for research. With research funding in the spring of 2005, visits to the construction site was followed up with interviews with the head of project management, project marketing, architects, quality consultants, head and members of city planning and architecture, representatives from the owner organization such as former and present CEOs and other project related members. Different kind of documentation has been collected, like public city plans, consultant reports, memos, decision protocols, architectural drawings, pictures, movies, press releases, and articles.

The Turning Torso case

Introduction

In a literal sense, the turning torso is a human body in movement. The Turning Torso is also the name of a most daring construction project in Sweden (see appendix for pictures and a summary of some important and unexpected events) The name is telling. The body of the building is turning some 90 degrees. During November 2004 it reached the full estimated height of 190 meters, including nine cubes with a total of 54 floors above the ground. In the year to come, the interior of the building was completed. By November 2005 the new inhabitants moved in. By March 2006 the process of moving in was almost completed. Only some office space still waited for their first inhabitants. In a metaphorical sense, the name

Turning Torso also summarizes what is at stake in a project of this kind, the many unexpected turns and twists along the way.

The case accounts for the many unexpected twists and turns during the project, including unexpected construction problems and redesigns, changes in use and functionality, delays, expenses, and moral concerns. The building has also been controversial since its inception. After the World Trade Centre tragedy September 2001, the future of skyscrapers has been called into question on a global scale.
For a building, the relation between local and global seems to be of a peculiar kind. While a car takes on its new life as it is leaving the site of production, the reverse is true for the building. For a building, life continues on the site of production. But as the Turning Torso case will show, being on site might be a very dynamic ('kinetic') form of existence, with many unexpected links to other sites of production, as in being here and there, local and global, simultaneously. As will be further accounted for, the identity of the building's owner and inhabitants became redefined in unexpected ways. To explain the many unexpected turns, or so the argument unfolds, it is necessary to pay close attention to the role of diverse devices, notably the architectural representations in the form of sculptures, prototypes and drawings and the management controls like the budget. The case and the argument that follows are organized according to the role the devices assume as project events unfold. Four related roles are accounted for: 1) Articulation, 2) Decision, 3) Control, and 4) Accounting.

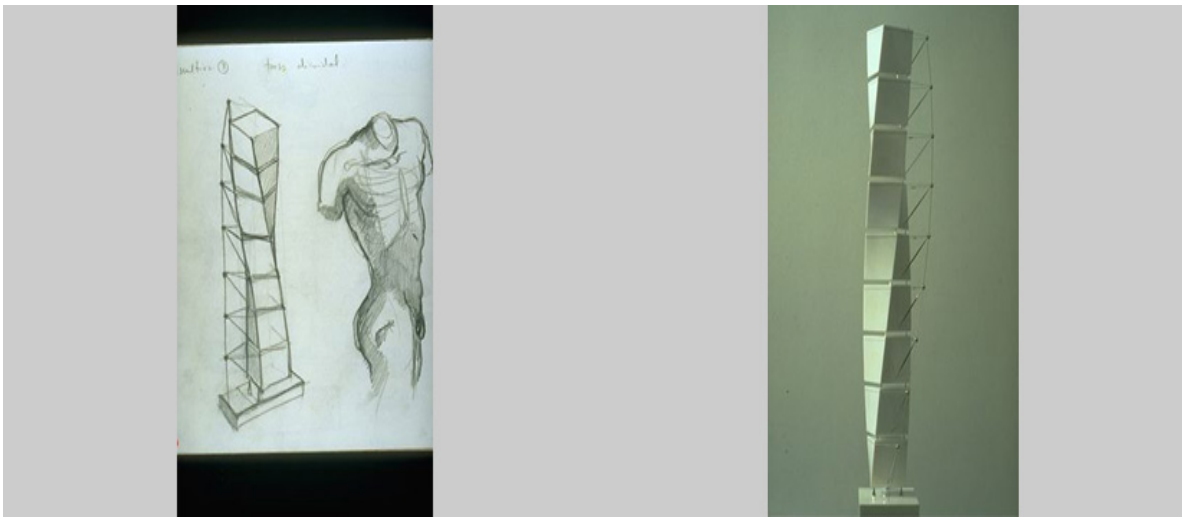
1. Articulation

A project that is not yet articulated does not exist, except perhaps as a highly abstract and fragile idea stored inside the head of the entrepreneur (or architect). Such ideas are not the main concern of the present work. Rather the focus is on the transformation of ideas into existing projects. More specifically, the task is to account for the *articulating role* of the devices in bringing the project into existence and keeping it in place.

Twisting Torso: a circulating reference turning art into architecture

> "Consider for a moment that forces are like crystallized movement. This is, in my opinion, quite a beautiful understanding, because even in its static condition, in the most stable thing, movement is hidden" (Santiago Calatrava, 2002, p. 83, The MIT lectures 1997)

As suggested by the quotation, to the artist, architect, and engineer forces are not just given constraints, but are rather considered as resources to be used in exploring the tension between movement (kinesis) and stability (stasis) in architectural designs. As will be further accounted for, such explorations might be greatly enhanced by sculptural devices: Back in the mid 1980ies, before its inception, the Turning Torso was a piece of art, a sculpture called the "*Twisting Torso*", a few inches high, conceived of by Santiago Calatrava. Explorations of the organic living form had been important to the architect's work since long. For example, Santiago Calatrava (1997/2002) explains one of his earliest work of transforming an existing warehouse, the Ernstig's Warehouse in Coesfeld Germany, by an association to the whale. To the architect, the scale of the building and its factory doors resembled a swallowing whale surrounded by a swarm of fish, i.e., the trucks entering and leaving the building. Other organic associations, like the eye, the human hand and body have assumed an important role in later work. The Stadelhofen Railroad Station in Zurich became one of the first experimental sites in this respect. Later studies and work came to incorporate more explicit movement as well. A "series of plastic studies goes a step further. They describe the spine, or how our body stands up. The spine is made up of vertebrae that are *represented* in the sculptures in a very elemental way, as a series of cubes… Also quite important is how our spine twists, how it turns around an axis, and how it bends and reaches. What was before a quite a shy movement becomes very explicit." (Calatrava 1997/ 2002, p.95. MIT lectures. Emphasis added).



From the plastic studies: Seven-cube drawing study/ Nine-cube sculpture study (Source: MIT lectures 1997/2002)

With due help of magazines, books and the Internet, the sculpure has come to travel a long way. It is pictured on page 10 in the book written by Luca Moliniary (1999). In this book, the sculpure "Twisting Torso" is dated from the year 1993 and counts nine cubes. Yet, it also transformed into a prototype, representing a "sculpture-study…[for the] Turning Torso", as pictured on page 115 in Höweler's (2003) book. The sculpture now contains seven cubes. In Tzonis (2004) book on Calatrava's complete work, the Turning Torso is displaced as a small-scale nine cube model of the building, " The scheme is derived from analogy to the human body…but it also emerged out of Calatrava's sculptural investigations. *The project was intended as a landmark…giving a stronger identity to the area*" (p. 332. Emphasis added). Finally, Birkhäuser's (2003) book on Calatrava's artworks, with the suggestive sub title " *A Laboratory of Ideas, Forms and Structures*", displaces two sculptures (on pp. 116-7) titled "Twisting Torso I" (from 1985), "Twisting Torso II" (from 1991) respectively, both with cubes made of white marble with chrome-plated steel and strings to hold the cubes together. The main difference is the number of cubes; the first sculpture from 1985 contains nine cubes and looks very similar to the one pictured from the MIT lectures (see above), while the second sculpture from 1991 contains seven cubes. The sculptures overall proportions are the same: 116*49*36 cm. Birkhäuser's (2003) book also displaces a series of two drawings (on pp. 118-119) that carries the name ""Turning Torso" high-rise building, Malmö, Sweden, drawing, 1999". One difference between the two drawings is the number of cubes, seven and six cubes respectively. Another difference is the width at the base of the building; the one with six cubes has the smallest base. The transformation and subsequent stabilization of the kinetic plastic object, from being the nine-cube sculpture "Twisting Torso I", to become the seven-cube sculpture study named "Turning Torso", to become the firmly localized skyscraper in Malmö with nine cubes and the same name requires some further explanations. As will be further accounted for, these transformations were not achieved without negotiations.

Localizing and articulating Turning Torso's global ambitions

The late 1990ies was a dynamic period for the Malmö city. An entire part of the city, the western harbour, was on the drawing board. The area was closely tied to the city's maritime and industrial history. In the recent past, the city had experienced a recession. Some 27 000 jobs were lost, mainly in the industrial sector. In 1991, the large Swedish car manufacturer opened a brand new assembly factory on the Western harbour only to shut it down a few

weeks later. The Malmö city had supported the establishment of the factory by giving away the land for the symbolic sum of 1 Swedish crown. Yet, there were also signs of a new expanding future. The 1991 joint governmental decision to build a bridge between the two major cities in the Öresund region, Malmö/Sweden and Copenhagen/Denmark was among them. The local constructing industry and the Malmö office of city planning assembled around the city map in order to identify the implications from the decision. The constructing industry proposed a bridge design that included both road and rails. The rails from the bridge could be further extended by connecting them to a prospective underground metro system that would pass through the central parts of Malmö (see Loua, 1991 for more details on the City's building and construction plans). The harbour area closest to the central railway station was selected out first to be further developed into combined areas for housing, recreation and work. Next in line was the neighbouring old shipyard, equipped with one of the world's largest cranes. The whole area was to be transformed into a site for living, recreation, education and the development of new knowledge-based industries. Sweden's first international housing exhibition " Bo 01 City of tomorrow" was scheduled to take place in that area, and finally opened May 17 2001.

Among the stated ambitions was to show the green sustainable city of the future " Bo01 will show provocatively imaginative visions of future living, where high demands on aesthetics, ecology and high technology are combined with man located in the centre." But the exhibition was also about the present, "*…to demonstrate there that this industrial wasteland can be transformed into the center of the world.*… That is how the plan took shape."(Emphasis added. Source: Hompage Bo 01, http://home.att.net/~amcnet/bo01.html). The plan came to have high ambitions. The global ambition to become the 'center of the world' in Malmö's western harbour, was of a more recent vintage, however. After all, in 1998 the whole housing exhibition was named "Bo 00" and planned to take place in 2000 some 7 kilometres south of down town Malmö, in the small coastal town Limhamn. As the head of city planning further explained a few weeks before the Turning Torso was to be celebrated and declared a complete project: "The crane was destined to be sold and sent away. The city's landmark was to be replaced by a new one, representing the transformation from an industrial city to the new area – Malmö, the city of knowledge and events. The Turning Torso, together with the new Malmö University was the two strategic projects in this respect".

Yet, before the building became the Turning Torso, i.e. an identifiable object, with a particular name, located in a particular place at a particular time to perform a particular global strategy of city transformation, much work had to be done:
The head of city planning was introduced to Calatrava through the architect responsible for organizing the Bo00 exhibition. Architects were invited to show their building prototypes at the exhibition office in Limhamn south of Malmö City. Among them was Calatrava. The architect was already familiar with the region through his earlier participation with an entry for the Öresund bridge (back then, the entry made by the local constructing industry came out as the winner).

At the Bo 00 exhibition office Calatrava displayed a building prototype with seven cubes. Along with the prototype there was also a production concept that showed the technical feasibility of the building process. Then a series of visits to the Calatrava office followed. One of the first visits was made by the head of city planning, together with the architect responsible for the rescheduled and upcoming Bo01 exhibition. During early spring 1999, a possible site for the building was identified in the city map outlining the master plan for the western harbour (For maps, appendix).

Yet, there was no prospective owner of the building, nor were the name, purpose and function decided. It could become a building for housing as well as one dedicated to offices. So far, the housing expo site was dedicated for a fairly tall building, with 25 stores and a maximum height of 77 metres, all according to the city plan. The major housing association, HSB-Malmö, was still unaware of its own future role as an owner of the Turning Torso. Besides they had their own plan of a 77 metres high building. As it were, the CEO of the prospective owner happened to have a meeting scheduled with the head of city planning somewhat later in the spring of 1999. While visiting the office of city planning, the CEO came across an exhibition folder displaying a picture of the seven-cube version of the “Twisting Torso” sculpture. “ I was heading for a different meeting with some architects at the office for city planning. There were some brochures scattered around that Calatrava had left behind and [in the brochure] there was this sculpture Twisting Torso. At that time, it was seven cubes high, because this is the way architecture divide the human body.” The CEO picked up the folder and became interested “..having seen the sculpture, I contacted the general management of the housing exhibition [in Malmö] in order establish contact with Calatrava”.

A new meeting was scheduled with Calatrava. This time, the head of city planning, the architect heading the exhibition, and the general manager of the exhibition travelled with the CEO. The CEO explains further " I travelled down to him [Calatrava] in Zürich and the sculpture stands there. There is only one exemplar of the original sculpture and it has seven cubes and is made of marble." The Swedish delegation had brought with them pictures of the Western harbour in order to argue their case, that the harbour would be an appropriate site for a high-rise building. During their meeting, the architect started to draw a picture of a cobra snake, but as the CEO further explained "I was not very interested [in the cobra] and succeeded in persuading him to consider doing something else for us..."
The architect, although designing buildings for many years, had never designed any larger buildings for housing before, nor designed a skyscraper. Although technical feasible, would the building also be appropriate for the city of Malmö and the HSB housing association? The architect's main concern was the issue of the building's context. The CEO invited the architect for a guided tour through the city of Malmö and the history of the housing association. The architect was finally persuaded. The CEO was right about the contextual feasibility of a high rising building. As the CEO further explained it " He [Calatrava] accepted it and started to make drawings". The CEO representing the prospective owner and constructor had finally succeeded in persuading the artist and architect that this small sculpture called Twisting Torso was indeed representing *both* arts as well the feasible architect prototype for a residential building. This became part of the project's ambition, to create a hybrid, mixing art and architecture in a new innovative way. The notion of '*living art*' was coined to summarize this ambition.

Yet the CEO had still to discuss with the board of the housing association. Would they share his enthusiasm over the emerging new ambition? Immediately after the summer meeting, the CEO informed the board about Calatrava and his sculpture study Twisting Torso. He further ensured the board that the plan was still to conclude the 25 store and maximum 77 metres high building project and have the construction ready within two years. As the CEO received the first drawings from Calatrava, new concerns emerged. " One of the first things we discovered was that the plan of 75 metres and seven cubes would not suffice. We discussed everything from three to five stores in each of those cubes, but ended up changing the plan to 133 metres." A few weeks later the CEO inform the board that the architect had submitted a tender. The project is now called the "high-rising" building. It is about 160 metres high, consisting of seven cubes and 42 stores. Delays should be expected in order to accommodate

the taller building. Due to the increased height, the city plan for the western harbour needed to be redrawn as well. The CEO asks the architect to supplement with a new tender and a set of more refined drawings. In October 1999 the board is informed about the present state of the emerging project. The project can still be terminated, and in this case there will be a final down payment to the architect. Estimated start for the project is May 2000, time for production is one year, and further estimates of the economy of the project is under way. The board endorsed the CEO's report. Yet, there was no final decision made. Further information was needed regarding design, construction, cost of production and the market.

When Calatrava entered the board room some weeks later, in February 2000, the architect was well equipped. He brought with him a sculpture study, sketches and drawings for every one to see. The board members were encouraged to go further with the project. The name 'Turning Torso' emerged in the wake of that meeting. As the CEO explained, "the name [Turning Torso] seemed natural". Not far away from the board room, the house for industrial design in down town Malmö opened the exhibition of Calatrava's work. The exhibition was thoroughly covered by the local press.

The articulating role of the budget

Closely related to the sculpture studies, the Turning Torso project also came to involve budgets in an important articulating role. In order to explain the articulating role of the latter it is necessary to reconstruct the situation immediately preceding the decision to start the Turning Torso project. As the CEO explained to me, "When we made the first models we believed that seven cubes and 133 metres would be sufficient, but it turned out that it would be very difficult to absorb the sharp angles of windows resulting from the 90 degrees twist." By staying faithful to the 90 degrees twist of the prototype body, height became a critical issue as well. By adding height, the issue of sharp angles of windows and walls, could be reduced. For the prospective end-user the changes was considered to be an important improvement as well. The sensation of living in the Turning Torso would become less of a challenge as angles of windows and walls approached the ordinary 90 degrees standard, the CEO explained. Through these subsequent simulations two more cubes were added. With the revised nine cube solution the kinetic qualities of the sculpture could be preserved while simultaneously taking prospective user needs into account. As these design changes became

further articulated in the revised drawings, new concerns emerged regarding the total costs and revenues of the project. Was this emerging project technically and economically feasible for the HSB association? During these discussions, the board decided to obtain more information before making any final decisions. The CEO contacted the prospective architect (Santiago Calatrava), the prospective constructing industry (NCC) and an external consultant (Dr. Koller). All three were asked to provide a budget for the cost of building the house. Three budgets returned in the next months to come. All three budgets estimated the time for the final building in a similar way. The building was to be finalized by the end of 2002. All three budgets articulated total costs for construction in the vicinity of 350M.SEK. Other project costs like administration and marketing was left out and to be added by the prospective project owner HSB. When such costs were added on top of construction costs, total project costs were estimated to reach approximately 550 MSEK.

Here it is relevant to notice a curious feature associated with the budget's summing up of total costs. The curious feature can perhaps be best illustrated by first considering a situation in which there is no budget and technical feasibility is highly uncertain. In this situation total costs for construction can not be articulated and summed up, nor can the time for project completion be estimated. With a budget, the situation can be re-described and summed up in monetary terms: The perhaps most characteristic feature of a budget is precisely to afford a summing up in monetary terms (total costs in our case). Once this simple economic calculation is performed, it simultaneously endorses the project's technical feasibility.
Put more generally, when bringing a project into existence the budget performs an important role as an articulation device. When total costs are summed up, the articulating role becomes more pervasive. When there are several budgets involved - as in this case, with each one performing the articulation in a similar manner, the project's existence can be strengthened even further. The simultaneous articulation of the technical feasibility/reduction of uncertainty is an important, yet often neglected feature when budgets are involved in the articulation of a project.

2) Decision

The CEO presented the budget estimations to the board members during several meetings autumn 2000. Intervening in these meetings was an emerging concern regarding the project's revenue side. So far the budgets had articulated total costs of construction (approx. 350

M.SEK) and production (350+200=550 M.SEK) while leaving the revenue side and hence the market largely unarticulated. Would the market endorse the project as well? It was decided to conduct further inquiries into the market and then decide. The board decided that a condition for a decision to build is a check-point in September 2000 where 70% of the apartments must be signed up. (Internal report 2005, p.). The head of marketing informed the HSB board that approximately 1000 persons had indicated their interest, that approximately 700 had been contacted by the marketing people, and some 40 people had paid the 25 000 SEK sign-up fee (Ibid.). So, there were still some 50 interested people missing in the 70% equation. The final decision had to wait - the future of the project seemed now to rest in the hands of the market. Would a sufficient number of interested people sign up before the next board meeting? The board meetings in October and November came to further discuss the design and the total cost of the project. The distinction between the building's 'commercial area' (that could generate revenue) and the non-commercial area (for transportation and technical installations only) emerged and became an important issue. The relation was deemed inefficient in terms of the relative yield potential. But then again, this ratio could perhaps be improved by some further redesign that could enlarge the commercial area. These concerns, articulated by project management, are to be taken into account in a revised budget. The expected increase in costs due to increased 'commercial area' and associated construction and re-design was to be compensated by the market in the form of increased revenues. With more 'commercial area', follows more revenues as well. Time for project start and completion has been slightly revised, estimating maximum two years from start in February 2001 to finished building February 2003. Still further changes in the design of the exterior could perhaps also reduce the total costs.

By now, some 90 people had paid the fee and signed up. Although the work below ground was planned to start in a few weeks, at the end of December 2000, it was decided that no such work could be started before the project was up to a final go/no-go decision at the next board meeting in November 23. At this meeting, a final economic calculus would be presented. The meeting, however, was to be postponed and to take place December 14. At the Calatrava office there was a rather intense activity in order to produce the required documentations. In particular, the request for more commercial space had to be taken into account. The total commercial area was enlarged from approximately 14800 sqm. to 17700 sqm[3]. While these

[3] According to the project leader, the resulting building contains approximately 26 000 sqm divided into 18000 commercial area and 8000 for technical installations and public spaces. And as he further notes, the commercial

changes were implemented in the new drawings, they simultaneously undermined the previous 550 MSEK cost estimation. As the project leader Ingvar Nohlin further explained, "It [the budget] was completely unrealistic". Then the budget was re-estimated "with a total cost of approximately 730 million crowns". The figure of 550 M.SEK was articulated before Nohlin assumed the role as project leader. The figure of 730 is referring to own first estimations after having assumed the role as project leader.

In mid December 2000 Ingvar Nohlin was formally appointed as the project manager along with a board decision to start the project as it was articulated in the revised 730 MSEK budget.

3) Control

Once equipped with the revised and presumably realistic 730M.SEK budget, project management embarked on the task of keeping project costs under control. The conventional definition subscribes to this view by defining the budget a as a plan for action expressed in monetary terms. Not unlike a weather forecast, it is a prognosis of what will happen in the future, given that the tasks articulated in the budget is followed by appropriate action, for example regarding construction, administration, and marketing. Although the revised budget was still operating with a two year time frame, further refinements were implemented to make more explicit accounts of 'Administrative costs' and 'Marketing' respectively. Yet, there were no further refinements of cost of construction, e.g. in terms of 'ground' and 'tower'/'exterior' and 'interior'. Accordingly, the newly appointed project management refined and detailed the revised budget still further in order to make it more useful in managing the project. During these refinements already estimated costs came to be reconsidered as well. For example, during January 2001 some 4 M.SEK costs were added to total project costs, only to be further increased by some 10M.SEK in the month that followed. There were underestimated costs for external consultants, interior work and marketing. In spring 2001, a new budget was devised, estimating total project cost to approximately 800M.SEK. Complete building was now estimated to March 2003. A risk seminar was organized with participants from the

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area is far below what is considered normal… " this amounts to some 62% commercial area, when it should have been 85% or more".

constructing industry (NCC) and the project owner (HSB). It was decided to refine the budget still further, notably with the pro-active aim of estimating in more precise terms costs for materials in construction (e.g. steel) while *seeking reduction* in total project costs. The resulting 'risk' was expressed in cost terms and estimated to approximately +100M.SEK in addition to the approximately 730M.SEK total project cost estimated a few months earlier. In late spring 2001, the HSB board was informed about the reports and the results from the risk seminar.

The newly appointed project management had several other tasks to attend to, all of them with complex ramifications for the budget. Among the first priorities was to get a building permission from the office of city planning, to establish contracts with subcontractors, and to re-negotiate the contract with Calatrava. Instead of a 16% fee on the total cost, project management argued for another incentive structure. In his own words " Dear god, I said to him [Calatrava], this [16% contract] you can forget. The more expensive you make this building, the more money you earn." Instead, a fixed price contract was written that defined the fee according to the architect's area of responsibility. The area of responsibility had thus to be more clearly defined and separated from coordination, apartments, and installations, like ventilations. " You [Calatrava] has responsibility for construction and [exterior] architecture" This part of the total cost was estimated to 350 M. SEK. Then project management negotiated a 15% fee on the basis of the latter and further defined it as a fixed price contract to be paid in US dollars. "This implies that for a project of 1.5 billion [SEK], I have to pay 53 million [SEK] for a world recognized architect, or some 3.5% [of total cost]".

Project management then invited two architects for the task of doing the apartments/interior design. A meeting was held in Malmö. Samark was selected for the task. The precise interface between interior/exterior/construction became further defined in subsequent discussions. As the project management explained it: "We can not have detailed drawings on the steel reinforcements, made in Switzerland and put into the hands of our people here. It is better that you [Calatrava] make more general drawings and leave it up to our quality consultants [to make the detailed drawings]". At the same time, the quality consultants, with a background from nuclear power stations and circular constructions, was assigned the special task of being the 'structural checker' of the drawings coming from the Calatrava office. Two prospective quality consultants were called to a meeting, before SWECO was selected for the task.

The project was launched officially 14th February 2001 by digging a small hole in the ground. Construction below ground level started June 2001, some six months later than first announced in the spring of 2000. Back then; a first estimate was a complete construction by the end of 2002.

Negotiating the forces of gravity – or how a resultant turned into more architecture

At the time of digging the small hole in the ground in February 2001, a project meeting was held in Malmö. Among those present at the meeting were a representative from Calatrava's office and his Swedish counter-part, the 'structural checker'. The task of the latter was to audit the drawings and the calculations of the former. Calatrava's drawings for the building permission were shipped to office for city planning a few weeks earlier, in January 5 2001. With the drawings in their hands, concerns emerged among those responsible for structural stability of the high rising building. During the meeting a question was posed to the representative from the Calatrava office. He was asked to locate the 'resultant' for the building (measuring the vertical axis of the construction). The resultant was pointed out in the drawings to the structural checker, which replied that the building was not stable. The main argument was that the radius at the base was too small, and that the estimated 'resultant' was outside the structural core of the building. Relocating the dislocated resultant would require a different set of architectural drawings that added width to the radius, and hence more concrete and steel reinforcements at the structural core.

There was also a related issue, concerning the structural stability of the floors below ground level. According to the project management and the structural checker there were too many doors and holes in the walls, which made the construction less stable. The argument was reinforced by a wind-tunnel test that simulated the structural stability of the construction under extreme wind pressure. During high wind pressure, the 'resultant' would most certainly be outside the structural core. The wind tunnel test was conducted in March 2001. The test results were communicated to the Calatrava office. As the structural checker further explained " It took some time to get the results, but we had to make sure because it is important to have architecture with us all along". It was decided that the radius at the base had to be increased to 15 metres [from 12 metres], "although it could perhaps have been 1-11/2 metres smaller, but this one [the first estimate of the radius], I do not think it would have been sufficient". As a consequence of the increased width of the building, both the thickness as well as the width of the foundation came to be reconsidered. The foundation had to be further enlarged, but how

much and in what way was still open questions. From the point of view of project management, this uncertain situation caused strain: “we were supposed to start building, we are in May and we have to start contracting, and then we have to know what to contract.”
By the end of May 2001, approximately six months after the first set of drawings was approved by the city planning office, the new set of revised drawings were in place. This time, the drawings were compliant with the negotiated resultant and its structural requirements for overall stability. While these discussions took place, the small hole in the ground had transformed into a large one.
In the original drawings from January 2001, there were 4 floors below ground level. In the revised drawings there were only three floors below ground level. As suggested, the disappearing fourth floor was due to the negotiated ‘resultant’ and the required reinforcements at the bottom. Yet, as it turned out, the building ended up with only two floors below ground level. How can this second disappearing floor be explained? According to the structural checker and the head of project management, time became a critical issue as well. The project was already delayed. By the end of December 2001 excavations for the ground was completed (conducted by the Danish sub-contractor, Orsleff), and the time had come to fill up the hole with concrete and steel reinforcements. The contracts with Swedish PEAB were in place for the deployment of the materials. By filling up the fourth and the third floor with concrete and steel (in total about 7 metres of massive concrete and steel reinforcements at the bottom), not only would the foundation become solidified beyond any doubts, but time and hence money could be saved as well. The budget had to be renegotiated as well. A new budget was devised, this time estimating the total cost to be around 850 million SEK**.**

New drawings were also required for the tower construction above the ground in the beginning of 2002. As the work below ground progressed, these requirements became more pronounced. As project management explained the situation, it was important to know in more precise terms how much concrete and steel to contract, and what and when to deliver, and how to build with these materials. Somewhat urgent calls for drawings reached the Calatrava office during February 2002. As a first conservative approximation, the head of project management decided to contract the 1700 tons of steel that was included in the first estimation for production in the fall same year. As the new drawings came in return, new concerns emerged. How much steel would be required to complete the tower, in addition to the already estimated 1700 tons? Was the proposed structural design really feasible in terms of stability? And what implications would this design have for the organization of work and

the overall time plan? Uncertain requirements in terms of man-hours, equipment and overall time consumption were part of the emerging concerns. During the spring, the head of project management and the structural checker visited the Calatrava office to discuss these concerns. By June 2002 the two subcontractors doing the ground and the floors re-estimated the time for construction from 16 to 19 months. The aim was to erect in total 54 floors, one floor each week, beginning in August 2002. But then again, drawings became a critical issue.

The casting of foundation started March 2002, completed below ground level August 2002, but strengthened further above ground level in the year to come for reasons further explained below. The 6th of July 2002 a new project meeting was held in Malmö. This time, Santiago Calatrava participated with most of his office. Some 15 people joined the meeting. The most important item on the agenda was the structural feasibility of the tower design. From the project management's point of view, the stability of the structural design was still in doubt. Although within acceptable limits in terms of structural stability for the whole construction (recall the resultant and the radiant), new concerns had emerged regarding each of the nine separate cubes. The main concern was that the proposed structure would give away over time, especially at the outer part of the ground floor for each of the nine cubes. The projected result would be a building with floors hanging down. The further away from the structural core of the building, the more pronounced the problem of hanging floors would be. When confronted with these calculations, Santiago Calatrava asked to be left alone with his team. After 1 ½ hour he opened the door and said that they were returning back home. It was decided to redo the structural design, so as to accommodate these new concerns. The project management summarized the somewhat dramatic event in the following way: " If he [Calatrava] had not changed at this particular point, it would have gone to hell, to put it frankly. We would not have approved it. We would never have done that" As it turned out, some 4400 tons of steel came to be incorporated into the construction[4]. The steel re-enforcements above ground were twofold; first the bottom floors on each of the nine cubes were strengthened. Secondly, an additional 11 pillars of steel were incorporated into the façade.

[4] This figure of 4400 tons of steel is not entirely comparable to the first estimation of 1700 tons of steel. A more accurate comparison requires an adjustment for the 700 tons of steel that entered for related groundwork. The comparable figures, according to the structural checker, should then be between 2400 (1700+700) and 4400 tons of steel.

During the summer of 2002 40 prospective owners had progressed from signing up on the list of interested, to also sign a letter of intent to become the first new habitants in the Turning Torso.

Turning more architecture into more costs.

The constructions above ground level were about to start August 2002. Among the three different prospective construction companies, one was selected for the task. Their production method based on a climbing form was considered to be the most appropriate. It took an additional month of experimenting with the climbing form solution before it was ready to leave the ground. As the work progressed towards the first floor, issues regarding the design of the main horizontal bearing from the core to the outer level of the floor became more pronounced. In the original specification (associated with the problem of hanging floors) these vertical steel beams was estimated with a diameter of 500mm in total. In the proposed redesign that diameter could be reduced to 270mm – if combined with a vertical steel beam close to the façade. It would imply more steel reinforcement, but also reduced weight of the total construction. In addition, this solution promised to reduce the need for man-hours at the construction site. During the autumn of 2002, the particular design of the new proposed vertical beams came to be negotiated with the Calatrava office. For the first floor of the first cube, the vertical beam came to be of a different kind than further up. As the project leader further explained “we received the drawings, and even the vertical steel beams, but the solution [of the latter] was the wrong one”. What was considered less good was the lack of a joint at each end of the beam. With a joint-link design, the durability (or dynamic stability) of the construction between floors would be improved. As the construction process progressed to higher levels (cube 2), the design of the vertical beam came to be refined to include the joint-link design. The issue of constructing appropriate steel beams also came to involve the outer steel ‘spine skeleton’ going from top to bottom. In this case, the (Spanish) subcontractor refused to share any responsibility as the welded constructions close to the ground started to give away. With the help of x-rays it was demonstrated for all concerned that the quality of the welding was unacceptable. New negotiations had to be initiated with the subcontractor during the year 2003. These negotiations turned out to be quite intense. Instead of fixed price contracts with subcontractors, they were paid along with the project. New delays emerged. The estimated ‘one floor each week’ was never achieved. At best, one floor was completed on

9 days. On average, some 11-12 days was required for each floor. Perhaps the most decisive cause for this delay was the peculiar weather conditions. In total, some 140 days were more or less lost due to hush and windy weather. The higher up the construction is rising, the more wind. For example, a wind of 6 metres per second at the ground level might translate into some 15 metres per second 100 metres up in the air. But not only mother nature, but also the way she came to be represented in the technologies of construction must be mentioned. Programmed into the outer crane's operation was a metrological instrument measuring the wind. When the wind speed exceeded a default value of 20 metres per second the crane automatically shut off. In addition, the higher up the more time consumed for material logistics. Also the time used for material logistics turned out to be difficult to estimate. Re-estimations of time consumption became necessary along the way. By December 2003, the Turning Torso reached the 27th floor. New estimations considered the 54th floor to be finished by October 2004. Still there are 27 floors yet to come.

The failing market test: Turning more costs into more ownership.

Along the way, prospective owners on the market for housing had been invited to sign up for one of the 152 emerging apartments. What had been signed was a 'letter of intent', an expression of interest on behalf of prospective owners. The Swedish architects from Samark were assigned the task of making each apartment according to individual customer's preferences. Samark was located with offices in both Malmö and Stockholm which was considered an advantage in terms of closeness to the prospective customer. In addition Samark could document experience in this kind of exclusive market segment that the Turning Torso was supposed to interest. " In fact, we obtained a list of some hundred interested persons, mainly from Malmö and Stockholm. Then we organized a first meeting, in both cities. We invited all prospective candidates on the list." The first meetings took place in the spring of 2001. But as the representative from Samark further explained, they came in very early, perhaps too early in the project, because the building changed a long the way. "So we made drawings, and re-drawing, and new drawings and re-drawings …the ambition was a shorter time plan compared to the actual outcome so when we entered it was urgent". The architects from Samark meet with the prospective customers on a number of occasions during the next years, both in groups as well as individually. A list of wishes and requirements was gradually composed for each of the prospective owners. Such wishes and requirements

typically consisted of size of apartment, height above ground, direction (north, east, south west) and particular solutions regarding the interior of the apartment (lay-out, materials, equipment). A basic layout for each floor was designed, comprising 1-5 apartments. Samark established a showroom close to the building site to demonstrate the full-scale interior and materials of a kitchen and a bathroom. " We did it in order to test it on ourselves and on our reference group, to test it on some key persons from this large group of hundred persons. It was an interesting way to work, to make people into users". Samark also organized a preliminary reservation of each apartment. Most prospective owners, accepted the general lay-out regarding both floors and apartments, but as the representative of Samark further noted " There was also a significant group that had a lot of opinions on their own". But then again, the unexpected delays changed all that " it took too much time. As it were the list became shorter and shorter as people opted for another place to live, or simply because they started to become concerned about the costs ". According to the representative from Samark, the time delays were of different kinds. Especially the discussions and subsequent changes in the construction had been decisive. The delays might also have been furthered by the workload at the Calatrava office " to be honest, capacity can also be involved. During this period, the office had an exceptionally amount of spectacular projects to draw and build, like the Olympic stadium in Athens".

By the mid of 2003 the time had come for the first real market test, the signing of contracts. In the constructor's press release it was proudly announced that "the first apartment in Turning Torso – Europe's highest and most spectacular residential high-rise building project – was sold". A two-bedroom apartment of 85 square metres was estimated to cost approximately 4.5 Million SEK. In addition there would be a monthly fee of 4000 SEK (including different kind of services like the outside cleaning of windows, reception desk, wine cellar, gym& sauna facilities). Then it was added, "The registrations of interest are literally pouring in from all over the world." By the end of the year 2003, the interested crowd has almost disappeared. Had they instead transformed them selves into owners? No, only a handful had made themselves into owners of yet unfinished apartments. What had happened? It was suggested that the falling stock- market had intervened. As it were, the Turning Torso also came to include a script with a particular role and identity for its habitants. It was the identity of being an owner, and of being a rich successful entrepreneur and cosmopolitan. "It is mainly wealthy Swedes, international businessmen, celebrities and Corporations who have taken an interest in the apartments" (Press release September 12, 2003).

The habitant identity inscribed into the Turning Torso, with due help of circulating marketing materials and show rooms, came to resemble what Koolhaas (1996) termed the *kinetic elite*. This exclusive script had to be renegotiated in order to redefine and enlarge the interested market. As the representant from Samark further explained " To be sure, initially there were very high ambitions, then we ended up collectively to conclude that you can not do it this way, to say to 150 people: Look, here you have an architect and together you will create you own apartment. We had never been able to pull off that logistics, to have 150 tenants to decide among 150 suppliers of kitchens, and then make space for all of them in the same elevator. Besides we would most likely end up with bad solutions, from the point of view of the second hand market." Prospective habitants were no longer defined as owners. Instead, they were defined as tenants that had to pay a rent. As the architect from Samark, further explained, " it was the right decision, now we could decide that the basic lay-out was [finally] in place". HSB would assume an additional role and identity, to become an owner and landlord as well.

Turning more ownership into other identities - The return of a former identity?

To HSB Malmö, the unexpected identity as a land lord and owner of more free space allowed for new possibilities as well. The constructor-owner could now pay a rent to itself while occupying the free space as a tenant. The old head quarters in Malmö could be sold off.

In March 2004, the time had come for the general assembly. The constructor and project owner in Malmö was also member of a large national federation of landlords, one of the major players in the market for housing in Sweden. The federation was established in 1920ies with a particular social goal, to provide good housing to reasonable costs for the ordinary citizen. It started out as a social movement, with close ties to the social democratic party. By now, the Malmö Head Quarters had sold off a substantial stock of its older houses in order to pay for the never-ending bills emerging from the Turning Torso. In total some 800 million SEK of own assets were sold off. The new budget estimated total cost of the Turning Torso to reach 1,1 billion SEK. Members in the local federation became concerned. The CEO was replaced at the general assembly. In September 2004, the total cost of the Turning Torso was estimated to reach 1,6 billion SEK, excluding additional costs for a parking house not yet built. Instead of keeping their savings and investments in the federation, some local members now started to withdraw their capital and opened new accounts in an ordinary bank. Spokespersons for emerging concerned groups, like the national association for cheap housing, claimed the

Turning Torso to be a phallic symbol and a severe deviation from the social values that once governed the federation. Was this the beginning of the end of the Malmö association – and indeed, of the Turning Torso? Was it no longer being this mix of art and architecture? Had the Turning Torso instead turned into to particular part of a male human body – being a mere phallus?

The national spokesperson of the federation claimed it to be a mistake, although one made with good intentions. After all, the federation was competing on the same market as everybody else. The newly appointed CEO in the Malmö office ensured that in the next years, only cheap affordable housing would be built, and in rather substantial numbers too.

4) Accounting

During the years that followed the decision to start the project the budget was revised on numerous occasions. As it were the direction of these revisions was almost without exception to take into account unexpected increases in costs, most notably for increased quantities of steel and concrete and by implication, prolonged time for construction and increased total costs.

At some point in time, the (revised) budget started to lag far behind the costs already incurred in the project. For example by mid 2003 already incurred and registered costs for marketing, external consultants and administration exceeded the budget with 35M.SEK (Source: Internal report 2005). At this point in time, there was approximately 2 1/2 years left before the project was completed. Instead of being a pro-active controlling device in the hands of project management, the budget had turned into a rather re-active and badly updated version of the accounting ledger already in use.

At the time of completion the project leader estimated total costs for the whole project in the vicinity of 1.5 billion SEK (excluding some 250 million SEK in additional costs for parking facilities in a near by building). Management’s cost/revenue calculation estimates a net return on the investment around 2% or some 30-35 MSEK. In practice, by mid 2003 the budget for total project costs seemed at least provisionally to be out of control, and also largely ignored by project members. The successive transformation of the budget for total project costs; from being this pro-active management control tool, to becoming a re-active tool hardly discernable from the accounting ledger, is intriguing. How can these changes in the role of the budget be explained?

Important clues to an explanation are provided by some of the actors involved. During the world press conference, announcing the completion of the building in August 2005, the architect was asked to explain why he calculated so wrong in the first budget estimations.

> "There is nothing wrong, and you are sitting here on the 54th floor. The building is very stable and solid. As an engineer I know that. If there were something wrong you would not be sitting here. It is also a beautiful building, and you have to understand that it is not one made according to standards. It is an innovative building".
>
> The new CEO and project owner supplied the architect by explaining,
> "If anything was wrong, it was the first budget estimations that severely underestimated the costs of conducting such a project". The comment by the CEO prompted another reply from the audience. "But if the budget had been correct in the first place, we would not be sitting here today, right? The CEO replied dryly: "That is entirely correct".

The concerns expressed at the world press conference provide two important clues to an enriched explanation of the role(s) of the budget. First, the role of the budget seems multiple. The budget assumes a controlling role as a benchmark for evaluating project management success and failure. Simultaneously, the budget is also performing work of articulation as it affords further questions and answers to be articulated. Especially in situations when uncertainty is high, as in an innovative project with few well proven standard solutions, the budget seems to primarily assume the role as an articulation device, adding existence to the project.

Secondly and closely related, it might be costly for those involved to mix up the budget's role of articulation with the budget's more conventional role of control. This seems to have happened in the Turning Torso case. When the role of articulation is confused with the conventional and taken for granted role of cost control, the people involved in the decisions fail to appreciate the uncertainty associated with the former. Decisions were made accordingly, as if the first four budget estimations taken together represented certainty and control: Turning Torso is both technical and economical feasible and to be completed within two years.

The simultaneous tension between the twin roles of articulation and control is an important one and also suggested in the reply from the new CEO: With a correct budget, control would have been in place at the outset and the Turning Torso project would have been terminated early on.

Yet, as this case turned out the CEO's reasonable answer also begs a related question: But how to know when you are confronted with a correct budget, i.e., a budget in which there is *perfect identity* and hence no tension between articulation and control? Again, the Turning Torso case suggests that when decisions are in the making this is not so easy to figure out. Below, I will try to summarize and explain why this is so.

5. The Twisting Torso as a narrated time folding machine: a conclusion with theoretical practical implications

Malmö has transformed into a city equipped with a new landmark, the skyscraper Turning Torso. But how is this new state accomplished? What role does the sculpture Twisting Torso assumes in this case? Does it stay faithful in its passive role as a means towards given ends, as in the rationalized culture accounted for by Scott and Meyer (1994) and others? Or might the device also assume a more dynamic and unexpected role and participate in the construction of ambitions, and thus in the production of culture?

As a plastic object of art starts to circulate in the hands of others, it can *become* a dynamic device. However, as argued by Callon and Latour(1981), Callon (2003), Latour (2002, 2005) and Czarniawska (1998, 2005), the outcome is always uncertain. The fate of the sculpture is in the hands of others. In the hands of other humans, the sculpture might be articulated into a *narrative* and transform into a text, written or otherwise – "contexts that have a history, that have been organized as narratives themselves" (Czarniawska, 1998, p. 4). Will the humans go along with the sculpture and support its continued existence? Will they modify the sculpture or what? If people turn their back to the sculpture, the project has failed and the plastic study has turned into the stasis of a dead object, at least provisionally. Conversely, if the sculpture is taken up and further circulated and articulated in drawings, written texts and other representations, the association extends itself and might become more real. In the case of the

Turning Torso, plasticity and kinetics (not the stasis of dead objects) is an integral part of what is accomplished.

For the student of emerging design strategies, the case seems to carry a lesson about the performativity of devices. Not unlike the map performing the role as a calming device in Weick's (1987) account, the sculpture Twisting Torso performed the role as an *interessement* device (Callon, 1986, Akrich, Callon and Latour 2002). First, in the brochure held by the CEO, the Twisting Torso is transformed into a written narrative and a picture that makes the CEO into an interested reader. The Twisting Torso is no longer just a sculpture, but has turned into a *circulating reference* (Latour 1999) in a process of association. This is what is meant by the *production of a narrative* (Czarniawska 1998, p.20). Then the Twisting Torso resurfaced as a three-dimensional sculpture displayed at a subsequent board meeting and at an exhibition down town. The local press adds to the unfolding narrative. Also the board members became interested in the Twisting Torso and decided to explore it further as a possible prototype for a building. The Twisting Torso is thus several different things in our case, being simultaneously an object of art, a picture, a prototype, a written text, as architectural drawings, as means for further architectural design and exploration, i.e. the associations making up the unfolding narrative. This multiplicity of the object is also what makes it differ in an important way from the map in the example provided by Weick (1987): Explorations, as noted by March (1978, 1999), might transform goals and ambitions as well, and as further noted by Latour (2002), goals and ambitions are especially prone to unexpected transformations *when passing through technical objects*. The Twisting Torso came to participate in defining collective ambitions. Simultaneously and progressively, largely undefined interests and ambitions become articulated and defined as 'Living arts'. Emerging global design strategies for city renewal and regional identity should be considered as an integral part of this unexpected outcome. When the process of transformation is taken further, as it turned out in this case, art can take on a new and unexpected role as well, i.e., to shape and mould the future in its image. By articulating and representing the future in the present, and by persuading others to act accordingly, the Twisting Torso can circulate further and become a *narrated time-folding machine*, not unlike what Weick (1987) term a 'self-fulfilling prophecy' (p.227). Yet, in addition to Weick's notion of a self-fulfilling prophecy, the notion of a narrated time-folding machine stresses the performativity of the devices. The devices perform work of singling out and intensify - not only coordinated actions towards a particular goal or ambition, but simultaneously and progressively they also participate in the transformation and subsequent

articulation of goals and ambitions, like the above mentioned global strategy for city renewal and the notion of living arts. Strong personal beliefs (Weick, 1987) might not be enough to explain such outcomes. Rather, strong beliefs, like a global strategy for city renewal can be, should be considered as part of what should be explained.

As the sculpture Twisting Torso assumed a crucial role as an articulation device in defining the emerging global strategy, the budget came to be renegotiated as well. The important point of reference for the emerging project ambition was to stay faithful to the prototype's exterior proportions. The authorized 730 M.SEK budget from the board decision in December 2000 was articulated accordingly. It was not until the instability associated with forces of gravity were articulated and pointed out with the help of the subsequent refined drawings that the exterior design came to be renegotiated. The additional width and associated steel and concrete reinforcements thoroughly undermined the budget. If project management had insisted on keeping the budget and the design intact when this situation emerged, i.e., without allowing for their negotiation, mutual adaptation and subsequent transformation; the project would - for better or worse, most likely have disintegrated and ended as a dead object. Here, the role of the Twisting Torso as a *narrated time-folding machine* deserves to be emphasized. Ambitions to construct according to the prototype turns out to be stronger than ambitions to construct according to the two year time frame inscribed into the budget. Such unexpected instances of time-folding are important to emphasize because they profoundly challenge the traditional notion of linear calendar time inscribed into a budget, and more generally, into modern rational management controls. Again, there is a related lesson on uncertainty that deserves to be emphasized; no one could have known in advance that the situation with the unstable building would emerge. To know in advance what the correct budget would be like is to ask for too much.

Implications for management research and practice

Uncertainty is a general and well known feature of projects. What the correct budget is can be assessed with great certainty at the point of project closure. Unfortunately, the reverse is not true, neither for projects nor budgets. So given this uncertain nature of projects the question to be asked is not so much what to know (which can only be known ex-post) but rather *how* to know.

One, and perhaps the only way of knowing (modestly more), seems to pass through the devices just mentioned above. As argued the sculpture and the architectural drawing are such devices that allows for articulation and further explorations of the project and its ambitions. This might come as no surprise. Yet, the articulating role so easily granted to prototypes and drawings should also be granted to the budget. Below I will extend this line of argumentation. The argument is simply that one way of knowing modestly more might be to acknowledge the different possible roles the budget can assume, in addition to control:
To begin with – when first confronted with a project budget, it is probably wise to consider the role of articulation *and* the role of control *without* assuming any perfect identity between the two. When generalized with an eye to practical implications, the consideration can be stated like this: While all budgets can assume the role of articulation and participate in bringing a project into existence, there seems to be considerably fewer budgets that simultaneously also assumes the role of perfect control. Control might come much later, if at all, especially in situations when the more fundamental role of articulation is mistaken for the more conventional role of control.

To the extent that this mistaken convention also operated in the Turning Torso case - and I have certainly argued that above, the mistake should come as no surprise. After all, most introductory books on the market for project management participate in reproducing the conventional controlling role of the budget – *without taking other and presumably more fundamental roles into account*.
Perhaps somewhat paradoxically, by only taking the conventional controlling role into account, practitioners as well as research might participate in preparing the ground for project costs out of control, with the budget ending up in a re-active role as a badly updated accounting ledger. Hence, the practical relevance of asking sensitizing questions concerning possible tensions between the different roles of the budget, notably between articulation and control, seems to be one important practical lesson to be derived from the Turning Torso case.

Finally, a few (more) words on practical implications concerning the particular task of project management and evaluation. The conventional definition is right in emphasising the unique innovative character of projects (e.g. PMI 2000). “Operations and projects differ primarily in that operations are ongoing and repetitive while projects are temporary and unique” (p.4). The important point conveyed by the PMI definition is that a project can afford a productive way to organize a task that does not fit so well with the organizational routines and conventions of

standard operating procedures. Yet, when the role of project management is considered, there is less concerns about the importance of managing according to the project's presumably non-conventional and innovative nature. Instead, the role of project management comes to resemble that of a highly repetitive mass-production operation: Planning, executing, controlling are the main tasks. Especially when considering project economy and budgets, expectations on management are reinforced along such conventional lines, as in 'Project Cost management' and 'Cost Control' (PMI 2000). It seems that only the project is granted the role of articulation by affording an innovative break with standard operating procedures. Neither project management, nor the budget is granted such an innovative role. In practice, as the Turning Torso case has shown, the expectations on and evaluation of project management tends to follow and reproduce the budget control convention mentioned above.

But why not grant to project management and budgets the role already granted to the project and the prototype, i.e., to articulate and manage the project as the non-conventional and innovative task it should be? The practical implications for project management and evaluation from such a modest enrichment of roles and expectations might be the several: The high and undue expectations regarding the controlling role of the budget can be softened. The evaluation of management can change accordingly and be further enriched by also taking due account of the project's defining characteristic, i.e., the unique innovative outcomes. By contrast, when budget deviations are spotted, the conventional and restricted evaluation repertoire consists of accusations of irrationality, scandal and conspiracy (ref . also Mouritsen and Kjær chapt. on budgets as political games). The repertoire of accusation thrives on the taken for granted role of the budget as a controlling device. Deviations from budget are irrational. Large negative deviations are both irrational and scandalous and presumably the outcome of a conspiracy. With an enriched and more articulated role of the budget, the repertoire of project management and evaluation can be enriched as well. There will be comparatively more room for evaluations concerning the unexpected costs for innovation and learning emerging along with the project. Conversely, by only emphasising the controlling role of the budget, project management may not only participate in preparing the ground for project costs out of control, at worst also the innovative character of projects might get lost.

Yet, what constitutes an innovation's success and failure is always in the hands of others. Will people continue to live in the Turning Torso in the years to come? Will the members of HSB, the citizens of Malmö and the visitors from near and far continue to travel to the site and

weave their own threads to the still fragile glocal link? Will the architects, art critics, social scientists and journalists enrich the weave still further by their writings? Will the world's modern museums of arts continue to display it? Will the market endorse it as an innovation – being this innovative mix of art and architecture? As for the future market success the project manager further explains: "It is not impossible that some actually will buy the house one day. It will be like buying art – you will simply own it". For a construction project, it seems like the question of success and failure is never finally resolved, being in this case at once a symbol of living arts and a phallic symbol – being at once a successful glocal scandal. As an unfolding narrative, the conclusion can only be provisionally so.

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Appendix

Source: http://home.att.net/~amcnet/bo01.html (homepage Bo 01) / October 2004

World press conference, announcing the Final building, August 27 2005

An interested visitor: The Swedish Prime Minister Göran Persson roof climbing the Turning Torso, October 31 2005.

Summary of some important events:

- Digging a small hole in the ground: February 14 2001
- Excavation/Construction begins May 2001
- 27th floor reached Dec 2003
- 54th floor reached Feb 2005
- Moving in November 2005-March 2006

Summary of some unexpected changes in plans:

- Site originally planned for a 25 store building/77 metres
- 7 cubes/42 stores/160 metres (Fall 1999). To be finished by May 2001.
- 9 cubes/45 stores/186 metres/130 apartments/550 MSEK (June 2000)
- from 14.800 sqm to 17.700 sqm 'commercial area'/Re-estimation total costs:730 MSEK (Fall 2000- Feb 2001)
- Adding 3 metres to radius at base (Feb 2001-June 2001) + 4 metres height
- Reducing number of floors below ground from 4 to 2
- Re-estimation of total costs: + 200 MSEK (Dec 2001)
- Re-estimations materials: from 1700 tons of steel to 4400 tons (Feb –July 2002)
- Re-estimation of time for construction above ground from 16-19 months
- Re-estimations of total costs: 1100 MSEK (March 2004), 1600 MSEK (Sep 2004), 1500 MSEK (June 2005, excluding some 250 MSEK for required and enlarged parking facilities)

Maps: 1)Western harbour: 3-D location as displayed by the Bo01 exhibition (left picture). 2) The red bull eye circle, right map, indicates the precise location of the building today. In spring 1999, another location was considered further south, close to "Fritiden".