Where Do the Construction Projects Come from?

The Case of the Kumpula Project

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Master's Thesis

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May 2005

Tiedekunta-Facultet-Faculty
Valtiotieteellinen tiedekunta

Laitos-Institution-Department
Sosiologian laitos

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Työn nimi-Arbetets titel-Title
Where Do the Construction Projects Come from? The Case of the Kumpula Project

Oppiaine - Läroämne - Subject
Sosiologia

Työn laji-Arbetetets art-Level	Aika-Datum-Month and year	Sivumäärä - Sidantal - Number of pages
Pro gradu	20050502	148 + liitteet (21 s.)

Tiivistelmä - Referat - Abstract
Kaupunkitutkimuksen piirissä rakennetun ympäristön muutosta on tyypillisesti tarkasteltu suunnittelun näkökulmasta olipa kyseessä sitten arkkitehtuurisuunnittelu tai kaupunkisuunnittelu. Suunnitelmat eivät kuitenkaan vielä itsessään muuta kaupunkitilaa vaan tarvitaan myös hankkeita, jotka toteuttavat suunnitelmia. Tutkimusta jäsentää kysymys siitä, mistä ja miten rakennushankkeet syntyvät.

Lukuisiin erilaisiin dokumentteihin ja haastatteluihin perustuva tapaustutkimus tarkastelee Ilmatieteen laitoksen ja Merentutkimuslaitoksen uuden toimitilahankkeen syntyä 1990-luvun lopulta aina vuoden 2003 puoliväliin saakka, jolloin osapuolet allekirjoittivat rakennushankkeen sopimukset. Monisäikeisen ja verkostomaisen hankkeen kuvaus ja analyysi perustuvat toimijaverkkoteorian ja kulttuuri-historiallisen toiminnan teorian yhdistelemiseen tapaustutkimuksen puitteissa. Analyysi jäljittää käännekohtia, joissa toimijat sitoutuvat toisiinsa ja rakennukseen, joka muuttuu asteittain todeksi.

Tutkimuksen keskeinen havainto on, että hankkeessa ei ole kysymys suoraviivaisesta suunnitelmien muuttamisesta rakennukseksi. Toteutus jäsentää suunnittelua vähintään yhtä paljon kuin suunnittelu toteutusta. Useiden erilaisten intressien yhteenkytkeytymisestä syntyvä hanke leikkaa kymmeniä eri organisaatioita ja teemoja tutkimuslaitosten hajasijoittamisesta ja yhdistämisestä kaupunkisuunnitteluinstituution muutokseen, paikallisesta asukasvastustuksesta Senaatti-kiinteistöjen rooliin valtionhallinnossa. Rakennus on samanaikaisesti materiaalinen, kulttuurinen ja performatiivinen kohde, joka sitoo hetkellisesti yhteen toimijoita, asioita ja tapahtumia, joiden on perinteisesti katsottu kuuluvan yhteiskunnan eri tasoille ja sfääreihin.

Työ on englanninkielinen.

Avainsanat Nyckelord Keywords

rakennushanke
tapaustutkimus
toimijaverkkoteoria
toiminnan teoria
kaupunkirakentaminen
teknologian tutkimus

Säilytyspaikka - Förvaringsställe - Where deposited /(täytetään kirjastossa)

Muita tietoja - Övriga uppgifter - Additional information

ID=3415

Helsingin yliopiston valtiotieteelliselle tiedekunnalle

Tarkastuslausunto Aleksi Aaltosen sosiologian pro gradu -tutkielmasta *Where Do the Construction Projects Come from? The Case of the Kumpula Project*

Valtiotieteen ylioppilas Aleksi Aaltosen pro gradu -työ *Where Do Construction Projects Come from? The Case of the Kumpula Project* tarkastelee kaupunkisuunnittelua ja -rakentamista tapaustutkimuksen kautta. Kohteena on Kumpulanmäelle sijoittuvan Ilmatieteen laitoksen ja Merentutkimuslaitoksen uuden yhteisen rakennuksen suunnittelu sekä sen rakentamisen käynnistämistä edeltävät vaiheet. Tämän tapauksen kautta tekijä pohtii yleisemmin sitä, minkälaisten ehtojen vallitessa ja minkälaisten toimijoiden kautta rakennusprojektit syntyvät ja toteutuvat. Aineistona työssä on suunnittelun dokumentteja, haastatteluja sekä osallistuvaa havainnointia. Työ tukeutuu sekä kaupunkitutkimuksen että tieteen ja teknologian tutkimuksen perinteisiin.

Johdannon jälkeisessä toisessa luvussa Aaltonen esittelee rakennusprojektin etenemisen kannalta keskeiset instituutiot: Merentutkimuslaitoksen, Ilmatieteen laitoksen, Senaatti-kiinteistöt ja Helsingin kaupunkisuunnitteluviraston. Kolmannessa luvussa esitellään ensin seikkaperäisesti työn teoreettiset lähtökohdat eli toimijaverkkoteoria (*actor-network-theory* eli *ANT*) ja kulttuurihistoriallinen toiminnanteoria (*cultural-historical activity theory* eli *CHAT*). Tämän jälkeen kerrotaan, miten nämä ovat keskenään yhdistettävissä tutkielman tarkoituksia varten. Luvussa neljä tekijä esittelee työlleen esikuvallisia tapaustutkimuksia. Luku viisi kuvaa työn aineiston, joka on laaja ja monipuolinen: se koostuu 23 puolistrukturoidusta haastattelusta, osallistuvasta havainnoinnista sekä lähes 200 asiakirjalähteestä, joihin kuuluu lakeja, hallinnollisia säädöksiä, kokousten esityslistoja ja pöytäkirjoja, suunnitteluohjelmia, karttoja, sopimusluonnoksia, sähköpostiviestejä ja niin edelleen (asiakirjalähteet on erikseen lueteltu työn liiteosassa).

Tutkielman ydin on yli 60-sivuinen luku kuusi. Siinä Aaltonen kuvaa Kumpula-hankkeen monipolvisen syntyhistorian sen varhaisesta ideoinnista ja sittemmin vakavasta käynnistämisestä vuonna 1997 aina siihen asti, kun hanketta koskevat sopimukset vuonna 2003 solmitaan ja itse konkreettiseen rakentamiseen ollaan valmiita käymään käsiksi. Tutkimus osoittaa oivallisesti, kuinka hitaasti syntyy monen toimijan yhteisymmärrys siitä, mitä suuressa kaupunkikuvaan vaikuttavassa rakennushankkeessa ollaan ylipäänsä tavoittelemassa. Yksittäisten tahojen alkuperäiset päämäärät muokkautuvat sitä mukaa, kun toisten toimijoiden kanssa pitää sopia jaetuista hyödyistä, joita ilman hankkeen edistämistä ei voida perustella riittävän laajalti. Koko prosessin ajan esimerkiksi käydään kädenvääntöä siitä, tulisiko Merentutkimuslaitos ja Ilmatieteen laitos yhdistää yhdeksi suureksi laitokseksi. Vai tulisiko niillä olla selvästi erotellut rakennukset? Entä pitäisikö myös Suomen ympäristökeskus tuoda samaan rakennukseen? Jossain vaiheessa hanketta kamppaillaan siitäkin, pitäisikö itse asiassa kaikki nämä laitokset hajasijoittaa kauas pois Helsingistä ja Kumpulanmäeltä. Toimijoina esiintyvät niin asianomaisten laitosten, Senaatti-kiinteistöjen, ministeriöiden, hallituksen aluepoliittisten linjausten, arkkitehtien ja kaupungin kaavoituksesta vastaavien toimijoiden lisäksi esimerkiksi lähialueiden asukkaat, jotka kiivaasti vastustavat virkistyskäytössä olevan alueensa täyttämistä mittavalla uudisrakennuksella. Kun lopulta rakentamisen turvaava sopimus solmitaan ja työt voidaan aloittaa, tämä ei ole minkään yksittäisen toimijan aikaansaannos, eikä lopputulos vastaa sellaisenaan kenenkään alkuperäisiä pyrkimyksiä. Sen sijaan että tällainen suunnitelmien elävyys vain todettaisiin, Aaltosen työ näyttää hienosti ja yksityiskohtaisesti, minkälaiset prosessit ovat tavoitteiden muuntumisten takana. Työ jättää kuitenkin hieman avoimeksi sen, miten muodostuvat ne tavoitteet ja argumentaatiot, joita hankkeeseen osallistuvat tahot mukaan tuovat.

Kaupunkitutkimuksen kannalta tärkeää on Aaltosen perushavainto: rahanketta ei voida selittää millään yleisellä "yhteiskunnalla" tai "ideologialla", joka ikään kuin liikuttelisi toimijoita näiden tietämättä. Sen sijaan yhteiskunnallisuutta – ja rakennettua ympäristöä sen elementtinä – syntyy vuorovaikutuksessa, jossa kaikki sen osapuolet myös muuttuvat, määrittävät itseään ja toisiaan ja jonka tuloksena syntyy materiaaliseksi jähmettyvää todellisuutta.

Muista Aaltosen työn löydöksistä mainittakoon esimerkiksi se, että tulevaisuuteen suuntautunut argumentti on tärkeämpi kaupungin kehittämisen mutta myös yksittäisen rakennushankkeen edistämisen kannalta kuin todennettavissa olevat tosiasiat. Esimerkiksi vaikka tulevaisuuden säästöjä, synergiaetuja tai yhteistyöintoa on melko vaikea todentaa tässä ja nyt, osittain juuri epämääräisyydessään ne ovat tavoitteita, joita on helppo jakaa ja jotka voidaan joustavasti ymmärtää kunkin mukana olevan instituution kannalta hyödyllisinä. Tämä päätelmä saa tukea muustakin kaupunkitutkimuksesta. Hieman toisenlainen lopputulema työssä on se, että rakennusprojektin todellisuus kasvaa asteittain, se ei ole joko–tai-kysymys. Hanke on sitä todellisempi, mitä enemmän toimijoita siihen saadaan liittymään ja mitä enemmän siihen saadaan sitoutettua paperien, suunnitelmien, kuvien ja sanojen lisäksi myös työmiehiä, kallion räjäyttämistä ja käytettyä rahoitusta. Suunnittelun kohde eli tuleva rakennus hankkeen objektina mahdollistaa ristiriitaistenkin tavoitteiden yhdistymisen: laitokset saavat nykaikaista ja entistä väljempää toimitilaa, ministeriö toiminnan synergiaetuja sekä yliopisto kampusmaista vuorovaikutusta, ja kaikki nämä tavoitteet kirjautuvat kaupunkiympäristöön rakennettavana uutena tilana.

Kaikkinensa Aaltosen pro gradu -tutkielma on poikkeuksellisen ansiokas. Sen teoriaosuus on kunnianhimoinen, aineistot laajoja ja tapauksen kuvaus oivaltavaa. Tutkimuksen arvoa nostaa se, että siinä tutkitaan kaupunkitilan tuotantoa muista kuin suunnitteluinstituution tai -teorioiden tavanomaisista näkökulmista. Teoreettinen perinpohjaisuus ja pyrkimys yhdistää kaksi erilaista tutkimusperinnettä tuovat työhön myös raskautta: varsinaiseen tapauksen kuvaukseen päästään käsiksi kovin myöhään, vasta sivulla 71. Kokonaisuudessaa työ on ylipitkä (148 sivua + 21 sivua liitteitä). Tekstimäärä on kuitenkin tutkielman tavoitteiden, aineiston ja teoreettisen kunnianhimoisuuden kannalta lähes kauttaaltaan perusteltu; lähinnä vain luvussa neljä esiteltyjen aiempien tutkimusten suoranainen suhde Kumpula-tapauksen jää turhan löyhäksi.

Tieteen ja teknologian tutkimuksesta ammentavaa lähestymistapaa tuntematon saattaisi kaivata empiirisen aineiston kuvauksessa selkeämpää käsitteellisen yhteyden luomista aiemmin työssä esiteltyyn teoriaan. ANT:a ja CHAT:a kuitenkin yhdistää se erityispiirre, että ne eivät ole varsinaisesti substantiaalisia tulkintoja ohjaavia teorioita. Ennemminkin ne ovat parhaimmillaan ajatuksellisia välineitä, joihin tukeutuen tutkija herkistyy aineiston moniulotteisuudelle. Tällaisen lähestymistavan Aaltonen on sisäistänyt suvereenisti Kumpula-hankkeen kuvauksessa. Kääntöpuolena on, että valitussa lähestymistavassa pitäytyminen ehkä myös estää tulosten tulkinnan ja pohdinnan laajenemista keskusteluksi muun, perinteisemmän kaupunkisuunnittelututkimuksen kanssa. Kaikkinensa Aaltosen työ tarjoaa hyvän pohjan tieteelliseen julkaisemiseen, ja se on myös ajankohtaisen kansainvälisen keskustelun kannalta relevantti. Työ viittaa selvästi tekijän mahdollisuuteen omistautua tutkijanuralle niin halutessaan.

Esitämme Valtiotieteelliselle tiedekunnalle Aleksi Aaltosen pro gradu -tutkielman hyväksymistä arvosanalla *eximia cum laude approbatur*.

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1 Introduction

It is easy to imagine a society without mobile phones or genetically modified food, but what about one without roads, buildings and bridges? It is impossible to conceive of a modern society devoid of the basic material infrastructure. Contrary to the rapid evolution of high technology appliances, the built environment tends to be relatively persistent. Hardly any other artifact is produced for a longer life cycle than a building or a bridge. Natural decay and social change put, however, the built environment under constant transformative pressure. A new piece of physical infrastructure often steers its users behaviour inconspicuously for decades.

Anne Haila's (2002, 96–97) notion of a city-building process endeavours to bring together all the steps in the process in which the raw land is transformed into an operational city environment. In Finland, the phases of the city-building process are in principle hierarchically demarcated from each other. The private building activities begin where the public planning ends (Haila 2002, 97). The municipal politicians and the city planning apparatus posses formally all the authority needed to steer the development of the built environment. This seems to be particularly true of Helsinki where the local planning institution orchestrated by the City Planning Department has mainly been able to control the development of the built environment on the basis of the idea of holistic planning.

On the other hand, some scholars have documented an increasingly intimate link between the city planning and implementation of the plans (e.g. Haila 2002, 96; Kurunmäki 2005, 258–259; Mäenpää & al. 2000, 35, 182). For instance, having compared the different modes of city-building in Europe, Hong Kong, Singapore and United States, Haila claims (1999, 265) that "town planning without consideration of the property sector is not successful". According to Kimmo Kurunmäki (2005, 264) the new kinds of public-private partnerships in urban development tend to blur the clear distinction between public policies an their implementation. All in all, urban scholars often ignore the variety of actions that take place between the city planning and the ready-made built environment (Haila 2002, 96).

Although the Finnish planning system is in principle open and public, it tends to obscure the origins of the plans as if they would emerge from a universal and neutral interest (Haila 2002, 102–103). In reality, the plans must be appealing to somebody, since the planning apparatus cannot force, for instance, the implementation of an economically unfeasible plan. Without construction projects, decay would be the only change in the built environment. Paraphrasing Haila (2002, 102), we may therefore ask: Where do the projects come from?

The board of the Finnish state property arm, Senate Properties, decided on 19th May, 2003 to commence a building project on the university campus area on the Kumpula hill, located a few kilometres from the centre of Helsinki. The Kumpula project would erect a new building for the Finnish Meteorological Institute (FMI) and the Finnish Institute of Marine Research (FIMR). The new premises are expected to be ready and the institutes to move in by the end of 2005. The project spans several years involving dozens of organizations whose relationships are sanctioned by habits developed in previous projects, regulation and, finally, the contracts signed in June 2003. Although the Kumpula project itself is not a juridical person, the network of interdependent contracts makes it a relatively predictable institution. In other words, the actors can rely on it that the project will deliver a building. This study focuses on the emergent phase of the process before the contracts were signed and the entity was just a contingent project (cf. Latour 1994b, 49). The institutional framework of the Kumpula project is described in chapter 2.

The public investment of 40 million euros does not imply a mega project (Flyvbjerg & al. 2003) but a relatively sizeable effort that draws together a number of public and private organizations. It is not possible to analyze or even describe such a large and complex project exhaustively. One needs a perspective. A glimpse on the empirical material reveals that simply making it happen has been a key concern for the informants. Instead of being a singular event of negotiation, agreement and handshakes at some particular place and time, the building decision emerged gradually from a vaguely explicated need in the late 1990s to mid 2003 as an irreversible course of action. It is possible to deem the difficulties with the practical implementation irrelevant for the study, but this would mean ignoring a prominent feature of

the informants' own orientation in the project. The unfolding of the project can be depicted as a struggle to secure the realization of the building.

In order to build the capacity to materialize the building, the project had to go through several transformations before the ground was broken in the autumn 2003. Securing the realization of the building does not, of course, mean that its trajectory and meaning would be determined for good. However, the material makeup of the building makes some interpretations more obvious, some practices more convenient and some futures more economic. The interpretive flexibility of a building is constrained by its materiality (Gieryn 2002a, 60–61) that is subject to intentional moulding. Design can be broadly understood as all the efforts that influence the material features of the building. It is not done exclusively by the designers. This study analyzes those turning points that made the building happen but also conditioned the socio-material outcome of the Kumpula project.

To me analyzing the transformation of material environment as an exclusively social or cultural phenomenon would seem limited. Should we not acknowledge that humans are also bodily beings? It is obvious that our behaviour is enabled and constrained by the material environment. Numerous researchers have described the physical place as a theoretically underdeveloped or even disregarded dimension of sociological analysis (e.g. Carroll-Burke 2002, 75–76; Eräsaari 1995, 92; Gieryn 2000; Pels & al. 2002, 2–5). The problem is not that we would need a sociological theory of spaces and places, but rather how to sensitize the sociological analysis to the physical circumstances of social life. Mainstream sociology predominantly lost interest in the physical aspects of social life in the course of the twentieth century. The materialistic approaches inspired by the works of Karl Marx fell in disfavour and the linguistic turn took over social sciences. However, starting from the 1970s a new branch of research has been growing in the fringes of social science so that today some scholars (e.g. Latour 1992; Pels & al. 2002, 6) are already talking about a new, material turn in social sciences.

There are different ways to include the material moment of social life into the sociological analysis. The generic idea is to sensitize the analysis to the various ways the material entities resist their interpretation and exclusively social construction. For instance, material entities can be conceptualized as tools and objects of human activity or even as fully-fledged actors among humans. A traditional sociologist may very well agree with all this but continue to claim that it makes no difference for the questions he or she studies. Material features of the society merely reflect its social structure. On the other hand, several scholars in the field of science and technology studies (STS) have noticed that such a perspective is seriously limited for understanding technologically constituted contemporary society. It is argued that sociologists should be able to account for the material settings as an independent variable among the others and not as mere stand-ins for social functions and structures. Some scholars (Diamond 2003) have even tried to trace current social inequalities back to the differences between the material environments on the different continents thousands of years ago.

It is difficult to think of a literally more concrete object than a building. Construction practices are oriented towards changing physical objects and mediated by material inscriptions. A construction project is therefore an example of a social phenomenon, in which the interplay between abstract social and its material footing can readily be observed. My research strategy is based on the actor-network theory (ANT) and the cultural-historical activity theory (CHAT) discussed in chapter 3. The both approaches have developed a battery of fine-grained concepts for analyzing the mutual constitution of social and material aspect of society as a historically unfolding process.

The transformation of the built environment has been approached from the perspectives of architecture, city planning, state real estate policy, construction management, economics and so forth, but little attention has so far been paid to the origins of the construction projects. The case of Kumpula is an exploration of a little studied part of the city-building process in which several organizations are brought together as a construction project. It links numerous institutions such as the land use planning, architecture, property development, user organizations and the physical place together. In chapter 4, I will review seven case studies

against which the current case can be contrasted. Together with these and the future case studies this analysis is a small but substantive contribution to the understanding of the practices transforming our built environment.

The analysis in chapter 6 endeavours to answer three research questions that can be characterized as the descriptive, the substantive and the methodological. The concluding chapter 7 expands the scope of the findings by juxtaposing them with the previous case studies and some conceptual models, and discusses the implications for further research.

The Descriptive Question: How did the Kumpula project emerge?

The historical unfolding of the Kumpula project cannot be summarized and explained with a few sentences. The delineation nevertheless enables to identify and analyze key characteristics of the process. By juxtaposing the findings with previous case studies and conceptual models it is possible to elaborate assumptions about the city-building process.

The Substantive Question: What does the project tell about the involved institutions?

The Kumpula project provides a fresh perspective into three important societal institutions. First, the case is a concrete example of the development of sectoral research that has a key role in producing knowledge for the needs of public policymaking, business and individual citizens. Second, Senate Properties carries out the state real-estate policies and is the biggest real estate company in Finland. Third, the Helsinki City Planning Department represents the city planning apparatus of the capital of Finland.

The Methodological Question: Can the notion of a common object of activity help to grasp the dynamics of the fragmented, yet singular, actor-network?

The study stages a sort of a methodological experiment to combine two distinct, but allegedly complementary, approaches. I will use the notion of object developed in the cultural-historical

activity theory to identify the common orientation of the actors. The dynamic transformations of the network and its object will be analyzed using concepts from the actor-network theory. The structuring of the analysis in chapter 6 is a tangible expression of this experiment.

The empirical data is based on 23 semi-structured interviews and nearly two hundred naturally occurred documents. The complete catalogue of the data used in this study can be found from Appendix 3. The original data is predominantly in Finnish, but the excerpts included in the text have been translated into English. I have also included the original Finnish excerpts in footnotes. Given the distributed nature of the activities and the lack of intensive participant observation, this study does not qualify as ethnography in the sense the term has been traditionally used in anthropology and sociology. I have nevertheless tried to grasp the subjective meanings the informants attribute to the project (Brewer 2000, 18), this being a hallmark of ethnography. On the other hand, it is obvious that the Kumpula project means different things to different informants. Therefore its unity cannot be understood by solely listening to the actors. In general, my strategy has been to follow the realization of the project as a thing that resonates in various events and organizations (Marcus 1995, 106–108). The research strategy and process are described in chapter 5 that also assesses the reliability, validity and generalizability of the findings.

The empirical material for the study was collected while working as a research assistant for the Proactive Design project[1] at the Center for Activity Theory and Developmental Work Research in the University of Helsinki. Observing an ongoing project involving contradictions between the informants, business secrets and a tight schedule requires trust between the informants and the researcher. Maintaining this trust has been both technically and ethically a necessity for the study. The informants have had a possibility to check that no excerpts from confidential documents or literal quotations from the interviews have been published without their consent. The analysis and the conclusions are mine.

[1] The Proactive Design project studied the transformation of product development practices in four large engineering companies. The three-years research project was funded by the Finnish Technology Agency.

2 Institutional Framework

The board of Senate Properties decided on 19th May, 2003 to contract a new building for the Finnish Meteorological Institute (FMI) and the Finnish Institute of Marine Research (FIMR). The institutes would move from their outdated and scattered premises to the university campus area on the Kumpula hill, a few kilometres from the centre of Helsinki. The detailed plan approved by the City Council came into force on 23rd May, 2003 and a network of contracts was set up in June 2003 to ensure that the building would take place. The project can be understood as a network of organizations (cf. Haapalainen & al. 2004).

In a plenary session on 21st August, 2003 the newly elected Government authorized Senate Properties to lease the plot out for the owner of the building. The ground was broken on 9th September, 2003. Given the cost-estimate of 40 million euros and the size of 26900 m^2 floor area, the project was the biggest construction project to obtain a building permit from the Helsinki City Building Regulation Department in 2003. The building was named Dynamicum on 8th October, 2004. Dynamicum is expected to be ready and the institutes to move in by the end of the year 2005. The Kumpula project has been touted as a groundbreaking public-private partnership because, for the first time in the history of the state real-estate management in Finland, the funding for a public building was acquired from the private sector.

Diagram 1 depicts the most important contractual ties in the Kumpula project. The contracts align and interlock the organizations into their positions so that their performances can be anticipated and the construction project will produce a building. Some general observations can be made on the basis of the diagram which provides a consistent and compact view into the complex project even though it omits some important organizations.

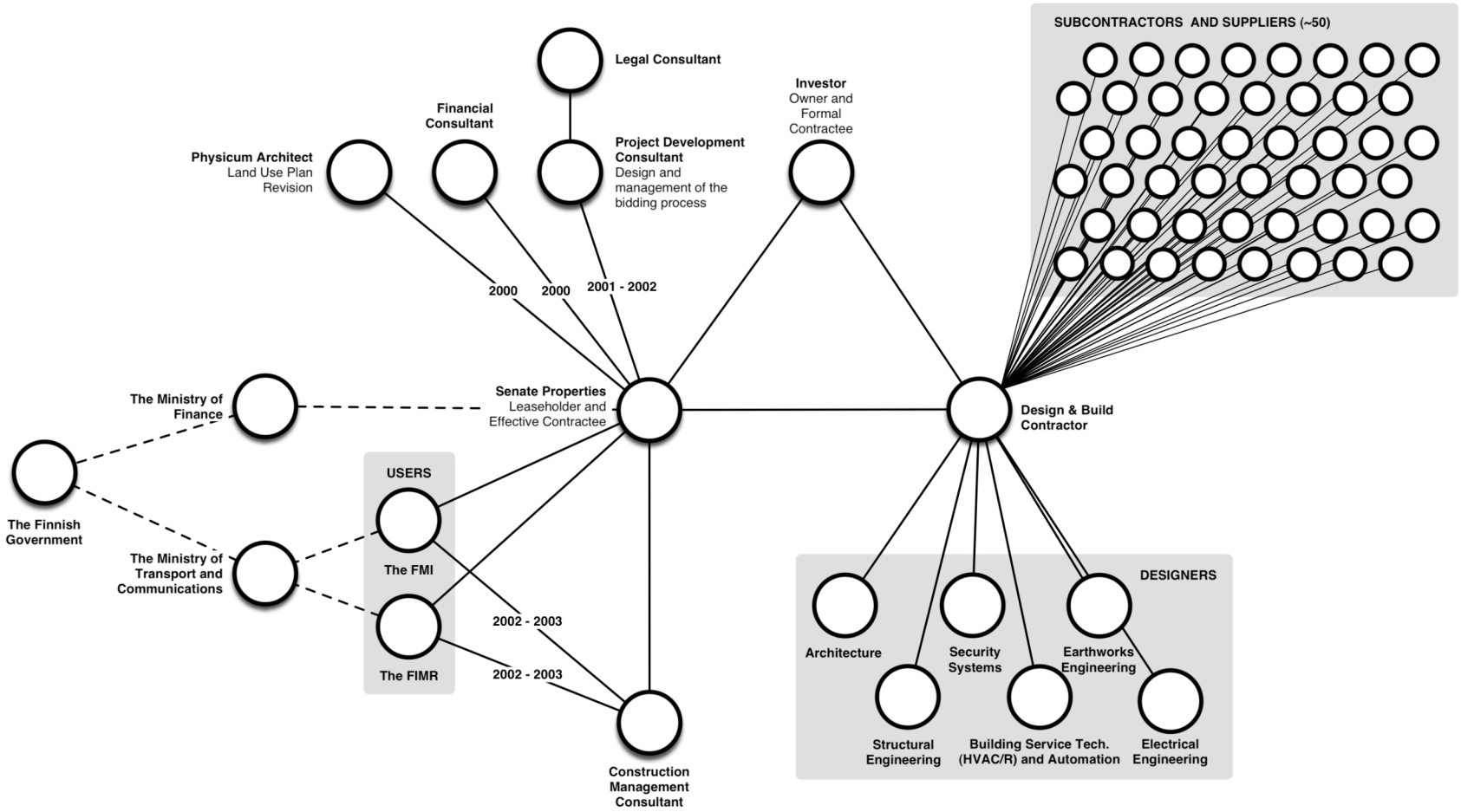

Diagram 1: *The network of contracts, set up in June 2003, stabilized the interaction between the key organizations so that it is reasonably certain that the building will take place. The diagram omits the City Planning Department, municipal administration in general and the University of Helsinki because no explicit contracts have been made with these organizations.*

First, there is neither a single centre nor a top in the network. None of the organizations involved can dominate the project because none of them can make the building take place alone. It is therefore a prerequisite to act together. However, it is worth noting that Senate Properties and the Design & Build Contractor are clearly more connected than the others. These two organizations are in a position to mediate the action of the others in the network. Although not visible in Diagram 1, to a degree this also applies to the City Planning Department which is the primary interface to the municipal administration. Second, although the project is not a juridical person, it is nevertheless a relatively institutionalized phenomenon. The various templates for setting up the system of interdependent contracts are called forms of contracting as described in the industry-wide General Terms of Contracts. More specifically the case is contractor-driven, which means that the principal contractor also hires the designers for the task (the lines connecting group DESIGNERS to the Design & Build Contractor). In the client-driven models the developer hires the designers.

The problem of Diagram 1 is that it does not tell anything about how the process was able to reach such a stable state. A lot of issues had to be settled and inscribed into the contracts, which, in turn, pushed the process to the point of no return. Why does the network look like this? What were the options that were rejected? According to Bruno Latour (1994b, 49) the virtue of observing a project before it is a stable institution is that "one sees not only the people who inhabit it but also the translation they wish to effect". In order to understand the Kumpula project it is necessary to understand the manoeuvring which led to this point.

This chapter will briefly introduce the focal organizations and summarize the city-building process on the Kumpula hill. The maps and illustrations in Appendix 1 depict the development of the Kumpula hill in various inscriptions. A short description of the Finnish land use control system can be found from Appendix 2.

2.1 Focal Organizations

The Finnish Meteorological Institute and the Finnish Marine Research Institute, the City Planning Department and Senate Properties were the most important public organizations involved in the emergence of the Kumpula project. The institutes will occupy the building and pay the project as rents. The current state real estate policy makes Senate Properties an obligatory passage point for the FMI and the FIMR in major real estate operations. The City Planning Department represents the municipal land use planning institution.

2.1.1 The Finnish Meteorological Institute and the Finnish Marine Research Institute

The Finnish Meteorological Institute (FMI) and the Finnish Marine Research Institute (FIMR) are a part of the state sectoral research system which has a key role in producing knowledge for the needs of policymaking, business and individual citizens. The institutes are governed by the Ministry of Transport and Communications.

The FIMR (founded in 1918) is the only organization conducting basic marine research in Finland. The institute provides information and expert services for government, academic and business use regarding the Baltic Sea especially. The FIMR employed 116 people in 2002. In contrast to the FIMR's predominant focus on research, the operations of the FMI, founded in 1838 and five times the size of FIMR, are more varied. In addition to research and expert services, the institute provides consumer services and develops commercial products. The FMI employed 549 people in 2002. The work of the both institutes is based on the extensive observation activities on their particular fields around Finland. The FIMR also operates its own research vessel Aranda.

The core operations of the institutes require maintenance and, to some extent, composing measurement equipment, analyzing data and making experiments in a dedicated workshop and laboratory environment which would be difficult to install into a general-purpose office

building. The current premises of both institutes are seriously outdated and impede their everyday operations.

2.1.2 Senate Properties

Senate Properties is the Finnish state property arm that was spun off from the state bureaucracy in 1995 as a state-owned enterprise. The original name of the National Board of Public Building[2] was first changed to the State Real Property Agency[3] and then on 1st March, 2001 to Senate Properties. The company is responsible for developing, maintaining and letting the property assets of the Finnish state for its bodies. These include university, office, cultural, and military buildings.

Senate Properties is the biggest real estate company in Finland. The company possesses an extensive experience of the Finnish real estate business and owns the land area on the Kumpula hill. Although the organization claims to operate on market terms, its annual investment limit is fixed by the Parliament in the state budget and the state bodies are obliged to use its services. Governed by the Ministry of Finance, Senate Properties has been criticized for alleged dominance in the state real estate management on the basis of neoliberal ideology (e.g. Eräsaari 2002; Jauhiainen & Niemenmaa 2002).

2.1.3 Helsinki City Planning Department

City planning is the primary instrument for public intervention in the development of built environment in Finland. The City of Helsinki owns about two thirds of its land area and has a historically strong City Planning Department. The Department has traditionally advocated holistic planning in which the role of detailed planning is to implement long-term regional objectives of the master and local plans. However, the Department has recently had to accept both more incrementalist and communicative approaches to detailed planning (Mäenpää & al. 2000, 183). Incrementalist approach means pragmatic planning for the needs of a particular

[2] Rakennushallitus
[3] Valtion kiinteistölaitos

project and municipal politics, while communicative planning emphasizes the dialogue and participation of various stakeholder groups in the planning process.

2.2 The Development of the Kumpula Hill

The number of students in the University of Helsinki increased rapidly throughout the 1950s and 1960s leaving the premises at the centre of Helsinki too small and impracticable for the university operations. In 1974, the University decided to locate its Faculty of Science on an un-built Kumpula hill few kilometres from the centre of Helsinki. The land was in the state of raw land meaning that it had not been designated for any particular use by a formal plan[4]. Since the land was owned by the City of Helsinki it had to be first acquired for a state operated university function. The City and the Finnish state signed on 15th February, 1977 the preliminary contract to swap 18 hectares of land in Kumpula to an equivalent piece of state-owned land suitable for residential building in Malminkartano suburban area and to organize a planning competition regarding the area.

According to the deal 130 000 m^2 of the approximately 145 000 m^2 overall permitted building volume on the hill was to be designated for teaching, research and similar activities by the municipal planning process. The City Planning Department also wanted to have residential buildings next to the university complex in order to create a lively environment and avoid social problems running from monotonous zoning. Based on the negotiations between the state, City of Helsinki and University of Helsinki Building Committee[5], the City Planning Department organized a competition in 1979 to obtain ideas of how to finalize the initial draft of the local plan[6] into an officially approvable local plan. One of the proposals was drawn by two employees of the City Planning Department.

[4] Small, temporary buildings had been constructed on the Kumpula hill after the Second World War in order to relieve acute need for housing. These buildings were demolished in the beginning 1970s.
[5] The Government convened in autumn 1971 a working group to investigate housing of the University of Helsinki. The task of the working group was to develop a proposal for locating the Faculty of Science while paying attention to the integration of the campus to the urban community (Ministry of Education & The City of Helsinki 1978).
[6] Kaavarunkoluonnos

The first prize was not awarded in the competition, but the jury decided to give equal prizes for four proposals out of which the one called “Umbilical Cord” (“Napanuora”) was chosen as the basis for further planning. In the proposal the parts of the campus buildings which are in the most active use, such as canteens and lecture halls, are located along a walking route that winds through the hill. Soon after the competition the original city planner of the project retired at the turn of the 1980s and the one taking temporarily care of the project left for a private company. The project was left in limbo.

In 1982, the first university building on the area materialized alongside the overall planning process. The Department of Physics had obtained, from the Soviet Union, a particle accelerator that needed a place to reside. On the basis of a tailor-made detailed plan from 1978 it was dug into the bedrock of the Kumpula hill with only a small building on the surface[7]. Around the same time the head of the Department chose the two planners who had drawn a proposal for the competition to take charge of Kumpula.

The planners finished the local plan in 1983 and the City Council approved it in 1984. A moderated version of the ‘Umbilical cord’ was retained in the plan which nevertheless revamped the traffic system on the hill. The local plan was a compromise between the City of Helsinki and the Finnish state that initially objected to the idea of placing housing on the hill, but eventually accepted some residential blocks. During the process the City Planning Department organized hearings among different stakeholders including the local inhabitants although, from the perspective of the Department, the main stakeholders were the City of Helsinki and the National Board of Public Building.

The city planners started to work on the detailed plan for the campus area. They adopted an exceptional strategy for the detailed planning. Instead of specifying the exact shape, size and location of each building, the city planners set some general guidelines for the development of the hill and declared that the detailed plan would be modified to suit the chosen design for each building. The strategic flexibility was possible since the Department thought it could

[7] The plot departed from the strict grid of the proposal “Umbilical Cord”.

count on the University as the developer sticking to the high quality of building. Another reason for the strategic flexibility was that according to the planners the land use plans tend to get outdated unless they are implemented soon after the planning apparatus has done its work. They knew that building the campus would take time and thus felt that they would not be able create a document that could adequately guide the development of the area for decades to come. The planners set up a process in which each construction project would trigger a reconsideration of the detailed plan for the particular block and its surroundings, based on the co-operation between the City Planning Department and the National Board of Public Building. According to the city planner the detailed plan of the campus that was approved in 1987 by the City Council was only bit more specific than the local plan it resembled to a great extent. The Ministry of the Environment ratified the detailed plan except for the highest point on the hill that was supposed to be left un-built[8] on the basis of an official appeal filed by the local nature conservation association.

In 1988 the detailed plan for the residential blocks on the Kumpula hill was approved and the building of the housing begun immediately. The architectural competition for the building of the Department of Chemistry was held the same year, but the actual building was postponed. The residential blocks were finished in 1990 just before Finland experienced its worst economic recession since the Second World War. The modifications to the detailed plan for Chemicum were approved on 15th January, 1992 by the City Council and the building begun the same year. Chemicum was finished in 1995 and the architectural competition for the second and the third building was executed in 1997.

During the latter competition the city planners learned that the University was not going to place as many activities on the Kumpula hill as was originally intended. The bioscience units of the Faculty of Science were to be located on the new campus of Viikki. The University did not need all of its 130 000 m^2. This was a welcome surprise for the planners who made a proposal to put some additional housing on the hill. Both the State Real Property Agency and the University accepted the proposal which was integrated into the second modification to the

[8] Prior to the new Land Use and Building Act (132/1999) that came into force 1st January, 2000 the detailed plans had to be ratified by the Ministry of the Environment. The requirement was removed from the new law.

detailed plan approved by the City Council on 15th November, 2000. The building of Physicum had already begun in 1999 on the basis of an exemption to the original detailed plan. In this plan the highest point of the hill was turned into to park based on the appeal filed in the late 1980s. In the plan the rest of the non-residential area was designated for generic office space. The plan modification initially met strong resistance from the people living in the residential buildings on the hill and in the Kumpula wooden house district nearby. Despite the resistance Physicum was finished in the spring 2001 and the building of Exactum begun. Afterwards the design of Physicum has sparked criticism also among some of the researchers that moved into the building (see Jauhiainen & Niemenmaa 2002; Niemenmaa 2003; Niemenmaa & Jauhiainen 2001).

3 Conceptual Framework

This chapter will introduce the conceptual foundation of my research strategy. The choice was not obvious and I in fact tried to resist getting involved with the slippery and controversial actor-network theory (ANT). The reason I eventually chose it was that it implies a research strategy that matches my propositions, research questions and data. This is because the actor-network theory "selects the trajectory of artifact construction as a unit of analysis. In this process both the object and the network of actors connected to it co-evolve" (Miettinen 2005 forthcoming; see also Miettinen 1998, 29–30).

Instead of substantive network formations, the actor-network theory focuses on the processes in which humans and artifacts are bind together as heterogeneous collectives. Collective formation both provides the actors with the capability to carry out their intentions and transforms the actors. In contrast to most mainstream sociological approaches the world of ANT is flat. It has no levels or overarching societal structures, but instead an indefinitely complex fabric of collectives. In empirical research the ANT could probably be described as a methodological way of thinking about social artifacts in the making. It offers a range of useful conceptualizations but no strict guidelines for how to apply them.

The disadvantage of a rather open framework is that developing an empirical research strategy is laborious. In this task I will use the concept of object from the cultural-historical activity theory (CHAT) to render the rather abstract notion of actor-network in a useful way. Contrary to the ANT, the cultural-historical activity theory models intentional human conduct as a multi-layered system: routine operations, individual actions, collective activity and networks of activity systems, and postulates the capitalistic society as a backdrop for all activity in contemporary society. The pivotal level is the collective activity that has a highly differentiated internal structure. The networks of activity systems are sums of their nodes.

3.1 Actor-Network Theory (ANT)

The actor-network theory is a commonly accepted label for a methodological approach which has been developed by Bruno Latour, Michel Callon, John Law and many others since the 1980s. The key ideas of the approach were originally formulated in the field of science and technology studies (STS) from social constructivist premises. Despite its name, most of the prominent proponents of the approach have avoided fixing its fluid concepts as a solid theory, thus leaving room for different renderings suitable for varying research designs (Latour 1999c, 115; Law 1999, 3; Palmroth 2004, 150; Ylikoski 2000, 300). Since the renderings of the approach vary even between its originators (McLean & Hassard 2004, 496), I have chosen the writings of its best-known proponent Bruno Latour as my starting point.

3.1.1 Background

The actor-network theory is generally deemed to have three important forerunners: the sociology of scientific knowledge (SSK), laboratory ethnographies and the sociology of translation. The latter two still remain a salient part of Latour's thinking. In the 1970s a group of researchers known as the Edinburgh School developed the so called strong program to reform the sociology of scientific knowledge. One of the basic tenets of the strong program was the principle of symmetry in explaining scientific knowledge. Contrary to earlier conceptions, the principle requires that all statements must be explained by a similar mechanism irrespective of their truth-values. Both false and true statements are socially constructed. Drawing from this idea Michel Callon first formulated the concept of generalized symmetry in the 1980s (Callon 1986; Miettinen 1999, 172). The idea, which is also known as ontological symmetry, has remained an essential and probably the most controversial part of the actor-network theorizing ever since.

3.1.2 Latour and Sociology

Over the years Latour has constantly revised his concepts and shifted from empirical analyses of scientific and engineering practices towards more philosophical issues, but his unconventional and uncompromising views about the composition of social reality have not changed significantly (Husa & Suoranta 1998; Lehtonen 2000, 276–278). Therefore it makes more sense to try to grasp the way of thinking Latour is developing instead of trying to pin down the exact meaning of his moving concepts in vain.

Latour attempts to bypass all the routinely employed dichotomies of social sciences such as social – material, technology – society, agency – structure, nature – mind, micro – macro, subject – object, ontology – epistemology, traditional – modern, language – nature by arguing that preloading phenomena into such oppositions neither explains anything nor helps in understanding the social (e.g. Latour 2000, 112–114; 1999a, 24, 294–296; 1999b, 16–17). At best the emergence and maintenance of such essentialist oppositions is something that requires explanation.

For Latour (2000, 113) society or any such category has to be constantly "composed, made up, constructed, established, maintained, and assembled". The problem in starting with essential categories and dichotomies is that they exclude the possibility of analyzing how those categories are constantly transformed and maintained. The paramount question is not how things are, but how they are constantly made. Although this may sound like constructivism Latour is not talking about social construction in the conventional sociological sense (e.g. Latour 1994b, 54). In fact, Latour has actively tried to distance his position from social constructivism. The proponents of the ANT have described their approach as relational materialism or distributed monism (Miettinen 1999, 176).

Latour criticizes traditional sociology for its alleged aim to reveal real social causes and functions behind the mundane artifacts people face in their everyday life and thereby to debunk actors' own knowledge about those objects as irrational or irrelevant (Latour 2000,

109–119). Not even the sociologist possesses superior knowledge about the society, although he or she may be more or less well equipped to study it. Drawing from the ethnomethodological notion of unique adequacy Latour (2000, 112) declares, "a general feature of *all* objects […] is that they are so specific that they cannot be replaced by something else for which they are supposed to be a stand-in." The way some entities emerge as locally significant is unique in a way that must be studied and not sacrificed in the search for general explanations. When generic explanations seem to work, it is important to identify the local entities representing the far-reaching networks concealed behind their apparently local performances.

In order to observe how different actors constantly forge, renew and cut associations that bind society together, sociologists have to abandon their preconceptions about what the society is or who the actors are (Latour 1987b, 348). The essence of the actor or society cannot be a point of departure for the study but something that can be locally settled by meticulously describing the action of the networks (Callon 1986, 200–201). For Latour (1991, 129) "society and technology are not two ontologically distinct entities but more like phases of the same essential action". The insight borrowed from ethnomethodology is that instead of abstract norms, social relationships and overarching culture, concrete humans make society in their local interactions with each other and numerous non-human artifacts.

The radical tenet is that social agency does not belong exclusively to humans, but it is symmetrically shared with various non-human entities. This is the idea of ontological symmetry. In order to facilitate understanding and representation of stitching together both humans and non-human actors as *collectives*, Latour's replacement for the concept of society, he develops a set of interconnected concepts that depart markedly from the traditional sociological theorizing (Latour 1991, 111; see also glossary in Latour 1999a, 303–311). According to Latour (1991, 110) "we are never faced with objects or social relations, we are faced with chains which are associations of humans (H) and non-humans (NH)".

Contrary to mainstream sociology and common knowledge, for Latour (2000, 113) social does neither refer to a substance such as humans and relationships between them nor a domain of reality opposing nature, technology and economy, "but a way of tying together heterogeneous bundles, of *translating* some type of entities into another (translation being the opposite of substitution " (see also Lehtonen 2000, 276–277). Social is the continuous movement, circulation in the chains of translations tying humans and non-humans into collectives.

3.1.3 From the Overarching Society to Heterogeneous Collectives

Latour (1999b) does not like the label of actor-network theory (ANT) and generally does not use the term actor-network in his writings. Nevertheless, the notion is commonly associated with Latour and can be used to illustrate some rudimentary aspects of his thinking[9]. John Law (1999, 5) discusses the term as follows:

> "This is a name [actor-network], a term which embodies a *tension*. It is *intentionally oxymoronic*, a tension which lies between the centred 'actor' on the one hand and the decentred 'network' on the other. In one sense the word is thus a way of performing both an elision and a difference between what Anglophones distinguish by calling 'agency' and 'structure'."

In the anti-dualist terminology Latour is developing, the notion of collective replaces both the concept of actor-network and the idea of overarching society. To put it very crudely, actors are networks made of actors, and vice versa: networks are actors made of networks (cf. Latour 1999b, 17–19; Lehtonen 2000, 291–292). Actors are network effects that "take the attributes of the entities which they include" (Law 1999, 5). The hyphen connecting the words 'actor' and 'network' in a sense highlights the recursive relationship between the actors and the networks, in which neither is primary nor exists without the other. It depends on the observer's perspective whether an entity presents itself as an opaque actor or a transparent network. To me it seems that grasping the recursivity and the role of perspective in defining the collective is paramount in understanding Latour's way of conflating ontology and epistemology. The

[9] Latour (e.g. 1987a, 104) has repeatedly pointed out that ultimately "the fate of a statement depends on others' behavior". It is, therefore, not up to Latour alone to decide how the approach he has been building is labelled.

idea of recursivity is also present in Latour's (1999b, 18–19) own account of the notion actor-network:

> "'Actor' is not here to play the role of agency and 'network' to play the role of society. Actor and network – if we want to still use those terms – designates two faces of the same phenomenon, like waves and particles, the slow realization that the social is a certain type of circulation that can travel endlessly *without* ever encountering either the micro-level – there is never an interaction that is not framed – or the macro-level – there are only local summing up which produce either local totalities ('oligoptica') or total localities (agencies)."

Actors are defined interactively with each other in *trials* of forces. For Latour (1999a, 122) "there is no other way to define an actor but through its action, and there is no other way to define an action but by asking what other actors are modified, transformed, perturbed, or created by the character that is the focus of attention." An actor is therefore "a list of answers to trials – a list which, once stabilized, is hooked to a name of a thing and to a substance" (Latour 1991, 122). Actors emerge as gradually stabilizing influences on each other. A name of action is initially attached to this set of effects and "only later does one deduce from these performances a competence, that is, a substance that explains why the actor behaves as it does" (Latour 1999a, 308). The key idea is that the process goes from action to essence – not the other way round. This is the source of the methodological sensitivity the approach potentially offers for empirical research, but also bound to create problems if the radical anti-essentialism is taken at face value.

> "To define an entity, one will not look for an essence, or for a correspondence with a state of affairs, but for the list of all the syntagms or associations into which one elements enters." (Latour 1999a, 161.)

These peculiar ontological premises entail two important consequences. First, the actors are neither fixed in scale nor necessarily human. The principle of ontological symmetry means that not only humans, but also non-human entities are entangled in network- or rhizome-like topologies that constitute acting collectives[10]. According to Latour (1994b, 35) "action is

[10] Latour (1999b, 19) notes: "As Mike Lynch said some time ago, ANT should really be called 'actant-rhizome ontology'. But who would have cared for such a horrible mouthful of words – not to mention the acronym 'ARO'? Yet, Lynch has a point." In general, Latour (1999b, 15–16) avoids using the notion of network since according to him it has been effectively deformed to connote unmediated, direct exchange between similar nodes like the flow of bits in digital communications networks. This is diametrically opposed to the idea of mediatedness of action. Acting collectives are heterogeneous networks of actants of various kinds and

simply not a property of humans but of an association of actants". The term *actant* refers to all kinds of acting entities in order to avoid confusions running from human bound connotations of the term *actor* (Latour 1999a, 303). Second, since Latour denies the existence of any abstract social structures steering action behind the backs of the actors, local action must also account for durability and commonalities between social practices around the world. The capability of material, non-human entities to mediate action is decisive in this respect.

3.1.4 The Dynamism of the Collective Action

Latour has developed his concepts in the field of science and technology studies by observing and analyzing scientific knowledge production and development of technological innovations that are by definition creative processes. However, the creativity of action is by no means limited to the practices in science and technology. Humans and non-human entities form collectives by swapping properties in a course of events that is not a zero-sum game.

> "Yes, society is constructed, but not *socially* constructed. Only the Machiavellian baboon, the Kubrick ape [see footnotes], constructs its society socially. Humans, for millions of years, have extended their social relations to other actants with which, with whom, they have swapped many properties, and with which, with whom, they form *collectives*."[11] (Latour 1994b, 53.)

Collective formation is a process in which humans and non-humans become entangled with each other in novel ways. The adjective creative should therefore not be taken in its commonsensical associations with positive progress and the emergence of novelties. The intrinsic creativity of action simply means that the action slightly exceeds its actors, who are irreversibly changed by their own actions (Latour 1996b, 237; Lehtonen 2000, 289–291). One can never fully anticipate how the others mediate our actions and if we try to repeat our own actions merely the knowledge about previous actions has altered the situation. Despite the tendency in the field of science and technology to study novel knowledge and technological innovations, action is not only about bringing about new entities. It is as well about artful

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scales that do not faithfully pass on each other's actions, but tend to translate and deform them according to their own interests. The nodes of the actor-network are not intermediaries but mediators. If one actor in the network changes, the others change too. Instead of the subject – object relationship human beings and material artifacts co-construct each other as actors (Latour 1991, 117; Murdoch 2001, 118).

[11] The Kubrick ape refers to a scene in Stanley Kubrick's Space Odyssey 2001. In the film a group of apes begins using tools and hence step on an evolutionary path on which they will once be called humans.

maintenance and continuous transformations of existing ones. New entities do not appear from the void but emerge out of the existing ones.

The constitution of an acting collective is neither amorphous nor is the process of its social structuration haphazard. Some actors may come to occupy a position from which it is possible to dominate others and benefit disproportionably from their actions while some actors may be actively debarred from the collective. If many actors have no other option to carry out their objectives but to go through the particular actant, this is called *an obligatory passage point* (Latour 1987a, 245). However, "domination is never a capital that can be stored in a bank. It has to be deployed, blackboxed, repaired, maintained" (Latour 1991, 118).

Although Latour delights in visualizing his ideas to a degree that irritates some his peers, there are virtually no diagrams depicting networks in his works. Instead of substantive network structures, Latour's theorizing is about network building, dynamics and historical evolution of collectives. For this task he offers a battery of concepts that expose different features from the collectives and the processes transforming them. *Relative existence* and *black boxing* are tools to assess and describe the entity's ontological status: How firmly has it been stabilized? Does it hide its internal workings from the others? *Translation of interests* is the mechanism through which the collective builds the capability to realize its program of action by binding necessary actors together. *Technical mediation, delegation and inscription* explain the existence of the entities that seem to transcend local face-to-face interaction and how these entities can be mastered locally.

Black Boxing and Relative Existence

As the network-actor[12] forges more associations that interlock actors into their places, its performance becomes more and more predictable as a member of other actor-networks. This stabilization process is called *black boxing*, "that makes the joint production of actors and

[12] I am using the terms actor-network, collective and network-actor almost interchangeably. The variation in the wording is to demonstrate that they all point to the same phenomenon which they highlight different aspects of. To me it seems that the network-actor, which is a neologism devised in the spirit of Latour, grasps the idea of recursivity best. Latour, together with other actor-network theorists, generates such a steady stream of neologisms that one more can hardly do any additional harm;)

artifacts entirely opaque" (Latour 1994b, 36). An entity is said to be a black box whenever it hides its internal workings from other actants who nevertheless can predict the output of the black box merely by knowing its input. While the black box is yet another actor-network, it acts as one from the perspective of other actors in the collective (Latour 1987a, 131). For instance, a point-and-shoot camera is a black box for a family father taking holiday snapshots, but an object of constant redesign, strategizing and calculation for a consumer electronics company striving to survive the rapid digitalization of photography (cf. Latour 1987a, 137). What is a part of a taken-for-granted backdrop for one's action is an object of activity for another. Collectives are different depending on the direction from which they are approached.

An entity that has been successfully black boxed nears the positive end on the gradient of *relative existence*, on which the entities may move to both directions (Latour 1999a, 310; Latour 1987a, 106). Becoming real, meaning difficult to undo or bypass, entails associating with other entities, which, in turn, results in transformation of the entity (Lehtonen 2000, 283). A really existing entity has so many associations to other entities that attempts to undo it will meet formidable resistance from those actors that rely on the entity before too many associations can be cut. A good example of this is smoking. Today it would be impossible to introduce a new consumable with comparable health hazards, but it is nevertheless very slow to get rid of the practice deeply entrenched into the everyday life of millions of people and cash flows of multi-national corporations.

> "When a phenomenon 'definitely' exists this does not mean that it exists forever, or *independently* of all practice and discipline, but that it has been entrenched in a costly and massive institution which has to be monitored and protected with great care." (Latour 1999a, 155–156.)

Entities can be more or less real depending on how securely they have been stabilized. When an actor-network becomes a black box, its historicity will not "be surpassed, with the entity *relayed into eternity by inertia, ahistoricity, and naturalness*" (Latour 1999a, 158). Natural systems evolve, technological artifacts decay, and humans change and die – all threatening the integrity of the black boxed collective. For Latour (1999a, 168) "what was an event must remain a continuing event" requiring continuous maintenance. In a sense, the idea of the

relative existence is to avoid philosophical pondering of whether the entity is real as such by focusing on whether it makes a difference for a particular collective.

Translation of Interests

No individual actant alone can build the network needed for action. Latour (1987a, 104) illustrates the collectivity of action by comparing it to a rugby game in which "the total movement of the ball, of a statement, of an artefact, will depend to some extent on your action but to a much greater extent on that of a crowd over which you have little control." The challenge is that in order to advance its interests, an actant must mobilize other actants to act with it and at the same time obtain some control over their behaviour (Latour 1987a, 108). This entails enrolling actants into the network and keeping them aligned. Callon (1986, 203) defines translation as a process, in which "the identity of actors, the possibility of interaction and the margins of manoeuvre are negotiated and delimited."

The work of enrolment requires translation of interests producing strategic displacements between the interests of the enrolling and enrolled actor. For instance, the actor A may try to convince B that the latter advances its interest most efficiently by taking actions that also happen to advance A's interests. This kind of complicated detours and returns between interests of the actors tie the actors together and often result in the emergence of new, joint interests and hence transformation of the actors themselves (Latour 1991, 108–109).

Keeping the enrolled actors in line entails proliferating collective associations and making them durable by shifting them down to non-humans such as contracts, pay checks and buildings. Eventually the collective may start to resemble a self-regulating machine, in which the sheer number of associations and their complicated delegation to material entities keeps the actors in check like an automaton, so that it is almost unthinkable for an actor to leave the collective (Latour 1987a, 108, 121–129).

Technical Mediation, Delegation and Inscription

"Every human interaction is sociotechnical", argues Latour (1994a, 806). The statement sounds almost trivial but it grasps the pervasiveness of technical mediation in the contemporary society[13]. It means that we seldom face a situation in which two or more people interact in the wild without any clothes or gadgets framing the interaction. At least getting into such a situation devoid of technical mediation would not be possible without numerous mediating artifacts such as cars, maps and phones. Latour (1996b, 231) discusses the common sense meaning of face-to-face interaction:

> "We say, without giving the matter too much thought, that we engage in 'face-to-face' interactions. Indeed we do, but the clothing that we are wearing comes from elsewhere and was manufactured a long time ago; the words we use were not formed for this occasion; the walls we have been leaning on were designed by an architect for a client, and constructed by workers – people who are absent today, although their action continues to make itself felt."

Action does not generally spring from the inside but "to act is to mediate another's action" (Latour 1996b, 237). Thereby it almost necessarily harnesses both human and non-human entities. A mediating entity, an actant, differs from a mere intermediary in that it cannot "be exactly defined by its input and its output. If an intermediary is fully defined by what causes it, a mediation always exceeds its condition" (Latour 1999a, 307)[14]. Unlike servers, switches and routers and other nodes of the digital communication networks, which transit our emails unaltered, mediators deform the action they pass on. Latour (1999a, 192) attaches a specific meaning to the adjective *technical*:

> "'Technical' also designates a very specific type of *delegation*, of movement, of shifting down, that crosses over with entities that have a different timing, different spaces, different properties, different ontologies, and that are made to share the same destiny, thus creating a new actant."

A speed bump and a mechanic door-closer are examples of technical *delegates* which take care of actions that could as well be assigned to a policeman and a doorkeeper (Latour 1999a,

[13] Humans, at least in the developed countries, are literally born into the high technology world of hospital. But is a newborn baby an actant? Definitely, considering the material reconfigurations taking place in home, the phone calls and visits from relatives and friends, the world of neonatal care the parents are drawn into etc.
[14] Latour does not explicate where does this surplus comes from.

188–189; 1995). Latour (1999a, 186) does not claim that a non-human substituting a human (or vice versa) would be its equivalent in all respects "but from an observer's point of view it does not matter through which channel a given behavior is attained." On the other hand, a policeman may be willing to overlook speeding if the road is empty while the speed bump will also make emergency vehicles slow down. Both human and non-human actants mediate their originators' intentions in unexpected ways.

Why do we need material and non-human entities to mediate social interaction? Non-human, material entities are needed to stabilize social interactions that are either negotiable and transient depending on the individuals' memory and good will or durable and immutable like features emerging from our genetic makeup. According to Latour (1994a, 803) "nonhumans offer an extraordinary feature: They are at once pliable and durable; they can be shaped very fast, but, once shaped, they last much longer than the interaction that has fabricated them." Non-human entities solve the contradiction between durability and mutability of social patterns. However, Latour (1996c, 267) notes, "the property I want to foreground is not durability per se, but multiplicity of different temporal scales. The body is of course parts and parcels of this folding process (habit, memory, know-how, skills, but also genes, development patterns, hard- and soft-wiring)."

Technical mediation plays a key role in the emergence of those features that set human collectives apart from animals. The difference is not that the former would necessarily be more complex, but that with the help of non-humans humans are able to transform the utter complexity of social life into complicated series of steps that can be tackled one at a time.

> "Without the presence of the past, the presence of the far away, the presence of nonhuman characters we would be limited, precisely, to interactions, to what we can manage to do, right now, with our own social skills, like the Machiavellian baboons I have just introduced." (Latour 1994a, 792.)

Although the baboons might be physically stronger than humans, they lack the buttons and switches that enable a human being to send text and images around the world, fly airplanes or kill millions of others in the blink of an eye. For Latour (1994a, 792) "technical action is the

form of *delegation* that allows us to mobilize in an interaction movements which have been executed earlier, farther away, and by other actants, as though they are still present and available to us now." Framing interaction with the help of non-humans increases the durability and complication of human collectives in contrast to complex yet highly labile and transient animal interaction.

> "Amongst humans, on the other hand, an interaction is actively *localized* by a set of partitions, frames, umbrellas, fire-breaks, which permit passage from a situation that is complex to one that is merely complicated. While I am at the counter buying my postage stamps and talking into the speaking grill, I don't have my family, colleagues or bosses breathing down my neck. And, thank heavens, the server doesn't tell me stories about his mother–in-law, or his darlings' teeth. A baboon could not operate such a felicitious channelling. Any other baboon could interfere in any one interaction." (Latour 1996b, 233.)

If there is no macro-level society guiding us behind our backs, how is it possible that societies express relatively high level of coherence in their workings around the world and we constantly observe local action having broader or even global impacts? There is no space for a thorough discussion of the topic but the answer is in principle similar to the question of how a couple of engineers can master monstrous machines that do not yet even exist (Latour 1986). The answer revolves around a specific kind of a mediator called *inscription* that enables domination from a distance and from a different time. Latour does not deny the existence of practices common to society at large, but urges to focus on the local phenomena that make large-scale features possible.

> "Instead of using large-scale entities to explain science and technology as most sociologists of science do, we should start from the inscriptions and their mobilization and see how they help small entities to become large ones. […] To take the existence of macro-actors for granted without studying the material that makes them 'macro,' is to make both science and society mysterious." (Latour 1986, 29.)

Inscription as a process "refers to all the types of transformations through which an entity becomes materialized into a sign, an archive, a document, a piece of paper, a trace" (Latour 1999a, 306). Inscriptions are created and manipulated locally, but they can move and be moved while holding some relationships of the inscribed entity intact. This is why Latour calls these entities immutable mobiles. They carry relationships from place to another, through time

and space. For instance, verbal interaction in meetings shapes technical drawings that steer activity at the building site. In this kind of a chain of consecutive, local transformations the entity loses its essence but retains it's meaning while travelling from place to another[15].

> "The mobilization of many resources through space and time is essential for domination on a grand scale. I propose to call immutable mobiles these objects that allow this mobilization to take place. I also argue that the best of these mobiles had to do with written, numbered or optically consistent paper surfaces." (Latour 1986, 23.)

Architecture and engineering are prime examples of practices that cannot describe their objects textually (Latour 1986, 13). They have to show things. A technical drawing is a paradigmatic example of a graphical inscription. Since it is flat and scalable, it can be recombined and superimposed with other inscriptions and made part of a written text (Latour 1986, 20–22). More importantly, its optical consistency forges a two-way connection between the figure and the object and therefore enables manipulation of three-dimensional material objects on paper.

What is it that makes the graphical inscriptions particularly potential actants in local action? According to Latour (1986, 14) "it is, first of all, the unique advantage they give in the rhetorical or polemical situation. 'You doubt of what I say? I'll show you.'" Like any other entity inscriptions do not act alone, but other actants can enrol them or be mobilized by them in ways which may supersede other coalitions. To me it seems that we do not even have to fall back on negotiations and confrontations between actors to grasp the importance of the graphical inscriptions. For instance, it would be simply absurd to try to steer, say, practices on a building site relying exclusively on verbal and textual representations of the building. There is knowledge that cannot be explicated in a linguistic form.

> "Industrial drawing not only creates a paper world that can be manipulated as if in three dimensions. It also creates a common place for many other inscriptions to come together; margins of tolerance can be inscribed on the drawing, the drawing can be used for economic calculation, or for defining the tasks to be made, or for organizing the repairs and the sales." (Latour 1986, 27.)

[15] This formulation was borrowed from a seminar presentation by Juha K. Siltata.

Inscriptions do not only facilitate manipulating the material environment, they also mediate making up abstract entities such as a 'state', a 'corporation', a 'culture', an 'economy'. For Latour (1986, 29) these "are the results of a punctualization process that obtains a few indicators out of many traces. In order to exist these entities have to be *summed up* somewhere." For instance, a national economy is something that can neither be seen nor acted upon unless innumerable bureaucrats, entrepreneurs, politicians and researchers have filled in forms, written papers, run statistical analyses, developed theories, argued with each other, summed everything up and combined it into charts and text that can be perceived and manipulated on a meeting room flip chart (Latour 1999a, 53; Oldroyd 1987, 344–345).

3.1.5 Implications for the Empirical Research Strategy

Probably the most commonly recognized contribution of the ANT is the methodological sensitivity it offers for the material aspects of social action which are routinely ignored by more mainstream approaches (Lehtonen 2000, 293; Ylikoski 2000, 308). Contrary to most sociological approaches the researcher is expected to be sensitive to the influences non-human entities emit per se in a particular collective and not to discount them as stand-ins for fundamental social functions. The way various actants such as the Kumpula hill, local plan, different spending limits and even discoursively originated arguments exert influence on the Kumpula project can be best understood if they are understood as constructed from both human and non-human ingredients. A key analytical strategy is to follow exchanges of properties between human and non-human entities, since "whenever we discover a stable social relation, it is the introduction of some non-humans that accounts for this relative durability" (Latour 1991, 111). Yrjö Engeström (1996, 259) also credits Latour for his insights on the evolutionary significance of material objects.

Many of the Latour's best-known empirical studies[16] such as on Pasteur's scientific breakthrough (Latour 1988; 1999a, 113–144), failure of a transportation system called Aramis (Latour 1993; 1996a), and on circulating reference (Latour 1999a, 24–79) are longitudinal

[16] Latour's breakthrough ethnography on Roger Guillemin's biological laboratory (Latour & Woolgar 1979) is omitted from the list for the reason that it predates the formulation of the actor-network theory.

case studies that follow the dynamic composition and decomposition of collectives. They observe things in the making. Latour does not make a strict distinction between a meticulous description and explanation of a phenomenon, which pertains to his anti-essentialism and respect for the comprehensive approach in the anthropological tradition (Lehtonen 2000, 278). For Latour (1991, 129) "the explanation emerges once the description is saturated." The ANT is a tool for describing how the actors build the capacity to act according to their interests.

3.1.6 Critique

A great deal of criticism has been targeted against the philosophical and theoretical underpinnings of Latour's approach. These issues will not be touched upon here, since as Lehenkari (2000, 51) points out, the proper touchstone of a methodology is, after all, its usefulness in empirical research. In this respect it is, nevertheless, clear that a consistent application of the actor-network methodology is not a straightforward task and may be virtually impossible without additional qualifications and adaptations (Palmroth 2004, 150). It has also been pointed out that not even the founders of the approach have been able to carry out their methodological principles consistently (Oldroyd 1987, 341; Latour 1999b, 20; Ylikoski 2000, 306–308).

The Problem of the Ever-Expanding Network

Latour provides no advice on how to distinguish relevant actors from the irrelevant ones – how to demarcate the collective under study (Miettinen 1999, 181; McLean & Hassard 2004, 499). According to Latour (1999a, 122) the actors should be let to define each other, while the researcher's task is to document and represent this process. In practice carrying out this principle consistently runs the risk of proliferating the amount of needed fieldwork beyond any limits unless we have some criteria where to draw the line between the relevant and the irrelevant actors and events. The actors are simultaneously members of several collectives so that the researcher needs a perspective from which he can choose the relevant actors.

Proponents of the cultural-historical activity theory (CHAT) have offered the notion of a common object of activity as a solution to this problem (Miettinen 1999, 183). The solution seems particularly promising in the field of technology studies in which the activity inevitably revolves around the same material thing. The idea is that although people and artifacts are simultaneously members of several overlapping collectives, a particular collective can be distinguished by the converging orientations of its members. A common object of activity is the basis for a shared orientation for a collective. The solution has been deployed in empirical work by some activity theoretically oriented researchers.

The Problem of Unfettered Anti-Essentialism

It is far from clear how the requirement for ontological symmetry should be carried out in empirical research. McLean and Hassard (2004, 496) argue that the challenge of the empirical application of the ANT is to consistently stick to the principle of symmetry without taking it too far and thus end in analytically absurd accounts. For instance, in this study the Kumpula project develops from the efforts of two research institutes into a collective encompassing not only numerous organizations but also other kinds of actants. As Miettinen (1999, 177) points out "although all entities of the assembly do have the power to influence, or 'act,' they are asymmetrical in regarding to taking the initiative in the construction of associations."

Why bother making the distinction in the first place, if there are no essential differences between human and non-human actants? Latour (McLean & Hassard 2004, 507) does not claim that there would be no difference whatsoever between human and non-human actants, but that these differences should not be allowed to prescribe the role of an entity in the analysis (Lehtonen 2000, 279). Ontologically different entities either emerge as actors of the network in focus or they do not exist for the acting collective[17]. The idea is abstract and difficult to operationalize in empirical analysis.

[17] The collective and the actor-network should not necessarily be understood as substantive formations. They are more like methodological viewpoints into social life.

Latour makes only scattered remarks about the substantive differences between humans and non-humans in his texts. One attempt to substantiate the distinction between human and non-human actants without excessive essentialism is to consider the categories equivalent to Ian Hacking's (1999, 103–106) interactive and indifferent kinds (Lehtonen 2000, 292; Murdoch 2001, 124). To my knowledge the implications for empirical research of such redefinition have not been widely addressed, but the idea has obvious similarities with Latour's (2000, 116) own account of the distinction:

> "Contrary to microbes and electrons who never abandon their capacity to *object* since they are not easily influenced by the interest of experiments, […] humans are so easily subjected to influence that they play the role of an idiotic object perfectly well, as soon as white coats ask them to sacrifice their recalcitrance in the name of higher scientific goals."

Irrespective of their ontological status non-humans and humans are not symmetrical in their relationship with the researcher who tends to fall into the latter category. Therefore their symmetrical representation in research may not be achieved with an undifferentiated treatment. Instead of striving for absolute symmetry that may be impossible to bring about, Ylikoski (2000, 306) argues that admitting some preconceptions about the inherent characteristics of the actors might yield more fruitful empirical results. He also points out that even Latour operates on the basis of some sort of a prior understanding about the human and non-human substance. At least we have not heard about Latour's attempts to interview, for instance, railway tracks (Ylikoski 2000, 306).

The Problem of Machiavellism

Empirical works inspired by the ANT have been accused of managerialism or Machiavellism (Engeström & Escalante 1996, 340; Miettinen 1999, 181). It has been claimed that instead of a symmetry between the actors, the case studies inspired by the ANT tend to overemphasize the actors that shout the loudest. The role of the more quiet actors – including not only non-humans but also people like shopfloor workers, technicians etc. – is easily ignored in the network building.

The criticism is a caveat for those applying the ANT in empirical research, but it does not necessarily imply a flaw in the framework. Latour (1987a, 118–119) makes a clear conceptual difference between the process of network building and the process attributing credit and responsibility for it. He calls the former the primary mechanism and the latter the secondary mechanism. The intensity and characteristics of the relationship between the two mechanisms is an empirical question in itself. For Latour (1994b, 35) "action is a property of associated entities." It cannot be equated with an individual actant's actions.

3.2 Cultural-Historical Activity Theory (CHAT)

In order to render the ANT as a useful tool for analyzing the Kumpula project, my research strategy draws on the notion of object in the cultural-historical activity theory (CHAT) and the dialogue between the proponents of the two approaches (e.g. Engeström, Y. 1996; Engeström & Escalante 1996; Latour 1996c; Miettinen 1999). The CHAT was originally formulated by the founders of the cultural-historical school of Russian psychology in the 1920s and 1930s and afterwards developed by scholars from numerous fields of inquiry. The approach provides an elaborate framework for studying intentional human activity with key insights resembling, to a degree, pragmatism that originated in roughly the same period (Miettinen 2001, 297) in the United States. Despite its psychological roots the activity theory does not start from the individual consciousness but instead takes the collectivity of activity as its point of departure (Hedegaard & al. 1999, 15).

Proponents of the CHAT have sough to develop their approach as a proper theory of intentional human conduct. In short, this approach studies object-oriented, collective, and culturally mediated human activity as historically developing, local activity systems (Engeström & Miettinen 1999, 8-9). This delineation of the CHAT is mainly based on works by scholars of the Center for Activity Theory and Developmental Work Research in the University of Helsinki.

3.2.1 Background

The cultural-historical activity theory originated in the 1920s when Lev Vygotsky and Alexei Leontiev portrayed human activity as inherently oriented towards some *thing* and being mediated by artifacts (Engeström & Miettinen 1999, 3–4). The formulation was based on Marx's concept of labour as a dialectical reworking of objects that are at the same time material and ideal. The aim to understand the human development has therefore been in the core of the approach right from the beginning. For Vygotsky the development of language and various tools was a key to understanding the gradual evolution of the collective human activity. He developed the concept of mediation by artifacts to transcend the dichotomy between human consciousness and physiological process as the source of explanations in psychology. Leontiev's conceptual insight was to distinguish *activity* as a collective effort from individual *actions* and routine *operations* and to explicate the dynamism between these levels (Engeström, Y. 1999, 23; Engeström & Miettinen 1999, 4)[18]. Without this conceptual distinction intentional human conduct is easily reduced to individual actions. This is a mistake, since activity demonstrating agency and transformative capacity is predominantly collaboration between people. An isolated individual can achieve very little by himself. Collective activity as the focal unit also implies a division of labour between the actors.

> "*Activity* is the molar unit, collective in nature and driven by a complex motive of which the individual actors are seldom aware. Activity manifests itself in the form of goal-oriented individual *actions* in which the subject is consciously aware of what he or she is trying to accomplish." (Engeström, Y. 1990, 172–173.)

Each of the three levels of intentional human conduct has a different orientational basis. The lowest level of routine operations is driven by the available tools and instrumental conditions in which the individual is striving to carry out his current action related to a consciously apprehended goal (Engeström & Miettinen 1999, 4). Individual goals do not appear from the void nor does the actor freely choose them. Goals are formed and transformed in a collective

[18] Leontiev illustrated the analytical distinction by an example of a beater taking part in a primeval hunt with other members of the tribe. The immediate goal of beater's individual actions is to frighten a herd of animals so that others can shoot them. It is obvious that the individual goal to frighten the animals makes sense only in the context of collective activity of hunting. Frightening the animals does not provide food or clothes neither for the individual nor the tribe. A successful hunt does. The simplistic example demonstrates the difference between individual actions and the collective activity.

activity "driven by an object-related motive" (Engeström & Miettinen 1999, 4)"[19]. Generally speaking each level obtains its meaning in relation to the level above, but depends on the execution of the lower level. It is the common object of activity that motivates and orients human activity.

> "The construction of any object thus entails a dialogical interaction aspects of the participant's personal experience and his or her relationship to the community of significant others with whom the object is pursued, and cultural-historical properties of the object. In other words, an individual's construction of an object is both facilitated and constrained by historically accumulated constructions of the object." (Foot 2002, 135.)

The distinction between the levels enables Yrjö Engeström (1999, 22) to point out that most sociological perspectives on activity are limited to the individual action and fail to grasp "the socially distributed or collective aspects as well as the artifact-mediated or cultural aspects of purposeful human behavior." In order to remedy the situation the CHAT offers its disciplinary unit of analysis called activity system as a starting point for analyzing the object-oriented, collective, and culturally mediated human activity (Engeström, Y. 1987, 73–82; Engeström & Miettinen 1999, 9; Miettinen 2005 forthcoming). The elements of the activity system are the object of activity, subject mediating artefacts, rules, community and the division of labour.

3.2.2 The Structure and the Evolution of the Intentional Human Conduct

According to the CHAT human activity revolves around objects that distinguish one activity from another (Engeström, Y. 1987, 66). Understanding the object of activity, its emergence and transformation are paramount to understanding the activity (Foot 2002, 132; Miettinen 1998, 424). The object exists independent of any particular subject but it encompasses also subjective images the object (Engeström & Miettinen 1999, 6).

> "In other words, the object is both something given and something anticipated, projected, transformed, and achieved. In the transformation of the object, also the tools, or mediating artifacts, are transformed." (Engeström, Y. 1990, 181.)

[19] Reijo Miettinen (2005 forthcoming) has elaborated the relationship the individual motivation and the collective activity in his article *Object of activity and individual motivation*.

The activity changes with its object that is a transitional being, constantly emerging and constructed, which makes it elusive and impossible pin down permanently (Engeström, Y. 1990, 181). The object is at the same time the motivational basis of the acting subject and a thing transforming each other. For instance, the multifaceted concept of activity is a true object of scientific study in a sense that it stimulates a lot of research but evades attempts to define the concept exactly. A great deal of the research inspired by the CHAT endeavours to conceptualize, identify, describe or intervene in objects of local activity. In this study the concept is used as a tool for identifying and analysing the shared orientation of the Kumpula project.

According to the CHAT, human activity is neither determined from the outside by society nor mastered from the inside by human himself or herself, but it can be controlled from the outside by human-made artifacts that are mediators between us and our aims (Engeström, Y. 1999, 29). This is because humans do not generally relate to each other and to the object of their activity directly, but through signs and tools that constitute the basic types of cultural artifacts mediating these relationships (Miettinen 1999, 173)[20]. For instance, in order to analyse the Kumpula project I use the conceptual toolbox of the ANT and CHAT. The evolutionary potential of human practices lies in the artefacts we create since the development of new tools enables qualitatively new kinds of activities.

> "This expansive potential is evident if we look at the notion of *control*. […] The idea is that humans can control their own behavior – not 'from the inside,' on the basis of biological urges, but 'from the outside,' using and creating artifacts. This perspective is not only optimistic concerning human self-determination, it is an invitation to serious study of artifacts as integral and inseparable components of human functioning." (Engeström, Y. 1999, 29.)

Specific developmental interests are vested in tertiary artefacts that provide 'where-to' models for a collective activity under transformation (Miettinen 1998b, 454). These models reflect upon the collective activity today and in the future. In general, the idea that artifacts should not be taken as stand-ins for fundamental social functions resembles the formulations of the actor-network theory.

[20] While the actor-network theory espouses somewhat different conception of mediation, Latour's (1994b, 51–53; Strum & Latour 1987) discussion of unmediated collective pertinently illustrates the pervasiveness of mediation in the contemporary social life.

In the context of an activity system, the mediating artifacts may take different roles. They may appear as objects of activity and as tools (Engeström & Escalante 1996, 361–362). An artefact that is a tool in one activity system can be the object of another activity system. The artifact may also switch between the different roles within the same system. Engeström and Escalante (1996, 361–362) point out "that objects appear in two fundamentally different roles: as objects (*Gegenstand)* and as mediating artifacts or tools. There is nothing in the material makeup of an object as such that would determine which one it is: object or tool." The movement of artifacts between different systems, roles and levels of activity provide a key developmental mechanism in the activity. For example, while a building might be the object of architects' activity system, for the occupants it is something else. Yrjö Engeström (1996, 260) provides an interesting passage specifically relating to buildings and the evolutionary role of artifacts:

> "The wall begins its life as an object to be created (1) for the owner of a house by means of hiring a carpenter. When the construction is finished, the wall momentarily appears as an outcome, a product (2). For a while the owner of the house sees the finished wall as a mediating artifact, a tool with which he reaches the purpose or rearranging his living space (3). Soon enough, the wall ceases to be a tool; it becomes an aspect of the tacitly assumed community infrastructure (4) for the family living in the house and for the friends visiting it."

Activity systems are not completely stable. Over time contradictions develop in-between different elements of the system[21]. This makes the system to seek transformation of its elements and endeavour to expand the object of activity. According to the CHAT these internal contradictions that energize the transformations are ultimately based on the Marxist contradiction between use value and exchange value in the capitalistic society (Engeström, Y. 1987, 84–87). Yrjö Engeström (1987, 84) argues that "in capitalism, all things, activities and relations become saturated by the dual nature of commodity – they become commodified. The relation between individual actions and collective activity, between specific productions and the total production, is transformed accordingly."

[21] In the texts inspired by the CHAT activity systems are typically depicted as complex triangles (see e.g. Engeström, Y. 1987, 113). The triangles are often used to illustrate contradictions between different elements of the activity system, which produces the developmental motive of the system.

3.2.3 Implications for Empirical Research

Activity theorists have recently recognized the need to expand their "focus on singular, relatively isolated activity systems" (Engeström & Miettinen 1999, 7) often coinciding with a single organization, department or team to the networks of activity systems (Miettinen 1998a, 34; 1998b, 445; Engeström, Y. 1999, 36). However, the local activity system(s) remains the point of departure and the basic unit of analysis (Miettinen 1998b, 424; 1999, 183). Studies on networks of interrelated activities have emphasised the distributed and changing nature of objects. For instance, Miettinen (2005 forthcoming) points out that "an object should not be understood as a distinct entity, but rather complex and contradictory assembly of heterogeneous materials embedded in social and economic relationships." The analyses, nevertheless, stick to the principle that the object of the network emerges in efforts to solve internal contradictions and tensions of local activity systems.

Miettinen (1998b; 1999; 2005 forthcoming) has studied the emergence and transformation of a research program as a common object of activity for the network consisting of a group of researchers working at the Biotechnical Laboratory of the Technical Research Centre of Finland (VTT), other research institutes, companies, and funding agencies. Analyzing the various articulations of the object Miettinen (2005 forthcoming) concludes, "the object was not unitary but instead composed of two kinds of partly contradictory orientations." The object of the network was a dual one comprising of the research object and application object. According to Miettinen (1998b, 452) "the two agendas included in object construction do not easily fit together. They are realized in different networks of activity systems with different objects, motives, and time perspective." Nevertheless, the both objects, the one revolving around the scientific knowledge production and the other around the industrial applications, were needed to hold the network together.

Kirsten Foot's (2002) work on conflict monitors building the Network for Ethnological Monitoring and Early Warning (EAWARN) in post-Soviet sphere highlights the elusiveness of the common object of activity. Foot (2002, 139) admits "at times I wondered whether a

common object even existed among participants in the Network, or whether the EAWARN was simply a vacuous shell that provided a convenient cover for the pursuit of individual goals." The common object of the Network spanning several organizations turned out be a complex and multifaceted yet singular. It had two primary conceptions both encompassing several distinct manifestations in the data (Foot 2002, 139). Foot (2002, 138) also discusses the possibility of multiple objects of activity. The situation is limited to times when an activity is beginning to coalesce or it is about to decompose into multiple activities.

Engeström and Escalante (1996) studied the failure of a free-standing electronic kiosk called Postal Buddy, from which consumers could buy stamps, address labels, business cards and change their addresses. The authors explain the failure as an incongruity between customers' object of activity in the local post office and the developers' ideas about it. The customers' conception of the Postal Buddy as a mundane tool to get by conveniently in the post office is substituted for the developers' object of affection (Engeström & Escalante 1996, 362–363). This leads to serious design mistakes and eventually to the cancellation of the contract between the United States Postal Service and the company producing Postal Buddies. The authors conclude that the artifact was projected for a wrong role in the activity system of a local post office. The developers tried to produce a new object of activity for the customers who would have needed a new, more efficient tool. Engeström and Escalante note (1996, 367) that "an attempt to turn a machine such as the Postal Buddy into a substitute object of affection is in effect a heroic attempt to turn the actions of buying stamps, labels, or business cards into a long-term activity of dealing with the Postal Buddy for the sake of the kiosk itself."

The three cases show that the idea of a common object holding the network together is valid. On the other hand, the object of the networked activity can be even more difficult to grasp than that of a singular activity system, since "an object may have, at any time, multiple manifestations for the various participants of its activity, both individually and collectively" (Foot 2002, 137).

3.2.4 Sociological Critique

The cultural-historical activity theory originated as a psychological theory and was elaborated mainly in the context of education. As a multidisciplinary theory and methodology the CHAT has gained some ground among various disciplines[22] but its impact on sociology has remained minuscule. The theoretical emphasis on learning and practical applicability for developmental interventions frames the approach in a way that may hinder sociologically relevant analysis. The approach has generally been uninterested in the issues of power (e.g. Miettinen 1998a, 32; 1999, 183) and more interested in the co-evolution of different actors and complementarity of their resources.

> "The development of a [innovation] network is not analyzed primarily in terms of persuasion and power, but in terms of the cultural resources the participating activities mobilize in the construction process, and of the learning associated with this collaboration." (Miettinen 1998, 453.)

Despite its strong emphasis on contradictions and their developmental significance, the approach effectively excludes conflicts between different groups of people from its subject matter. The contradictions that provide the developmental dynamics of the activity system take place between the different elements of the activity system, between the individual and the collective activity and between the objects of different activity systems (Engeström, Y. 1987, 82–88; Miettinen 2005 forthcoming), but not between people or groups of people[23]. Recent efforts to grasp the multivoicedness (Engeström, R. 1999; 1995) of activity system are, however, promising in this respect. To a degree the question is a matter of choice. Not every analysis needs to be interested in power and conflicts of interest. However, the relative insensitivity to the issues of power combined with a tendency to posit faith in the positive progression of society needs critical reflection.

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[22] E.g. anthropology, communication, computer science and human-computer interaction, organization studies, pedagogy and learning philosophy, and psychology (Engeström & Miettinen 1999, 1; Hedegaard & al. 1999, 12).

[23] Jani Ursin (2002, 42) points out that the definition of activity system as the unit of analysis "is problematic in that it is not self-evident that every actor is committed to the common goal of the activity. Thereby, it is doubtful whether consciousness and meaning are formed collectively, which is one of the key assumptions in the cultural-historical activity theory." It seems as if humans are either considered in general or a normative consensus is assumed within the acting community that is the unit of analysis.

> "Activity theory has the conceptual and methodological potential to be a pathbreaker in studies that help humans gain control over their own artifacts and thus over their future." (Engeström, Y. 1999, 29.)

First, despite its stated despise for using abstract societal structures to explain human conduct, the internal contradictions that energize the transformations of activity systems are ultimately based on a Marx's idea of contradiction between use and exchange values in capitalistic society (Engeström, Y. 1987, 84–87). The conception of developmental dynamics in activity theory therefore postulates the capitalistic society as an analytically untouchable, ahistorical macro structure behind the analysis of local activity (Arnkil 1990[24]). From this perspective the interventions based on the CHAT promise micro-level solutions for the macro-level contradiction. The abstract opposition between the use value and the exchange value presupposes a single interest group and therefore excludes conflicting interests and different stakeholder groups from the analysis of how the contradiction are (to be) solved (Arnkill 1990).

Second, contradictions emerging in local activity may have many possible solutions. According to Yrjö Engeström (1999, 34–35), "what is more advanced, 'which way is up,' cannot be decided using externally given, fixed yardsticks. Those decisions are made locally, within the expansive cycles themselves, under conditions of uncertainty and intensive search." On the other hand, external yardsticks are not necessarily needed since there may well be several conflicting ones locally available. The different solutions to the contradictions may not be equally appealing for all the actors. The transformation of the built environment is an obvious example of this.

Third, the emphasis on applicability to simultaneous interventions may exclude the possibility of asking certain kinds of questions (Arnkil 1990) about the research object. For instance, Arnkil (1990) provides an example of this phenomenon from his own developmental research on social work. Is the development of social work about ever more effective socialization of

[24] The page numbers of the article were omitted from the reprint version used for this study.

the poor into their current role or is it about the emancipation of them? What ends do the research interventions serve? It is difficult to assess this kind of questions in the context of research aiming at practical interventions.

3.3 Juxtaposing ANT and CHAT

The differences between the actor-network theory and the cultural-historical activity theory run from their different philosophical backgrounds and programmatic aims. The CHAT promotes researcher's active interventions into the local activity system, whereas Latour's task for the researcher is the re-presentation of the social back to itself. For the former the network is the sum of its nodes while for the latter the nodes are the result of the whole network. Since the aim is to understand the Kumpula project as a characteristically networked phenomenon without intervening in it, the actor-network theory is a more suitable starting point for this study. The ANT is also better tailored to the fact that city-building is loaded with various interests (e.g. Flyvbjerg 1998; Haila 2002, 105–107; Pennanen 2003, 14; Rajanti 2003, 37). In general, my research strategy can be described as an undogmatic combination of the two approaches.

According to the ANT a node can be any entity that has a relatively stable impact on other actors. The nodes of the network result from the connections between them and the analytical interest is on network building and stabilizing (Lehtonen 2000, 278–284). The ANT studies the joint production of the actors and the network. In contrast, the CHAT takes individual activity systems, the nodes of the network, as its point of departure and argues that the functioning of the network must be understood on the basis of its nodes (Miettinen 1998a, 34). In CHAT the nodes are activity systems that usually coincide with organizations, organizational units or some other local social formation such as home.

Despite their differences and inherent problems the both approaches have been successfully applied for studying the development of technological artefacts. A peculiar shortcoming of the ANT is that it does not explain how the interests that are supposed to energize the action

emerge in the first place (Lehtonen 2000, 291). Miettinen notes (1999, 183) that the cultural-historical activity theory solves this problem: “According to AT [CHAT], the interests of the actors are also based on their historically formed cultural resources.” Since the object of activity motivates the collective activity it also explains the interests of the actors.

It is beyond the scope of this study to explicate the interests of the involved organizations by analyzing them as activity systems. However, since the focus is on how the actors and their interests interact in the particular configuration called the Kumpula project, it is not necessary to explain these interests with one exception. The object of the Kumpula project, the program of action of the collective in focus, must be explained. This entails analyzing the unfolding of the object of networked project as a process that stitches together the necessary actors to make the building happen. The intentions of the organizations involved are taken more or less as they are present in the data.

The object of activity provides an effective way to identify and analyze the shared orientation of the actors without assuming any essential common denominator between them. The various orientations must be made to converge on a single material thing, since only one design will be carved into steel and concrete on the Kumpula hill. The concepts of trial, obligatory passage point, black boxing, relative existence, translation of interests, technical mediation and inscription will be used to describe this process. I have used these concepts as tools to describe the development of the Kumpula project, but they do not make up a rigid model imposed on the data.

4 Previous Case Studies

Today more and more scholars acknowledge the role of material mediation in the constitution of society (e.g. Gieryn 2000; Miettinen 1998a; Latour 1992; 1994b; Pels & al. 2002). Getting by in everyday life necessitates the use of numerous artifacts which afford and constrain human conduct in various ways and therefore structure our social practices. However, the material moment of social life is not limited to the artefacts we use, but it also encompasses the places we inhabit (e.g. Latour 1996b, 235).

> "Buildings stabilize social life. They give structure to social institutions, durability to social networks, persistence to behavior patterns. What we build solidifies society against time and its incessant forces for change." (Gieryn 2002a, 35.)

One attempt to incorporate material places into a sociological subject matter is the notion of place sensitive sociology developed by Thomas F. Gieryn (2000). Gieryn (2000, 464–465) defines place as a meaningful combination of material things at some unique spot in the universe. Place entails material, bodily experience and therefore should not be confused with the abstract, geometrical notion of space or virtual places such as websites (cf. Goffman 1983, 2–4). In a programmatic literature review *A Space for Place in Sociology* Gieryn (2000) unravels the emplacedness of analysis in a variety of sociological texts. For instance, he discusses how Michel Foucault's (1995 [1978]) *Discipline and Punish* traces the process through which the discipline exerted by the architecture of prison, hospital and garrison on individual bodies is slowly internalized into the modern psyche. Gieryn (2000, 467) declares that "place saturates social life: it is one medium (along with historical time) through which social life happens". Sociological studies sensitive to place generally focus on the emergence of places or their impact on social practices (Gieryn 2000, 468). This and the seven case studies reviewed in this chapter fall into the former category.

Most places are doubly constructed. They are not only designed and built but also "interpreted, narrated, perceived, felt, understood, and imagined" by people (Gieryn 2000, 465). The incessant decay of the built environment together with the societal change ensures that the task of reconstruction will be endless. One can hardly move through an urban area without

observing cranes, site huts and construction workers wearing distinctive uniforms behind plywood fences[25]. The construction site is, however, merely a tip of the iceberg in the complex phenomena transforming the cityscape.

Bent Flyvbjerg's Aalborg Project and Latour's Aramis trace the evolution and eventual failure of innovative urban infrastructure projects. Vivi Niemenmaa and Jussi Jauhiainen evaluate critically the design of their department's newly erected building on the very same campus my case comes from. Lucy Suchman delineates the simultaneous alignment of social and material entities into bridge. In the last three cases Gieryn elaborates his program of place sensitive sociology by analyzing how biosciences are being defined in the process of designing three campus buildings in the United States.

The cases employ different research strategies, but they all analyze the interaction between a number of cooperating and conspiring stakeholders as an intentional effort to transform place. As in the present study, the cases reviewed are based on the interviews of the parties involved and the trail of documents left behind by the projects. Suchman's case of bridge building is a full-blown ethnography while the others incorporate only a limited amount of participant observation.

4.1 Comprehensive Urban Renewal Project in Aalborg

The Aalborg Project was initiated in 1977 to counter the problems caused by the increasing number of private cars in the centre of the medium-sized Danish town Aalborg (Flyvbjerg 1998; 2001, 144–161). In the course of the practical implementation, the original policy objective to restrict the use of private cars and to develop the bicycle routes and public transportation were step by step reversed effectively diluting the whole project. Fragmented and largely failed to meet its objectives, the Aalborg Project was finally dissolved in the beginning of the 1990's. In terms of the cultural-historical activity theory, the stakeholders not

[25] Construction sites are attractions in themselves (Kopomaa 2000). From Kamppi in Helsinki to Sagrada Familia in Barcelona to Ground Zero in New York, increasing attention is paid to the aesthetics and people observing centrally located constructions sites.

only failed to create a shared object of activity, but some of the involved organizations intentionally hindered the efforts to turn the project into an institution.

Flyvbjerg (1998, 225) describes the original aspirations of the project as a "comprehensive, coherent, and innovative" urban renewal project "based on rational and democratic argument". His dissection of the failure follows the numerous confrontations taking place between the Enlightenment idea of a context-independent rationality and historical accumulations of local power during the implementation of the project. For instance, Flyvbjerg (1998, 111) shows how the interest of the storekeepers selling specialty goods in the downtown Aalborg attains a decisive importance in public policy "through a complicated web of influences and rationalizations." This and numerous other instances of successful rationalizations of private interests lead Flyvbjerg to conclude that it is hardly the Enlightenment idea of a context-independent rationality yielding public good that drives the implementation practices. In the case of Aalborg the local Chamber of Commerce succeeded to rationalize its views as the public policy (Flyvbjerg 2001, 147). Refusing to acknowledge the practical reality makes the democratic institutions even more vulnerable to context-dependent, ephemeral and private interests.

During its trajectory the Aalborg Project encompassed both stable, if asymmetric, power relations and open confrontations between the stakeholders. Flyvbjerg (1998, 232) argues that the leverage of rationality is embedded in stable power relations, whereas "rationality yields completely, or almost completely, to power in open, antagonistic confrontation because it is here that naked power can be exercised most freely." The fact that antagonistic confrontations are generally avoided (Flyvbjerg 1998, 231) makes some room for rational argumentation and democratic decision-making in the contemporary society. However, the context of rationality is often power which "determines what counts as knowledge, what kind of interpretations attains authority as the dominant interpretation" (Flyvbjerg 1998, 226). The case of Aalborg shows how "power defines, and creates, concrete physical, economic, ecological, and social realities" (Flyvbjerg 1998, 227). In the context of power, rationalizations and rationality tend to blur. Presenting rationalizations as rationality is the strategy of powerful. However,

Flyvbjerg also points out that power relations are historical and therefore mutable. They need constant stabilization with the help of material entities (Flyvbjerg 1998, 231).

The Aalborg Project demonstrates that the implementation matters not only to the success or failure but also to the content of urban policy. Even though the public authorities posses formally all the authority needed to steer the development of the built environment, Flyvbjerg's analysis shows that this does not necessarily hold in practice. Decision-making that tries to approximate the ideal type of universal rationality is in practice always entangled in power relationships.

4.2 Revolutionary Public Transportation System for Paris

Aramis was meant to be a completely automated personal rapid-transport system for Paris (Latour 1993, 383) that would combine the overall efficiency of the public transportation and the convenience of a private car. Aramis was about "dreams seeking to be realized shaping Paris, working through its subterranean spaces and stations" (Latour 1996a, 28). The case is a typical example of how the development of technological artefacts is making future (Lehtonen 2000, 283) by modelling new social practices and attempting to stabilize those visions[26].

The project was initiated in the late 1960s and Latour was hired in 1987 to answer the question why the millions of investment and years of development ultimately did not deliver a working transportation system. Latour (1993; 1996a) follows a series of interest translations between actors and shifting down human properties to non-humans that ultimately fail to stabilize from a project to an institution. The failure of Aramis is compared to a highly successful automated subway called VAL that was opened in 1984 in the city of Lille. The methodological principle of symmetry requires that both success and failure must be explained by similar mechanisms.

[26] In the context of the cultural-historical activity theory these "where-to" models are called tertiary artifacts (Engeström, Y. 1990, 194; Miettinen 1999, 190) that have an important role in the search for expansive solutions to the local contradictions.

> "It would be against our principles to say that VAL was more efficient, less costly, more socially accepted, and better technically designed than Aramis, since all of the former's qualities and all of the latter's defects are *results* and not *causes* of the existence of VAL and of the lack of existence of Aramis." (Latour 1993, 382)

The right question is not why VAL is better, but how it was made decisively better than Aramis. At the outset Aramis was lovable and seemed to outperform VAL. The convenience of a private car without the congestion and pollution problems, at a reasonable cost, was in principle an equally appealing offer for citizens, politicians, labour union activists, automobile drivers and urban planners alike (Latour 1993, 283–284). In contrast, VAL was just an automated metro.

The informants gave numerous accounts for the failure of the project (Latour 1993, 386–387). None of these accounts explain the failure as such, but the fact that the different interpretations of Aramis do not intersect is characteristic for failing projects. The accounts are mere interpretations whereas in the case of VAL the different interpretations are "*points of view* about an institution, the VAL, which exists independently of them" (Latour 1993, 388). Latour cannot "find the sum of interpretations of Aramis, since there is no common intersection and hence no distinction between interpretations and the object to be interpreted." The absence of a shared object of activity is even more evident than in the case of the Aalborg Project. This is because the link between the translation of the stakeholders' interests and the transformations of the object of activity was missing.

> "An object cannot come into existence if the range of interests gathered around the project do not intersect. Of course, interests may be modified and so may projects. But, if the two-way movement translating the interests and modifying the project is interrupted, then the object cannot become real." (Latour 1993, 391.)

Stakeholders' support for the project is not unconditional or disinterested. They support the project in order to advance their interests. For instance, for the Mayor of Paris Aramis is just one option to redeploy an unused railroad track and enhance public transportation to a particular southern district. According to Latour (1993, 389) "the project leaders inside Matra

as well as inside the RATP had literally to 'take on board' those various translated interests"[27]. However, this is not enough if the object of activity does not change as well. A key difference between Aramis and VAL is that the basic specification of the project remained the same throughout the project (Latour 1993, 392) while in the VAL case the specifications were continuously redrawn.

> "We know the general answer to those quandries: negotiate, go back to the drawing board and redesign the project so that it folds over and 'absorbs' or 'swallows' the contradictions of hesitant supporters. Then, once the project itself has been modified, it in turn holds in place all the interests that were at first holding it in place." (Latour 1993, 389–390.)

Latour's study elaborates the observation made also by Gieryn, Suchman and Flyvbjerg that design is not merely about designing a material object, but it is crucially about advancing the realization of the artefact. Design is performative. Ensuring that the artefact will take place depends on the two-way movement between the translation of the interests of the parties involved and the continuous redrawing of the specifications.

As the only example of innovation study, out of the seven cases reviewed here, Aramis reveals a particular tendency in the way the research questions are formulated in this stream of research (for further examples, see section 3.2.3). Explaining why a particular technological innovation did or did not succeed is not, after all, a particularly interesting question unless it is accompanied with a reasoned argument about what kind of a society (or a collective) was advanced or set back by the outcome.

4.3 Campus Building at the University of Helsinki

The closest reference case comes literally from the next door on the Kumpula campus. Geographers Niemanmaa and Jauhiainen (2001; Jauhiainen & Niemenmaa 2002; Niemenmaa 2003) have studied user participation in the design of Physicum built on the Kumpula campus between 1999 and 2001. As "a step beyond city planning to a more detailed level in the analysis of collaborative planning" (Niemenmaa and Jauhiainen 2001, 7; translated by A. A.)

[27] Matra was an engineering company producing transportation equipment. RATP is the public transport authority for Paris.

their work is an attempt to apply the methodological apparatus of urban studies to the analysis of building design. Contrary to two previous cases, Physicum was successfully realized and will shape the activities of several departments for decades to come. The fact that the authors' department (of Geography) moved into Physicum in the spring 2001 gives the work an ethnographic flavour. The staff of the department begun to raise questions about to whom and on whose conditions the new premises were designed as it turned out that they were too small and to a degree non-functional for the work of the department (Niemenmaa & Jauhiainen 2001, 7–8).

The authors pinpoint several flaws in the design of the building running from the systematic neglect of the user perspective during the design. Niemenmaa and Jauhiainen (2001, 10; translated by A. A.) point out that "the ideas what the university and the work at university should be are visible in the new spatial design, in how the work of individual researcher is though to be organized." They (Niemenmaa and Jauhiainen 2001, 16–17; translated by A. A.) argue that "since the requirement for new spatial organization of the research does not come from the user, we may ask if the aim of the spatial reorganization is to transform the research work itself."

For instance, the open-plan offices combined with the use of glass in the remaining interior walls increase the visibility of personnel dramatically in the new building. According to Jauhiainen and Niemenmaa (2002, 50) this amounts to new governmentality striving people to produce ever more publications under the constant surveillance of each other. Particularly in the article with Jussi Jauhiainen as the primary author (Jauhiainen & Niemenmaa 2002) the analysis ends up with a rather traditional sociological plot. It is the neoliberal ideology decomposing the welfare state that reorganizes academic space and ignores the particularities of the academic world in general and specific disciplines in particular. The flaws in the building are flaws in society.

From the perspective of my research strategy such an explanation is not very interesting. Since the mechanisms between the micro-level phenomenon and the macro-level structural cause are

not explicated, the analysis raises three questions: Do such claims add anything new to what innumerable critical writings have already said? How does it help to remedy the gloomy situation? Is it really so that locally evolving practices and material settings are nothing else than reflections of the abstract macro-level structures (cf. Latour 1996b, 235)? Latour (1993, 392) has criticized such an analysis by arguing:

> "What those social scientists never explain is the reason why society constantly need to be projected onto new objects. Is society so weak that it needs continuous resuscitation? […] And, if religion, arts, styles are necessary to reflect, reify, materialize, embody, society, then are they not, in the end, its co-producers? Is not society built literally, and not metaphorically, of gods, machines, sciences, arts and styles?"

The authors readily acknowledge that the reality hit back immediately after the researchers and students had occupied Physicum, but this merely highlights the failure of the design and the designers. Ill-founded open-plan offices had to be retrofitted with additional walls forcing the same design team to drop them from the next building on the campus called Exactum. Contrary to Jauhiainen and Niemenmaa's (2002, 51) claim that Physicum is an example of the state's neoliberalistic real estate policy, which has became self-evident, it is possible to argue that the invisible hand of the neoliberal ideology burnt its fingers in the case[28]. My contention is that in the end it was not only the research practices that were transformed but also the architects' ideas of how to design university buildings.

4.4 Aligning Social and Material Relationships into a Bridge

Suchman's (2000; 2001) organizational ethnography on practices of civil engineers working with a replacement for an old, unsafe bridge in an earthquake-prone area draws methodologically from ethnomethodology and social studies of science and technology, but ventures also into the domain of urban studies. Suchman's (2000, 312) research strategy has obvious resemblances with the actor-network theory as it aims "to break down received oppositions of nature and society on the one hand, society and technology on the other, drawing attention instead to the diverse discursive and material, human and artifactual

[28] At the time of writing this thesis, the Department of Geography is in the process of obtaining new premises from the sixth building on Kumpula campus that is currently being designed.

elements that must be assembled together in the construction of stable organizations and artifacts".

Suchman (2000, 314–316) describes the project as a complex socio-technical ordering and a "canonical example of heterogeneous engineering" involving sensemaking, persuasion and accountability on top designing material structures. A bridge can be compared to an organization in the sense that "like an organization, a bridge can be viewed as an arrangement of more and less effectively stabilized material and social relations." Designing and constructing a technological artifact means organizing those relationships.

The case illustrates an important tenet that is also present in the actor-network theory. The current configuration of the social relationships reinforced by the old bridge will be shattered if the forecasted earthquake hits before the new bridge in place. This entails that holding things as they currently are entails building a new bridge, but this unavoidably also opens up possibilities for change. According to the actor-network theory, the structures that keep society in place are neither ahistorical nor immutable, but require active maintenance (Latour 1987a, 132–140; Lehtonen 2000, 285). The case of bridge building is an interesting example of how innovative engineering and creative deployment of material artefacts are needed to keep society in place. It reminds us that technological development is not only allied with social change, but is also needed to stabilize and maintain society as it is. Active stabilization is as important as inducing change.

4.5 Constructing Biosciences on Three Different Campuses in the United States

Thomas Gieryn (1998; 1999; 2002a) has done case studies of design processes of three different buildings for biotechnology and molecular biology on campuses around the Unites States. The buildings are Cornell Biotechnology Building in Ithaca (CBB), Lewis Thomas Laboratory in Princeton (LTL) and the Center for Advanced Biotechnology and Medicine in Piscataway (CABM).

> "The design of new science building is an archaeological site for examining struggles over the definition science: its audiences, purposes, beneficiaries, and culture." (Gieryn 1998, 248.)

Gieryn draws from the same constructivist STS tradition as Latour and even notes that his research strategy resembles the actor-network theory (footnote 5 in Gieryn 1998, 249), but he is reluctant to give agency for non-human entities. For Gieryn, it is the people who act with the help of and constrained by material artifacts. His case analyses show that one does not have to seek absolute symmetry in order to accommodate the influence of material things into the analysis.

Gieryn (1998, 222–223) espouses a rather broad conception of design, which, I think, sums up insights also present in the other cases. First, the architects are not alone responsible for the designing of the building. Instead, all the parties involved in the actual practices of deciding on how much space is needed and how it will be allocated to different groups and functions contribute to the design. The identification of the relevant actors is an empirical question. Second, "design is a process in which spaces move along a gradient of stabilizations." It "does not begin only when the architect begins to draft, nor does it end when construction commences or even when the building is occupied." In other words, studying design should not be limited to the design phase depicted in the schedule documents.

Third, not only a physical building is being designed, "but also a set of practices shaped to happen effectively within it, and even a society in which such situated practices also fit comfortably." This is another way of saying that design is a process in which various interests come together, become translated and stabilized with the help of material entities. Design practices simultaneously realize and redraw society. Fourth, "design is pragmatic and performative. Its paramount purpose is to bring into being a certain building. Design decision are not determined by universal abstract principles of aesthetics or functional efficiencies or even cost." An inherent tension in design seems to take place between planning a material thing and trying to make it become real.

4.5.1 Cornell Biotechnology Building (CBB)

In *Biotechnology's Private Parts (and Some Public Ones)* Gieryn (1998) observes how the distinction public-private is used throughout the process of designing the Biotechnology Building at the Cornell University in Ithaca (CBB). Gieryn's (1998, 220) "methodological strategy is to 'follow' *public* and *private* as indexical textual signifiers (remaining agnostic or indifferent about their referents) inserted by participants into their ongoing practices of making biotechnology".

The designers employ the public-private distinction simultaneously to lure the interest and limit the physical access of different publics into the building (Gieryn 1998, 227–228, 233). This is necessary since there is not enough capital behind the private interests to make the building happen. The public-private distinction is employed to set up a complex system of inclusions and exclusions regarding CBB and its different publics. In the context of allocation of space between the individual researchers and research groups, the difference between public and shared raises question about access and ownership, control and status.

4.5.2 Lewis Thomas Laboratory (LTL) and the Center for Advanced Biotechnology and Medicine (CABM)

In *Two Faces on Science: Building Identities for Molecular Biology and Biotechnology* Gieryn (1999, 423) compares how the Lewis Thomas Laboratory at Princeton (LTL) and the Center for Advanced Biotechnology and Medicine in Piscataway (CABM) "materialize identities for people, organizations, and practices they house". Gieryn (1999, 427–428) distinguishes three mechanisms of how the building a design becomes simultaneously design of the collective 'we'. First, buildings are tangible manifestations of otherwise elusive and implicit characteristics of organizations. Second, buildings stabilize and provide durability to transient social phenomena. Third, "buildings discriminate identities that are always at some risk of blending".

4.5.3 Agency and Structure from the Perspective of the Built Environment

In *What buildings do* Gieryn (2002a) discusses the relationship between agency and structure from the perspective of emplaced social practices. Gieryn begins his article by reviewing writings of Giddens and Bourdieu on the built environment. For Giddens the built environment makes a difference for social practices only through actors' conscious apprehension. In contrast, for Bourdieu the "buildings become objectified history" that shapes social practices behind the backs of the actors. Giddens ends up giving a theoretical privilege to human agency and Bourdieu to material structures. While Bourdieu fails to acknowledge that the built environment is designed and re-designed by humans, Giddens ignores that the outcomes of social practices are also shaped by unreflective taken-for-granted elements such as the physical settings of everyday interaction.

> "The structuring force of built-environments comes from the spatial and architectural routinization of everyday interactions: the design of familiar places evokes and steers patterned behavioral responses." (Gieryn 2002a, 37.)

Since both approaches have their merit, Gieryn (2002a, 37) endeavours to reconcile their insights and transcend the inherent dualism by adding a temporal dimension to the analysis. Gieryn (2002a, 41) concludes that neither of the theoreticians offers "conceptual tools sharp enough for picking apart the empirical realities of buildings (in particular) as simultaneously shaped and shaping." In the context of constructivist studies of technology the buildings can be seen as "technological artifacts, made material objects, and humanly constructed physical things. […] Buildings, as any other machine or tool, are simultaneously the consequence and structural cause of social practices" (Gieryn 2002a, 41). Applying the concepts of *heterogeneous design*, *black boxing*, and *interpretive flexibility* Gieryn develops a longitudinal scheme that can be used to analyze the interchanges between agency and structure in the context of the transition from design to use.

Building design is at the same time planning of a material thing that must obey the natural phenomena such as the weather and the law of gravity, and negotiation between different social interests. Variously envisioned futures are manifested by the trail of scrapped sketches

and optional designs that were abandoned for a reason or another. In the end, only one specification can be built. According to Gieryn (2002a, 53) “the design is a social theory of a future science, rendered architecturally”.

The malleability of envisioned social practices decrease dramatically as soon as they become materialized into steel and concrete. In the process of building “many possibilities become one actuality” (Gieryn 2002a, 43). The practices that move into the building are forced to adapt to their new physical setting. Some practices may become obsolete and others have to be created. Re-emplaced practices may resemble more or less those envisioned in the design, but, in any case, the building is “an indispensable and unavoidable gate somewhere in the middle of a human project” (Gieryn 2002a, 43). The finished building is often a black box for its users. The interests and negotiations inscribed into the physical setting are concealed “behind interpretive registers that focus on instrumental efficiency, costs, or possibly aesthetics” (Gieryn 2002a, 44).

Buildings are, of course, constantly reconfigured both discursively and materially. Material artifacts mean different things to different people and practices. Discursive reconfiguration may lead to material tinkering with the building. Physicum is a good example of this kind of interpretive flexibility. As soon as the researchers moved in, they employed their intellectual apparatus to make sense of their new premises and started erecting additional walls much to the annoyance of the architect. Nevertheless, once a good enough fit between the practices and the place is found, inherent need for reconfiguration decreases. Reconfiguration does not have to open the black box.

4.6 The Summary of the Previous Case Studies

All of the reviewed case studies elaborate the basic insight that the way material environment structures our social practices is often subject to intentional moulding. The structuring force of the physical infrastructure often comes from the inconspicuous behavioural efficiency and

easy routinization it offers for particular social practices while discouraging others[29]. On the other hand, conflicting intentions of the actors involved, unintended consequences and long chains of material mediations from words and drawings to steel and concrete make sure that the relationship between designed and actual practices is to a degree unpredictable and contingent even in the cases in which the design is successfully realized.

With the exception of Physicum, the cases examine transformation of the built environment in projects that are not yet stabilized as predictable institutions (Latour 1993, 382; 1994b, 48). The analyses of the Aalborg Project and Aramis tried to find for reasons to the failure of the projects. In the case of the bridge building the focus was on how the artifact was made to happen and the three cases about biotechnology buildings acknowledged the performativity as an important aspect of design activities. Only in the case of Physicum the analysis took the realization of design for granted.

Another common theme is that transformation of the built environment is loaded with conflicting interests between the different stakeholders. In their analyses Latour and Gieryn stick to conflicting interests between local actors. My study falls into this category. Flyvbjerg, Suchman, and Niemenmaa and Jauhiainen go further to discuss more fundamental contradictions between universal rationality and local power, democratic participation and physical safety, local culture and neoliberal ideology. Together the cases hint that technological innovation may as well serve to keep society as it is as to induce change. Both conservative and progressive social projects need to be technologically stabilized (Latour 1991). Although construction projects have generally not been in the focus of urban studies (Kalliovaara 1999), these studies call for a more detailed analysis of the manoeuvring needed to materialize the plans.

[29] A typical example of such design is locating exits, cafeterias, recreation areas and elevators so that the amount of unplanned encounters between occupants of an office building will be maximized.

5 Data Gathering and Methodology

In this chapter I will briefly present the research design, implementation and approach to the analysis of data. Instead of reconstructing a neat, deductive process descending logically from the research questions to methodology, methods, data and finally to the implementation of the plan, I will describe how it happened in reality.

The iterative approach of the present work is not the most cost-efficient and in the beginning it was not clear what kind of results the study would yield. The approach entails collecting lots of only partially useful data, which is clearly against the standard advice given to students working with a thesis. For instance, according to Silverman (2000, 51–52) one should try to limit the amount of data and make its collection as easy as possible. The benefit of starting without a fixed research design is that it provides invaluable freedom to look into a relatively little studied phenomenon without too many ready-made, conventional answers.

5.1 Research Process

The empirical data was collected while working for Proactive Design project at the Center for Activity Theory and Developmental Work Research at the University of Helsinki. In the project my task was to collect and analyze data from four large-scale construction projects and to work with one of the private companies[30] participating in the project. The assignment provided me with an exceptional access to a little studied phenomenon so I decided to do a detailed dissection of one of the projects.

Since I was obliged to start gathering the data immediately and without too much prior understanding of the topic, the methodological premise that all observations are theory laden became depressingly clear as soon as memos, technical drawings, spreadsheets, reports, interview transcripts, photographs, Gantt charts etc. started piling on my desk. Being able to

[30] Rautaruukki Oyj

make coherent observations about the phenomenon under study would have required some sort of a prior idea of what there was to be seen.

I collected data, read previous case studies and theoretical texts simultaneously trying to figure out what kind of adaptations an advance on one of the fronts should induce to the other two. Discussions with several colleagues and conference presentations gradually helped to narrow down the focus and abandon many emerging ideas while sticking to the most promising ones. On top of everything, I did not want to fix the focus on a particular profession, organization, institution or location. Therefore I needed some other guideline to structure the analysis. One of the original intentions was to follow the development of some interesting themes such as user participation throughout the project (cf. Gieryn 1998, 220), but the idea turned out to be useless for organizing the data. I needed a way to follow the emergence of a building as a thing drawing different aspects together.

In principle there seemed to be two routes to systematic analysis. If I could find an existing conceptualization that would help in structuring the analysis my task would be much easier. For instance, Haila's (2002, 96–97) concept of a city-building process embeds the construction projects into the overall process transforming the built environment, but it is too general for the detailed analysis of a single project. Gieryn's (2002a) conceptual developments grasp the materiality of building, but tell little about the interaction between the various actors. Therefore I had to start from the more abstract theories in the field of science and technology studies. The conceptual toolbox of the actor-network theory, supplemented with ideas from the cultural-historical activity theory, turned out to enable me to decipher what was going on in the data piling on my desk. In particular, the idea of an object of activity seemed a promising tool for identifying and analyzing the thing that draws various organizations together as a construction project. In general, the approach resembles one of the strategies ethnographers use for studying multi-sited phenomena (Marcus 1995, 106–108).

5.2 The Kumpula Project as a Network of Organizations

The Kumpula project is characteristically a network of organizations. The actor-network theory (ANT) and the cultural-historical activity theory (CHAT) offer different conceptions of what the network is and how to study it. This analysis is a sort of a combination of these two approaches. The analytical interest is on the dynamics of the actor-network; how do the organizations involved build the collective actor capable of carrying out the expensive and complex project. The individual informants are generally taken to represent their organizations which are considered to be the primary actors in the process. There are several reasons for this. First, the analytical focus is on the interaction between different organizations and institutions. The contracts that bind the network together take place between organizations. Second, the conduct of the informants is sanctioned by their organizations. The informants were often quite aware of the fact that they represent their organization in the project. Third, increasing the granularity of the analysis is necessary in order not to lose sight of the project altogether. It would be extremely laborious to faithfully carry out the principle of the CHAT in which each activity system involved must be analysed in detail or to drop all the preconceptions about the actors in the spirit of the ANT. Fourth, since the names of the public bodies are real, it is impossible to provide a complete anonymity for the informants[31]. Focusing on the interaction between the organizations is a way of minimizing the potential distress for them.

5.3 Embedded Single-Case Study Design

The potential strength of a case study relies on how it combines the understanding of a local phenomenon in its historical setting with general knowledge about society. Sensitivity to local differences makes case studies particularly well suited for studying complex, emerging or unique phenomena (Yin 1994, 2–3). However, not just any relationship, event, process or circumstance is a case (Wieviorka 1992, 160–161). In contrast to singular historical entities the case is always a case of something. This entails application and potentially also developing theoretical knowledge (Walton 1992, 121).

[31] The informants were aware of this solution at the time when they were given a possibility to check their citations.

There are different approaches to deciding what the evidence is a case of (Ragin 1992, 9–11). Cases can be defined on the basis of previous research or considered as general theoretical constructs external to any particular research effort. Sometimes identifying cases or constructing them by imposing some conceptual framework on the data is the most important finding of the study. In any case, a case study requires a definition of the spatial and temporal boundaries of the case.

This is a case study of the emergence of a large-scale construction project. In terms of a city-building process, it is in a stage beyond plain city planning while it cannot be seen as a stable construction project yet. The case begins when the first hints about the Kumpula project can be observed in the late 1990s and ends in mid 2003 when it has become relatively clear that the building will take place. The temporal span of the case is therefore relatively easy to define, but due to the problem of the ever expanding network in the actor-network theory (see chapter 3.1.6) the spatial boundaries of the case are more difficult to identify. They are defined empirically on the basis of sampling and the overall organizing principle of the analysis.

The case does not have to coincide with the unit of analysis. This study follows what Yin (1994, 41–43) calls the embedded single-case study design. The case is divided into seven subprograms representing the instances of the unit of analysis. This fosters more rigorous analysis, for instance, by enabling comparisons within the case. On the other hand, the analyst must make sure not to lose sight of the case as a whole. The case of Kumpula project will also be compared with case studies conducted by other researchers.

5.4 Sampling

Qualitative case studies are often used to answer ‘how’ and ‘why’ questions that prioritize rich understanding of the phenomenon over powerful generalizations. According to Yin (1994, 6) “this is because such questions deal with operational links needing to be traced over time, rather than mere frequencies or incidence”. Particularly in the context of a single-case study,

the purpose of sampling differs from the studies in which the sampling aims to create generalizability from the cases to the whole population (e.g. Silverman 2000, 102–105).

In this study sampling has less to do with the generalizability of findings and more with the structuring of the analysis (see next chapter). Anselm Strauss and Juliet Corbin (1998, 202) describe theoretical sampling as a snowballing procedure tailored for developing conceptual knowledge about the phenomenon. The selection of informants and other sources of data evolve during the research process on the basis of developing conceptualization about the phenomenon. For instance, Mäenpää & al. (2000, 19) used snowball sampling while mapping the discourses orienting the work in the Helsinki City Planning Department.

Yin (1994, 30) points out that this kind of "theory development does not only facilitate the data collection phase of the ensuing case study. The appropriately developed theory also is the level at which the generalizations of the case study results will occur". Snowballing as a sampling strategy is particularly suitable for exploring new and uncharted phenomenon (Strauss & Corbin 1998, 202) and compatitible with the actor-network theory. Latour's (1999a, 122) advice is to let the actors define each other. Given enough time and iterations, the approach should be sensitive enough to cover the network of most important actors in the Kumpula project and therefore likely to yield fruitful data about the case.

5.5 Data

Despite the dangers of using multiple methods (Silverman 2000, 48–51) I see no reason to reject any piece of data that may contribute to the empirical analysis, which is in line with the studies I have modelled my research on. The data consists of approximately 170 documents produced naturally by the Kumpula project, 23 semi-structured interviews, 24 newspaper and magazine articles and occasional observational data.

The interviewing was based on a set of basic themes and an evolving list of questions I wanted to hear more about, but in general I let the informants and their answers influence what to ask next. The aim was to let the informants frame the project in their way and to avoid imposing a

specific perspective with a rigid list of questions. The themes that were covered with every informant considered the current status of the project, the informant's personal role and the most important contacts in the project, and the historical evolution of the project. The exact questions varied according the informant, since it did not make sense, for instance, to ask about the competitive bidding from a person who had not had anything to do with it.

The informants were also the most important source of the documents. I usually asked after an interview whether I could obtain copies of the documents that the informant had mentioned during the interview. The approach worked well. For instance, I was able to obtain the whole bidding material and a folder into which one of the project managers had documented the early phases of the project. The rest of the documents were obtained from numerous sources such as the Internet, civil servants, various publications and so forth.

The analysis is predominantly based on the documents and interviews that were analyzed systematically. I first used the trail of documents left behind by the project to fix the dates of the events. At this point the project looked like a messy flow of events. Analyzing the documents and the interview accounts side by side I then gradually divided the single grand trajectory into several smaller trajectories. Once I had identified the candidates for the key trials and subprograms in the overall process it was possible refocus the further interviews and the document inquiries.

The broad category of documents consists of various types of items such as personal hand-written notes, emails, technical drawings, minutes, spreadsheets, published reports, website printouts, press releases and laws. The distinction between the documents and the category of newspaper and magazine articles is arbitrary to a degree. The latter were separated from the documents mainly for the reason that they involve an editorial process that is not controlled by the organizations directly involved in the project. Appendix 3 consists of a complete catalogue of different types of data used in this study.

5.6 Triangulation and Materiality in the Analysis

Different types of data enable using triangulation in the analysis. In general, triangulation means approaching the phenomenon under study from several viewpoints by using more than one type data, seveval investigators, different theories or various methodologies (Flick 2004, 178). Studies employing triangulation has been criticized for the allegedly unjustified claims to uncover the totality of the phenomenon under study (Flick 2004, 179) and glossing over the metatheoretical difficulties that combining various data sources, methodologies and theories entail (Eskola & Suoranta 1998, 71). According to Silverman (2000, 99) triangulation does not necessarily make the findings any more valid since "if you treat social reality as constructed in different ways in different contexts, then you cannot appeal to a single 'phenomenon' which all your data apparently represent".

On the other hand, if we take the materiality of social life seriously, it is obvious that reality does not accept all interpretations equally. The building can be socially constructed in many ways, but in order to construct it materially at the intersection of various interpretations[32] must be the same material object (cf. Latour 1993, 388). More importantly, this is not just a matter of analytical perspective if we try to understand the informants' subjective meanings of the project. Just making it happen has been a major concern for many of the organizations involved, which entails making various interpretations point to the same material object. The informants represent different organizations, have different individual backgrounds and interpret the project from different perspectives[33], but in order to erect a building, they must be working on the same material object. The common denominator shared by the informants is the material orientation of their activity.

In this study the triangulation of data (Flick 2004, 178) has two purposes. First, I used it to validate the identification of the turning points in the evolution of the project. The most significant concerns, contradictions and difficulties resonated vividly both in the interviews and the documents. Second, the triangulation is used to enrich the delineation of subprograms

[32] Strictly speaking this applies only to the naturally occuring data.
[33] Some of the informants had worked together before but not all.

revolving around the identified turning points. In practice this means that instead of analyzing different types of data separately, the interview accounts and all kinds of documents are used simultaneously in the representation of the Kumpula project. This is a common feature for instance in ethnographic research typically based on multiple methods and types of data (Brewer 2000, 59).

5.7 The Validity and Reliability of the Findings

Max Weber's embedded single-case study on the emergence of the spirit of capitalism confirms that the findings of a case study can have a broad relevance (Walton 1992, 122–125). In Weber's (1992 [1930]) study the four religious sects represent the unit of analysis. Case studies do not, however, usually lend for statistical generalizations, since the cases of a case study are not sampling units like, for instance, in survey-based variable research (Yin 1994, 31). The generality of the findings must be worked out analytically by showing that the case under observation is typical, extreme, exceptional, unique, revealing or theoretically decisive in a way that has a broader relevance (Saarela-Kinnunen & Eskola 2001, 162–163; Walton 1992, 125; Yin 1994, 30–40).

Although many social scientists agree that the evaluation of case studies calls for different procedures than the research operating on quantitative variables (Burawoy 1998, Silverman 2000, 187–188; see however Yin 1994, 32–33) there exists no universally accepted standard for assessing the quality of a case study. Yin (1994, 33–38) discusses four criteria for the task: construct validity, internal validity, external validity and reliability. Validity means that the findings represent accurately the research object and reliability that the findings are free from systematic biases and errors (Silverman 2000, 175).

Construct validity is about a proper operationalization of theoretical concepts. Yin (1994, 34) points out that according to critics "a case study investigator fails to develop a sufficiently operational set of measures and that 'subjective' judgements are used to collect the data." This is also a weak point of this study in a sense that the conceptual framework was not in place

prior to collecting the data. The framework was developed in conjunction with the data collection, which, on the other hand, led to an interesting methodological experiment.

Internal validity is an antidote against anecdotalism. The findings must be based on consistent and thorough investigation of all data instead of few well-chosen examples (Silverman 2000, 176). This study divides the case into seven subprograms each describing a solution to a critical trial in the overall process. Each document and interview account was consistently examined with the following question in mind: What does this piece of data tell about that subprogram? No individual piece of data was accepted as a conclusive evidence of anything. Only when the inferences from several pieces of data converged were they considered worth studying more closely.

The external validity is about generalizability of the findings. Do they tell anything beyond the immediate case? In contrast to most quantitative studies, in a qualitative case study sampling is not usually the basis of generalizations (Silverman 2000, 102–105; Yin 1994, 31). Instead of statistical generalizations to populations (Yin 1994, 30–31) the case studies usually aim at analytical generalizations to theoretical concepts and propositions. For instance Michael Burawoy's (1991, 279) extended case method endeavours to identify the specific macro determinations in local phenomena and to reconstruct existing theory on the basis of particular cases. Instead of universal laws and formal theory, the extended case method aims to reveal historically specific causality by analysing how particular large-scale social forces enter into the local situations. By taking a novel perspective to a construction project this study suggests various refinements to our knowledge about built environment and its transformation. The proposed conceptual developments will hopefully be put into a test in the studies to come (Burawoy 1998, 20).

Reliability means that should the same or any other researcher repeat the case analysis he or she would arrive at the same findings (Silverman 2000, 188; Yin 1994, 36). However, in qualitative case studies this is seldom done in practice. It is nevertheless emphasised that the researcher should document the research process in order to provide the reader grounds for

assessing the potential biases and sources of error in the study. In this study I have described the research process in the current chapter and included the complete list of data as an Appendix 3.

6 The Emergence of the Kumpula Project

This chapter delineates the empirical case from the inception of the Kumpula project to the breaking of the ground on the hill. The task sounds simple but organizing the events systematically turned out to be a major challenge. How to divide the project into analytically usable units and represent these units? The data had neither inherent structure nor did it suggest any simple principle for structuring the analysis. For instance, attempts to simply split the process into subsequent phases resulted in complex descriptions of only remotely related events with little analytical interest. The solution emerged together with the development of the snowballing sampling strategy.

It turned out to be relatively painless to identify those actors the others considered momentous, but as the interviews accumulated so did a nagging feeling that my informants did not speak of the same project after all[34]. Instead of a single grand trajectory, the building seemed to attain reality in several overlapping and interconnected activities that spread over several years and organizations. The documents revealed not only several processes and subprojects taking place simultaneously, but also explicit efforts to keep the different threads sufficiently aligned. Trying to map all these threads would have been impossible while lumping them together would have ignored an inherent characteristic of the project. The actor-network theory provided little help in the crucial task of focusing the analysis on the most interesting parts of the network and its evolution (see section 3.1.6).

The challenge was to identify and reconstruct the threads which would be the most fruitful for further analysis. Each organization had contributed to the Kumpula project from its particular perspective and position. The involvement of the actors in the project had varied from non-existent to the balance of power depending on the particular issue at hand. The actors did not share the same orientation to and opinions about the project, but they had a performative common denominator. The actors had to be able to agree on the physical manifestation of the object. Otherwise the building could not take place. Instead of trying to uncover a single

[34] It was as if the project and its object were too complex entities to be treated altogether in practical actions.

trajectory bringing all the organizations together, the organizing principle was to identify the observable issues that had activated parts of the network and transformed its object of activity.

In the interviews the informants repeatedly indicated that the project had been at stake several times throughout its history. By triangulating these interview accounts with naturally occurring data, I reconstructed seven subprograms oriented towards solving this kind of critical trials. The benefit of the approach is therefore that it focuses the analysis on the issues that have made a difference in the project. The term subprogram is adapted from Latour (1999a, 181–182). In this study it is used to highlight the fact that subprograms are analytically constructed and therefore not necessarily subprojects in the language of the informants. In the subprograms actors combine in order to solve a particular trial obstructing the realization of the overall program of action that is to materialize the building.

The basic unit of analysis is a subprogram that revolves around a trial the actors have to solve in order to take the building one step closer to realization. Having solved a critical trial successfully, the outcome of each subprogram builds into the foundation of the project that is difficult question afterwards. The building becomes gradually more real through these trials. Each of the subprograms fulfils three conditions: informants described them as critical trials, they are readily discernible in the documents, and they entail a fundamental transformation of the project. This definition not only helped to identify but also reject candidates from further analysis. The key translations between the process of stitching together the collective and the evolution of its object are illustrated by using a schematic model explained in Diagram 2.

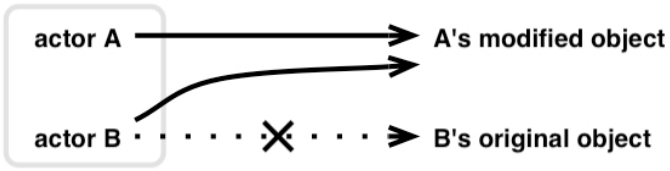

Diagram 2: *In this study the collective of actors is assumed to be oriented towards a shared object of activity (the visualization is adapted from Latour 1999a, 181). Both the collective and its object are historical formations. Mustering actors behind the objective usually entails transformation of the object, but since the object of activity is constitutive for an actor, also the actors are transformed in the process. In this schematic example actor B is enrolled behind A's object although A's original aim is also transformed in the process. The resulting actor-network AB is oriented towards an object that resembles A's original object. The dotted line depicts the actor's original interest and the cross over the line denotes that the line of action has become impossible by the translation.*

The identified subprograms are analyzed in the following seven sections. The attempt to retain the temporal dynamics of the overall process results in somewhat clumsy chronological cataloguing and cross-referencing of events between subprograms. Nevertheless, the reconstruction of historical trajectories enables to perceive the essence of timing and hopefully makes it possible for the reader to assess the credibility of my interpretations. Each section identifies the active organizations and their interests in respect to the issue at hand; depicts translations and the emergence of new entities; and discusses the interconnections with the preceding, overlapping and succeeding subprograms. The findings will be summarized in the end of the chapter and elaborated further in the concluding chapter by comparing them with other case studies and conceptual models.

6.1 The Consolidation of the Project: 1997–1999

In the FMI the search for new premises begun already in the 1980s due to the scattering of personnel around Helsinki Metropolitan Area. In the turn of the 1990s, the institute drafted an initial room schedule and evaluated several optional sites for its new building with the National Board of Public Building[35]. A room schedule dated 30th January, 1990 does not specify a particular building site, but the size of 17 000 m^2 for 450 employees is close to what

[35] The National Board of Public Building is a predecessor of Senate Properties.

was finally settled on. The National Board of Public Building hired the winner of the planning competition to study how the FMI could reside on the Kumpula hill that was pinpointed as the preferred location for the institute. An important partner of the institute, the University of Helsinki was going to place its Faculty of Science on the top of the hill that would also be a good location for observation activities. The effort dried up as Finland was hit by a severe economic recession in the beginning of the 1990s. The city planner recalled the incident as follows.

> "He [the winner of the planning competition] did it [the study] for them [the National Board of Public Building] with a bit of a low profile and I don't think it was ever shown to us, no."[36]
>
> (Interview of the city planner)

The amount of personnel in the FIMR grew throughout the 1990s. By the middle of the decade it was clear that the institute would not fit properly into its current premises. The institute studied several options and tried to push forward with the old spirits factory in Salmisaari right next to the sea. The place was going to be renovated into offices. The original aspirations of the institutes were separate and disinterested in each other (see Diagram 3).

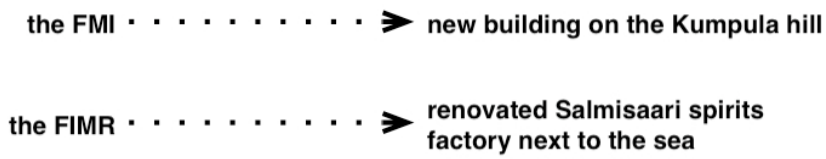

Diagram 3: *The FMI and the FIMR were originally disinterested in each other's efforts to acquire new premises.*

Both the FMI and the FIMR had separately tried to mitigate their office space problems for several years when a seemingly unrelated event created space to realize their efforts as joint projects. In the middle of the 1990s, the University of Helsinki decided to place the biosciences originally programmed for Kumpula in another campus area at Viikki. The

[36] "Hän [the winner of the planning competition] teki sen [the study] vähän niin kuin sammutetuin lyhdyin sinne [the National Board of Public Building], eikä meille kyllä koskaan, ei sitä vissiin näytettykään."

University did not need all of the 130 000 m^2 permitted building volume allocated for campus buildings on the hill. Given the diverse links between the FMI, FIMR and the University, it is likely that the University had been aware of the institutes' efforts, but there is no evidence that making room for the institutes would have been a reason for the reorganization of the campus plans. Having studied other locations in the meantime the FMI got interested in the Kumpula hill again. The first reference to the emerging project can be traced back to an international evaluation report of the FIMR operations. While not being explicit, the report could hardly point to any other location than the university campus on the Kumpula hill.

> "With regard to accessibility, the present location of the Institute [FIMR] in the outskirts of Helsinki, and far removed from the University complexes makes it difficult for interaction, and particularly for students to access and work at the FIMR. A proposal was received during the interviews to relocate the Institute next to the FMI near the city centre and university, the relative benefits of such a move should be considered."
>
> (14 April 1997. Excerpt from the international evaluation report of the FIMR.)

The report implies that the spatial and social relationships between the three organizations are interdependent and that these dependencies should be studied. The evaluators did not probably invent the idea[37] but they map the association between the effects of spatial proximity and the consolidation of the project at an early stage in the process. As the whole Kumpula project, the benefits of the spatial proximity were initially little more than verbal accounts and some scattered remarks in different documents.

Before the relative benefits hinted by the evaluation report could be studied in depth, the institutes had to get a firm hold of the site that could accommodate the both institutes. The FMI resumed talks with the University of Helsinki in 1998 regarding the Kumpula campus and the FIMR, whose effort at Salmisaari had collapsed, proposed in the beginning of 1999 to the Ministry of Transport and Communications to be located in Kumpula[38]. From the

[37] According to the head of Technical Department, the University of Helsinki had fostered the idea of having the FMI on the hill in the beginning of 1990s because of the enhanced co-operation with its department of meteorology. The department of meteorology had, nevertheless, been reluctant to move into the same building with the FMI.

[38] "MTL on jo usean vuoden yrittänyt saada itselleen uudet toimitilat ja selvitti useita eri toimitilavaihtoehtoja 1990-luvulla ennen kuin teki vuonna 1999 liikenneministeriölle esityksen sijoittumisesta Kumpulaan yhdessä IL:n kanssa." (Reports and Memoranda of the Ministry of Transport and Communications B9/2001. Published 7.2.2001, page 21)

perspective of the FIMR the drawback of the hill was that it lacked direct connection to the sea and thereby to the research vessel Aranda.

> "In a way people noticed that there were two departements with these interests. [...] And then it was discovered that it was possible to make a common project, and perhaps it was this that gave the extra spark needed."[39]
>
> (Interview of the Director General of the FMI)

The talks between the two institutes and the State Real Property Agency[40] began in February 1999. Judging from the handwritten notes of Senate Properties project manager from December 1999, the initial, fuzzy idea was to construct two buildings in two subsequent phases. The State Real Property Agency owned the land area and was ready to take care of the development process, but it alone could not ensure that the institutes would fit on the hill. The project had to be validated by the land use planning executed by the City Planning Department. By the end of 1999 the originally separate and so far unsuccessful efforts had become interested in each other. Two distinct objects of activity began to coalesce (cf. Foot 2002, 138).

6.2 Land Use Planning: 1999–2000

Starting from 1997, the institutes' separate and so far unsuccessful efforts to acquire new premises began to mesh. This coincided with a gradual re-conceptualization of the efforts. The new spatial arrangements were no longer understood merely as a mitigation of problems with the existing premises, but a way of developing the institutes' operations. However, turning "the relative benefits" from the international evaluation report into an effective ally for the project required material footing on a particular location. The emerging argument had to be grounded on the Kumpula hill. A shared object of activity was emerging, but would it fit on the hill. Together the institutes would need a lot of floorspace.

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[39] "Siinä tavallaan sitten huomattiin, että on kaksi laitosta, joilla on tämmösiä intressejä. […] Kun todettiin, että tässähän voidaan tehdä yhteinen hanke ja se ehkä sitten toi tähän sitä toivottua lisäkipinää."
[40] The State Real Property Agency is a predecessor of Senate Properties.

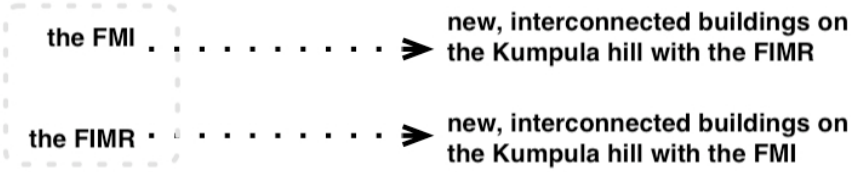

Diagram 4: *The Kumpula project originated as a result of re-conceptualization of the separate efforts. The object of activity began to coalesce and the collective behind it to build capacity by enrolling more actors.*

Designating a place for the buildings required cooperation with the City Planning Department. Sticking to their original objective of heterogeneous urban environment, the city planners were on top of everything interested in having more housing on the hill. When they heard that the University of Helsinki does not need all of its 130 000 m^2 the planners proposed increasing the proportion of housing on the hill. Since neither the State Real Property Agency nor the University opposed the proposal, 12 000 m^2 of the 130 000 m^2 designated for university buildings was repurposed for mostly residential building. The alteration was incorporated into the detailed plan modification the Department was drawing for the third (Physicum) and fourth (Exactum) campus buildings.

> "As it has turned out that the University does not need all the permitted building volume for its own use, there are possibilities to strengthen the residential building activity at the expense of the departments. As far as the City is concerned, building other state buildings but university premises is a clearly worse option than building housing."[41]
>
> (11 February 1999. Excerpt from the City Planning Committee proposal for the City Board.)

The plan modification met organized resistance from the local inhabitants, who urged the planning authorities to reduce the permitted building volume significantly and reorganize the traffic system on the hill. During the public inspection period 5–9th October, 1998 the City Planning Department received 35 comments about the proposed plan[42]. The resistance surprised the municipal bureaucrats. The State Real Property Agency announced that it would

[41] "Kun on osoittautunut, että yliopisto ei tarvitse koko alueen jäljellä olevaa rakennusoikeutta omaan käyttöönsä, on edellytyksiä voimistaa asumista laitosten kustannuksella. Kaupungin kannalta muiden valtion rakennusten kuin yliopiston laitosten rakentaminen on selkeästi huonompi vaihtoehto kuin asuntojen rakentaminen."

[42] The proposed plan had been presented to the local stakeholders on 24th September, 1998 in a meeting organized in Chemicum (the second university building on the campus).

not accept such a major departure from the original programme inscribed into the land exchange contract with the City of Helsinki.

> "They pretended, which is obviously their right, to act as if they didn't know it was a university and not a park as they had imagined. Then they were absolutely horrified when the building began. People wrote petitions and appeals to the President. The television, radio and the press were all harnessed to oppose the building. [...] For a while there was a great confusion but then a group of civil servants, who had been planning a university on the hill for 20 years, got their act together and approached the residents with matter-of-fact letters. In the dealings of the residents a lot of false information had been spread on purpose and we had to correct them and tell people how things really were."[43]
>
> (Interview of the city planner)

The City Planning Department declined to make significant modifications to the plan it presented to the City Planning Committee on 11th February, 1999. The plan was approved after two votes in which a minority of the Committee voted for redesigning the plan according to the opinions filed by the local stakeholders. Meanwhile, Physicum had obtained on 8th December, 1998 a building permit on the basis of an exemption to the original detailed plan. The building began in the spring 1999. The city planner described the situation on 30th September, 1999 in his address for a seminar discussing stakeholder interaction[44].

> "As many of you may have noticed, there is a current city planning argument going on in Kumpula. Primarily new residents, in other words those who have not been involved in the planning of the area, and who nevertheless are now benefitting from it, cannot accept the plans of the University now, in the phase when the plans are supposed to be realized. [...] There are many factors involved: there is a real concern for the preservation the natural environment in general, a fear of the shrinking of the recreation areas people are used to having, there are the efforts of the State to enhance participation and so forth. I can partly relate to the concerns expressed by the residents, but from my perspective it seems there are many misunderstandings involved. Besides, this causes, speaking from our perspective again, unnecessary work and loss of time, but this is the direction our world seems to be going and that's why we have to accept it in silence. It is impossible to draw a plan that would make everyone happy."[45]

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[43] "He uskottelivat ja se on tietysti heidän oikeutensa mukamas olla tietämättä, että se onkin yliopisto, mitä he olivat kuvitelleet puistoksi. Sitten ne olivat aivan kauhuissaan, kun puistoa ruvettiin rakentaan. Siinä kerättiin adresseja ja kirjotettiin Tasavallan presidentille vetoomuksia. Valjastettiin TV, radio ja lehdistö vastustamaan tätä rakentamista. […] Hetken siinä oli valtava hämmennyksen tila, mutta sitten virkamiesjoukkio, joka oli 20 vuotta puuhannu yliopistoa tänne mäelle, ryhdistäytyi ja lähestyi myös asukkaita asiallisilla kirjelmillä. Siinä asukkaiden touhussa myös valheellista informaatiota ihan tarkoitushakuisesti levitettiin ja ne meidän oli pakko oikaista ja kertoa, miten asiat oikeasti on."

[44] 30 September, 1999. The Helsinki Metropolitan Area Council's seminar "Eheyttävä täydennysrakentaminen ja vuorovaikutus".

[45] "Kuten monet teistä varmaan ovat huomanneet, on Kumpulassa ajankohtainen kaavoituskiista menossa. Pääosin uudet asukkaat, siis sellaiset jotka eivät olleet mukana vaikuttamassa Kumpulan kaavoitukseen – tosin sen hedelmistä nyttemmin nautiskellen – eivät hyväksykään yliopiston suunnitelmia niiden tultua toteutusvaiheeseen. […] Tässä vaikuttavat monet tekijät: on aitoa huolta luonnonympäristön säilymisestä yleensä, on huolta totuttujen virkistysalueiden pienenemisestä, on valtiovallan

(30 September 1999. Excerpt from the draft of the city planner's speech in the Helsinki Metropolitan Area Council's seminar "Eheyttävä täydennysrakentaminen ja vuorovaikutus".)

The City Council approved the modified plan on 15th November, 2000 including the increased proportion of housing and repurposing the top of the hill into a park. During the process the city planners had also learned about the aspirations of the FMI and the FIMR on the hill, but they did not want to complicate the already tiresome process further. The planners did not have anything against the idea especially because the University of Helsinki and State Real Property Agency had approved their proposal of expanding the proportion of housing on the hill.

"Then we started to think if it would be possible. We thought it was definetely possible, that it would be exactly the kind of thing that would enrich the functionality, and we were very content with just having housing there."[46]

(Interview of city planner)

Given the reduced permitted building volume and the local planning objectives, would it still be possible to fit both the FMI and the FIMR on the hill? It turned out that no suitable plot for the institutes' buildings existed in the modified detailed plan. The city planner proposed deploying the flexible planning process as before.

"Yesterday I negotiated with the State Real Property Agency project manager of possibly placing of the FMI on the plot 24973/1. Its proposed permitted building volume would seem to be smaller than the volume required by the institute. I suggested we transform the Pietari Kalm Street partly into plot area and form the new plot in such a way that the FMI fits on it […]"[47]

(4 January 2000. Excerpt from the city planner's email to the State Real Property Agency.)

In the beginning of the year 2000 the institutes begun to hammer out their needs in the form of draft room schedules with the State Real Property Agency and its consultants. The process of

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taholta tulevat pyrkimykset osallistumisen lisäämiseen yms. Osin kyllä ymmärrän asukkaiden huolta, joskin siihen omasta näkövinkkelistäni sisältyykin huomattavia väärinkäsityksiä. Lisäksi se tuottaa – taas meidän näkökulmastamme – turhaa työtä ja ajanhukkaa, mutta tälläiseksi maailmamme nyt näyttää olevan menossa, ja siksi on hiljaisesti kai hyväksyttävä: On mahdotonta laatia kaikkia tyydyttävää suunnitelmaa."

[46] "Sillon jo ruvettiin miettiin, et olisko se mahdollista. Meidän mielestä se oli hyvinkin mahdollista, et se oli juuri sellaista toiminnallista sisältöä rikastavaa tai me oltiin hyvin tyytyväisiä jo siihen, et saatiin sitä asumista sinne."

[47] "Neuvottelin eilen [the State Real Property Agency project manager] kanssa ilmatieteen laitoksen mahdollisesta sijoittumisesta tontille 24973/1. Sen ehdotettu rakennusoikeus näyttäisi olevan pienempi kuin laitoksen tilantarve. Ehdotin ratkaisuksi Pietari Kalmin kadun osittaista muuttamista korttelimaaksi ja uuden tontin muodostamista siten, että ilmatieteen laitos sille mahtuu…"

getting hold of a suitable land area culminated in the land use plan revision. The city planner helped the State Real Property Agency project manager to put together a brief for the land use planning assignment. The brief dated 9th February, 2000 recognizes the institutes, State Real Property Agency, City Planning Department and the University of Helsinki as stakeholders in the revisioning process. The FMI and the FIMR are treated as clearly separate cases and the spatial relationship between the institutes is not specified.

> "It has become a current issue that the FMI should move to Kumpula, onto the highest point of the hill. Besides the FMI, the FIMR is also looking for appropriate and uniform premises from the Helsinki area."[48]
>
> (9 February 2000. Excerpt from the request for a proposal for the land use planning assignment.)

The State Real Property Agency contracted on 8th March, 2000 the architect, who had just designed the third university building called Physicum, to study the possibility of placing the FMI and the FIMR on the hill. Soon after this a third institute, the Finnish Environment Institute, announced that it was also interested in the new premises on the Kumpula campus. Its reasoning for the location was similar to the claim of the FMI and the FIMR about beneficiality of spatial proximity with the University of Helsinki and each other. The FMI and the FIMR did not oppose the idea as such, but they were reluctant to couple yet another building to their project. They feared it might delay their already sizeable project. Nevertheless, the architect working with the land use plan was asked as an afterthought also to locate, if possible, the Finnish Environment Institute on the hill.

> "According to preliminary information the Finnish Environment Institute would also be interested in acquiring new premises from Kumpula which would bring synergies for the FMI as well. When the information is confirmed, it will probably influence the content and the schedule of the land use plan assignment."[49]
>
> (7 April 2000. Excerpt from the memo of a meeting between Senate Properties, the FMI and the FIMR.)

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[48] "Nyt on käynyt ajankohtaiseksi Ilmatieteen laitoksen siirtyminen Kumpulaan, alueen korkeimmalle maastonkohdalle. Ilmatieteen laitoksen lisäksi myös Merentutkimuslaitos etsii tarkoituksenmukaisia ja yhtenäisiä toimitiloja pääkaupunkiseudulta."
[49] "Alustavien tietojen mukaan myös SYKE (Kesäkadulta?) olisi kiinnostunut saamaan uudet toimitilat Kumpulasta, mikä toisi synergiaetuja myös IL:lle. Kun tieto saadaan varmistettua, se vaikuttanee maankäyttösuunnitelma –toimeksiannon sisältöön ja aikatauluun."

The case of the Finnish Environment Institute was not the only incident that altered the course of the land use planning. The process interacted with the simultaneous negotiations between the FMI, FIMR and the Ministry of Transport and Communications (see next section). The negotiations elaborated particularly the relationship between the FMI and the FIMR. The back and forth movement between the negotiations and land use planning transformed the assumed benefits into an argument about measurable synergies by inscribing a specific spatial relationship between the institutes into the illustrations and texts of the land use plan. The process can be observed both in the actual plan and in the memos discussing it and the negotiations.

> "The FMI and the FIMR told that in the operating strategy and financial plan of the Ministry of Transport and Communications for the year 2001–2004 it was stated that 'it is an objective of the Ministry that the FMI and the FIMR will move into common premises by the end of the planning period (2001–2004).' The objective was interpreted as absolute. As a result, the objective of the land use planning changes accordingly from the one recorded in the request for a proposal."[50]
>
> (15 May 2000. Excerpt from the memo of a meeting between the State Real Property Agency, FMI, FIMR, City Planning Department and the Physicum architect.)

While in the beginning of the year 2000 the institutes and their projects were largely discussed as separate cases, during the following six months the name of the action (Latour 1999a, 308) was unified and stabilized. The project was no longer just a set of effects in various organizations. From now on the entity was labelled as "the Finnish Meteorological Institute and Finnish Marine Research Institute" or simply as "the Kumpula project". The idea of loosely associated projects was thus gradually transformed into two interconnected buildings. The emerging actor-network had a vague but common object of activity.

The land use plan revision dated 28th June, 2000 concludes that there is room for interconnected buildings of the FMI and the FIMR on the hill, but implies that the building of the Finnish Environment Institute would require spending most of the building volume

[50] "IL:n ja MTL:n taholta kerrottiin, että liikenneministeriön toiminta- ja taloussuunnitelmaan vuosille 2001–2004 on kirjattu 'Liikenneministeriön tavoitteena on, että Ilmatieteen laitos ja Merentutkimuslaitos siirtyvät uuteen yhteiseen toimitaloon suunnittelukauden (2001–2004) lopussa.' Tavoite tulkittiin ehdottomaksi. Tästä seuraa, että maankäytön suunnittelutyön tavoite muuttuu vastaavasti tarjouspyyntöön kirjatusta."

reserved for the enlargements of the university buildings. The allocation of the permitted building volume reveals that the efforts of the Finnish Environment Institute were secondary to the joint project of the FMI and the FIMR[51], who share the same material object of activity. In the final land use plan the FMI and the FIMR are considered as a unitary entity.

> "As a starting point for the planning of the new premises for the FMI and the FIMR, the users of the buildings have given a condition that the institutes should be possible to join with a hall. In addition to this, there has been a wish that some other functions of the buildings could be joined regardless of the administratorial borders in order to reap the functional synergies."[52]
>
> (28 June 2000. Excerpt from the land use plan revision.)

The land use plan revision was originally commissioned to see if the FMI and the FIMR would fit on the hill. This entailed illustrating *how* they would fit on the hill. In the plan the architect had illustrated a building with separate, comb-shaped wings for the institutes mainly following the style of the other buildings on the campus. In contrast to the brief, written some months before, the spatial relationship between the FMI and the FIMR was not only made explicit, but, more interestingly, also rationalized on the basis of the expected benefits. The distinct rationalization was neither mentioned in the brief nor invented by the architect who delegated it to the drawing. It reflected the developments in the negotiations that began early in the year 2000 between the FMI, FIMR and the Ministry of Transport and Communications. The material relationship inscribed into the illustrations of the land use plan revision is an effect of an emerging synergy argument.

The Ministry of Transport and Communications sent a request for a comment on 2nd October, 2000 to the City Planning Department and the University of Helsinki regarding the project. The both organizations announced their support for the project. In the statement of the Department on 9th October, 2000 the city planner highlights the Department's interest to gracefully pre-empt further attempts to intervene in the local plan.

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[51] Despite the fact that according to memos and meeting records the Finnish Environment Institute figured in the process (its representatives were present in many meetings) between 7th April, 2000 and 25th January, 2001 the informants hardly mentioned it in the interviews.

[52] "Ilmatieteen laitoksen ja merentutkimuslaitoksen suunnittelun lähtökohdaksi on rakennusten käyttäjien taholta asetettu ehto, että laitokset tulee voida yhdistää toisiinsa aulan välityksellä. Lisäksi on esitetty toivomus, että myös rakennusten muita toimintoja yhdistettäisiin hallinnolisista rajoista riippumatta toiminnallisten synergiaetujen parantamiseksi."

> "The City Planning Department is ready to initiate the planning of the modification of the detailed plan so that the draft plan would be drawn first for the architectural competition to be organized in order to design the new premises of the institutes. [...] Finalizing the incomplete appearance of the Kumpula hill would clarify the situation as for the public debate, largely weighed by misunderstandings."[53]
>
> (9 October 2000. Excerpt from the statement of the City Planning Department for the Ministry of Transport and Communications.)

The Department's statement was supplemented with a map titled "Merentutkimuslaitoksen ja Ilmatieteen laitoksen mahdollinen tonttialue", on which the city planner demarcated a site for the new building on the hill approximating closely the land use plan. From the perspective of the city planners, the Finnish Environment Institute would not probably differ from the FMI and the FIMR. Any combination of the three organizations would fulfil the wish to nail down the development of the Kumpula hill and consequently gracefully pre-empt further attempts to intervene in the local plan.

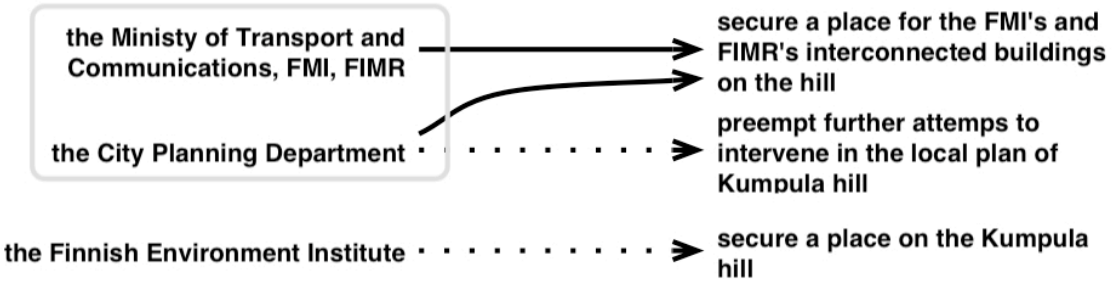

Diagram 5: *Fostering the Kumpula project was a detour for the City Planning Department to pre-empt further attempts to intervene in the local plan.*

Turning the site into a suitable plot would still require an official modification of the detailed plan (see section 5.5). The consensus amongst the City Planning Department, University of Helsinki and the State Real Property Agency on how it could be done was now stabilized with the land use plan and the statements obtained by the Ministry of Transport and Communications. Delegating the support of the Department and the University to written

[53] "Kaupunkisuunnitteluvirasto on valmis käynnistämään asemakaavan muutoksen suunnittelun siten, että ensin laadittaisiin asemakaavan muutosluonnos laitosten toimitilojen suunnittelemiseksi järjestettävää arkkitehtuurikutsukilpailua varten. […] Kumpulan mäen keskeneräisen ympäristön saattaminen tältä osin valmiiseen asuunsa selkeyttäisi tilannetta julkisen keskustelun suhteen, jota väärinkäsitykset ovat paljolti leimanneet."

statements made the support somewhat more difficult to withdraw and independent of the particular persons taking care of the project.

6.3 Arguing for the Rental Money: 2000–2001

The FMI and the FIMR had initiated the talks about the Kumpula hill with the State Real Property Agency in February 1999. The land use planning began in December 1999. However, without the support of the Ministry of Transport and Communications there would be nobody to pay the increased rent. It was clear right from the beginning that the newly built premises would cost a lot more compared to the current situation. The FIMR project manager described the initial talks as follows.

> "It was all fumbling then, because the need existed but there was no money whatsoever coming. Everyone realized that it'll be much more expensive if we move into a new building in which the floorspace increases."[54]
>
> (Interview of the FIMR project manager)

The workspace problems had not escalated suddenly. The international evaluation team had documented the inadequacy of the FIMR premises already in 1997 and the state auditors had mentioned it in their report for the year 1999. The FMI had been looking for a building that would bring together its employees who had been scattered into several locations around the Helsinki Metropolitan Area since the 1980s. The mundane hardship did obviously not suffice to stretch the spending limits of the Ministry.

The Ministry began to investigate the rationale for moving the institutes to the Kumpula campus in the early 2000 (the subprogram overlaps with the land use planning described in the previous section). The FMI had considered the location suitable already in the beginning the 1990s and recently revised its room schedule for a new building. The FIMR's effort was initially less organized. It had only very general estimates of its needs and less idea how to get more money from the Ministry. The first occurrence of the word "synergy" can be observed

[54] "Se oli semmoista hapuilevaa siis, koska silloinhan oli tämmöinen tarve, mutta ei ollut minkään maailman rahaa tiedossa. Jokainenhan käsitti sen, että tämähän nyt on paljon kalliimpaa, jos mennään uuteen taloon, jossa neliöt lisääntyy nykyisestä."

scribbled into the margin of a printout of a spreadsheet dated 21st February, 2000. The spreadsheet estimated the space needed for the library of the FMI and it was used in the discussions about relocating the library together with the university campus library in Physicum. The label was quickly adopted to point to the anticipated positive effects of the new spatial arrangement. The impact of these anticipations on the land use planning can be observed immediately on 8th March, 2000 when the State Real Property Agency commenced the land use plan.

> "It was discovered that there was no need in the FMI's project to split it in phases. The project of the FIMR could be a separate one depending on the schedule and the location, or it could be 'the 2nd building stage. [...] The FMI and the FIMR are hoping for as good a physical connection as possible between their premises. The FIMR seeks to meet the schedule of the FMI (2004)."[55]
>
> (6 March 2000. Excerpt from the memo of a meeting between the FMI, FIMR and Senate Properties)

The FMI and the FIMR were still considered as separate cases, but as soon as the discussions with the Ministry started the efforts of the FMI and the FIMR began to align. This coincided with the emergence of a new actant: the argument about benefits running from the spatial proximity. These benefits were labelled as synergies and their elaboration took the central stage in the process. During the first half of the year 2000 the use of word "synergy" proliferated in the memos and other documents. The emerging synergy argument transformed and specified the relationship between the institutes. The rationalized relationship inscribed into the land use plan by the Physicum architect revision was an effect of the new actant (see previous section). The argument that could stretch the Ministry's spending limits was initially rather vague, but the actors actively reinforced it. An assumption about various gains was gradually turned into a reasoned list of anticipated benefits and given existence independent of the Kumpula project and its actors (cf. Latour 1999a, 135–138).

> "The Director General of the FMI rang regarding the Kumpula project, on the following concerns:
> 1) The FMI and the FIMR should definitely be placed in the same building. Otherwise the

[55] "Todettiin, ettei IL:n hankkeessa ole tarvetta jakaa sitä vaiheisiin. MTL:n hanke aikataulusta ja sijoituspaikasta riippuen voi olla erillinen hanke tai '2. rakennusvaihe. […] MTL ja IL toivovat mahdollisimman hyvää fyysistä yhteyttä toimitilojensa välille. MTL pyrkii toimitilojensa osalta samaan aikatauluun IL:n kanssa (2004)."

> planned synergy savings resulting from common laboratories, shared duties, and so forth, will not be realized. The same is called for in the Ministry's paper written on the issue."[56]
>
> (27 April 2000. Excerpt from an email from the Director General of Senate Properties to the project team.)

In order to enrol the Ministry of Transport and Communications and its spending limits to the project, the synergies had to look like cost savings. The FMI hired Engel[57] in April 2000 to help in putting together a room schedule for the Kumpula premises and the FIMR followed in the beginning of May. The room schedules were to enable them to estimate the price for the buildings and therefore to flesh out the anticipated cost savings running from lumping the projects together. The FMI, FIMR and the University of Helsinki listed support and service functions such as garage, canteen, gym and sauna as facilities that could be shared between the organizations on the hill. The institutes were now working synchronously with their projects whose fate was effectively tied together, since their efforts had the same object of activity. The preferred relationship between the institutes is observable, for instance, in the discussion about the bicycle and pedestrian route next to the buildings of the FMI and the FIMR.

> "We just held a meeting about the land use planning of the FMI and the FIMR, and we discussed the drafts of [the Physicum architect]: the FMI and the FIMR together and the the Finnish Environment Institute on Kustaa Vaasa Street. There were two options which had one basic difference: the placing of the bicycle and pedestrian route either through the building complex or in between that and the accelerator laboratory. Nothing special was agreed or decided upon, people commented on the drafts and discussed the options for laying out the architectural masses, connections, the location of the walkway and construction heights. The users (the FMI?) clearly preferred the latter model."[58]
>
> (8 June 2000. Excerpt from an email memo written by the Senate Properties project manager to people involved with the land use planning.)

From June 2000 on there was a single project that was meant to produce two interconnected buildings. The land use plan revision was finished on 28th June, 2000 simultaneously with the

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[56] "Ilmatieteen laitoksen pääjoht. soitti kumpulan projektiin liittyen, ja hänen huolenaiheensa olivat seuraavat:
1) Ilmatieteen laitos ja Merentutkimuslaitos tulisi saada ehdottomasti samaan taloon. Muussa tapauksessa suunnitellut synergiasäästöt yhteisten laboratorioiden, päivystysten yms. Suhteen eivät toimi. Saman katon alle menoa on myös edellytetty ministeriön asiaa koskevassa paperisssa."

[57] Engel was a part of Senate Properties predecessor, the National Board of Public Building, till the end of year 1994.

[58] "pidimme äsken palaverin Kumpula IL – MTL maankäytön suunnittelusta ja käsittelimme Mahlamäen luonnoksia malli: IL + MTL yhteen ja lisäksi Kustaa Vaasan tien varteen SYKE. Vaihtoehtoja oli kaksi, joiden olennaisin ero oli kevyen liikenteen väylän linjaus joko rakennuskompleksin halki tai sen ja kiihdytinlaboratorion välistä. Mitään erityistä ei sovittu saati päätetty, luonnoksia kommentoitiin ja ja vaihtoehtoja massoittelulle, yhteyksille, kevyen liikenteen väylän sijainnille, rakennuskorkeuksille jne pohdiskeltiin. Käyttäjät (IL ?) selvästi pitivät enemmän jälkimmäisestä mallista."

detailed and consistently formatted room schedules for both institutes. A building complex illustrated in the land use plan could be interpreted as two interconnected buildings or one building with two clearly separated wings. On the basis of the room schedules Engel estimated the price of the building and the State Real Property Agency calculated the corresponding rent. The investment price of the building was estimated on 29th June, 2000 to be 71 million euros. The building was projected to begin in September 2003. The Ministry announced that their spending limits would not stretch that far.

> ”Well, this was an enormous sum of money, of course, I can't remember anymore how much it was. But at the time it was much more than what this rent is going to be. Because they had taken into account the huge rises in the building costs and perhaps there were more floorspace, too, compared to the final version. These [plans] were then presented to the Ministry, of course including how much it would cost and what kind of premises could be built. They then communicated more or less blatantly that they could not support a project this expensive.”[59]
>
> (Interview of the FIMR project manager)

The most important cost factor of a building is the size, but especially due to the relatively high anticipated annual increase (8,3 percent) of the costs of building at the time, the longer it would take to finish the building the more expensive it would get. This could be readily seen in the fluctuation of the cost estimates. Two months later on 15th August, 2000, in the calculations based on the same room schedule, the price was slashed by over 5 million euros to 66 million euros by rescheduling the building to begin 11 months earlier in October 2002. Later in the autumn the FIMR squeezed its room schedule so that the overall cost estimate decreased to 60 million euros.

[59] “Ja tuota, tämähän oli huikea summa tietysti, en mä enää muista mitä se oli. Mutta se oli paljon enemmän, mitä se tulee olemaan tämä vuokra, siinä vaiheessa. Koska oli huomioitu ne valtavat rakennuskustannusten nousut ja neliöitäkin oli varmaan sitten enemmän, mitä tässä lopullisessa versiossa. Sitten nämä esiteltiin ministeriölle, myös tietysti nämä, että mitä se maksaa ja minkälaiset tilat voisi saada. Ja he sitten ilmoittivat jokseenkin suorasukaisesti, että he eivät voi tukea siis näin kallista hanketta.”

> ”These were all rough estimates at this stage. Nobody knew what the building would cost in the end. And they [the Ministry] demanded a yes-or-no answer to the question of whether we could get functional premises with a certain amount of money. That they could get that certain amount for us. Well, both of the institutes then stated that they could. I can't remember, but we, too, had to calculate how much we'd have to cut down and would it be worth it anymore.”[60]
>
> (Interview of the FIMR project manager)

The Ministry of Transport and Communications sent a request for a comment on 2nd October, 2000 to the City Planning Department and the University of Helsinki regarding the project. The University of Helsinki elaborated the potential synergies both in terms of cost-savings and the benefits for research and teaching. The University highlighted the importance of having a critical mass of various researchers and equipment on the hill. The City Department announced in its statement on 9th October, 2000 that it was interested in furthering the implementation of the local plan by initiating a detailed plan modification on the basis of the land use plan revision. The synergy argument that has little to do with city planning found its way to the Department's statement as well.

> “The City Planning Department can conceive of the benefits that can be reached with the possibilities of cooperation, synergy and savings in floorspace.”[61]
>
> (9 October 2000. Excerpt from the statement of the City Planning Department for the Ministry of Transport and Communications)

The project was presented on 25th October, 2000 to the executive group of the Ministry. The memo prepared for the executive group demonstrated the mechanism of how the spatial synergies yielded measurable cost savings. The potential savings were constructed by contrasting them to an imaginary situation in which the institutes were located in separate buildings with the equivalent spaces and services. Compared to the real situation at the time, the rent would be in any case significantly higher. The peculiar kind of future-orientedness is characteristic also for other types of anticipated benefits. The synergy argument projects

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[60] “Kaikkihan oli tietysti karkeita arvioita, siis tässä vaiheessa. Kukaan ei tiennyt mitäs se rakennus tulisi lopulta maksamaan ja muuta. Ja tuota, he [the Ministry] sitten vaativat sitten sellaisen tiedon, että kyllä vai ei, että saammeko me tietyllä rahalla toimivat toimitilat vai emmekö saa. Että siihen asti he pystyy järkkäämään meille rahaa. No kumpikin laitos totesi sitten, että saa. Mä en muista, meilläkin se käytiin läpi sillä tavalla, että kerta kaikkiaan laskettiin kuinka paljon pitää supistaa ja mitä jää jäljelle sitten ja oliko se järkevää sitten enää.”

[61] “Kaupunkisuunnitteluvirasto ymmärtää hyvin ne edut, joita mm. yhteistyömahdollisuuksien, synergian ja tilansäästön suhteen on ratkaisulla saavutettavissa.”

various benefits into the future, but the validity of the anticipations is difficult to judge at the time when the necessary decisions must be made.

> "By centralizing the FMI's activities of the Helsinki area and locating the FMI and the FIMR into the same building, it is possible to reach savings of 14 million FIM [2,3 million euros] in the building costs. This saving will be reflected in the decrease of the institutes' yearly rents by almost 1.2 million FIM [0,2 million euros]. [...] The synergy benefits can be exploited efficiently if the building project is carried out as a joint project of the FMI and the FIMR. The benefits can be divided into two categories: the savings in the building costs and the functional benefits. ."[62]
>
> (25 October 2000. Excerpt from the memo "Merentutkimuslaitoksen ja Ilmatieteen laitoksen toimitalohanke" for the executive group of the Ministry of Transport and Communications.)

By sharing the reception, the real estate management and maintenance, meeting rooms, canteen and to a degree workshops and laboratories the institutes would need 690 m^2 less floorspace. These synergies were calculated to reduce the annual rents and personnel costs by 0,9 million euros. While the institutes' workspace problems could be solved in various ways, only shared premises would reap these synergies. The executive group of the Ministry decided on 8th November, 2000 to conduct a further evaluation of the potential synergies and co-operational possibilities related to re-locating the institutes into the shared premises on the Kumpula hill.

The FIMR finished its final project plan on 10th November, 2000. The project plan of the FMI was finished on 11th December, 2000. The anticipated cost saving in the support and service functions had been calculated in detail, but co-operation in laboratory and workshop operations and in research activities had so far received less attention. The Ministry's evaluation forced the institutes to envision their substantive co-operation in the future. In January 2001, the FMI, FIMR, Ministry of Transport and Communications, Finnish Environment Institute, Ministry of Environment and the State Real Property Agency discussed the idea of merging the laboratories of the FMI, FIMR and the Finnish Environment Institute.

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[62] "Yhteensä rakennuskustannuksia voidaan säästää lähes 14 milj. markkaa [2,3 million euros] keskittämällä IL:n Helsingin alueen toiminnot yhteen sekä sijoittamalla IL ja MTL samaan toimitaloon. Säästö rakennuskustannuksissa vaikuttaa laitoksien vuokramenoihin alentavasti vuositasolla lähes 1,2 milj. markalla [0,2 million euros]. […] Toteutettaessa toimitalohanke IL:n ja MTL:n yhteisenä hankkeena pystytään hyödyntämään synergiaedut tehokkaasti. Synergiaedut on jaettavissa kahteen osaan; toisaalta rakennuskustannuksissa saavutettaviin ja toisaalta toiminnallisiin etuihin."

It became clear that the FMI and the FIMR did not want to merge their laboratories with each other and definitely not with the Finnish Environment Institute. In a meeting of 11th January, 2001 the FMI and the FIMR announced that they did not want "too big" a laboratory complex that could decrease the quality of research, foster routine operations and diminish the benefits of the sectoral research. The synergy argument that had brought the FMI and the FIMR together was now used to exclude the Finnish Environment Institute from the construction project and against serious reorganization of the environmental research. Lumping all three organizations together was conceived as a threat to the synergies. The Finnish Environment Institute was more interested in the idea and tried to tone down its connotation of administrative reorganization.

> "The Finnish Environment Institute agrees that the search for synergy should not slow down the realization of the project. The cooperation in laboratories aims at benefits in research and on the functional level. An admistrative change is not on the agenda."[63]
>
> (11 January 2001. Excerpt from the meeting memo between the Ministry of Transport and Communications, Ministry of Environment, Finnish Environment Institute, FMI, FIMR and the State Real Property Agency.)

The FMI and the FIMR wanted to push forward with the project and proposed clarifying the division of labour between the three institutes instead. Meanwhile the estimated price of the building had risen to 63 million euros despite the fact that the anticipated annual increase of building costs had decreased to 7%. The increase was probably caused by rescheduling the beginning of building to January 2003. The scope of planned floorspace savings on building costs was therefore similar to the fluctuation caused by the economic trends and postponing the schedule. More fundamental savings in floorspace and building costs may have entailed a thorough reorganization of the institutes' operations. The State Real Property Agency project manager pointed out the relatively limited scope of savings in her email to the stakeholders.

> "I don't think, for instance, that placing all the laboratories side by side in the same building would result in substantive cost-savings. If the institutes are centralized, we could achieve synergy and cost-savings by getting rid of some over-lapping functions, decreasing the number

[63] "Synergian hakeminen ei SYKEnkään mielestä saa viivästyttää hankkeen toteuttamista. Laboratorioyhteistyöllä haetaan toiminnallisia ja tutkimuksellisia hyötyjä, ei hallinnollista muutosta."

> of staff, by making more effective use of the expensive equipment, lengthening the time of use and refraining altogether from purchasing certain equipment or building certain premises.
>
> Such functions in the FMI-FIMR project are, for example, uniting the porter and vestibule services, sharing the canteen, library and possibly the usage of the University auditoriums for meetings and training seminars. The decrease in the need for floorspace, achieved by the above means, remains relatively insignificant in a project of this size. Apparently the cooperation did not succeed for the part of the laboratories and workshops. I had imagined that the Finnish Environment Institute could have parts of its research done by the FMI, FIMR or the University, or the other way round. Thus the community of the research institutes and the University would make do with fewer laboratories and workshops than what would be needed if the insitutes were situated apart."[64]
>
> (25 January 2001. Excerpt from an email written by the State Real Property Agency project manager to the stakeholders.)

The permitted building volume was not the only material factor limiting how the institutes could reside on the hill. Due to the limited number of allowed storeys no plot on the hill would allow a big enough building complex for all of three organizations. Hosting approximately thousand employees in the maximum of four storeys would entail too big a footprint for the building.

> "It is possible to build an underground connection between the buildings which is also useful in the maintenance and repair of the estates. Joining the Finnish Environment Institute's project more closely to the FMI-FIMR project, by building joint premises for all three, does not, however, appear possible in terms of the land use and the cityscape."[65]
>
> (25 January 2001. Excerpt from the State Real Property Agency memo.)

The evaluation report written by the Ministry's employee was published on 7th January, 2001 together with a press release in which the Ministry of Transport and Communications announced its commitment to the joint building of the FMI and the FIMR. In the report the

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[64] "Minusta esim. kaikkien laboratorioiden sijoittaminen samaan rakennukseen vieri viereen ei vielä tuota olennaista kustannussäästöä. Jos laitokset sijoitetaan keskitetysti, saavutettaisiin synergiaetua ja säästöä sillä, että jotkut päällekkäiset toiminnot voitaisiin purkaa, henkilömäärää vähentää, kalliiden laitteiden käyttöä tehostaa, käyttöaikoja pidentää ja jotkut laitteet jättää kokonaan hankkimatta ja tilat rakentamatta.

Tälläisiä toimintoja IL-MTL-hankkeessa ovat nyt esim. vahtimestari- ja aulapalvelujen yhdistäminen, yhteiset ruokala ja kirjasto ja mahdollisesti yliopiston auditorioiden käyttö kokouksissa ja koulutustilaisuuksissa. Näillä saavutettavan tilantarpeen pienenemisen merkitys näin suuressa hankekokonaisuudessa on suhteellisesti aika vähäinen. Laboratorio- ja työpajatoimintojen osalta yhteistyö ei ilmeisesti onnistunut. Olin kuvitellut, että SYKE voisi teettää jotakin tutkimuksiaan IL:lla, MTL:lla tai yliopistolla ja päinvastoin, ja sitten Kumpulan yliopisto- ja tutkimuslaitosyhteisö tulisi toimeen pienemmällä laboratorioiden ja työpajojen määrällä kuin mitä laitokset erilleen sijoitettuna tarvitsisivat."

[65] "Rakennuksille voidaan rakentaa maanalainen sisäyhteys, joka on hyödyllinen myös kiinteistöjen ylläpito- ja huoltotoimen kannalta. SYKE-hankkeen liittäminen tätä kiinteämmin IL-MTL-hankkeeseen eli kaikkien kolmen laitoksen toteuttaminen yhtenä jatkuvana rakennuskokonaisuutena ei kuitenkaan maankäytön eikä kaupunkikuvan kannalta tunnu mahdolliselta."

mundane hardship caused by the current premises made the issue urgent, but it was not considered as the overarching rationale for the project. The report also discussed merging of the institutes, but concluded that the benefits of the reorganization would probably stand small in comparison with the managerial and operational drawbacks, since the core operations of the institutes do not overlap. While the FMI had declined to take stance on the issue, the FIMR made it clear during the assessment that it opposed the idea vigorously.

> "The question of the FIMR's position as an independent organizational unit has been raised on various occasions. The FIMR has been considered too small to be independent and it has been suggested that the institute or a part of its activities be joined in bigger research institutes. According to the FIMR's view, in these cases the starting point has been an outside urge to strengthen another sector with the expertise of the area. The FIMR has opposed these suggestions on the basis of the argument that if we want to do marine research of international acclaim and high quality, we must have a strong and independent marine research institute."[66]
>
> (7 February 2001. Excerpt from the Ministry of Transport and Communications report "Selvitys Ilmatieteen laitoksen ja Merentutkimuslaitoksen yhteistyöstä ja toimitalohankkeesta sekä Ilmatieteen laitoksen liiketoiminnan kehittämisestä".)

Mustering the Ministry and its budget behind the project transformed the object of activity. The efforts of the institutes became inextricably tied together and their object became a singular material entity to be realized by the same construction project. The idea of placing two organizations on the Kumpula hill into separate buildings was transformed into a plan of one shared building.

> "Locating the institutes into the planned joint premises in Kumpula would provide the best opportunities for the long-term development of the institutes. The both institutes have a valid argument for the new premises. The decisions regarding the premises should be made as soon as possible, since the current premises of the institutes cause troubles for the effective operations and development of the institutes."[67]

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[66] "MTL:n asema itsenäisenä organisaatioyksikkönä on eri yhteyksissä nostettu esille. Laitos tai osaa sen toiminnoista on ehdotettu yhdistettäväksi isompiin tutkimuslaitoksiin, koska on katsottu MTL:n olevan liian pieni itsenäiseksi organisaatioksi. MTL:n näkemyksen mukaan lähtökohtana on tällöin ollut muualta tullut halu keskittää alan asiantuntemus vahvistamaan jotain yksittäistä muuta sektoria. MTL on vastustanut ehdotuksia ja on katsunut, että Suomessa on oltava vahva ja itsenäinen merentutkimuslaitos, jos halutaan kansainvälisesti tasokasta ja menestyvää merentutkimusta."

[67] "Parhaat edellytykset laitosten toimintojen pitkäjänteiselle kehittämiselle mahdollistaisi laitosten sijoittuminen suunnitteilla oleviin yhteisiin toimitiloihin Kumpulaan. Molemmilla laitoksilla on perustellut syyt uusille toimitiloille. Toimitilaratkaisussa pitäisi tehdä päätökset mahdollisimman pian, koska laitosten nykyiset toimitilat aiheuttavat haittoja laitosten tehokkaalle toiminnalle ja toimintojen kehittämiselle."

(7 February 2001. Excerpt from the Ministry of Transport and Communications report "Selvitys Ilmatieteen laitoksen ja Merentutkimuslaitoksen yhteistyöstä ja toimitalohankkeesta sekä Ilmatieteen laitoksen liiketoiminnan kehittämisestä".)

In the process a new actant, the argument about the potential synergies between the institutes, emerged and stabilized. The argument brought together at least three kinds of anticipated benefits. First, sharing of support and service facilities such as the reception, canteen, gym, garage etc. and to a lesser degree also advanced research facilities such as the workshops, laboratories and the computing resources would enable building less floorspace and letting some people go. This was expected to lead to cost savings for the Ministry. Second, increasing the critical mass of related research on the hill might benefit both the institutes and the University operations. The close proximity was anticipated to enhance co-operation between the organizations by making the mundane interaction between the personnel more easy. Third, the project was to bring together an internationally exceptional concentration of environmental research and potentially enhance the visibility of Finnish research. Whenever the anticipated synergies needed to be explicated, any or all of these aspects could be highlighted in a way that best suited the circumstances.

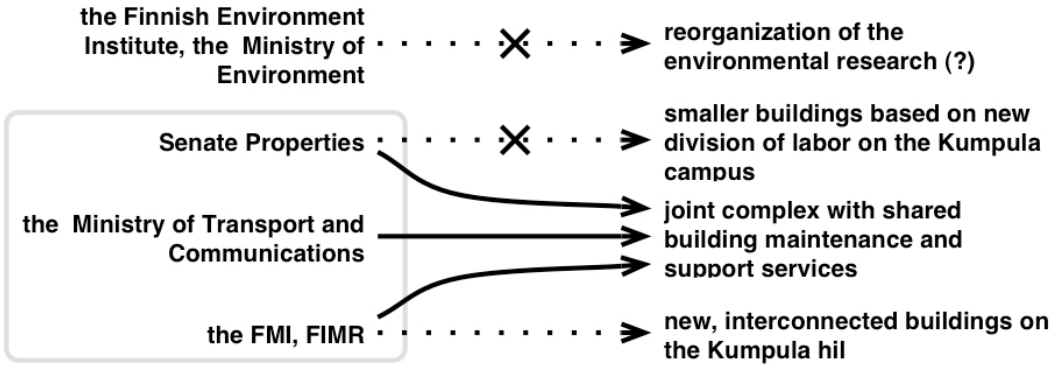

Diagram 6: *The synergy argument made the Ministry of Transport and Communications interested in a joint building of the FMI and the FIMR.*

The synergy argument was about economies of scale and having a critical mass of related research activities on the hill, but the project actually went on without the Finnish Environment Institute and ruled out the possibility of any significant reorganizations. The Environment Institute tried to apply the synergy argument, but the argument was turned

against it. As the Environment Institute belongs to the jurisdiction of the Ministry of Environment, the dividing line happened to coincide with the administrative divisions. The synergy argument, nevertheless, helped to insert the increased rent into the spending limits of the Ministry of Transport and Communications and it was inscribed into the land use plan as a specific rationalization for the spatial relationship between the FMI and the FIMR. The argument also associated the project with more generic ideals of how sectoral research should be organized. Years before the ground would be broken the State Science and Technology Policy Council[68] white paper dated 23rd May, 2001 already made the Kumpula project an ideal way to exploit spatial synergies.

> "The cooperation and synergy benefits offered by the physical location of the research institutes must be fully utilized. The current examples are moving the Finnish Meteorological Institute and the Finnish Institute of Marine Research to the Kumpula campus area and preparations that aim to locate the Finnish Environment Institute in Viikki campus area."[69]
>
> (23 May 2001. Excerpt from the Science and Technology Policy Council white paper on the strategic development of governmental sectoral research.)

The public announcement of the synergy argument in the press release and its circulation into the Science and Technology Policy Council white paper put it to a degree beyond the control of the actors of the Kumpula project. The relative existence of the argument no longer depended solely on the project. The project was made an example of sensible strategy to place research institutes and could be judged afterwards as such. Whether the synergies would realize or not would be known only afterwards, but the reference enabled the Kumpula project to immediately lend the credibility of the Council behind its objectives. The Council became enrolled into the project.

In the spring 2001 the FMI, FIMR, Ministry of Transport and Communications, City Planning Department, University of Helsinki, Science and Technology Policy Council and the synergy

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[68] The Science and Technology Policy Council "advises the government and its ministries in questions relating to science and technology. The Council is responsible for the strategic development and coordination of Finnish science and technology policy as well as of the national innovation system as a whole" (www.minedu.fi/tiede_ja_teknologianeuvosto/eng/index.html, 13.4.2005).

[69] "Tutkimuslaitosten fyysisen sijoittamisen tarjoamat yhteistyö- ja synergiaedut on hyödynnettävä täysimääräisesti. Ajankohtaisia esimerkkejä ovat Ilmatieteen laitoksen ja Merentutkimuslaitoksen sijoittuminen Kumpulan kampusalueelle ja valmistelu, joka tähtää Suomen ympäristökeskuksen sijoittumiseen Viikin kampusalueelle."

argument had been mustered behind the project, when it turned out that the investment program of Senate Properties did not have room for the project (see next section). It took a full year to figure out a funding mechanism before the FMI and the FIMR were ready to ask the Minister of Transport and Communications for the permission to sign a preliminary tenancy contract with Senate Properties. The decision was justified by the expected synergies running from the Kumpula premises.

> "Regarding this the Ministry of Transport and Communications states that the institutes should undertake necessary actions to streamline the operations so that the financing according to the spending limits of the state budget suffices both for the normal operations and the extra costs running from the new premises. The cost savings presented to the Ministry of Transport and Communications must therefore realize in the future."[70]
>
> (2 June 2002. Excerpt from the Ministry of Transport and Communications letter "Ilmatieteen laitoksen ja Merentutkimuslaitoksen Kumpulan toimitalohankkeen esisopimuksen allekirjoittaminen" (998/12/2002) to the FMI and the FIMR)

The minister expected the cost savings to realize, but did not mention in his letter the other kinds of synergies or the problems with the current premises. Irrespective of the realization of the cost-savings, it would be difficult to recall the decision once it has taken place on the Kumpula hill.

6.4 Securing the Investment Capital: 2001–2002

The increased rent for the joint premises was successfully inserted into the spending limits of the Ministry of Transport and Communications early in 2001, but the difficulties with the funding continued.

[70] "Tältä osin liikenne- ja viestintäministeriö toteaa, että laitosten tulisi suorittaa tarvittavat toimenpiteet toiminnan tehostamiseksi siten, että valtion talousarvion rahoituskehysten mukaiset varat riittäisivät sekä normaaliin toimintaan että uusista toimitiloista aiheutuvien lisäkustannusten kattamiseen. Liikenne- ja viestintäministeriölle esitettyjen säästöjen on siis aikanaan realisoiduttava."

> "Then there were problems when it turned out that they [Senate Properties] could not finance the project from their annual investment money which they receive from the Ministry of Finance. […] This was a big drawback for the project."[71]
>
> (Interview of the FIMR project manager)

In the beginning of the year 2001 the State Real Property Agency project manager had composed all the technical information the company needed to make the preliminary tenancy contract and investment decision regarding the FMI and the FIMR, and to launch the architectural competition. The corresponding information could also be obtained for the Finnish Environment Institute in a short period of time. With all three organizations together, the estimated costs exceeded 100 million euros. The Agency announced on 11th January, 2001 that the project would not fit into its investment program within the preferred timeframe.

> "[The State Real Property Agency project manager] noted that the Finnish Environment Institute has, after the summer, joined the planning later than the other institutes. No clear picture of the search for synergies has been formed. [...] Together the projects will cost over 600 million FIM [100 million euros] which causes problems for the State Real Property Agency. It has to obtain funding outside the state budget for the projects that's costs would realize mainly in 2003 and 2004. [The State Real Property Agency project manager] asked if the projects could be spread over longer period of time (due to the funding and the engineering related issues)."[72]
>
> (11 January 2001. Excerpt from the memo of a meeting between the Ministry of Transport and Communications, Ministry of Environment, FMI, FIMR, Finnish Environment Institute and the State Real Property Agency)

Making room into the investment program would require either postponing other projects or the Parliament to stretch the investment limits of the Agency. It seems that neither of the options were seriously considered, but the top management of the Agency put forward the idea of private funding while the project manager of the Agency proposed dividing the project into three subsequent phases that would fit into the investment program. She argued this would

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[71] "Sitten tuli hankaluutta sikäli, että rupesi ilmenemään, että he [Senate Properties] eivät pystykkään rahoittamaan sitä hanketta tästä heidän vuosittaisesta rakennusrahastaan, minkä he saavat Valtiovarainministeriöiltä käyttöönsä. […] Tämä oli kova takaisku hankkeelle."

[72] "[The State Real Property Agency project manager] totesi, että SYKE on tullu kesän jälkeen eli muita laitoksia myöhemmin mukaan suunnitteluun. Selvää kuvaa synergioiden etsimisestä ei ollut muodostunut. […] Yhteensä hankkeiden kustannusarvio on arviolta yli 600 milj. mk, [100 million euros] mikä aiheuttaa Kiinteistölaitokselle rahoitustulpan. Sen on haettava valtion rahoituksen ulkopuolista rahoitusta hankkeille, joiden kustannukset ajoittuisivat pääosin vuosille 2003 ja 2004. [The State Real Property Agency project manager] esitti toivomuksen, että hankkeet voisi ajoittaa pidemmälle ajanjaksolle (rahoitus ja rakennustekniset syyt)."

make the sizeable project more manageable and likely to reduce building costs due to more effective bidding.

> "The projects can be carried out according to the functional requirements both in terms of size and phasing. The most natural way to implement would be to build the FMI-FIMR project in two phases and the Finnish Environment Institute as the third phase, each phase taking approximately two years. The whole on-site process would take six years. Dividing the project into smaller phases would increase the number of potential contractors and enhance competition and would therefore influence the costs. Also in terms of funding it is preferable that the need for funding would be divided as equally as possible over a longer period of time."[73]
>
> (16 January 2001. Excerpt from a meeting memo.)

Soon after the funding problems had surfaced, the Finnish Environment Institute was cut off from the project. The last memo discussing the Finnish Environment Institute in the context of the Kumpula project is dated 25th January, 2001. The Institute did not seem to hold on board as the FMI, FIMR and the Ministry of Transport and Communications pushed forward with their project. No explicit decision could be observed to exclude the Finnish Environment Institute that belongs to the jurisdiction of the Ministry of Environment. It was probably not even needed, since the object of the Institute's efforts failed to coalesce with the object of the Kumpula project. The Finnish Environment Institute tried to apply to the synergy argument, but the argument that emerged in the talks between the FMI, FIMR and the Ministry of Transport and Communications turned out to be indifferent or even hostile to the Institute. The FMI and the FIMR could already show their Ministry enough synergies so that it could justify their project in the Cabinet Finance Committee. Coupling the Finnish Environment Institute into the Kumpula project seemed merely to complicate it further.

> "In respect to the cityscape of Kumpula, the FMI-FIMR project is sizeable and this problem of scale has been mitigated during the land use planning by breaking the massive building visually into smaller compartments by using comb-shaped architectural masses. The site is tight and due to the urban structure is advisable not to grow the architectural mass significantly. [...] The FMI-FIMR project is significantly bigger than a typical construction project, which may limit, for instance, the number of suitable contractors. Dividing the project into phases would make the

[73] "Hankkeet on mahdollista toteuttaa toiminnan vaatimusten mukaisesti sekä koon että vaiheistuksen osalta. Luontevin toteuttamistapa olisi IL-MTL-hankkeen rakentaminen kahdessa vaiheessa ja SYKE-hankkeen kolmantena vaiheena, joista kukin kestäisi noin kaksi vuotta. Näin koko työmaaprosessi vietäisiin läpi kuudessa vuodessa. Hankkeen jakaminen pienempiin osiin lisäisi mahdollisia tarjoajia ja sitä kautta kilpailua ja vaikuttaisi siten kustannustasoon. Myös rahoituksen kannalta on suotavaa, että rahoitustarve jakautuisi mahdollisimman tasaisesti pidemmälle ajanjaksolle."

> management of the process easier, decrease risks related to the design and contracting, and would increase competition and therefore most likely decrease contracting costs."[74]
>
> (25 January 2001. Excerpt from the Senate Properties memo "Kumpula-hankkeet: Ilmatieteen laitos, Merentutkimuslaitos, Suomen ympäristökeskus".)

The State Real Property Agency considered even the joint project of the FMI and the FIMR oversized. With all three institutes the building complex would grow remarkably large and the Agency would have to deal with the laboratories the Finnish Environment Institutes was currently renting from it. The plot drafted in the land use plan had barely space for the FMI and the FIMR while the building of the Finnish Environment Institute was located approximately hundred meters to the west from it. Without a thorough reorganization of the three institutes across the Ministries, coupling the Finnish Environment Institute into the project would not reduce the needed floorspace, facilities and therefore costs. The FMI, FIMR and the Ministry of Transport and Communications were not interested in such an operation. The hill would host an exceptional concentration of environmental research with or without the Finnish Environment Institute. The mundane interaction would, of course, be easier if also the Finnish Environment Institute was located in Kumpula, but this was not a decisive concern. From the perspective of the University, the Environment Institute could as well be located on its biosciences campus in Viikki. To summarize, the Kumpula project did not emerge to maximize the synergies, but instead the synergy argument was crafted to realize the Kumpula project.

[74] "IL-MTL-hanke on Kumpulan kaupunkikuvaan nähden kooltaan huomattava ja tätä mittakaavaongelmaa on maankäyttöä tutkittaessa pyritty ratkaisemaan murtamalla massiivinen rakennus visuaalisesti pienempiin osiin kampamaisten rakennusmassojen avulla. Rakennuspaikka on ahdas eikä kaupunkirakenteen kannalta ole suotavaa kasvattaa rakennusmassaa olennaisesti. […] IL-MTL hanke on huomattavasti tavanomaista uudisrakennushanketta suurempi, mikä saattaa rajoittaa esimerkiksi sopivien urakoitsijoiden määrää. Hankkeen jakaminen osiin helpottaisi prosessin hallintaa, vähentäisi suunnittelun ja urakoinnin riskejä ja lisäisi tarjouskilpailua ja siten todennäköisesti alentaisi urakkahintoja."

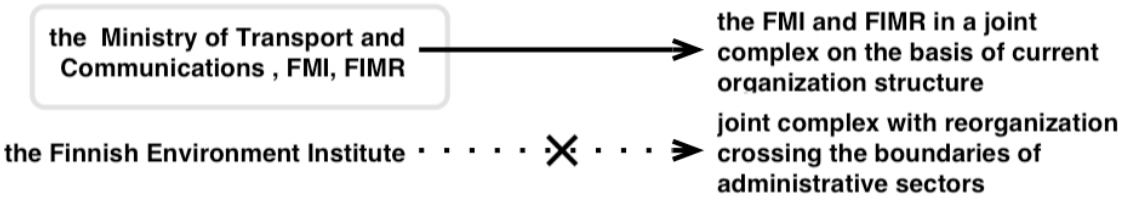

Diagram 7: *The FMI, FIMR and the Ministry of Transport and Communications were not interested in complicating the Kumpula project by coupling the Finnish Environment Institute into it.*

The exclusion of the Finnish Environment Institute did not abolish the funding problem. From January to June 2001 the preliminary tenancy contract, investment decision and the architectural competition were repeatedly recorded in the memos as the next steps without notable progress. The board of Senate Properties decided on 20th April, 2001 to keep the project alive by assessing alternative financing models even though the FMI and the FIMR preferred customary financing from the balance sheet of Senate Properties. The institutes were promised that their rental terms would not be affected by the financing solution. Senate Properties contracted financial consultants to investigate models based on private funding. The Senate Properties project manager was to prepare an investment proposal for the board and work with the institutes on a preliminary tenancy contract required for launching the architectural competition. The plan was to have the preliminary tenancy contract signed so that the investment proposal could be presented to the board on 18th June, 2001.

In a meeting on 15th June, 2001 Senate Properties presented two ways of funding the construction project. The project manager wanted to fit the project into the investment program that would allow the funding to spread over four years' period starting from the year 2003. The compartments of the FMI and the FIMR would be built in two subsequent phases and the entire building would be ready in 2007. During the spring the board of Senate Properties had fostered the development private funding mechanism that would enable the building to be ready in the first half of the year 2005. In addition to their particular risks, the both options required modification to the detailed plan (see next section). The vigorous resistance of the local inhabitants had just delayed the official approval process of the previous modification significantly. The institutes were still clinging to the conventional financing, but wanted to have their building ready as soon as possible.

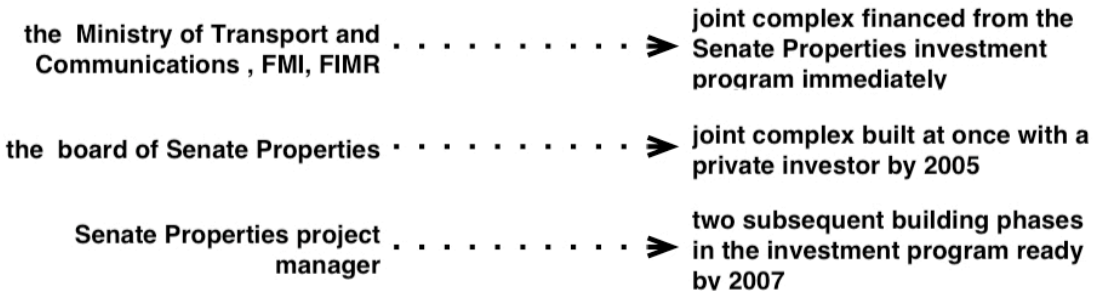

Diagram 8: *The optional financing models in June 2001.*

The dispute had stalled the anticipated course of action already for half a year, but it could not be solved in the meeting. Unlike the Finnish Environment Institute all the parties had to be kept on board to materialize any of the options. In the meeting it was decided that Senate Properties would prepare the preliminary tenancy contracts in August and continue to elaborate the model based on private financing. The preliminary tenancy contract was now aimed to be approved in September. The contract was needed to settle the mechanism of how to share the costs of the architectural competition if the project did not realize after all. The competition would enable pushing forward with the modification of the detailed plan.

> "The reason for organizing the architectural competition is that it could be used to further the detailed plan modification for the plot. This requires more elaborate designs that could be achieved with the architectural competition. [...] Senate Properties has prepared a contract with which the FMI and the FIMR would commit to cover the costs, approximately 1,5 million FIM [0,25 million euros] of the competition for Senate Properties in the case the project does not realize."[75]
>
> (4 September 2001. Excerpt from the Senate Properties memo.)

In the beginning of September 2001 the parties were working on the preliminary contract and at least some draft proposals were exchanged. The tense situation was vividly present in the version proposed on 10th September, 2001 by the FMI. The draft contract bluntly declared that Senate Properties would make room for the project in its investment program between

[75] "Suunnittelukilpailun järjestämisen perusteluna on, että sen perusteella rakennuspaikkaa koskevaa asemakaavan muutosta voitaisiin valmistella eteenpäin. Tämä edellyttää suunnitelmilta tämänhetkistä suurempaa valmiutta, joka olisi saavutettavissa suunnittelukilpailun avulla. […] Sk:ssa on valmisteltu sopimusta, jolla IL ja MTL sitoutuisivat korvaamaan SK:lle kilpailun järjestämisestä aiheutuvat kustannukset, noin 1,5 milj. markkaa, jos hanke jää toteutumatta."

2002 and 2005. Backed by the Ministry of Transport and Communications, the institutes eventually tried to force the Kumpula project into the investment program. The effort culminated in a letter the Minister of Transport and Communications sent on 18th September, 2001 to the Director General of Senate Properties. The minister was mobilized to back up the institute's view of the project.

> "I ask you to reconsider the timing of the project. The project could be started earlier by prioritizing the investments differently and dividing the Kumpula project into smaller pieces. [...] I also propose that the architectural competition will be launched immediately."[76]
>
> (18 September 2001. Excerpt from the letter the Minister of Transport and Communications sent to the Director General of Senate Properties.)

The joint leverage of the institutes and the Ministry was not enough to force the Kumpula project into the investment program without the support of Senate Properties. In his reply to the Minister the Director General made it clear that Senate Properties was reluctant to start reorganizing its investment program.

> "Senate Properties endeavours to carry out the project as soon as possible. Therefore the primary option is to use a third party for funding the project. The investment project can be organized so that the financing and the ownership model of the building are not visible towards the user in any way, while Senate Properties acts, for instance, as an intermediary tenant. [...] The contract between Senate Properties and the users is being prepared. On the basis of this contract the architectural competition could be launched already before deciding on the funding solution."[77]
>
> (10 October 2001. Excerpt from the Director General's reply to the Minister.)

If the Ministry and the institutes wanted to stick to the preferred schedule and implement the building as a seamless entity, they would have to accept the alternative financing method. Soon after the attempt to force the project into the investment program failed, the institutes settled on the private funding Senate Properties had had time to elaborate since May 2001. On

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[76] "Pyydän teitä ottamaan hankkeen ajoituksen uudelleen harkittavaksi. Hankkeen aikaistaminen olisi mahdollista tehdä muuttamalla toteutettavien investointien tärkeysjärjestystä ja pilkkomalla Kumpulan hanke osiin. […] Ehdotan myös, että hankkeen arkkitehtikilpailu käynnistetään viipymättä."

[77] "Senaatti-kiinteistöt pyrkii toteuttamaan hankkeen mahdollisimman nopealla aikataululla. Tällöin ensisijaisena vaihtoehtona on ulkopuolisen tahon käyttäminen hankkeen rahoittajana. Investointihankkeen toteutuksessa voidaan luoda malli, jossa rakennuksen rahoitus- tai omistajuusjärjestelyt eivät näy käyttäjään päin millään tavalla Senaatti-kiinteistöjen toimiessa esimerkiksi ns. välivuokraajana. […] Hankkeesta on valmisteilla Senaatti-kiinteistöjen ja käyttäjien välinen sopimus, jonka perusteella hanke voitaisiin käynnistää suunnittelukilpailun järjestämisellä jo ennen rahoituksen päättämistä."

the basis of the available evidence, the phasing and postponing of the project was not seriously considered. After several months of very slow progress, the project now took in less than two months a remarkably different shape. The rapid schedule and seamless, single building were more important than lowering costs by more effective bidding and less complicated project management.

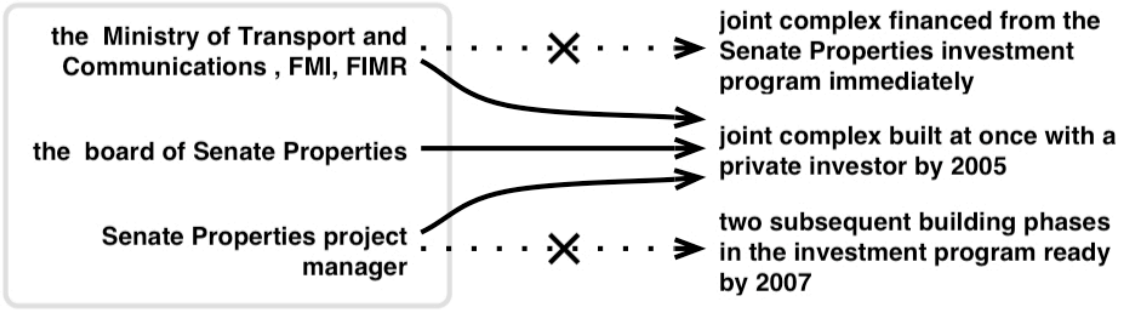

Diagram 9: *Since the investment program of Senate Properties did not stretch, the institutes prioritized the rapid schedule and seamless building over traditional contracting and design that could be realized sequentially.*

Soon after the correspondence, Senate Properties hired project development consultants to devise a bidding process and the form of contracting on the basis of an adopted financing mechanism. In the beginning of December 2001, Senate Properties settled on a form of contracting paraphrased as Design & Build & Finance. The model entailed that a single construction company would: pick the designers and steer their work; contract the actual building from numerous subcontractors; and arrange the investor who would come to own the building. The financing mechanism and the form of contracting had been detached issues until late 2001, but the adoption of novel financing mechanism eventually transformed the anticipated form of contracting entirely. The paramount effect was that a separate architectural competition was not anymore needed and the decisions about design, contracting and funding would be combined into a single event.

> "It could have been carried out in a couple of phases, like universities are built, phase by phase. I don't really know why it couldn't be done like that. The users didn't want that, for example, the FMI was built first and then, in a second phase, a wing for the FIMR. […] In the Ministry they were driven to put these two together, for administrative reasons it seems. […] I went there a couple of times, because they were pushing this project forwards and these two institutes

> together. I had a feeling that the Ministry wanted to shake these organizations by reorganizing them. I also think they weren't terribly successful."[78]
>
> (Interview of the Senate Properties project manager)

The idea of merging the FMI and the FIMR had not died regardless of the negative statement in the Ministry's report. The first half of 2002 was spent organizing the competitive bidding. Senate Properties announced the competition in the Official Journal on 10th January, 2002 and obtained an approval for the funding model from the Ministry of Finance. The project development consultants contacted major construction companies to evaluate their willingness to participate in such a competition. Altogether 18 companies and consortiums announced they were willing to participate in the bidding process. Senate Properties chose five teams, each led by a major construction company for the actual competition. On 5th April, 2002 the board of Senate Properties made the formal decision to launch the construction project on the basis of the novel form of contracting. On 14th May, 2002 the company sent a request to the City Planning Department to modify the detailed plan (see next section).

The preliminary tenancy contract between the institutes and Senate Properties was finally signed on 3rd June, 2002 (see previous section). The City Planning Committee approved the proposed plan on 13th June, 2002 (see next section) and on 14th June, 2002 Senate Properties sent the request for proposal and bidding material, a thick folder of paper, for the five chosen construction companies. Hammering out the funding solution had taken one and a half years and the outcome of the process would fundamentally frame the design and contracting of the building. The design did not have to enable construction in two subsequent phases, since the premises would be built simultaneously for the both institutes. Dividing the project into two subsequent phases would have required designing blocks that could have been built one at the time. The bids would be evaluated as combinations of proposed design, costs and funding

[78] "Sen olisi voinut toteuttaa parissa vaiheessa, niinku yliopistoja tehdään, vaihe kerrallaan. Minä en oikein tiedä miksi tässä ei voitu mennä siihen. Käyttäjät eivät halunneet, että olisi esimerkiksi tehty ensin Ilmatieteen Laitos ja kakkosvaiheena Merentutkimuslaitos yks siipi lisää. […] Siinä oli hirveä draivi tuolla ministeriössä, että ne halusivat ilmeisesti tälläsistä hallintopoliittisista syistä panna nämä yhteen. […] Kävin sielläkin muutaman kerran, koska ne toisaalta ajoivat tätä hanketta eteenpäin ja näitä kahta laitosta yhteen. Minulla on sellainen tuntuma, että ministeriö pyrki ravistelemaan näitä organisaatioita sitä kautta, että ne panee ne uuteen istumajärjestykseen. Olen myös sitä mieltä, että ne eivät oikein tainneet siinä onnistua tavoitteen saavuttamisessa."

model unlike in the traditional model in which architectural competition first looks for the best design and then competitive bidding for the lowest price.

6.5 Finalizing the Detailed Plan: 2001–2003

The city planner had pointed out in October 2000 a suitable site for the building but no such plot existed in the detailed plan in force. Since the City Planning Department had announced its support for the project, the content of plan modification itself was not considered a problem. However, the official modification process and the possible appeals following the final approval could decisively delay the project. Not even unanimous political support would pre-empt the citizens' right to appeal after the City Council would have approved the plan.

> "When this project finally realized, we really started to look at where it would be built. And we discovered that there was no such site in existence. […] that for that we have to change the detailed plan once again."[79]
>
> (Interview of the city planner)

In May 2001 Senate Properties requested the City Planning Department to modify the detailed plan in force according to the land use plan, but the city planners clung to their approach devised for the campus area. They wanted to see some actual building design before starting the official modification process and therefore the dispute over the financing mechanism (see previous section) effectively stalled the planning for the rest of the year 2001. Even though the rapid schedule was a top priority for the institutes, the architectural competition was not launched before the form of contracting had been settled.

[79] "Kun tästä hankkeesta tuli vihdoin totta, ruvettiin tosissaan kattoon, että mihin se tuossa sijoittusi. Todettiin, että ei sellasta tonttia ole olemassa […] että täytyy muuttaa asemakaavaa taas sitä varten."

> "The rationale for organizing the architectural competition is that on the basis of it the detailed plan modification regarding the building site could be advanced. This requires more elaborate designs that could be achieved by the architectural competition. The sooner the plan modification process would commence, the less, for instance, the delays related to possible appeals about the approval of the plan would affect the overall schedule."[80]
>
> (4 September 2001. Excerpt from the Senate Properties memo "Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilahanke, Kumpula".)

One reason the architectural competition was not launched was that Senate Properties and the institutes had different views on how to divide the estimated 250000 euros cost if the project did not realize. It would have also effectively ruled out the possibility of combining design, contracting and funding into one bid. The previous university buildings on the hill had been built using client-driven forms of contracting. In these models the winning proposal of an architectural competition is sent to contractors for competitive bidding. This leaves more time between the architectural competition and beginning of contracting to finish the detailed plan and push it through the municipal administration.

The modification process finally resumed along with the preparations for the competitive bidding in the beginning of 2002. In the meantime the form of contracting had changed from customary client-driven model to an extended version of Design & Build contracting[81] (see previous section). Design & Build is a contractor-driven model, in which the primary contractor delivers the proposed design and price for the building simultaneously as a single bid. The actual building begins as soon as possible after the contracts have been made. The time lag between the design and on-site activities is typically much smaller than in the client-driven models. Despite the changes to the form of contracting the city planners stuck to their planning strategy.

> "The City Planning Department does not regard realistic to modify the detailed plan before the implementation of the project will be secured and the design has been chosen. The plan modification will be done on the basis of the outcome of the competition, and the intention is to involve the planner into the evaluation of the proposals as an expert. [...] The timeframe for the

[80] "Suunnittelukilpailun järjestämisen perusteluna on, että sen perusteella rakennuspaikkaa koskevaa asemakaavan muutosta voitaisiin valmistella eteenpäin. Tämä edellyttää suunnitelmilta tämänhetkistä suurempaa valmiutta, joka olisi saavutettavissa suunnittelukilpailun avulla. Mitä nopeammin kaavamuutosprosessi käynnistyisi, sitä vähemmän esim. asemakaavan hyväksymiseen liittyvien mahdollisten valitusten aiheuttama viive vaikuttaisi kokonaisaikatauluun."
[81] In this case the bidders were also expected to arrange the investor for the project.

> planning process is extremely tight. [...] The potential appeals regarding the detailed plan are a scheduling risk (1 – 1,5 years) that will also be mentioned in the bidding documents."[82]
>
> (11 March 2002. Excerpt from the Senate Properties memo "Kumpula-hanke, Ilmatieteen laitos ja Merentutkimuslaitos")

The peculiar combination of Design & Build contracting and the particular planning strategy exaggerated the risk of delays. In order to stick to the schedule that had already been slipping due to difficulties with the funding, the investment decision, official plan modification and the competitive bidding had to be interleaved as much as possible. The board of Senate Properties approved on 5th April, 2002 the principles of contracting and the company submitted a written planning proposal on 14th May, 2002 to the City Planning Department. The city planner, who was also helping in putting together the bidding material, was invited to the competition jury. The flexible planning strategy enabled the planner to expand his role beyond a conventional planning bureaucrat towards a more active involvement in the project. The city planner's official role was to oversee the quality of the proposals from the perspective of the City Planning Department. In practice he had also a pivotal role in steering the plan modification through the city administration and democratic organs in a tight schedule.

> "I was the only one from the part of the City [evaluating the competition entries]. The planning was the link through which I was there. It wouldn't have been needed otherwise. Had there been a completed, strong detailed plan, there wouldn't have been a need for a representative from the City."[83]
>
> (Interview of the city planner)

The official planning process[84] had already been publicly announced on 8th April, 2002 and the draft plan was available for comments 18th-25th April, 2002. The Kumpula Club[85] urged

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[82] "Kaupunkisuunnitteluvirasto ei pidä mielekkäänä kaavamuutoksen tekemistä ennen kuin hankkeen toteuttaminen varmistuu ja toteutettava suunnitelma on valittu. Kaavamuutos laaditaan kilpailutuloksen perusteella ja kaavoittajaa on tarkoitus käyttää asiantuntijana ehdotuksia arvioitaessa. […] Kaavaprosessille jäävä aika on erittäin kireä. […] Asemakaavasta mahdollisesti tehtävät valitukset ovat aikatauluriski (1 – 1,5 v), joka mainitaan myös tarjouspyyntöasiakirjoissa."

[83] "Minä olin ainoa kaupungin puolelta [arvostelemassa kilpailuehdotuksia]. Kaavoitus oli tavallaan se kytkös, jonka takia minä olin siinä mukana. Ei siinä muuten olisi tarvittu. Jos olisi ollut valmis, vahva asemakaava, niin kaupungilta ei olisi luultavasti tarvittu ketään."

[84] The participation and assessment program (osallistumis- ja arviointisuunnitelma) was delivered to stakeholders on 8th April, 2002. The document sparked no comments. The draft detailed plan (asemakaavaluonnos) was available for comments 18th - 25th April, 2002 in the City Planning Department. The City Planning Committee rejected the suggestion of the Kumpula Club to remove Pietari Kalm street westward extension and approved the draft detailed plan on 13th June, 2002. The public inspection period of the proposed detailed plan (asemakaavaehdotus) 6th September - 7th October, 2002 produced no objections. The proposed plan was tweaked on 10th February, 2003 to enable either of winning solutions. The City Board approved on 17th

the city planners to remove the reservation for Pietari Kalm Street westward extension next to the building. The City Planning Department rejected the idea by reasoning that the extension might be necessary for public transportation in the future and therefore should not be removed from the plan. The City Planning Committee approved the draft plan in a vote on 13th June, 2002. A minority of the Committee voted for returning the draft to the Department. The issue was not the building itself, but some of the councilmen wanted to have the reservation for the extension of Pietari Kalm Street removed. The procedure was repeated in every hearing of the official approval process, but the Kumpula project turned out to enjoy enough political support to suppress the concerns mainly voiced by the Green League and the Left Alliance.

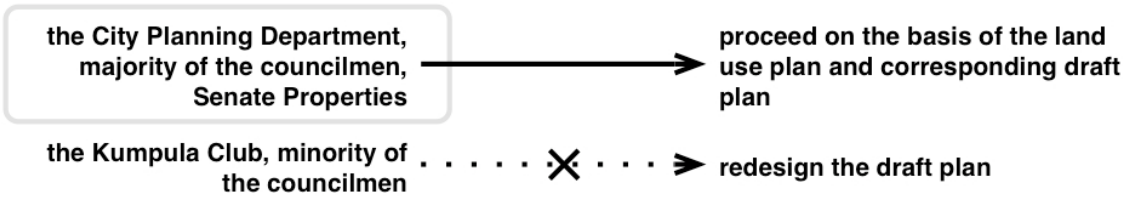

Diagram 10: *The municipal politicians of the City Planning Committee approved the draft plan in a vote on 13th June, 2002. The disagreement did not regard the building itself, but the reservation for Pietari Kalm Street extension.*

The detailed plan had now tentatively secured political support and it was put on hold to wait for the outcome of the competitive bidding. Senate Properties sent on 14th June, 2002 the bidding material to the five competitors. The material left some leeway in interpreting the proposed plan and its objectives as long as the designs did not jeopardize the official approval process. The building designs should implement verbally and visually expressed planning objectives and technically not deviate significantly from the proposed plan the City Planning Committee had approved.

> "The land use plan is one example of a solution that fulfils the planning objectives. [...] The proposals must adhere to the map 'Approximate location of the buildings', drawn by the City Planning Department, and the related 'Memo regarding the status of the planning on the

March, 2003 the proposed plan including the modifications and the City Council approved it on 9th April, 2003. No appeals were made and the detailed plan came into force on 23rd May, 2003.

[85] The Kumpula Club (Kumpula-seura) is an association of local inhabitants of Kumpula disctrict. Participation in the planning has been one the main activities of the Club that was founded in 1981.

> Kumpula hill' (appendix 4.3.). Deviating from these so that the detailed plan in the process need to be modified after the competition may lead to the rejection of the proposal."[86]
>
> (3 June 2002. Excerpt from the request for a proposal document.)

The bidding material had been composed prior to the tentative political approval by the City Planning Committee. After the approval the communication with the competing teams shifted towards emphasising the flexibility of the plan, while sticking to the performative requirement. Although the ultimate authority to approve or reject plans belongs to the City Council, the proposals were mediated through the City Planning Department. It would be up to the city planner to frame how the designers had interpreted the planning objectives and judge whether the Department would dare to present the changes as a negligible modification to the proposed plan. On 15th August, 2002 a seminar was arranged in which Senate Properties, the institutes, the City Planning Department, the architect who had produced the design guide and the project development consultants provided clarifications to the request for a proposal and discussed the bidding process. The city planner explained how to interpret the planning objectives and technical requirements of the detailed plan. He declared that nearly everything in the proposed plan and the bidding material about the plan would be open for interpretations.

> " The competitors were obviously interested to know to what extent the city plan would tie them. I said that in this case it is enough if the house sits inside the block."[87]
>
> (Interview of the city planner)

The flexibility of the plan was also present in the minutes of the seminar and in a reply on 4th September, 2002 to a written question filed by one of the competitors. The only definitely expressed requirement was that the design might not move the borders of the plot or induce changes to the adjacent blocks. The emphasis on flexibility is obvious.

> "Significant change to the proposed plan is not advisable, but the plan can be tweaked on the basis of the winning proposal. [...] The proposed plan can be regarded as one guideline for

[86] "Maankäyttösuunnitelma on yksi esimerkki ratkaisusta, joka täyttää asemakaavassa annetut kaupunkikuvalliset tavoitteet. […] Kaupunkisuunnitteluviraston laatima kartta 'Rakennusten likimääräinen sijoituspaikka' sekä siihen liittyvä 'Muistio Kumpulan mäen suunnittelutilanteesta' (liite 4.3.) sitovat kilpailijoita. Näistä poikkeaminen niin, että valmisteltavana olevaa kaava jouduttaisiin muuttamaan kilpailun ratkettua, voi johtaa tarjouksen hylkäämiseen."

[87] "Kilpailijathan olivat tietysti kiinnostuneita tietämään, että missä määrin se asemakaava sitoo heitä, niin minä sanoin että kyllä se tässä tapauksessa riittää että se talo osuu sinne korttelin rajojen sisäpuolelle."

> interpreting the detailed planning objectives. With a good reason, it is possible to deviate from it in respect to the layout of the architectural masses and the functional organization of the site within the plot area (24973/5) defined in the proposed plan for the FMI and the FIMR, while taking into account suitable aspects of the planning premises and objectives presented in the appendixes 1.1, 1.2 and 4.3."[88]
>
> (15 August 2002. Excerpt from the minutes of the seminar that was organized for the competing teams.)

The competition jury chose on 24th January, 2003 two proposals, Atrium and Cumulus, to be further elaborated with Senate Properties and the institutes. In the eyes of the city planner one of the rejected proposals was superior, but its funding solution was considered weak. While Cumulus was rather faithful to the land use plan, Atrium had adopted a completely different approach.

> " It's not a secret that one of these rejected [proposals] was […] as far as I'm concerned in the league of its own in terms of the cityscape. But it was the proposal that had the weakest funding model."[89]
>
> (Interview of the city planner)

Despite the superiority of the ruled out design and obvious differences between Atrium and Cumulus, the city planner ended up treating all of the five proposals as good enough. It was possible to refrain from officially taking a stance for or against any of the five proposals, because the evaluation record was merely going to state the winner of the competition and not to rank the proposals. In fact, it is rather difficult to decipher from the record which one the proposals the city planner regarded the best.

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[88] "Oleellinen muutos kaavaehdotukseen nähden ei suotava, mutta kaavaa on mahdollista tarkistaa toteutettavaksi valittavan ehdotuksen pohjalta. […] Laadittu asemakaavaehdotus on nähtävä yhtenä suuntaa antavana tulkintana asemakaavallisista tavoitteista. Siitä voi perustellusti poiketa rakennuksen massoittelun ja tontin toiminnallisten ratkaisujen suhteen asemakaavaehdotuksessa määritellyn Ilmatieteen laitoksen ja Merentutkimuslaitoksen korttelialueen (24973/5) sisällä ottaen soveltuvin osin huomioon tarjouspyynnön liitteissä 1.1, 1.2 ja 4.3 esitetyt asemakaavalliset lähtökohdat ja tavoitteet."

[89] "Ei ole mikään salaisuus, että yksi näistä uloslyödyistä [ehdotuksista] oli [...] minun mielestä kaupunkikuvallisessa mielessä ihan omaa luokkaansa. Mutta se oli sellainen ehdotus, jossa tämä rahoituskuvio taas oli kaikista hatarimmalla pohjalla."

	Atrium	Cumulus
Cityscape and exterior	”The nearly symmetrical building monolith presented in the proposal Atrium implies personality and is surprisingly straightforward, but the low and dense building that has a small footprint has undeniable benefits for the cityscape.”	”The designer adopts the comb-like shape of the university buildings most literally of the proposals and takes into account the principle that the height of the building should decrease gradually. With the exception of the height of the building the layout of the architectural masses seems relatively successful in the cityscape.”
Planning objectives	”The proposal fulfils the objectives of the detailed plan except the principle that the height of the building should decrease gradually.”	”The proposal fulfils the objectives of the detailed plan except the height of the top of the building.”
Implications for planning process	“The deviations are, nevertheless, minor and according to the City Planning Department the proposed detailed plan can be tweaked without putting it on a public display again.”	“The deviations are, nevertheless, minor and according to the City Planning Department the proposed detailed plan can be tweaked without putting it on a public display again.”

Table 1: *Excerpts from the jury's evaluation record 30th January, 2003.*

The active involvement in the Kumpula project entailed a commitment to its object including the performative aspect of making the building happen. Regarding all the proposals as good enough indicates that the city planner shared the common object of activity with the Kumpula project. Although the building was in the interests of the City Planning Department, pursuing the objectives of the Department in the context of a particular project entailed potential conflicts that were present in the way the planner handled the proposals.

> ”When we finally saw the proposals for the first time, we got rather confused with this Atrium because it was in a way exactly the opposite of what had been requested. A big monolithic mass, without any kind of variation in the building height. At a closer look, however, it turned out to be the lowest building of all the proposals in the competition. Even if it did not follow the objectives adopted from the land use plan.”[90]

[90] Kun me aikanaan sitten nähtiin ne kilpailuehdotukset ensimmäisen kerran, niin tämän Atriumin kohdalla hiukan leuka loksahti, koska se edusti tavallaan juuri sitä, mitä ei pitänyt tulla. Suuri monoliittinen massa, siellä ei ollut minkäänlaista porrastusta. Sehän oli kuitenkin, kun tarkemmin tutustuttiin, kilpailun absoluuttisesti matalin talo. Vaikka se ei noudattanut sitä maankäyttösuunnitelmasta otettua tavoitteistoa.”

(Interview of the city planner)

Since all of the proposed designs were acceptable, the potential contradiction between the city planner's commitment to make the building happen and the substantive planning objectives could be downplayed by regarding all the proposals good enough. From the perspective of the Kumpula project the active role of the city planner enabled the ingenious interleaving of the official planning process with the competitive bidding, which would have been difficult to achieve otherwise.

> "Once there were the two options which would be developed, the city planner who has taken care of this planning in the City Planning Department, sneakily drew such a plan that either one of the proposals could have fitted into it. In this case the City Planning Department acted in a very positive and flexible manner. The project is an important one for them as well."[91]
>
> (Interview of the Atrium architect)

The city planner tweaked the proposed plan on 10th February, 2003 so that it could accommodate either of the designs and sent it for the approval of the City Board. The modifications were technically small and for a layperson even pinpointing them on the detailed plan map cluttered with technical markings would be difficult. Although the plan enabled two rather different building concepts it demonstrates visually only one. All the illustrations in the document depict a building that closely resembles the land use plan and therefore Cumulus. The Board reiterated the discussion about the extension of Pietari Kalm Street, but approved the modified proposed plan on 17th March, 2003 and forwarded it to the City Council for the final approval.

[91] "Sitten kun oli olemassa ne kaksi kehiteltävää ratkaisua, niin [the city planner], joka on Kaupunkisuunnitteluvirastossa hoitanut tätä kaavotusta, leipoi semmoisen kaavan niin juonikkaasti, että kumpi tahansa niistä ehdotuksista olisi mennyt sen kaavan sisään. Eli siinä siis kaupunkisuunnitteluvirasto toimi hyvin noin myönteisesti ja joustavasti. Se on myös heille tärkeä hanke."

> "Since the winning proposal has not yet been chosen and because the building is scheduled to begin already in May, it has been considered sensible to loosen the specifications regarding the footprint and the height of the building so that either of the two final proposals can be built on the basis of the detailed plan. [...] The modifications are minor and therefore it is not necessary to put the plan on public display again."[92]
>
> (9 April 2003. Excerpt from the City Council agenda.)

The City Council approved the detailed plan on 9th April, 2003. Once again, the extension of Pietari Kalm Street was discussed but failed to make impact on the approval process. In the meeting the Deputy Mayor for City Planning and Real Estate argued that the delay caused by redesigning the detailed plan might risk the project due to the plans of the newly elected Government to move some of the state bureaucracy outside Helsinki (see section 6.7). The following day the Cabinet Finance Committee authorized the Ministry of Transport and Communications to rent the new premises for the institutes. Since no appeals were made to the Helsinki Administrative Court the detailed plan came into force on 23rd May, 2003. The piece of land area that was set aside for the Kumpula project on the consensus between the University of Helsinki, City Planning Department, Senate Properties and the institutes had now turned into a statutory plot, on which concrete building practices could take place.

6.6 Competitive Bidding: 2002–2003

The FMI and the FIMR signed on 3rd June, 2002 the preliminary tenancy contract with Senate Properties on the permission of the Minister of Transport and Communications. In his letter to the institutes the Minister set a condition that the competitive bidding must yield a satisfactory outcome. The City Planning Committee approved the proposed plan on 13th June, 2002 and the bidding folder was sent to the chosen competitors the following day. The folder consisted of the request for a proposal and its 23 appendixes[93]. Since the project was a sizeable public

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[92] "Koska kilpailun pohjalta toteutettavaa hanketta ei ole vielä valittu ja koska rakentaminen on tarkoitus käynnistää jo kuluvan vuoden toukokuussa, on katsottu tarkoituksenmukaiseksi väljentää asemakaavan muutosehdotuksen rakennusaloja ja korkeuksia koskevia merkintöjä siten, että kumpi tahansa parhaiksi arvioiduista ehdotuksista voidaan toteuttaa asemakaavan mukaisesti. […] Tehdyt muutokset eivät ole olennaisia, joten ehdotusta ei tarvitse asettaa uudelleen nähtäville."

[93] The design guide; identically formatted project plans and room schedules for both institutes; the security classification guide for state buildings; maps, aerial photographs and other documentation about the construction site; the proposed detailed plan (approved by the City Planning Committee), the land use plan revision and planning objectives document; the description of the land leasing principles; the exemplar of the tenancy contract; the division of maintenance responsibilities regarding building products and materials during the contract term; the list of principal contractors selected for the competition.

investment[94], an overarching concern in the competitive bidding was that each team should be treated equally[95]. The competition jury would suggest the winner to Senate Properties that would make the implementation and leasehold contracts. In order to calculate the price and negotiate the investor for the project, the teams were required to create relatively detailed building designs on the basis of the bidding material. A major concern was that since the design, contracting and financing were combined into a single bid there was no way to ensure that any of the proposals would solve all three aspects satisfactorily.

> "We could have had such an arrangement in which we place all the proposals in an order based on their functional and architectural quality, and we could have ended up in a situation in which only the worst one of the proposals fitted into the available budget. […] If out of the competetive bidding comes no proposal that fits into the Senate's frames."[96]
>
> (Interview of the FMI project manager)

The competing teams had to draw exceptionally detailed designs for the bid, but at the same time Senate Properties and the institutes were forced to refrain from steering individually any of the groups for the sake of a fair competition. The issue was emphasized both for the competing teams and the institutes[97]. The interaction between the designers and institutes was strictly limited to a predefined, rigid procedure. There would be a seminar for the competitors, after which the teams could pose additional questions by mail. Every team would receive answers equally to their own and others' questions. The restricted interaction was not only a problem from the institutes' perspective, but it was also noted by the project leader of the winning contractor.

> "In this kind of a competition, it is exceptional and a little annoying even, in terms of the design process, how the organizer, Senate Properties, stuck to their absolute neutrality. In other words, it was impossible to have the normal discussions that belong to the project with the user, it couldn't be done."[98]

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[94] Strictly speaking the building is a private investment the state will cover by making a long-term leasehold contract.
[95] Senate Properties to paid 30 000 euros for each competitor for their efforts excluding the winning contractor.
[96] "Meillähän olisi voinut olla vaikka semmoinen ratkaisu, että olisi pantu ne viisi tarjokasta toiminnallisesti ja arkkitehtoonisesti järjestykseen ja vain se kaikista huonoin olisi ollut taloudellisesti siinä budjettiraamissa, mikä meillä oli käytettävissä. […] Jos sieltä [tarjouskilpailusta] ei tulekkaan yhtään sellaista [ehdotusta], joka olisi mahtunut Senaatin raameihin."
[97] One of the coalitions excluded from the actual competition inquired about the reasons for their rejection.
[98] "Se mikä tässä [kilpailumuodossa] oli poikkeuksellista ja sanoisinko suunnittelun kannalta vähän ikävääkin, oli se ehdoton puolueettomuus, mitä kilpailun järjestäjä Senaatti-kiinteistöt harrasti. Eli normaali hankkeeseen kuuluva keskustelu käyttäjän kanssa, sitä ei voinu käydä, se oli mahdotonta."

(Interview of the Atrium project leader)

The bidding material that was meant to be the primary source of information for the teams describes the aims of the project in a rather generic manner. The preferred solution would be a functional, good-quality and a cost-efficient way to house the institutes. The relative importance of these potentially contradictory criteria was not specified although it was made clear that the price would be a key issue. The synergy argument was present in a very generic manner. The spatial arrangements were supposed to be flexible and foster interaction between people, and to provide cost-savings by sharing the reception, meeting rooms and the canteen between the institutes.

> "The objective of the project is to find a solution that fulfils well the given design objectives and is the most affordable solution in terms of its rental and financing conditions. The overall economics of the solution is an important criteria for the tenant."[99]
>
> (3 June 2002. Excerpt from the request for proposal document.)

Although there was a single construction project, the FMI and the FIMR had separate project plans in which they elaborated their aims for the building design. The institutes shared the same object of activity, but they still espoused different manifestations of it. In the project plans the aims were nearly word for word the same except for the paragraph discussing the relationship between the institutes. The FIMR's project plan[100] includes an outspoken paragraph about the topic in which the smaller of the institutes made clear that it wanted to preserve its separate architectural identity. The paragraph was omitted from the FMI's plan[101].

> "The design will be done so that the building has a common reception and entrance hall for the Finnish Meteorological Institute and the Finnish Institute of Marine Research. The functions that will be coordinated in order reap synergies, will be located nearby the entrance hall. Otherwise, the building has clearly separated premises for the Finnish Meteorological Institute and the Finnish Institute of Marine Research."[102]

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[99] "Hankkeen tavoitteena on löytää annetut suunnittelutavoitteet hyvin täyttävä sekä vuokra- ja rahoitusratkaisuiltaan edullisin vaihtoehto. Ratkaisun kokonaistaloudellisuus vuokralaisen kannalta on tärkeä arvosteluperiaate."
[100] The FIMR's project plan was originally dated 10th November, 2000.
[101] The FMI's project plan was originally dated 11th December, 2000.
[102] "Suunnittelu tehdään niin, että rakennuksessa on yhteinen sisääntuloaula Ilmatieteen laitokselle ja Merentutkimuslaitokselle. Yhteiset muut tilat tai tilat, joissa on sovittu toimintojen koordinoimisesta synergiaetujen saavuttamiseksi, sijoitetaan toiminnallisesti lähelle tuloaulaa. Muuten rakennuksessa on selkeästi erikseen Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilat."

(10 November 2000. Excerpt from the FIMR's project plan included in the bidding material.)

The organizers of the competition provided clarifications for the request for a proposal and discussed the bidding process in a seminar on 15th August, 2002. In the event one of the architects proposed visits to both institutes which were arranged the following week. After the seminar the teams had one week to pose additional questions by mail. The questions were mostly about clarifying the economic, juridical and technical details of the building, contracts and the evaluation criteria of the proposals. For instance, it was made clear that the proposals consisting of design, contracting and funding will be evaluated as a whole. They would not be taken apart and recombined into different combinations. The idea of merging the institutes in the future that was not mentioned in the bidding material and according to the minutes it was not discussed in the seminar. It, nevertheless, popped up during the visits to the institutes and one team mailed a question about how it should be accounted for in the proposal. The reply waters the issue down, but does not reject the idea as such.

> "Does the merger of the institutes that was mentioned during the introduction visits induce changes to the request for a proposal? No. The statement during the visits illustrated the transformation of the user community in general and highlighted the flexibility of the design."[103]
>
> (4 September 2002. Excerpt from the document consisting of the replies to the questions mailed by the teams.)

None of the involved organizations had officially promoted the idea of the administrative merger. It was rejected in the report published on 7th February, 2001 by the Ministry of Transport and Communications as well as in the negotiations with the Finnish Environment Institute. The idea nevertheless refused to die. The project manager of Cumulus team recalled the incident as follows.

> " At that point we thought we had gone wrong as the institutes were situated in separate compartments, but then we just thought the decicion has been made. […] They're not investigating the same things after all, even if they belong to the same administration. Each group needs their own space and laboratories. […] When we're talking about a building this big,

[103] "Aiheuttaako esittelytilaisuuksissa kerrottu laitosten sulauttaminen eli yhdistäminen muutoksia tarjouspyyntöön ja sen liitteisiin? Ei aiheuta. Lausuma esittelytilaisuudessa kuvasti yleensä käyttäjäyhteisöjen muuttumista ja korosti suunnitteluratkaisujen yleispätevyyttä."

> not everybody can be situated side by side all the time. A certain amount of floorspace is needed. Someone has to go a long way always."[104]
>
> (Interview of the Cumulus team project manager)

The competing teams delivered their proposals on 11th November, 2002. The jury consisting of representatives from Senate Properties, the FMI, FIMR, City Planning Department and the project development company evaluated the proposals from three perspectives supported by two expert teams. The financial and legal assessment team compared the rents and estimated how the terms of contract in each proposal will affect the costs in the future. The design and contracting assessment team evaluated the functionality, technical merits and architectural experience of the proposals. The assessment of the project management and the delivery capability was to ensure that the chosen contractor would be capable of carrying out the project.

> "In this competition there was this model of finance, and its frame was pretty tight. […] It presented one clear criterium for evaluation to the extent that we feared did the quality evaluation stand for anything if at the end of the day the rent the institutes have to pay over 30 years is the decicive factor. And it was decisive, for three out of five proposals were rejected because of it."[105]
>
> (Interview of the city planner)

The jury chose on 24th January, 2003 the proposals called Atrium and Cumulus as the winners of the competition. The economics dictated the verdict to the extent that the proposals chosen for further elaboration were the two cheapest ones. Architecturally these two proposals were remarkably different from the each other. Cumulus was faithful to the ideas sketched throughout the land use planning process. It located the institutes into separate, comb-shaped wings, while, in contrast, Atrium obliterated all spatial distinctions between the institutes. It was a single doughnut shaped mass, in which the functions of the institutes would interleave

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[104] "Silloin me todettiin, että ollaankohan me tässä menty väärin, kun ne [laitosten tilat] tavallaan olivat erillään, mutta sitten me todettiin, että ratkaisu oli tehty. [...] Eihän ne samoja asioita tutki, vaikka ne olisivat hallinnollisesti samaan laitosta. Toiset tarvitsevat omat tilansa ja toiset omat labratilansa. [...] Kun puhutaan näinkin isosta rakennuksesta, niin ei kaikki voi olla toistensa vieressä aina. Se vaatii sen tietyn neliömärän ja tietyn tilan. Aina tulee pitkä matka jollekin."

[105] "Tässä kilpailussa oli tämä rahoituskuvio, ja siinähän oli asetettu hyvinkin tiukka raami. […] Se oli yhtenä selkeänä arvostelukriteerinä jopa niin pitkälle, että me pelättiin, että onko tällä laatuarvostelulla mitään merkitystä, jos viime kädessä kuitenkin laitosten maksama vuokra tiloistaan 30 vuoden ajanjaksolla on se ratkaiseva. Ja se olikin ratkaiseva, niin pitkälle, että sillä pystyttiin lyömään ulos jo kolme ehdotusta niistä viidestä."

flexibly. The concept of Atrium was similar to the recently built centre for medical research and training called Biomedicum that won the annual prize for the best concrete structure in Finland 2001. The building was designed by the architect of the Atrium team together with the one who produced the design guide for the Kumpula project. The initial views of the FMI and the FIMR about Atrium and Cumulus did not coincide at all.

Atrium	Cumulus
”According to the Finnish Meteorological Institute the proposal [Atrium] fulfils the objectives set for the design in this respect [community] well and the functionality and clarity of the premises is regarded excellent. In contrast, the Finnish Institute of Marine Research regards the proposal bad in respect to the functionality and objectives set for the design.”	”The proposal divided into two comb-shaped wings does not support the objective of the Finnish Meteorological Institute to foster community building. The objectives of the Finnish Institute of Marine Research are fulfilled well. In the proposal the interaction within the institutes is handled decently, although the compartmentalized character of the wings hinders this to a degree. The interaction between the institutes is limited.”

Table 2: *Excerpts from the jury's evaluation record on 30th January, 2003 discussing the functionality of the two winning proposals.*

The jury recommended that Senate Properties continue negotiations with the two teams in order to reach the final resolution. The both proposals needed clarifications, but since Senate Properties regarded both the bids acceptable the final decision was left for the institutes. The two teams enhanced their proposals on the basis of the evaluation record and delivered the updated bids on 17th February, 2003. The FIMR had now obtained a dedicated floor in Atrium it had to accept as the smaller of the two institutes. The FMI as the bigger of the institutes had more leverage to further its preferences. It was no longer thinkable for the FIMR to withdraw from the collective activity it had become multifariously associated with (cf. Latour 1987a, 108, 121–129).

> ”But that's the way life goes [laughs] that the bigger, as you know... When people or whatever are chosen for whatever purpose, the one who has the majority wins at that stage. On the other

> hand, the FIMR was of the opinion that both buildings were going to be good. We would have chosen the other one."[106]
>
> (Interview of the FIMR project manager)

For the FIMR the performative aspect of the object, to make it happen, took a priority over particular concerns about the design. The FMI and the FIMR announced in a negotiation on 18th February, 2003 with Senate Properties that they prefer Atrium to Cumulus. Senate Properties needed, however, still more time to hammer out its terms of contract with the primary contractor of Atrium.

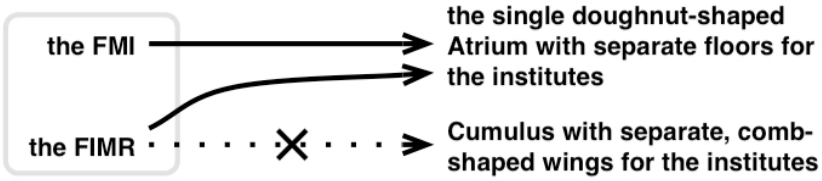

Diagram 11: *Atrium was not only preferred by the bigger of the institutes, but it also fit the synergy argument better.*

The original price of Cumulus and Atrium was roughly the same, but after the elaborations the Atrium was estimated to be slightly more expensive than Cumulus. The final verdict was therefore not ecomical. The FMI not only had more leverage as the bigger organization but its favourite design Atrium was considered to match better the synergy argument that had become constitutive for the Kumpula project. In contrast to Atrium that was anticipated to maximize the interaction between the personnel the jury considered the interaction between the FMI and the FIMR limited in Cumulus even though the institutes would have been located in the same building and would have shared the same basic facilities such as the reception, canteen, conference facilities etc. If the research and service operations would not overlap and the institutes would still have their own laboratories, why would it be necessary to make people bump into each other on a daily basis? It was enough for synergies to work with the University to have it on the opposite side of the road. The FMI was even planning to move its library to

[106] "Mutta elämähän on sellaista, että suurempi tuota (naurahdus), kuten tiedät…Kun tuota valitaan mihin tahansa ihmisiä tai muita, se jolla on enemmistö voittaa siinä vaiheessa. Toisaalta kyllä Merentutkimuslaitos tietysti katsoi koko ajan, että kummastakin saadaan hyvä rakennus. Me olisimme valinneet kyllä sen toisen."

Physicum a hundred metres away. Atrium did not promise bigger cost-savings. In fact, it was slightly more expensive than Cumulus.

The exclusive association of the synergy argument to the complete obliteration of spatial distinctions between the institutes fits together with an idea that runs through the Kumpula project as a subtext. Despite the FIMR's strict opposition and the FMI's officially neutral stance, the idea of merging the departments had refused to die. It was not brought up in the official documents, but seemed to thrive in more informal occasions. In the cityscape Atrium is a single, monolithic mass whereas the Cumulus would have separated the institutes into a two separate wings. Atrium is a single entity, it looks like one organization and can be allocated as such like the original design suggested. The architect inscribed the idea of merging the institutes into the design of Atrium by not supporting the distinct identities of the FMI and the FIMR.

> "The alliance of the FMI and the FIMR was in some ways a shotgun marriage. The marine research is a small unit while the meteorological institute is a big one, and the big one is about to swallow up the small one here. In practice, within a couple of years, these two organizations will probably merge. […] It was discernible in the competition program and the project plans that what they [the FIMR] want is a distinct identity for the institutes here on the Kumpula hill. […] The primary contractor was worried about us steering this into one institute, are we going wrong here, should we have two buildings after all? But I convinced them that what we were doing was good."[107]
>
> (Interview of the Atrium architect)

After the initial hesitation the Cabinet Finance Committee granted on 10th April, 2003 the permission to sign the tenancy contract. The Board of Senate Properties decided on 16th May, 2003 to commission the Atrium project. The contracts were signed and publicly announced on 17th June, 2003.

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[107] "Nämä [the FMI and the FIMR] on osittain pakkonaitettu keskenään. Merentutkijat on pieni yksikkö, Ilmatiede on suuri ja siellä suuri on hotkasemassa pientä. Ihan käytännössä muutaman vuoden kuluttua nämä organisaatiot todennäköisesti yhdistyvät. […] Siitä kilpailuohjelmasta oli vähän niin kuin luettavissa tai itseasiassa hankesuunnitelmista, että ne haluavat että niillä on oma identiteetti täällä Kumpulan mäellä. […] [The primary contractor] huoli oli, kun me ruvettiin ohjaamaan sitä tämmöiseksi yhdeksi laitokseksi, että mennäänkö me nyt vikaan, että pitääkö meidän sittenkin tehdä kaksi taloa. Minä sitten vakuutin niitä, että kyllä tämä on hyvä."

6.7 Avoiding the Government's Regionalization Efforts: 2002–2003

Early in 2003 the construction project was almost ready to take off. The Ministry of Transport and Communications had included the increased rent into its spending limits; Senate Properties had devised a novel way to secure the wherewithal; the FMI and the FIMR had agreed upon the building design; and the City Planning Department was forcefully pushing the detailed plan through the municipal administration. Since the institutes were about to sign over 5 million euros financial commitment to new premises, their Ministry would have to obtain an approval from the Cabinet Finance Committee. The Ministry of Finance would also have to obtain an approval from the Government for Senate Properties to lease out the plot for the owner of the building. The procedure had been identified as a risk during the negotiations about the financing mechanism.

> "Taking the land leasing into the Government has a risk, that the whole project and its foundation are subjected to re-evaluation."[108]
>
> (12 June 2001. Excerpt from the Senate Properties memo "Kumpulan hankkeen rahoitus ja toteutumisriskit, IL ja MTL".)

Some years before the approvals may have been mere formalities, but at the time they may have subjected the Kumpula project under serious reconsideration. The Government proclaimed on 8th November, 2001 a new policy aiming at regionalizing state bureaucracy outside the Helsinki Metropolitan Area. According to the policy, reorganization, expansion and downsizing of state bodies would also trigger a scrutiny about the location of the organization.

> "Because the project entails a commitment to rent new premises worth at least 5 000 000 million euros, the Ministry of Transport and Communications have to ask a statement from the Cabinet Finance Committee. The statement can be asked only after the board of Senate Properties has made its decision about the project."[109]

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[108] "Tontinvuokrauksen käsittelemiseen valtioneuvostossa sisältyy riski, että koko hanke ja sen perusteet otetaan uudelleen arvioitaviksi."

[109] "Koska kysymyksessä on sitoutuminen vähintään 5 000 000 euron arvoiseen uuden toimitilan vuokraukseen, on LVM:n pyydettävä asiasta valtioneuvoston raha-asiainvaliokunnan lausunto. Ennen kuin lausuntoa voidaan pyytää, täytyy hankkeesta olla Senaatti-kiinteistöjen hallituksen päätös."

(7 February 2002. Excerpt from the memo of a meeting between the FMI, FIMR and Senate Properties.)

According to a schedule document printed on 18th March, 2002 Senate Properties was originally prepared to send out the request for proposals before the Government had granted the permission for the institutes to rent the premises. In the case the Government would have rejected the permission, the plan was to abort the competitive bidding process in the beginning of June 2002. The board of Senate Properties decided on 5th April, 2002 to launch the bidding on the basis of Design & Build & Finance model, but the requests for proposals were not sent before the institutes had signed the preliminary tenancy contract on the permission of the Minister of Transport and Communications.

A memo prepared for the Cabinet Finance Committee on 8th April, 2002 or any other project document from the time does not mention the regionalization issue. The Parliament enacted on 16th May, 2002 a new law about regionalization of the state bureaucracy that came into a force on 1st June, 2002, a day before the Minister of Transport and Communications authorized the institutes to sign the preliminary tenancy contract. The authorization to lease out the plot was not asked at this point. The Government decreed on 27th June, 2002 about the regionalization of the state bureaucracy on the basis of the proclaimed policy. The decree authorized a governmental task force called the Coordination Group for Regionalisation to oversee and foster the efforts.

"The respective ministry has to always investigate the possibilities for locating the units of the state central administration or centrally managed state functions to outside the capital area, especially to the regional centres, when:
1) a new unit or function is founded;
2) the existing activities are expanded significantly;
3) or the existing activities are significantly reorganized."[110]

(27 June 2002. Excerpt from the Government decree "Valtioneuvoston asetus valtion yksikköjen ja toimintojen sijoittamista koskevasta toimivallasta" 567/2002.)

[110] "Asianomaisen ministeriön on aina selvitettävä valtion keskushallinnon yksikköjen ja valtakunnallisesti tai keskitetysti hoidettavien valtion toimintojen sijoittamismahdollisuudet pääkaupunkiseudun sijasta maan muihin osiin, erityisesti aluekeskuksiin, kun:
1) perustetaan uusi yksikkö tai toiminto;
2) laajennetaan olemassaolevaa toimintaa olennaisesti;
3) tai organisoidaan olemassaolevaa toimintaa merkittävästi uudelleen."

The Ministry of Transport and Communications authorized the institutes to sign the preliminary tenancy contract before the Parliament had decreed about the decentralization, but the principles of decentralization were already present in the law that came into force in the beginning of June 2002. Regionalization of the FMI and the FIMR was probably not in the interests of the Ministry, but it would certainly be incompatible with the Kumpula project. From the perspective of the project it was crucial to avoid falling into the three categories that would trigger regionalization inquiry, but there was little else the actors could do except try to ignore the issue altogether and push the project beyond the point after which it would too costly to stop it. Especially the attempts to merge the FMI and the FIMR might be interpreted as a significant reorganization of state bodies referred in the decree and therefore trigger decentralization evaluation. The existence of the construction project had been gradually stabilized with the help of various documents, negotiations and extended spending limits and so forth, but, in short, these were all just paper. Scrapping papers and forgetting what was once said is not necessarily easy, but it is much easier than stopping an on-site building activity and deconstructing an entity made of steel and concrete. The incoming parliamentary elections in March 2003 made the regionalization issue even more pressing.

> "There was a big concern here during the final stages of the competition of the Finnish Meteorological Institute. Is was wanted that the solution is not delayed, since the elections were coming and it seemed that the Center Party might score a victory. And we joked that the Finnish Institute of Marine Research will be in Rymättylä and the Finnish Meteorological Institute in Iisalmi."[111]
>
> (Interview of the city planner)

In early 2003 the regionalization issue nevertheless surfaced. The Government stepped up its regionalization plans on 5th February, 2003 and singled out the FMI and the FIMR for further investigation. In addition, the administrative reorganization with the Finnish Environment Institute was back on the agenda.

> "The possibilities for merging the environmental research of the Finnish Environment Institute, the marine research of the Finnish Institute of Marine Research and the research of the air

[111] "Oli kova hätä tässä Ilmatieteen laitoksen kilpailun viime vaiheessa. Haluttiin, että ei viivytetä sitä ratkaisua, koska vaalit oli ovella ja näköpiirissä, että Kepu tulee pärjäämään vaaleissa. Ja siellä puolipiloillaan sitten heitettiinkin, että se Merentutkimuslaitos on Rymättylässä ja Ilmatieteen laitos Iisalmessa."

> quality department of the Finnish Meteorological Institute will be investigated together with the assessment how to regionally organize the combined research operations."[112]
>
> (5 February 2003. Excerpt from the Government evening session record published in the weekly newsletter of the Government.)

The idea of consolidating parts of the FMI, FIMR and the Finnish Environment Institute, and regionalizing the combined organization was diametrically opposed to the construction project it had taken years to assemble. Competitive bidding was already done and the institutes settled on 18th February, 2003 in a meeting with Senate Properties on the proposal called Atrium. The Ministry of Transport and Communication presented a motion to rent the Kumpula premises in the Cabinet Finance Committee meeting on 13th March, 2003, three days before the parliamentary elections on 16th March, 2003. In the document the synergy argument was boosted by circulating it through the Science and Technology Policy Council's white paper.

> "The Science and Technology Policy Council has referred in its report 'Osaaminen, innovaatiot ja kansainvälistyminen', published 2003, to the Kumpula project as a significant way of utilizing cooperation and synergy benefits."[113]
>
> (6 March 2003. Excerpt from the motion the Ministry of Transport and Communications presented to the Cabinet Finance Committee.)

The reference in the motion actually pointed to a reference in the white paper which in turn pointed back to the Kumpula project. In the white paper, the Kumpula project was made a case example of how the governmental sectoral research should be spatially arranged. This, in turn, was made a proof of the project's viability. The argument was effectively a circular one, because the Council had hardly studied the synergies of the Kumpula project in any more depth than had already been done within the project. The circulation through the Council made the synergy argument opaque; black-boxed it by hiding the argument's internal workings and enrolled the Council behind the Kumpula project. Instead of explicating the expected synergies, the credibility of the synergy argument was now founded on the circular reference

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[112] "Selvitetään mahdollisuudet Suomen ympäristökeskuksen ympäristötutkimuksen, Merentutkimuslaitoksen merentutkimuksen ja Ilmatieteen laitoksen ilman laatuosaston tutkimuksen yhdistämiseksi ja miten näin yhdistettävä tutkimus tulisi alueellisesti järjestää."

[113] "Valtion tiede- ja teknologianeuvosto on vuonna 2003 ilmestyneessä raportissaan 'Osaaminen, innovaatiot ja kansainvälistyminen' viitannut Kumpulan toimitilahankkeeseen merkittävänä keinona tutkimuslaitosten yhteistyö- ja synergiaetujen hyödyntämisessä" (The publication year of the report seems to be wrong in the memo. Most likely the memo refers to the Science and Technology Policy Council white paper that was published on 23rd May, 2001 and discussed in the section 6.3.)

in the Council's white paper. The synergy argument attained credibility, became more real simply because it circulated through the Council's white paper.

> "The Coordination Group for Regionalisation had to give a statement that this project can be carried out in Helsinki. And it was very critical both times. The outcome was not self-evident in any way, so that we mobilized all the possible muscles to ensure that the project should be done precisely like this."[114]
>
> (Interview of the Director General of the FMI)

The Cabinet Finance Committee shelved the motion and sent a request for comment to the Coordination Group for Regionalisation about the project. The Center Party, which draws its support mainly from outside the Helsinki Metropolitan Area, won the parliamentary elections and would seize the Prime Minister's Office in the middle of April 2003. In the memo prepared on 26th March, 2003 for the Coordination Group meeting on 1st April, 2003, the Ministry of Transport and Communication rejected the idea of merging the FMI, FIMR and the Finnish Environment Institute. According to the memo, the proper way to develop environmental research was to enhance cooperation between the three organizations. The synergy argument acted effectively against regionalization because the anticipated cost-savings and exceptional benefits for the core operations of the FMI and the FIMR were grounded on the particular plot on the Kumpula hill. The memo dramatized the synergies by contrasting them to the assumed drawbacks of the regionalizing the institutes. In contrast, the mundane hardship argument was of little use against regionalization since the appropriate premises could very well be built somewhere else. The memo also emphasized that the process of moving the institutes on the Kumpula hill had started before the regionalization was took on the Government agenda.

> "Before the decree regarding the authority for locating the state bodies and functions came into a force, the Ministry of Transport and Communications gave 2 June, 2002 with a letter (Dno 998/12/2002) the permission for the Finnish Meteorological Institute and the Finnish Institute of Marine Research to sign the preliminary contract regarding the new premises. At the time the

[114] "[Hallituksen] alueellistamistyöryhmän piti antaa lausunto siitä, että tämä hanke voidaan toteuttaa Helsinkiin. Ja se oli hyvin kriittistä molemmilla kerroilla. Se ei ollut mitenkään läpihuutojuttu, että siinä todella otettiin kaikki mahdolliset lihakset käyttöön, mitä siihen asiaan vakuuttamiseksi on, että se nimenomaan kannattaa tehdä näin."

> law and the decree on the authority for locating the state bodies and functions had not yet been proclaimed."[115]
>
> (1 April 2003. Excerpt from the Ministry and Transport and Communications memo for the Coordination Group for Regionalisation.)

The memo rightly points out that Kumpula project has started long before the new law and decree came into force, but the formal decisions coincide in a peculiar way. In fact, the law came into force on 1st June, 2002, a day before the Minister sent the letter to the FMI and the FIMR. The Coordination Group discussed the project on 1st April, 2003, but refrained from interfering in it. The issue resonated simultaneously in a completely different setting. The Deputy Mayor for City Planning and Real Estate used the critical situation to foster the approval of the detailed plan in the City Council. The building is an object that momentarily draws city planning, national and municipal politics together.

> "Sending this plan back [to be redesigned] risks the moving the whole institute elsewhere in Finland. I would regard it as a tremendous drawback."[116]
>
> (9 April 2003. Excerpt from the City Council record.)

Unsurprisingly, the councilmen wanted to keep the state bureaus in Helsinki. The last Cabinet Finance Committee of the caretaker government[117] gave on 10th April, 2003 a permission to the Ministry of Transport and Communications to rent new premises for the FMI and the FIMR.

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[115] "Liikenne- ja viestintäministeriö antoi ennen valtion yksikköjen ja toimintojen sijoittamista koskevasta toimivallasta annetun asetuksen antamista ja voimaantuloa 2.6.2002 päivätyllä kirjeelle (Dno 998/12/2002) Ilmatieteen laitokselle ja Merentutkimuslaitokselle luvan Kumpulan toimitalohankkeen esisopimuksen allekirjoittamiseen. Kyseisenä ajankohtana toimintojen sijoittamista koskevaa lakia ja asetusta ei vielä oltu annettu."

[116] "Palauttamalla tämä asia [valmisteluun] on vaarana koko laitoksen siirtäminen muualle Suomeen. Pitäisin sitä tavattoman suurena takaiskuna."

[117] After the parliamentary elections the old government is called a caretaker government until the new government has been formed. The caretaker government takes care of running practical matters of the ministries, but customarily refrains from doing politically significant decisions.

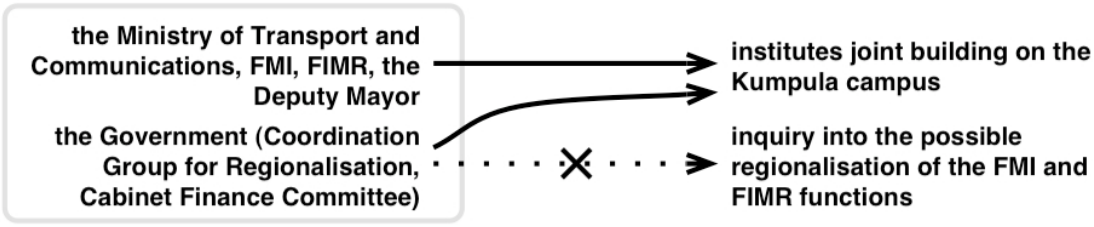

Diagram 12: *After the dedicated building would take place on the Kumpula hill, regionalizing the FMI and the FIMR would be difficult to rationalize.*

After the Government had authorized the Ministry of Transport and Communications to rent the premises and Senate Properties had signed the contract with Atrium contractor the necessary decision about the land leasing seemed to have been a mere formality. Senate Properties handed on 17th June, 2003 the site over to the contractor along with the signing of the contracts. The design and preparations for earthworks were steaming full ahead. Despite its assumed tendency to favour regionalization, the costs of pulling the plug on the Kumpula project would have been difficult to rationalize for the new Government that went through a reshuffling in June in order to replace the Prime Minister herself. The chairperson of the Center Party had lost the confidence of the Parliament as a result of being caught lying to them. Despite the fact that the Center Party had scored a major victory in the elections and was now the largest group in the Parliament, the standing of party in the Government was generally deemed to be weak at the time because of the scandal. The new Government authorized in a plenary session on 21st August, 2003 Senate Properties to lease the plot out to the owner of the building and the ground was broken on 9th September, 2003 on the site. Later on, in the ceremony of casting the foundation stone on 20th January, 2004 the Minister of Transport and Communications praised the project as a case example of reasonable regionalization practices.

6.8 The Summary of the Findings

The previous sections delineated the emergence of the Kumpula project from its inception to the breaking of the ground on the hill. The process was observed as an interplay between the efforts to strengthen the actor-network and transforming the object of networked activity. Diagrams 3–12 illustrate the most prominent features of this interaction. Together they depict

a transition from the separate initiatives of the FMI and the FIMR into a collective project encompassing numerous actors and an elaborate object of activity. The point of departure for the analysis were the organizations involved, but also several non-human entities such as the synergy argument emerged during the multi-threaded process. The Kumpula project is a heterogeneous entity in itself. Despite the actors' various and sometimes contradictory interests, the network eventually reaches a stable state in which the organizations involved have locked each other into well-defined roles, by legally binding contracts.

The findings are divided into three categories according to the research question: the first section summarizes the most important observations about the network building process; the second discusses the methodological experiment and the third analyzes the substantive framing of the actual construction practices and the future of the institutes.

6.8.1 Kumpula Project is a Multi-Threaded Process Driven by Various Local Interests

The Kumpula project was not just about solving the problems with the existing workspaces or rationalization of operations. The old premises of the FMI and the FIMR had obvious problems but this was not the decisive factor driving the project. Although the problems were not disputed, they alone were simply not strong enough to make such an argument which would kick off the project. The interests of the actors were to a varying degree economic, but there is no evidence that the economics would have dictated any of the observed trials. For instance, the eventual winner Atrium turned out to be more expensive than the second option, Cumulus. The anticipated savings in building costs running from synergies were relatively small compared to the effects of the economic trends and potential savings in the building costs related to the rejected idea of administrative reorganization. The observation that the inclusion of the Finnish Environment Institute did not seem to bring any additional cost savings reveals that the savings were constructed exclusively from the perspective of the Ministry of Transport and Communications. In sum, *there was no single cause or mechanism behind the project that emerged out of various local interests.*

It is equally impossible to pinpoint a decisive decision, actor or a moment in the process[118]. *The project unfolded as a series of path-dependent trials relating to particular issues obstructing the realization of the building* (cf. Latour 1999a, 122, 311). Solutions to trials were often manifested as decisions of some kind, but not all decisions such as the final approval for leasing out the plot implied a related trial. Through the trials the overall course of actions became gradually more and more inevitable so that eventually halting the process would have been too costly even for the Government endeavouring to regionalize its functions.

The trials framed each other in a way the actors were not able to fully anticipate because the trials took place in different subprograms encompassing different actors. The Kumpula project did not emerge as a single trajectory but in several overlapping threads of activity. Borrowing a metaphor from software engineering, *the project could be described as a multi-threaded entity*. In engineering multi-threading means dividing the execution of a computer program into several simultaneous processes that must be carefully coordinated. *Grasping the ordering and timing of the events was a prerequisite for understanding the multi-threaded Kumpula project.* For instance, the approval by the Government for leasing the land out was effectively rendered into a formality due to its timing. Since the contracts had already been signed in June 2003 on the permission of the Cabinet Finance Committee, it would have been difficult to justify a decision that would have led the Kumpula project into serious trouble. The approval for leasing out the plot was needed in the form of a formal decision, but it did not manifest a genuine trial, since there were no real alternatives for the decision.

6.8.2 Analyzing the Actor-Network as an Object-Oriented Entity

The analysis was an experiment to combine insights from the actor-network theory and the cultural-historical activity theory. According to the actor-network theory strengthening the network entails expanding it to encompass more actors and stabilizing it by forging more

[118] The City Planning Department designated the site for the building. The Ministry of Transport and Communications inserted the increased rent into its spending limits. The board of Senate Properties decided to look for alternative financing mechanisms. The Ministry authorized the institutes to sign the preliminary tenancy contract. The board of Senate Properties decided to organize the competitive bidding. The Coordination Group for Regionalisation deciced not to intervene in the project. The City Council approved the detailed plan. The Cabinet Finance Committee approved the project. The board of Senate Properties signed the contracts with the contractor and investor. The new Government authorized Senate Properties to lease out the plot.

associations between the actors (Latour 1987a, 122). However, analyzing network building as an object-oriented effort also teased out features such as the exclusion of some actors from the project and a partial substitution of the original objectives with the building as such. The object of networked activity was at the same time material, cultural and performative.

Strengthening the object-oriented network entailed excluding some organizations from the project. For instance, the Finnish Environment Institute and local inhabitants were kept outside. The building could absorb and foster various aims, but letting in too many conflicting interests was feared to tear apart the object of a collective activity while its existence was still on paper. In addition to this, it was not enough that the vital actors were enrolled and aligned once. *The building as a material, non-human actant forced the involved organizations to agree on its detailed design, which, in turn, uncovered tensions between the enrolled actors.* For instance, every elaboration of the spatial relationship between the FMI and the FIMR raised the sensitive issue of administrative merger. The practical building activities on the hill would be virtually impossible as long as the material aspects of the object, discernible in memos, drawings and other specifications, was not made to converge on a very detailed level.

The most difficult tensions surfaced between the actors who were indispensable for the project. The disagreements about the financing mechanism and building design are examples of such contradictions. Withdrawal of the Ministry of Transport and Communications, FMI, FIMR or Senate Properties would have disintegrated the Kumpula project. In these situations actors' interests clashed, but the shared interest to make the building happen took priority over the particular concerns. Once a lot of time and effort had gone into the Kumpula project, it gradually became an opaque proxy for whatever ends it was supposed to advance. Actors do not withdraw nor are they excluded from the project, but the interpretive flexibility (Gieryn 2002a, 44) of the building enables them to adapt to the situation. *The object of the networked activity, the building, partly substituted the original objectives it was suppose to serve.* For instance, the flexible planning strategy enabled the city planner to expand his influence in the Kumpula project, but at the same time he became aligned behind its object of activity. The

City Planning Department's interest to secure the implementation of the detailed plan is to a degree substituted for securing the implementation of the Kumpula project.

It is difficult to say whether the actors shared other than a loose idea about the object (cf. Latour 1993, 386). Although the building design is the same irrespective of the viewer, it can be, of course, interpreted in many ways. The city planner sees it as the latest stage in the implementation of the Kumpula hill detailed plan. For the FMI and the FIMR it is the long-awaited solution for the problems with the current premises. Senate Properties will learn about pros and cons of private funding. For the primary contractor it is a task to be done within a tight schedule and a fixed budget. The Deputy Mayor emphasized the importance of making sure that the FMI and the FIMR are to stay in Helsinki also in the future.

The interpretive flexibility is crucial in solving the clashes between the actors' particular aims and the shared commitment to make the building happen. If the all actors would view the object alike, it would be more difficult to translate their interests to support it. For instance, the FIMR initially opposed the design of Atrium, but quickly reinterpreted it as 'good enough' since the FMI as the bigger institute stuck to it. Contrary to Latour's (1993, 391) argument that "an object cannot come into existence if the range of interests gathered around the project do not intersect", the findings show that *the interpretive flexibility of the building enables it to hold together contradictory interests to a degree. The interests do not have to intersect as long as the material object of activity can tie them together.*

6.8.3 Substantive Findings Regarding the City-Building Process and its Actors

In addition to the exploration of the previously little studied phenomena and the methodological experiment, the case is a concrete example of the development of the sectoral research system, the state real estate management and the city-building in Helsinki.

The potential merging of the FMI and the FIMR ran as an undertone throughout the Kumpula project, but whenever it surfaced openly the issue was quickly toned down. Despite none of

the organizations involved dared officially to endorse the idea that may have compromised the FIMR's commitment to the Kumpula project, the distinct identities of the FMI and the FIMR were not inscribed into the building. In contrast to the ideas sketched throughout the land use planning and four other designs, Atrium eradicated the separate material identities of the institutes. The potential merger would likely be considered as a significant reorganization of the state bodies prescribed in the law and therefore trigger consideration for moving the institutes outside the Helsinki Metropolitan Area.

However, once the institutes have moved into the new building, the efforts to regionalize them will take place in quite a different framework. It would not only be about moving people, papers and equipment somewhere else but also dealing with the tailor-made building in Kumpula. It will be much easier to build strong claims against regionalization once they can lean on the new building. The material outcome of the construction project does not predestine decisions made in the political arena, but makes some options look more reasonable, economic and convenient. Securing the close relationship between the institutes, University and the City of Helsinki was delegated to non-human entities of the Kumpula hill by the project (cf. Latour 1994b, 44). *While the new building effectively precludes attempts to regionalize the institutes, it destabilizes the relationship between the FMI and the FIMR.*

Senate Properties and the Ministry of Finance have been criticized for allegedly dictating the operations of state bodies through real estate management executed in the spirit of neoliberal ideology (e.g. Jauhiainen & Niemenmaa 2002, 51). It would be antithetical to the chosen theoretical framework to try to identify ideologies pulling the strings behind the actors. Instead, we may ask was there a mastermind, a prime mover manipulating the other actors for its own interests in the same manner as the Chamber of Commerce in the case of Aalborg. Given the multi-threaded nature of the project, the paramount task for such a Machiavellian Prince would be to control the alignment of different threads of activity.

Diagram 1 (see chapter 2) readily hints that Senate Properties had a central role in the Kumpula project, which is generally confirmed by the analysis of the seven subprograms. The

company adhered to its standard profit margins and resisted the attempt by the Minister of Transport and Communications to force the project into the investment program. Senate Properties owns the land area on the hill. There is no evidence whatsoever that there would have been any other option for the FMI and the FIMR than going through *Senate Properties which was an obligatory passage point in-between the institutes and the new premises on the Kumpula hill.* On the other hand, Senate Properties did not originate the Kumpula project and once it had secured its profit margins, it left the final decision about the building design to the institutes. More importantly, on the basis of the available evidence *the company or any other organization can hardly be said to have controlled the alignment of the different subprograms.* The role of Senate Properties was central, but its influence was generally limited to the building, its funding and contracting. For instance, the City Planning Department had somewhat similar role in terms of land use planning as the sole representative of the City in the project.

The unfolding of the Kumpula project coincided with the emergence of the synergy argument (cf. section 3.5.1) that created a crucial link between the future anticipations and the project. Potential benefits of a new location made the Ministry of Transport and Communications interested in the institutes' aspirations in Kumpula. In the negotiations with the Ministry the positive effects of the spatial proximity were labelled as synergies and later on substantiated with technical drawings, discoursive accounts and calculations. What was initially a vague hint about the beneficiality of the spatial proximity was gradually turned into a forceful argument about synergies. The more effort the actors put into the elaboration of the synergy argument, the more real and independent actant it became (cf. Latour 1999a, 138). Eventually the circulation through the Science and Technology Policy Council made the argument a black box beyond the control of the organizations involved. The Kumpula project was no longer just an effort to reap the synergies but an example of them, long before the actual building began on the hill.

Both the mundane hardship and the synergy arguments had a material footing although in ways that differ. The problems with the current situation would be obvious for anybody

visiting the current premises while the synergies were inscribed into the accumulating body of documents during the process. The key difference between the arguments is that in contrast to the mundane hardship argument, the synergy argument is future-oriented. The argument creates an ideal future but the validity of the claim cannot be judged right here right now. For instance, the operational benefits turned out to be difficult to elaborate in advance and the promised cost savings were calculated against a hypothetical situation, a scenario in which the institutes would obtain equally equipped but separate workspaces. Since the synergies were exclusively tied to the Kumpula hill, the argument also implies a threat of losing them in the case the Kumpula project should fail. All in all, *the synergy argument is a difficult one to dispute at the time of its greatest impact on the project*. Afterwards, whether the synergies work or not the building will stay. For instance, Gieryn (2002a, 63) has made similar observations about Cornell Biotechnology Building. Mäenpää and others (2002, 179) have observed the increasing use of similar arguments in city planning. This analysis does not tell why such synergism is valued in our society, but it hints at why the future-oriented arguments may work in local circumstances better than apparently hard facts.

In addition to its peculiar future-orientedness, the power of the synergy argument relies in its multifacetedness. The argument promises simultaneous cost-savings, operational benefits and enhanced public image of the Finnish research, but the relative weight of the three aspects seems to fluctuate from situation to another. The cost-efficiency aspect was analyzed first and most thoroughly, but this does not mean that the other two would be insignificant or merely cover-ups of rationalization of operations. As soon as further savings in the building costs would have entailed administrative reorganization the argument was, in fact, turned against them. What is clear is that *the synergy argument was crafted to foster the Kumpula project and not the other way round.* The argument worked well in different, even contradictory, situations. Whenever the anticipated synergies needed to be explicated, any of the three aspects could be highlighted in a way that best suited the circumstances. This kind of a partial opening of the black box did not reveal the contradictions in its contents.

Niemenmaa (2001, 8) points out the importance of taking into account the realistic opportunities for action during the design phase. My original idea was to study user participation and the specific life-cycle contract developed in the Kumpula project until the interplay between the conceptual framework and the data directed my attention differently. These topics simply did not resonate significantly in the subprograms reconstructed to grasp the key trials of the process. However, *the study reveals how the framework for detailed planning and architectural design is put together piece by piece before the actors are ready to sign the contracts* that bind the network behind the Kumpula project irrevocably together. For instance, the novel form of contracting entailed exceptionally detailed drawings and specifications but precluded user participation during the competitive bidding when the most fundamental decisions about the building design were made. In addition to this, the bids combined design, contracting and funding so that the best proposal in terms of the cityscape was ruled out on the basis of its funding mechanism. The framework for design does not appear from the void but emerges along with the project.

Once the contracts were signed in June 2003 begun the so-called design phase in which the designers worked with the institutes in order to hammer out their specific requirements for the building. The design phase took place in the framework set up by the contracts and under the pressure to deliver designs to the contractors waiting with their payrolls and expensive machines on the hill. In order to keep the cost to a minimum and stick to the schedule, the primary contractor overlapped the design phase with contracting as much as possible.

7 Conclusions

The Kumpula project was not just about the new building. The case intersected over 30 activity systems and issues such as the regionalization of the state bureaucracy, the local inhabitants' resistance to the extension of Pietari Kalm Street, the public-private partnerships for funding public infrastructure, the organization of the environmental research, the development of the sectoral research system, building design and so forth. It would, however, be a mistake to regard the various issues and organizations as a context for the project as if one could identify some sort of a core activity. The insight running from the adopted theoretical framework is that politics, administration, design and business do not take place in separate domains or levels of society, but in the configurations, such as the Kumpula project, that do not respect such demarcations. The project is a substance which draws momentarily many different activities together.

In the analysis the Kumpula project was reconstructed with the help of the actor-network theory and the cultural-historical activity theory. The unity of the scattered actions is not, however, a mere social construction. It can be experienced in practice on the Kumpula hill. The project is a single entity, an actant, yet literally distributed into the numerous organizations and issues. The ability to conceptualize the multi-threaded and divided entity by taking the non-human, material aspects of social life into account is the most important insight of my methodological experiment. It was achieved by disentangling the ideational, material and performative characteristics of the object of the networked activity.

The experiment contributes as such to the debate on how to study the societal production of technological artifacts. I argue that in order to avoid peculiar shortcomings of some innovation studies, the analyses should not be limited to explaining the success or failure of the projects. It is important to contrast the performed design with the variously envisioned futures in the optional designs that were rejected during the process, because this enables us to see what kind of a future the project finally came to aim at. To me this is more interesting than mere pondering on the success or failure of the project.

7.1 Contrasting the Findings with the Previous Case Studies

Methodological developments are, of course, valuable only if they enable researchers to produce interesting new knowledge about the empirical world. I will conclude this study by extending the scope of the findings by comparing them with the previous studies. Although the comparisons are to a degree limited due to the different research strategies employed by the studies, together they form a basis for further research on the projects linking the overall city-building process to the material environment.

7.1.1 Performativity and Participation

This study corroborates the observation made also by Latour (1993, 389–390), Gieryn (1998, 222–223) and Suchman (2000, 314-316) that design is not merely about designing a material object. It is also crucially about advancing the realization of the artifact. For instance Gieryn (1998, 222–223) points out "design is pragmatic and performative. Its paramount purpose is to bring into existence a certain building. Design decisions are not determined by universal abstract principles of aesthetics or functional efficiencies or even cost." This was a great concern for the actors involved in the Kumpulta project, too.

Unless we somehow account for the performativity in projects such as the Kumpula case, we cannot claim to have tried to understand the subjective meanings the informants attribute for their actions or their realistic opportunities for action (cf. Niemenmaa 2001, 8). For instance, the synergy argument might seem vacuous or a mere cover-up for cost-savings unless its performative aspects are understood properly. The argument that helped the institutes to obtain new, tailor-made premises can hardly be described as vacuous. Performativity, striving to make it happen, is a part of the culture of practical building. It also trickled into the city planning as a result of the enrolment of the City Planning Department into the Kumpula project.

The building as a material object could be made to hold together interests of many different actors, but not each and every stakeholder could be included in the Kumpula project. The case demonstrates two challenges for communicative and participatory planning. First, some parties had to be excluded for the building to take place. Because it may be impossible to completely abolish the contradiction between performativity and participation in design we have to ask whether there are mechanisms for a *fair exclusion*? Participation may be therapeutic but it is ultimately useless unless the plans are built (Haila 2002, 108). Second, in terms of the three planning ideals the City Planning Department operated on the basis of a holistic planning ideal, but its practical actions had also incrementalist features. This fits together with the previous studies (Mäenpää & al. 2000, 170, 182; Pennanen 2003, 21). Communicative planning did not fit into the project neither as an ideal nor in practice due to the long historical roots of the process.

7.1.2 Building Organizations

The boundaries of an organization are discernible in its artifacts that mediate the relationships between the organization and its environment (Rafaeli & Vilnai-Yavetz 2003, 188–189). Gieryn (1999, 427–428) distinguishes three mechanisms of how the building design can reinforce the collective ‘we’. On the basis of the Kumpula project, I propose a fourth mechanism to supplement the list. New buildings may also obliterate spatial distinctions and therefore weaken the distinct identities of organizations and their units. In terms of the collective ‘we’, the fourth mechanism can be labelled as the *reluctant inclusion*. The peculiar qualifier ‘reluctant’ connotes that from the perspective of the FIMR the institutes ended up cohabiting a bit more intimately than the initial intention was. According to Jauhiainen and Niemenmaa (2002, 42) a similar discussion, including the reluctance of the subjects, took place in the University administration regarding Physicum. It was proposed that the Departments of Geography and Geology moving from different locations to Physicum would be merged in order to reap administrative benefits. Atrium simply makes it easier for the others to treat the FMI and the FIMR as one.

Tuija Mikkonen (2003, 85) points out that "*changes* in the history of organisations are often shown with a change of physical setting". The eradication of the distinct material identities of the FMI and the FIMR may or may not signify a first real step in the gradual emergence of a joint institute. Cohabitation on the Kumpula hill may eventually wear off the FIMR's resistance as pointless or assure the FMI that the merger makes no sense. It may also be that the decisive trials about the merger will not take place on the hill at all, but for instance in the Ministry of Transport and Communications. Looking at the alternative designs, it is nevertheless clear that Atrium was designed and chosen to leave all the options as open as possible.

On the other hand, I argued on the basis of Suchman's case of bridge building and the critical review of some innovation studies that we should also pay attention to the potentially conservative characteristics of the novel technological artifacts. The analysis of timing and ordering of the events in the Kumpula project revealed that it fosters also continuity in the FMI and the FIMR. Even in the case that the institutes will be merged and an obligatory evaluation for regionalization will be carried out, moving the institutes away from Helsinki and their new building will be difficult. Decisions about regionalizing state bodies take place in the so-called political arena, but in the case of the FMI and the FIMR the real trial took place in the Kumpula project. All in all, while the new building destabilizes the mutual relationship of the institutes, it also effectively precludes regionalizing the institutes. The same artifact can produce both change and continuity.

7.1.3 City-Building in Practice

Kurunmäki (2005, 253) argues that the urban planning "system is changing according to the circumstances of the practice of planning". Paula Pennanen (2003, 21) notes that the Helsinki city planning apparatus has been able to retain its strong position in the urban development by adapting to the societal, economic and cultural changes by involving the land owners and developers into the city-building process already during the preliminary phases of planning. According to Taina Rajanti (2003, 36–37) the planning theory should endeavour to grasp the

real actors of the planning process instead of sticking to the ideal type consisting of the decision-makers, the city-planners and the users.

The Kumpula project is a case of the second line of planning identified by Kurunmäki (2005, 255, 258). It follows the official procedures, but involves various public and private interest groups into the planning process. The preliminary land exchange agreement between the National Board of Public Building and the City of Helsinki set the most important planning parameters such the permitted building volume before the actual planning process (cf. Kurunmäki 2005, 259). Interestingly, instead of the universal public interest there were three different public interests in the project represented by Senate Properties, the institutes and their Ministry, and the City Planning Department (cf. Pennanen 2003, 18).

The ingenious interleaving of the building design and the official plan modification shows that the formal planning procedures do not necessarily tell much about what is really happening in the land use planning. In the case of Kumpula project, the detailed design of the land use took already place in the land use plan revision commenced by the State Real Property Agency and the City Planning Department in the beginning of year 2000. It is hardly surprising that the key trials about allocation of land area for different functions does not necessarily take place in the context of the statutory planning process.

It was observed in section 6.8, that although solutions to trials are often manifested as decisions of some kind, not all decisions imply a related trial. In addition, an explicit decision such as the approval of the detailed plan may represent a trial, but not the one we expect it to correspond to. The real trial related to the official plan modification process was about having the modified plan approved in a tight schedule and to avoid having to (re)design the plan. Analyzing the correspondences of the formal decisions with the real trials in the three lines of urban planning mapped by Kurunmäki (2005, 255) could reveal a lot about the reality of the Finnish city-building process.

7.1.4 The Role of Senate Properties in the State Real Estate Management

Having studied Physicum developed by Senate Properties, Jauhiainen and Niemenmaa (2002, 51–52; translated by A. A.) argue that in the case the architects were hired to materialize the vision of "flexibility, standardized users, strictly rationalized allocation of space and transparency" as a part of the increasing "privatization of state, outsourcing of its functions, entrepreneurial and new public management". Leena Eräsaari's (2002) book *Julkinen tila ja valtion yhtiöittäminen* presents an utterly gloomy analysis of the reorganization that took place in the Finnish state real property management during the latter part of the 1990s. My study provides less black-and-white picture of the state real estate management. More specifically, the findings seem to contradict to a degree the claims made by Jauhiainen and Niemenmaa (2002) and Eräsaari (2002).

Most of the findings of this study were corroborated by the previous studies that each employed a different research strategy. My findings do not, therefore, run merely from the application of a peculiar research design and the specific theoretical framework. Why is it, then, that I was no able to observe the allegedly overarching neoliberal ideology behind the state real property operations? I believe there are at least two reasons for this.

First, the analysis focuses primarily on the informants' practical activity and not on how they speak about it. In contrast, Eräsaari's (2002, 19) premise is that the world is "made by words". Second, there seems to have been empirical differences between the projects of Physicum and Atrium. However, adhering to the dualistic opposition between good 'welfare statism' and evil 'neoliberal forces' seems too easily to obscure this kind of differences. Although the evidence is not conclusive, it seems that in the case of Physicum the interests of the Technical Department of the University converged with Senate Properties and not with the Departments. In contrast, the FMI, FIMR and the Ministry of Transport and Communications were able to present generally unanimous front towards Senate Properties therefore limiting its room for manoeuvring. Construction projects are networked entities in which the balance of power shifts from case to another depending on what kind of coalitions emerge during early phases

of the project. In order to study the making of these coalitions we must pay attention to the material and performative aspects of the real estate operations.

7.2 Concluding Remarks

This study began with the question: Where do the construction projects come from? The Kumpula project emerged from the interests of the FMI, FIMR, Ministry of Transport and Communications, City Planning Department, University of Helsinki and Senate Properties as a multi-threaded process. The material orientation and performative character were key features of this process. The methodological experiment that combined insights from the actor-network theory and the cultural-historical activity theory successfully facilitated the representation and analysis of the complicated process. It turned out that the Kumpula project was not merely about the new building. The case touched upon themes such as the state real estate management, the relationship between planning and implementation, regional politics and organizational change. The findings elaborated, corroborated and contradicted earlier studies. In the future, it might be even more interesting to study where do the high-profile construction projects take us. For instance, studying the emergence of the new music hall on Töölönlahti or the fifth nuclear power plant could tell a lot about Finnish society.

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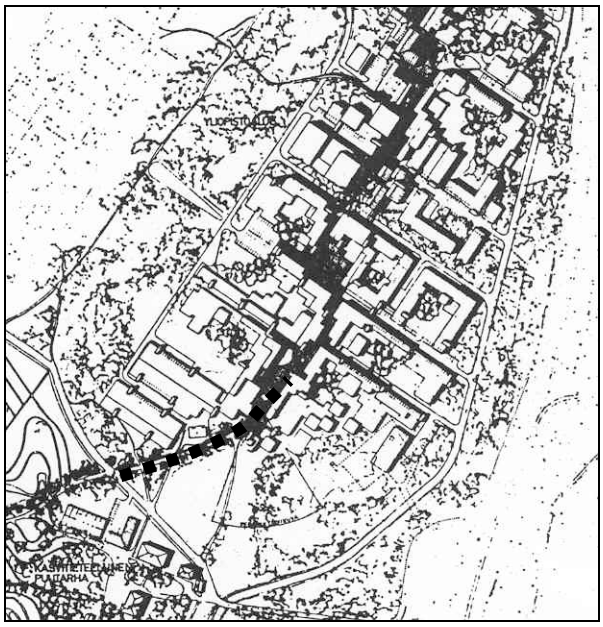
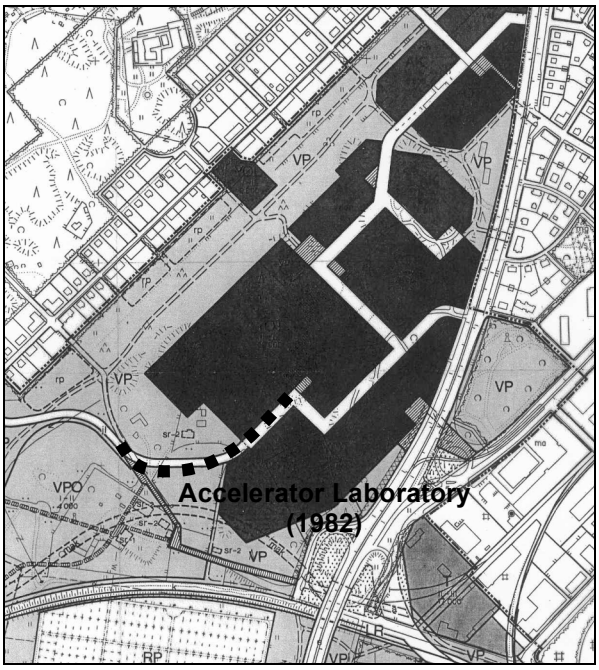
Maps and Illustrations 1979–2003

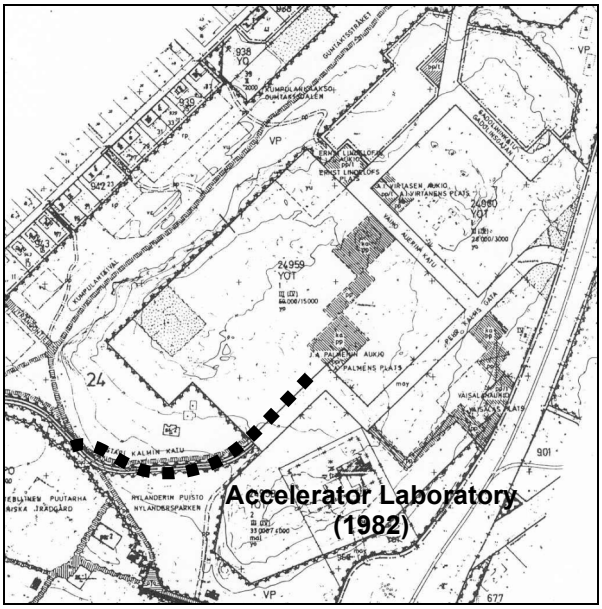
How is possible that hundreds of construction workers can stage a concerted effort to materialize the building on the plot? Verbal descriptions of the design are of little use in steering concrete construction practices without the variety of illustrations and numerical tables. What is written or said about the building must therefore be discernible also in the non-verbal knowledge bearers of the process. In a sense, the building exists on paper (and on-line) before it takes place in the cityscape. Reworking the non-verbal knowledge bearers results in changes in the material object, since their optical consistency creates a two-way connection between the object and the figure (Latour 1986, 7–9). This series of maps and drawings illustrates how the buildings on the hill gradually take place and shape. Changes in the socially constructed relationship between the institutes are reflected in the illustrations as the spatial relationship between the premises of the two institutes and routing of the westward extension of the Pietari Kalm Street.



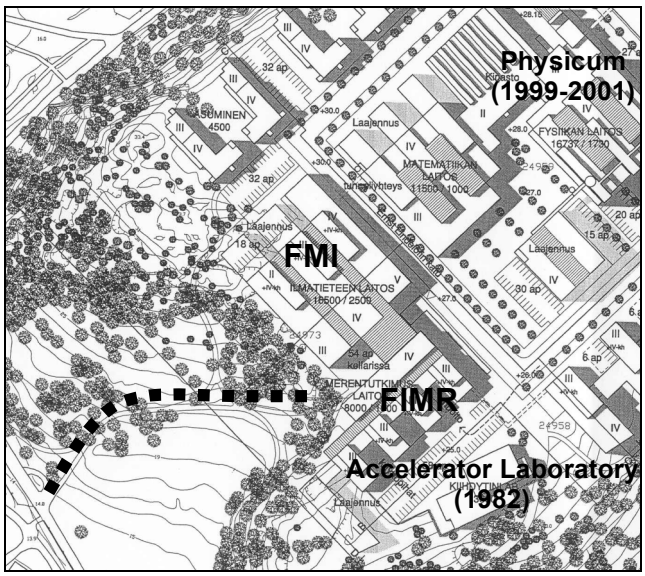
1979: The proposal “Umbilical Cord” for the planning competition of the Kumpula hill. At the time the hill was an un-built area.



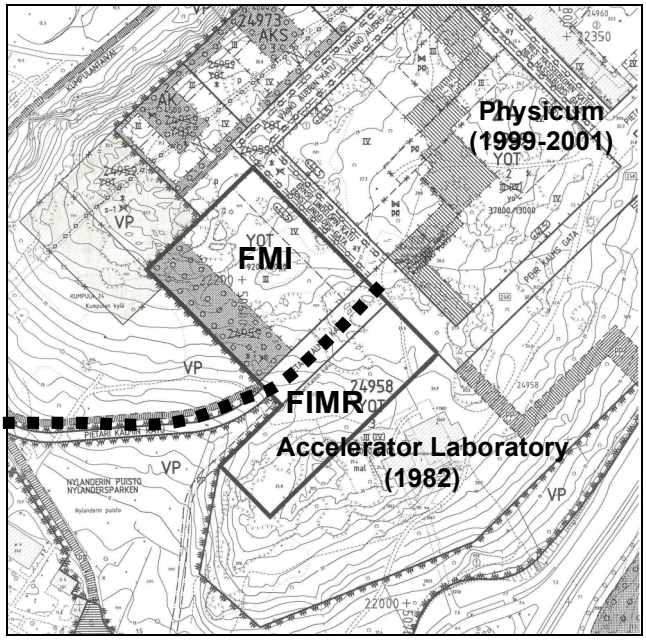
1984: The original local plan was approved in the year 1984 by the City Council and ratified by the Ministry of the Environment.



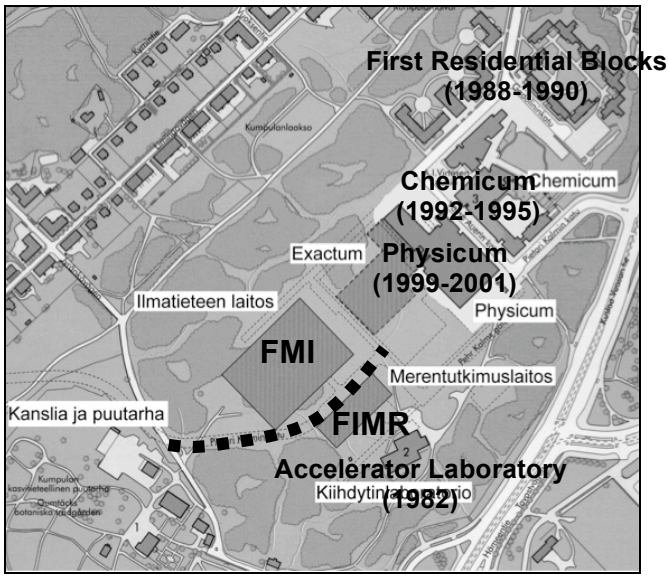
1985: The original detailed plan that was approved in the year 1985 by the City Council. The plan does not differ significantly in the level of detail from the local plan.



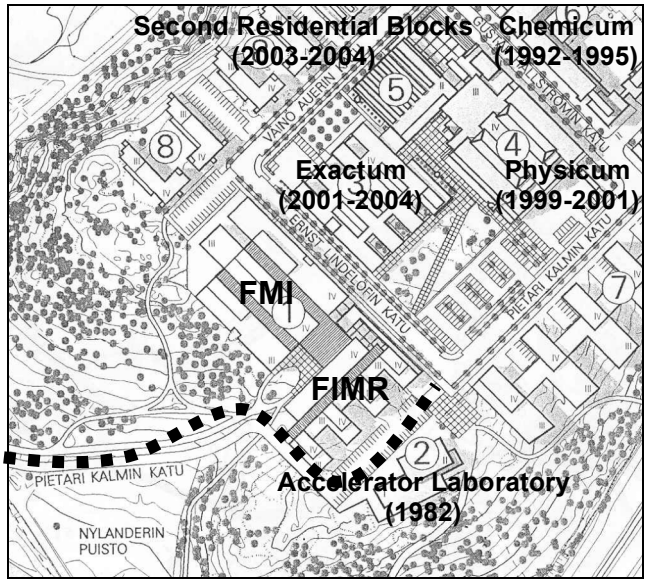
28 June 2000: The revised land use plan illustrated how the FMI and the FIMR could be located on the Kumpula hill. The Physicum architect who drew the plan transformed the controversial westward extension of the Pietari Kalm Street into a bicycle and pedestrian route.



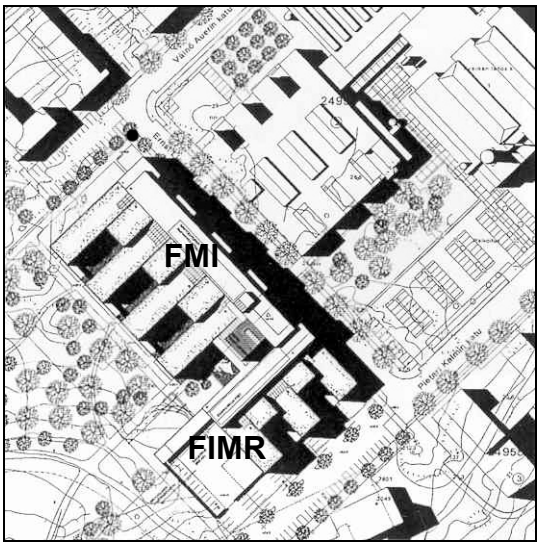
10 October 2000: The city planner designated a plot area for the buildings of the FMI and FIMR. The shape of the plot is based on the land use plan, but the extension of the Pietari Kalm Street made a comeback and cuts now through the building complex.

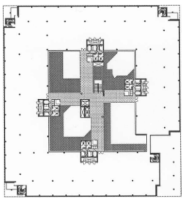


31 October 2001: The illustration from the report of the university working group on the Kumpula campus structure (Kumpulan kampusrakennetyöryhmä) depicted two separate buildings.



10 February 2003: An illustration of the modified proposed plan prepared by the city planner for the City Board and the City Council. The shape of the building approximates closely the land use plan, but the extension of the Pietari Kalm Street does not anymore cut through the building complex.





4 November 2002: The two proposals Cumulus (left) and Atrium (right) differed significantly from the each other.

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The Finnish Land Use Control System

Anne Haila (2002, 97) describes the Finnish land use control system as regulative. The property development is controlled by specific written instructions about what is allowed and not allowed. The city planning is the primary instrument for public intervention in the development of the built environment. Irrespective of the land ownership, planning tells what, how much and to some extent how, can be built on a particular piece of land area. The municipal 'planning monopoly' provides the exclusive rights to the local administration for executing detailed planning as the City or Municipal Council as the supreme authority.

In order to obtain a building permit one must present to the local building authority relatively detailed drawings and specifications that conform to a plot-specific detailed plan (asemakaava) and a bunch of other statutory building norms such as Land Use and Building Act (5.2.1999/132), Land Use and Building Decree (10.9.1999/895), the National Building Code of Finland and the municipal building code. Without a statutory detailed plan a piece of land are cannot be developed.

A local (osayleiskaava) plan is a part of the city or municipality wide master plan (yleiskaava), which designates land area for different types of usage such as housing, commerce and recreation. The detailed plan, which sets the statutory framework for actual development activities such as building, must conform to the master plan. Before the new Land Use and Building Act came into force in the beginning of the year 2000 the detailed plans had to be ratified by the Ministry of Environment.

In Helsinki, the detailed planning can be initiated either by the City Planning Department or by a third party by submitting a planning proposal (kaavoituspyyntö). The Department announces (ilmoitus kaavan vireilletulosta) the initiation of a planning process and delivers the participation and assessment program (osallistumis- ja arviointisuunnitelma) to the stakeholders, who can submit comments to it. Next the draft plan (kaavaluonnos) is made available for comments. The City Planning Committee discusses the draft plan and possible

comments. The Committee may elevate the plan to the status of proposed plan (kaavaehdotus) or send it back to the Department for modifications. During the public inspection period stakeholders can submit objections to the proposed plan. If the City Board approves the proposed plan it goes to the City Council for the final approval. If no appeals are made during a certain period the detailed plan enters into force.

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Date	Type	Title	Author	Reference
1978	competition program	"Kumpulan yliopistoalueen kaupunkirakenteellinen aatekilpailu; Kilpailuohjelma"	Ministry of Education / University of Helsinki Building Committee & City of Helsinki	Ministry of Education & The City of Helsinki 1978
1979	map	"Illustraatio kilpailualueesta 1:7500" (exerpt from a competition entry)	"Umbilical Cord" architect	
1984	map	The local plan of Kumpula hill	City Planning Department	
1985	map	The detailed plan of Kumpula hill	City Planning Department	
21.3.1985	illustration	"Asemakaavan ja asemakaavan muutoksen selostus"	City Planning Department	
18.7.1990	memo	"Tonttivaihtoehtoja"	National Board of Public Building	
24.1.1991	room schedule	"Tiivistelmä käyttäjän 30.1.1990 laatimasta huonetilaohjelmasta"	National Board of Public Building	
13.1.1997	publication	"New Opportunities and Challenges; International Evaluation of the Finnish Meteorological Institute"	Ministry of Transport and Communications	Publications of the Ministry of Transport and Communications
14.4.1997	publication	"New Opportunities and Challenges in Marine Research; International Evaluation of the Finnish Insitute of Marine Research"	Ministry of Transport and Communications	Publications of the Ministry of Transport and Communications
12.10.1998	memo	"Selvitys väestönsuojasta"	University of Helsinki	
11.2.1999	minutes	"Kumpulan mäen yliopistoaluetta koskeva asemakaava ja asemakaavan muutosehdotus (nro 10690)	City Planning Committee	
30.9.1999	speech	"Eheyttävä täydennysrakentaminen ja vuorovaikutus; Luonnos puheenvuoroksi YTV:n seminaarissa 30.9.1999; Case: Kumpula"	City Planning Department	
10.12.1999	email	"Kumpula/VSS"	State Real Property Agency	
16.12.1999	minutes	meeting with representatives from the State Real Property Agency, University of Helsinki, FMI, FIMR	State Real Property Agency	
30.12.1999	email	untitled	FMI	
4.1.2000	email	untitled	State Real Property Agency	
5.1.2000	email	untitled	City Planning Department	
26.1.2000	email	"Kumpula"	City Planning Department	
27.1.2000	email	"Ilmatieteen laitos"	State Real Property Agency	

9.2.2000	request for proposal	"Kumpulan maankäyttösuunnitelman tarkistus"	State Real Property Agency	
16.2.2000	bid	"Kumpulan yliopistoalueen maankäyttösuunnitelman tarkistus"	Physicum architect	
21.2.2000	spreadsheet	"Ilmatieteen laitoksen kirjasto"	University of Helsinki	
23.2.2000	memo	"Toimitalon hankesuunnittelua varten tarvittavat tiedot ja päätökset luokituksista ja rakentamisen tasosta"	FMI	
6.3.2000	agenda	"Kumpulan IV rakennusvaihe; Hankesuunnitteluryhmän kokous 1"	University of Helsinki	
6.3.2000	minutes	"Kumpulan IV rakennusvaihe; Hankesuunnitteluryhmän kokous 1"	University of Helsinki	
6.3.2000	agenda	"Ilmatieteen laitos, Merentutkimuslaitos,	State Real Property Agency	
6.3.2000	minutes	"Ilmatieteen laitos, Merentutkimuslaitos,	State Real Property Agency	
7.3.2000	bid	"Korjattu tarjous"	Physicum architect	
8.3.2000	order	"Kumpulan maankäyttösuunnitelman tarkistus"	State Real Property Agency	
9.3.2000	email	"Tuulen viemää"	State Real Property Agency	
15.3.2000	room card	"Toimistotila, jäähdytetty"	Engel rakennuttamispalvelut Oy	
	memo	"Suojaluokituksesta aiheutuvat kustannukset"		
15.3.2000	minutes	"Ilmatieteen laitos, kustannukset ja maankäyttö, neuvottelut" (meeting with representatives from the FMI, State Real Property Agency, Engel rakennuttamispalvelut)	State Real Property Agency	
31.3.2000	agenda	"Kumpulan IV rakennusvaihe; Hankesuunnitteluryhmän kokous 2"	University of Helsinki	
7.4.2000	minutes	"Ilmatieteen laitos, Merentutkimuslaitos, neuvottelut" (meeting with representatives from the State Real Property Agency, FMI and FIMR)	State Real Property Agency	
17.4.2000	schedule	"Ilmatieteen laitos, Merentutkimuslaitos; Uudisrakennushanke, Kumpula"	State Real Property Agency	
25.4.2000	memo	"Suomen ympäristökeskuksen (SYKE) toimitilahanke" (on the basis on discussion between the representatives of the State Real Property Agency and Finnish Environment Institute)	State Real Property Agency	

27.4.2000	email	"Kumpula ja Ilmatieteen laitos"	State Real Property Agency	
28.4.2000	email	"Kumpula ja Ilmatieteen laitos"	State Real Property Agency	
28.4.2000	spreadsheet	"(YO)-rakentaminen / hintatietoutta"	State Real Property Agency	
3.5.2000	meeting agenda	"Kumpula, maanalaiset tilat, neuvottelu" between the University of Helsinki, FMI, State Real Property Agency and two consulting companies	State Real Property Agency	
5.5.2000	memo	"Suomen ympäristökeskuksen uudishanke, Kumpula"	State Real Property Agency	
8.5.2000	agenda	"Maankäytön suunnittelu, IL, MTL, Kumpula"	State Real Property Agency	
8.5.2000	minutes	"Maankäytön suunnittelu, Kumpula" (meeting with representative from the FMI, FIMR, City Planning Department, Physicum architect, State Real Property Agency)	State Real Property Agency	
15.5.2000	email	"VS: neuvottelumuistio"	State Real Property Agency	
2.6.2000	email	"Kumpulan väestönsuojat"	FMI	
7.6.2000	memo	"Kumpulan maankäyttösuunnitelman tarkistus; Luonnostarkastelu kilpailuohjelmaa varten"	Physicum architect	
8.6.2000	email	untitled	State Real Property Agency	
12.6.2000	email	"Hankesuunnittelupalaveri 9.6."	Engel rakennuttamispalvelut Oy	
15.6.2000	email	"Kumpulan maankäyttö"	State Real Property Agency	
15.6.2000	email	"VAST: Kumpulan maankäyttö"	City Planning Department	
20.6.2000	letter	"Kumpulan mäen yliopistoalueen asemakaava- ja asemakaavan muutosehdotus (nro 10960)" (to the City of Helsinki Real Estate Department)	State Real Property Agency	K 123/64/98
26.6.2000	spreadsheet	"Kumpulan kalliotilat; Käyttövaihtoehtojen rakennuskustannukset"	consulting company	
28.6.2000	land use plan	"Kumpulan maankäyttösuunnitelman tarkistus" between the University of Helsinki, FMI, FIMR and State Real Property Agency	Physicum architect	
29.6.2000	spreadsheet	"Ilmatieteen laitos; Vuokra-arvio"	State Real Property Agency	
29.6.2000	spreadsheet	"Merentutkimuslaitos, Helsinki; Vuokra-arvio"	State Real Property Agency	
29.6.2000	memo	"Ilmatieteen laitos / Kumpula; Huonetilaohjelman mukainen laajuus ja tavoitehinta"	Engel rakennuttamispalvelut Oy	

29.6.2000	memo	"Merentutkimuslaitos / Kumpula; Huonetilaohjelman mukainen laajuus ja tavoitehinta"	Engel rakennuttamispalvelut Oy	
30.6.2000	bid	"Kumpulan yliopistoalueen maankäyttösuunnitelman tarkistuksen lisätarjous"	Physicum architect	
7.8.2000	invitation	"Kumpula-seminaari"	State Real Property Agency	
9.8.2000	email	"autopaikat kumpulassa"	State Real Property Agency	
15.8.2000	spreadsheet	"Ilmatieteen laitos, Merentutkimuslaitos, Kumpula; Laajuus- ja kustannustiedot"	State Real Property Agency	
15.8.2000	email	"rakentamisaika 10/2002	Engel rakennuttamispalvelut Oy	
17.8.2000	map	"Kumpulan kalliotilat; Asemapiirustus, 50 autopaikkaa	consulting company	
17.8.2000	spreadsheet	"Ilmatieteen laitos; Vuokra-arvio"	State Real Property Agency	
17.8.2000	spreadsheet	"Merentutkimuslaitos, Helsinki; Vuokra-arvio"	State Real Property Agency	
18.8.2000	agenda	"Kumpula-seminaari"	State Real Property Agency	
28.9.2000	spreadsheet	"Ilmatieteen laitos, Merentutkimuslaitos, Kumpula; Autopaikkalaskelma	State Real Property Agency	
28.9.2000	schedule	"Ilmatieteen laitos, Merentutkimuslaitos; Uudisrakennushanke, Kumpula"	State Real Property Agency	
9.10.2000	memo	"Lausunto merentutkimuslaitoksen ja ilmatieteen laitoksen toimitalohankkeesta" (on the request of the Ministry of Transport and Communications)	City Planning Department	
10.10.2000	map	"Kumpulan yliopistoalue; Merentutkimuslaitoksen ja Ilmatieteen laitoksen mahdollinen tonttialue" (on the request of the Ministry of Transport and Communications)	City Planning Department	
25.10.2000	memo	"Merentutkimuslaitoksen ja Ilmatieteen laitoksen toimitalohanke"	Ministry of Transport and Communications	
26.10.2000	memo	"Yliopiston lausunto merentutkimuslaitoksen ja ilmatieteen laitoksen toimitalohankkeesta" (on the request of the Ministry of Transport and	University of Helsinki	
10.1.2001	memo	"IL-MTL-SYKE laboratoriot Kumpulan alueella"	FMI	
11.1.2001	memo	"Kumpulan rakennussuunnitelmaan liittyviä synergiatekijöitä" (on the basis of meeting between the FMI and FIMR)	FMI, FIMR	

11.1.2001	minutes	"Neuvottelu tutkimuslaitosten laboratoriotilojen sijoittumisesta Kumpulan hankkeessa" (meeting with representatives from the Ministry of Transport and Communications, FMI, FIMR, Ministry of the Enviroment, Finnish Environment Institute, State Real Property Agency)	Ministry of Transport and Communications	
16.1.2001	memo	"Kumpula-hankkeet; Ilmatieteen laitos, Merentutkimuslaitos, Suomen ympäristökeskus"	State Real Property Agency	
25.1.2001	email	"Kumpula"	State Real Property Agency	
25.1.2001	memo	"Kumpula-hankkeet; Ilmatieteen laitos, Merentutkimuslaitos, Suomen ympäristökeskus"	State Real Property Agency	
31.1.2001	publication	"Selvitys Ilmatieteen laitoksen ja Merentutkimuslaitoksen yhteistyön ja Ilmatieteen laitoksen maksullisen liiketoiminnan kehittämisestä sekä laitosten yhteisestä toimitalohankkeesta"	Ministry of Transport and Communications	Reports and Memoranda of the Ministry of Transport and Communications B9/2001. Published 7.2.2001.
19.2.2001	publication	"Selvitys Ilmatieteen laitoksen ja Merentutkimuslaitoksen yhteistyön ja Ilmatieteen laitoksen maksullisen liiketoiminnan kehittämisestä sekä laitosten yhteisestä toimitalohankkeesta"	Government	weekly newsletter of the Government
8.3.2001	email	"fwd: LM:n tiedote 7.2."	FMI	
12.3.2001	spreadsheet	"Ilmatieteen laitos, Helsinki; Vuokra-arvio"	Senate Properties	
12.3.2001	spreadsheet	"Merentutkimuslaitos, Helsinki; Vuokra-arvio"	Senate Properties	
12.3.2001	spreadsheet	"Ilmatieteen laitos, Merentutkimuslaitos, Kumpula; Laajuus- ja kustannustiedot"	Senate Properties	
5.4.2001	email	"Re: Kumpulan sopimukset"	FIMR	
17.4.2001	telefax	"IL asettaa johtoryhmän laitoksen Kumpulaan sijoitettavan toimitalon uudisrakennushanketta varten"	FMI	
20.4.2001	email	"Kumpulan hankkeen investointiesitys KORJATTU VIESTI"	Senate Properties	
16.5.2001	memo	"Kumpulan hankkeen rahoitus"	Senate Properties	
23.5.2001	publication	"Ministeriöiden sektoritutkimuksen strateginen kehittäminen"	Science and Technology Policy Council	

12.6.2001	email	"Kumpula-kokous perjantaina, 15.6. klo 8.00"	Senate Properties	
12.6.2001	memo	"Kumpuhan hankkeen rahoitus ja toteutumisriskit, IL ja MTL"	Senate Properties	
15.6.2001	minutes	"Kumpula-hankkeen rahoitus" (meeting with representative from the FMI, FIMR, Senate Properties, financial consultants"	Senate Properties	
4.9.2001	memo	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilahanke, Kumpula"	Senate Properties	
10.9.2001	draft contract	"Sopimus; Ilmatieteen laitoksen ja Merentutkimuslaitoksen Kumpulan -toimitalohankkeen suunnittelukilpailun järjestämisestä ja rakennushankkeen toteuttamisaikataulusta"	FMI	
18.9.2001	letter	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitalohanke" (to the the Director General of Senate Properties)	Minister of Transport and Communications	
10.10.2001	letter	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitalohanke" (to the Minister of Transport and Communications)	Senate Properties	
31.10.2001	memo	"Kiinteistörahoitusprosessi Ilmatieteenlaitos/Merentutkimuslaitos"	Construction management consultants	
8.11.2001	memo	"Valtioneuvoston periaatepäätös valtion toimintojen sijoittamisen strategiasta"	Government	
8.11.2001	publication	"Periaatepäätös valtion toimintojen sijoittamisen strategiasta"	Government	Press release 253/2001
7.12.2001	email	"Toimitalohanke"	Senate Properties	
10.12.2001	bid	"Ilmatieteenlaitos ja Merentutkimuslaitos projekti, Kumpula; Suunnittelu-, toteutus- ja rahoituskilpailun valmistelu"	Construction management consultants	
18.12.2001	order	"Mittaukset, pohjatutkimukset ja perustamistapalausunto; IL ja MTL -hanke, Kumpula"	Senate Properties	
20.12.2001	order	"Suunnittelu-, toteutus- ja rahoituskilpailun valmistelu"	Senate Properties	
7.1.2002	schedule	"Kumpula-hanke; Valmistelevat toimenpiteet, järjestys"	Senate Properties	

10.1.2002	publication	Announcement of the Design & Build & Finance competition	Senate Properties	Official Journal 10.1.2002/1-2, page 52
31.1.2002	order	"Kumpula-hanke, suunnitteluohjeen laatiminen"	Senate Properties	
5.2.2002	email	"Kumpula-hanke"	Senate Properties	
6.2.2002	minutes	"Kumpula-hanke" (meeting with representatives from the FMI, FIMR, Senate Properties)	Senate Properties	
11.3.2002	memo	"Kumpula-hanke, Ilmatieteen laitos ja Merentutkimuslaitos"	Senate Properties	
15.3.2002	map	Initial drawings for the public utilities on the Kumpula hill	City Planning Department	
18.3.2002	schedule	"Kumpula-hanke; Valmistelevat toimenpiteet, järjestys"	Senate Properties	
4.4.2002	memo	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen suunnittelun asemakaavalliset tavoitteet"	City Planning Department	
5.4.2002	email	"pkt ote kumpula"	Senate Properties	
8.4.2002	announcement	"Ilmoitus asemakaavan muutoksen vireilletulosta, osallistumis- ja arviointisuunnitelmasta ja nähtävilläolosta"	City Planning Department	
16.4.2002	photograp	Aerial photographs of Kumpula hill for the initial draft plan	City Planning Department	
14.5.2002	planning proposal	"Kumpulan mäen asemakaavan muuttaminen Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilahanketta varten" (to the City Planning	Senate Properties	
6.5.2002	email	"muistio"	Engel rakennuttamispalvelut Oy	
8.4.2002	memo	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen Kumpulan toimitalohanke" (prepared for the Cabinet Finance Committee)	Ministry of Transport and Communications	
16.5.2002	law	"Laki valtion yksikköjen ja toimintojen sijoittamista koskevasta toimivallasta 16.5.2002/362"	Parliament	362/2002
30.5.2002	memo	"Kumpulan mäen aluetta koskeva asemakaavan muutosehdotus (nro 11XXX)" (for the City Planning Committee)	City Planning Department	
2.6.2002	letter	"Ilmatieteenlaitoksen ja Merentutkimuslaitoksen Kumpulan toimitalohankkeen esisopimuksen	Ministry of Transport and Communications	998/12/2002
24.6.2002	schedule	"Alustava piirustusaikataulu; Kumpulan tarjousprojekti"	Atrium principal contractor	

27.6.2002	decree	"Valtioneuvoston asetus valtion yksikköjen ja toimintojen sijoittamista koskevasta toimivallasta"	Government	567/2002
27.6.2002	letter	"Ilmatieteenlaitoksen ja Merentutkimuslaitoksen tarjouspyynnöt" (for Senate Properties)	A company excluded from the competitive bidding	
24.7.2002	letter	"Kumpula-hankkeen tarjouspyynnöt" (reply to the excluded company)	Senate Properties	
15.8.2002	minutes	"Pöytäkirja 15.8.2002 pidetystä seminaarista; Ilmatieteen laitos ja Merentutkimuslaitos; Suunnittelu-, toteutus- ja rahoituskilpailu; Kumpula, Helsinki"	Senate Properties	
14.10.2002	notes	"Kumpula palaveri"	Senate Properties	
2002	notes	"Kumpulan yliopistoalueen suunnittelun ja rakentamisen vaiheet"	City Planning Department	
25.10.2002	publication	"Valtioneuvoston Viikko 43, 19.10. - 25.10.2002"	Government	weekly newsletter of the Government
11.11.2002	presentation	"Cumulus"	Cumulus team	
30.1.2003	evaluation record	"Arvostelupöytäkirja; Suunnittelu- toteutus- ja rahoituskilpailu; Ilmatieteen laitos ja Merentutkimuslaitos; Toimitilahanke; Kumpula, Helsinki"	Senate Properties	
7.2.2003	publication	"Valtioneuvoston Viikko 6, 1.2. - 7.2.2003"	Government	weekly newsletter of the Government
10.2.2003	memo	"Kumpula; Asemakaavan muutoksen nro 11095 selostus" (for the City Board)	City Planning Department	
6.3.2003	memo	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen Kumpulan toimitalohanketta koskeva vuokrasopimus" (for the Cabinet Finance Committee)	Ministry of Transport and Communications	
10.3.2003	publication	"Valtion toimintojen uudelleen sijoittamisen koordinaatioryhmä asetettiin uudeksi toimikaudeksi"	Government	Press release 64/2003
13.3.2003	memo	"Sopimuksen tekeminen toimitilojen vuokraamisesta"	Ministry of Transport and Communications	
26.3.2003	memo	"Alueellistamisen jatkamista koskevan 5.2.2003 tehdyn hallituksen kannanoton 14 kohdan edellyttämä liikenne- ja viestintäministeriön selvitys" (for the Government)	Ministry of Transport and Communications	

26.3.2003	memo	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilahanke Kumpulassa" (for the Coordination Group for Regionalisation)	Ministry of Transport and Communications	461/27/2003
3.4.2003	memo	Ilmatieteen laitoksen ja Merentutkimuslaitoksen Kumpulan toimitalohanketta koskeva vuokrasopimus" (for the Cabinet Finance Committee)	Ministry of Transport and Communications	
10.4.2003	memo	"Päätös; Sopimuksen tekeminen toimitilojen vuokraamisesta"	Cabinet Finance Committee	
10.4.2003	publication	"Valtioneuvoston raha-asiainvaliokunnan istunto 10.4.2003"	Government	Press release
10.4.2003	web page	"Ilmatieteen laitos ja Merentutkimuslaitos saman katon alle" (news article on the website)	FIMR	printout from website
11.4.2003	publication	"Valtioneuvoston Viikko 15, 5.4. - 11.4.2003"	Government	weekly newsletter of the Government
2003	slideshow	"Atrium; Merentutkimuslaitoksen ja Ilmatieteen laitoksen toimitilat"	Atrium principal contractor	
2003	illustration	the network of contracts	Atrium principal contractor	
16.5.2003	spreadsheet	"Kiinteistön perustiedot ja korjaustarve vuosina 2005-2034"	Atrium principal contractor	
17.6.2003	illustration	"Toteutusmalli, Kumpula"	Atrium principal contractor	
17.6.2003	publication	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilat Kumpulaan"	Senate Properties	Press release
14.8.2003	schedule	"Kumpula-hanke kokousaikataulurunko"	Contruction management consultants	
26.5.2003	publication	"Hallitus jatkaa keskushallinnon toimintojen alueellistamista"	Government	Press release 156/2003
22.8.2003	publication	"Valtioneuvoston Viikko 34, 16.8. - 22.8.2003"	Government	weekly newsletter of the Government
26.8.2003	schedule	"Alustava projektiaikataulu"	Atrium principal contractor	
5.9.2003	illustration	A different version of Atrium floorplan	Atrium architect	
29.9.2003	spreadsheet	"Atrium laajuusvertailu" (comparisons of different floorplan version in terms of their size)	Atrium architect	
24.10.2003	web page	"Kumpulanmäen kohtalonkysymyksiä; Kolmekymmentä vuotta visioita ja kauhuskenaarioita"	local inhabitants	printout from website

29.10.2003	web page	"Kysymyksia ja vastauksia Kumpulasta" (printout from the intranet pages for the FMI and FIMR)	FMI, FIMR	printout from website
29.10.2003	web page	"Toimitalohankkeen organisaatio" (printout from the intranet pages for the FMI and FIMR)	FMI, FIMR	printout from website
29.10.2003	web page	"Kumpulan rakennushankkeen aikataulu" (printout from the intranet pages for the FMI and FIMR)	FMI, FIMR	printout from website
3.10.2003	schedule	"Suunnitteluaikataulu"	Atrium principal contractor	
30.10.2003	drawing	"Atrium; Ilmatieteen laitos ja Merentutkimuslaitos; Pääpiirustus"	Atrium architect	
3.11.2003	publication	"Suuria rakentamiskohteita pääkaupunkiseudulla; Tilannekatsaus, lokakuu 2003"	Helsinki Metropolitan Area Council	
21.11.2003	publication	"Joukkoliikenteen tiedelinja; Alustava liikennöintisuunnitelma 2004 - 2007" (disseminated in the consultation event of FMI employees 7.4.2004)	Helsinki Metropolitan Area Council	Pääkaupunkiseudun julkaisusarja B 2003:15
20.1.2004	web page	"Ministeri Luhtanen: Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilojen yhdistämisestä eväitä hajasijoituskeskusteluun"	Ministry of Transport and Communications	printout from website
20.1.2004		"Peruskirja" (ceremonial document for the ceremony of the casting the foundation stone)		
13.2.2004	memo	Remarks and timeline regarding the project (on the request of the researcher)	Senate Properties	
1.4.2004	drawing	Atrium floorplan (disseminated in the consultation event of FMI employees 7.4.2004)	Atrium architect	
May 2004	web page		local inhabitants	printout from website
2004	web page	"Toimintakertomus 2003; Päätökset rakennusasioissa"	Helsinki City Building Regulation Department	printout from website

NOTE! This is the PDF version of the thesis. In this appendix (3) the page numbers do not exactly match the original printout.

Date	Title	Reference
1986	"Kumpula - helsinkiläistä täydennysrakentamista" (written by the city planners)	Arkkitehti 8/1986
3.11.1997	"Fysiikan laitosten rakentaminen Kumpulaan alkaa 1999"	Helsingin Sanomat 3.11.1997, page B3
5.5.2000	"Valtion maksettava osa vuokrista takaisin yliopistoille" (opinion)	Helsingin Sanomat 5.5.2000, page A5
13.5.2000	"Paluuta ilmaistalouden maailmaan ei enää ole" (opinion by the Director General of Senate Properties)	Helsingin Sanomat 13.5.2000, page A5
2.1.2001	"Yliopistot tympääntyneet kiinteistöjensä vuokrasählinkeihin"	Helsingin Sanomat 2.1.2001, page C7
15.1.2001	"Entä jos vietäisiin koko yliopisto pörssin arvioitavaksi" (opinion by Anne Haila)	Helsingin Sanomat 15.1.2001, page A5
2.2.2001	"Meilahen uusi Biomedicum sai vuoden betonipalkinnon	Helsingin Sanomat 2.2.2001, page B9
28.8.2001	"Yliopiston uusi talo vihitään Kumpulassa"	Helsingin Sanomat 28.8.2001, page B3
7.9.2001	"Kadunnimisekoilu maustaa fysiikan laitoksen avajaisia"	Helsingin Sanomat 7.9.2001, page B2
2002	"Helsingin yliopisto, Physicum"	Teräsrakenne 3/2001
1.12.2001	"Yliopistoja rakennettu ja korjattu viime vuodet ennätystahtiin"	Helsingin Sanomat 1.12.2001, page A7
13.2.2002	"Suomi rakentaa Alvar Aallon jälkeen"	Ilta-Sanomat / TV-Lehti, page 5
2002	"Biomedicum, Helsinki"	Teräsrakenne 1/2002
4.5.2002	"Yliopistoille esitetään 12 miljoonan vuokrahelpotuksia"	Helsingin Sanomat 4.5.2002, page A8
6.5.2002	"Valtion kiinteistöpeli korostaa liikaa tuottoa" (editorial)	Helsingin Sanomat 6.5.2002, page A4
10.9.2002	"Antero Toikan teos valmistui Kumpulan Physicumiin"	Helsingin Sanomat 10.9.2002, page B4
30.9.2002	"Valtion taideostoksiin ei lisärahaa ensi vuodelle"	Helsingin Sanomat 30.9.2002, page A9
2.2.2003	"Harvat arkkitehdit pääsevät kutsukilpailuihin"	Helsingin Sanoma 2.2.2003, page B1
18.6.2003	"YIT toteuttaa toimitalon meteorologeille ja merentutkijoille"	Helsingin Sanomat 18.6.2003, page D3
27.6.2003	"Kumpulan liikuntakeskus avautuu syyskuussa"	Helsingin Sanomat 27.6.2003, page B1
4.9.2003	"Kiinteistöleasingissä 25-30 vuoden vastuut"	Rakennuslehti 27/2003
2003	"Kumpulan yliopistokampus kasvaa"	Kontrahti 3/2003, page 31
2003	"Ilmatieteen laitoksen ja Merentutkimuslaitoksen toimitilat Kumpulaan; Julkisen ja yksityisen toimijan osaaminen yhdistettiin"	Kontrahti 4/2003, pages 22-25
30.1.2005	"Opiskelijat maistelivat Kumpulassa kiinalaista lohikäärmeen luuta"	Helsingin Sanomat 30.1.2005, page C6

Date	Informant
7.8.2003	City planner
19.9.2003	Project manager of the structural engineering company (Atrium)
24.9.2003	Atrium project leader
10.2.2003	Atrium superintendent
10.2.2003	Atrium principal architect
21.10.2003	Atrium project manager
21.10.2003	Atrium project engineer
23.10.2003	Senate Properties project manager
29.10.2003	FMI project manager
31.10.2003	Construction management consultant
3.11.2003	Atrium project architect
18.11.2003	FIMR project manager
4.12.2003	Two construction managers, Atrium
18.12.2003	City planner
22.12.2003	Atrium contract expert
8.1.2004	Cumulus project manager
15.1.2004	The Director General of the FMI
30.1.2004	Atrium project engineer
11.2.2004	Director of the Special Premises Division, Senate Properties
12.2.2004	The Director General of the FIMR
8.6.2004	Senate Properties project manager
15.3.2005	City planner
22.3.2005	The Head of the Technical Department, University of Helsinki