The Work of the Studio Aalto Collaborators: Practice, Craft and Theory

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DATUTOP
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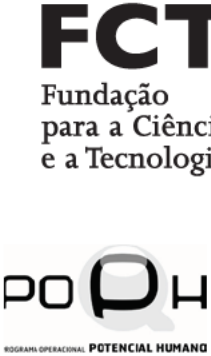

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Acknowledgments

When I first came to Finland as an Erasmus exchange student in August 2003, I was keen to visit the various works of Alvar Aalto. I remember well my first encounter with the Helsinki University of Technology campus in Otaniemi. On close inspection, the forms and contents seemed to suggest each other: the entrance court with the classroom wing converging in the Main Hall, the precision of the construction, and the careful choice of materials. Together, these left a strong impression upon me. During the next year, I lived and studied in another campus, at the Tampere University of Technology in Hervanta. Though the planning of this suburb of Tampere had started just as the Otaniemi campus was being completed in 1967, I was unable to recognize the presence of the latter in the former when it came to my knowledge that it had been designed by one of Aalto's collaborators, Toivo Korhonen.

I had the opportunity to think about this issue, however, during the lectures in the history of architecture by Senior Lecturer (now Professor) Olli-Paavo Koponen, and I was able to discuss Aalto's influence in the work of the collaborators with Professor Emeritus Tore Tallqvist, who had himself worked in the Studio Aalto in 1965-1972.

I would like to express my sincere gratitude to Professor Koponen, for his openness, understanding, guidance, and continuous support. My gratitude extends to Professor Tallqvist, for providing key insights during the planning of the thesis.

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At an early stage of this research I had the chance to work in what used to be the Studio Aalto; the director of the Alvar Aalto Academy in 2009, Esa Laaksonen, and the people working in Tiilimäki at that time, made me feel at home. I would like to thank also the director of the Alvar Aalto Foundation Tommi Lindh, exhibition producer Mari Forsberg, and chief curator Mia Hipeli for their invitation and support in preparing the exhibition "The Work of Alvar Aalto's Collaborators", held at the Studio Aalto in 2014.

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and helped me in searching through the university archives.

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Special thanks to my parents and my brother Pedro, to my uncle Miguel, and to Jenni.

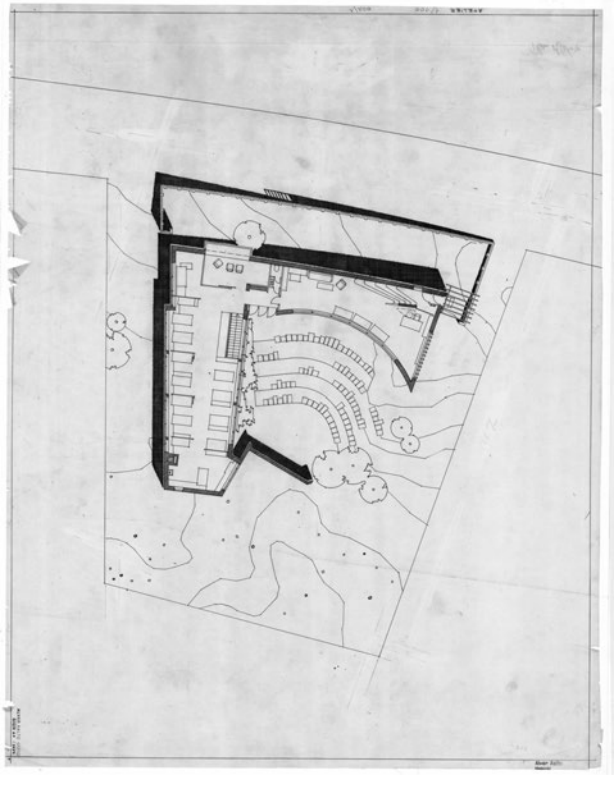
Alvar Aalto, Studio Aalto, Helsinki (1954-1955, extended 1962-1963).
View from the street.

Abstract

In 1954 Alvar Aalto built a new and larger studio building close to his existing combined home and studio in Munkkiniemi in Helsinki. The current study complements previous studies on the work produced at the so-called Studio Aalto over the next two decades by stressing its collective dimension and examining how in turn it was appropriated by the Studio collaborators.

This study is a combination of the history and theory of architecture and is structured thematically along three lines: *practice*, *craft*, and *theory*. The thesis as a whole is divided into 2 parts. Part I introduces and connects the work of the Studio with the work made independently by its members, a group of architects which has so far remained relatively unknown. A central question is thus whether these architects could continue the architectural profession at the level set out by the Studio. Part II concentrates on three case studies by members of the Studio: Jaakko Kontio (and Kalle Räike's) Lappeenranta University of Technology (1969-1975); Kaarlo Leppänen's Valkeakoski Cultural and Administrative Centre (1966-1973); Eric Adlercreutz (and Nils-Hinrik Aschan's) Jägarbacken Housing in Ekenäs (1968-1973).

The point of view of *practice* shows the relationship between the architecture and the circumstances, allowing for the problematization of the changes associated with the emergence of a welfare state in post-war Finland. Kontio's experience in university campus design is examined by considering the dialogues established with other people involved in the project. The point of view of *craft* emphasizes the action of successive generations upon the same material. Aalto's sense of tradition provoked a revision within the Modern Movement, but also contributed to the isolation of the Studio within Finnish architecture circles in the late 1960s. To contrapose the progressivist bias at that time, Leppänen's work is presented through a combination of technological and cultural approaches. In turn, *theory* is that part of architecture that can be discussed through ideas. The reconstitution of Adlercreutz's Pattern Language studies, based on those of Christopher Alexander, establishes a triangulation that clarifies the Studio's systematic and open method, thus helping to challenge the Studio's reputation for neglecting theory. The comparisons show that each of the collaborators combined something of their experience with Aalto with their own individual experiences, and used this combined experience, moreover, to face partly new problems. Taken bidirectionally, the comparisons encourage a reconsideration of Aalto's work and support my broader effort to confirm the continuity of architecture.



Studio Aalto. AAM.
Plan of the main floor.

Introduction

This study is part of a broader effort to confirm the continuity of a profession, namely architecture. The focus on Alvar Aalto – in fact, the focus on the work of the Studio Aalto collaborators – results, however, from the careful consideration of the circumstances surrounding it. On the one hand, the study complements previous ones on an experience and a body of work too often seen in terms of a brilliant individual, and instead acknowledges their collective dimension on numerous social, artistic and scientific levels. On the other, it suggests an examination of how this experience and body of work were individually appropriated.

Alvar Aalto (1898-1976) worked half of his career in partnership with his first wife, the architect Aino (Marsio) Aalto (1894-1949), from 1924 to her premature death in 1949, and an equal period of time in partnership with his second wife, the architect Elissa (Elsa Kaisa Mäkiniemi) Aalto (1922-1994), from 1952 to his own death in 1976, after which Elissa directed the office Alvar Aalto & Co until 1994.[1] Over its seventy years of existence, the Studio Aalto employed altogether more than three hundred architects,[2] and many of the architects who worked in the Studio later started their own independent offices; consequently, the Studio had a manifold direct and indirect influence. But contrary to the work undertaken in the Studio, the work made independently by the Studio collaborators has so far remained relatively unknown. Thus, instead of confining myself to the Studio's workings and masterpieces, in this study I set out to describe and connect the latter with the work made by some of its individual members, a group of architects who started their own offices at a crucial moment in Finland in the 1960s.

An important question to be addressed is whether these architects could continue the architectural profession at the level set out by the Studio. Then again, what would the continuity of architecture actually involve?

At this point – and due to my personal experience – I think of (my fellow countryman) the Portuguese architect Álvaro Siza, who has himself reflected much about Aalto's architecture. As Siza put it, Aalto's *"fundamental contribution"* is:

> *the double and sensitive distance from both the ambiguousness of neo-empiricism …* [and] *an architectonic language of rupture … Aalto proposes the act of planning not as a straight process, from analysis to synthesis, but as a continuous process, open, complex and comprehensive. He demonstrates that drawing comes from permanent dialogue between what pre-exists and the collective desire for transformation.*[3]

For Siza, Aalto's architecture puts in evidence the relationship between

continuity and change. But as his own work demonstrates, Siza has not only been able to interpret, but also to acquire the lesson of Aalto's contribution by transforming it. Finally, Siza's example is revealing in that it shows how the problem of influence cannot be reduced to a question of direct transmission of information.

It is necessary to have this point in mind when considering the work of the Studio Aalto collaborators. Each of them combined something of the shared experience with Aalto with his own individual experience and used this combined experience to face partly new conditions and problems. Taken bidirectionally, the comparison between the works of these two generations might therefore even encourage a reconsideration of Aalto's contribution.

In Siza's appraisal of Aalto's architecture the question of continuity and change stems from the very complexity of the architect's work. Indeed, it can be said that architecture is characterized by its capacity to sustain different, conflicting dimensions. Already in an old definition by Alberti, the work of the architect is described as a complex of social, artistic and scientific problems that requires a constant effort of re-making:

> *Him I consider the architect, who by sure and wonderful reason and method, knows both how to devise through his own mind and energy, and to realize by construction, whatever can be most beautifully fitted out for the noble needs of man, by the movement of weights and the joining and massing of bodies. To do this he must have an understanding and knowledge of all the highest and most noble disciplines.*[4]

This quality of multidimensionality is so important that the Finnish philosopher Georg Henrik von Wright referred to it as a case for the revision of the *"modern project"*. Taken one-sidedly, he explained, Kant's tripartite critique of the good, beauty and truth has led to a disintegration of human life. Architecture, on the contrary:

> *... problematizes, one could say, the very idea of modernity …* [it] *does not belong exclusively in the sphere of art. It also belongs in the sphere of techniques, and therewith in that of science. It has, moreover, a moral, i.e. social, dimension for which it cannot, like the 'pure' arts, detach itself.*[5]

In order to consider the work of the architect in this dynamic, complex sense, the following study is structured simultaneously along the lines of *practice, craft* and *theory*.

The study is generally divided into 2 parts. In Part I, I try to substantiate some tentative definitions of *practice, craft* and *theory*, as I describe the activities of the Studio Aalto and focus on a group of architects and projects. In Part II, I use

each of the points of view of *practice, craft* and *theory* to examine a collaborator case study, respectively: the Lappeenranta University of Technology campus (in particular the first stage, 1969-1975) by Jaakko Kontio (and Kalle Räike); the Valkeakoski Cultural and Administrative Centre (partly built in 1966-1973) by Kaarlo Leppänen; and the Jägarbacken Housing in Ekenäs (in Finnish Tammisaari) (1968-1973) by Eric Adlercreutz (and Nils-Hinrik Aschan). Although the 2 parts of the dissertation function with some autonomy from each other, it should be noted that a correspondence exists between the tripartite structure of the chapters of Part I and the case studies discussed in Part II, accordingly: *Chapter 1* connects with *Chapter 4*, *Chapter 2* with *Chapter 5,* and *Chapter 3* with *Chapter 6.*

The definition of *practice* adopted in this study shows the relationship between architecture and its political, economic and social circumstances by concentrating on the dialogue between the architect and other *people* involved in a project. By contrast, *craft* refers to the more internal aspects of the architect's work: it emphasizes, through a combination of cultural and technological approaches, the action of successive generations upon the same *material*. Finally, *theory* corresponds to that part of architecture which can be discussed through *ideas* and which can therefore be more clearly associated with knowledge and science in the broad sense.

From the point of view of *practice*, therefore, architecture appears foremost as an activity performed in a precise historical context. In the case of the Studio Aalto, the latter corresponds to the transition of Finland to a welfare country during the post-war years: Aalto's responsiveness to a period characterized by unprecedented growth, technological development, urbanization and social change reveals a first collective facet of the Studio. The construction of a larger Studio building in 1954 indicates that Aalto had to rely even more on his collaborators, and one could say with some certainty that for Kontio, Leppänen and Adlercreutz – who coincided working together in the Studio in the late 1950s – this experience marked the rest of their careers.[6]

The point of view of *craft* requires an understanding of architecture as a group of materials and processes which are continually transformed into more refined products for man's use and delight. As has been widely demonstrated, Aalto's sense of craft provoked a reappraisal of the role of tradition within the Modern Movement. His stance, however, was also perceived by some in Finland in the 1960s as being elitist. Counter to this, it will be argued that the Studio's cultural approach implied admiration and renewal of other architectures, thus suggesting one more collective facet of the Studio.

Through a process of conceptualization, *theory* allows for a discussion of architecture with autonomy from any specific space and time and promotes an exchange between different disciplines. Due to the combined effect of Aalto's own strategy and the radicalism of a younger generation of Finnish architects,

Studio Aalto.
View from the courtyard.

the Studio Aalto earned during its later years a reputation for neglecting theory; Aalto represented at that time the paradigmatic example of intuition. However, it has been since observed by colleagues and critics that the Studio pursued, in fact, a systematic and experimental approach derived from Aalto's critiques of Functionalism and Rationalism. Eventually, the Structuralist theories that emerged in the late 1960s would confirm both the contemporariness and the universality of the Studio's contribution.[7]

The *"Academy"*

Aalto's architecture links the past and present: for instance, he created in the Paimio Sanatorium (1929-1932) an original combination of technology, spatial planning and functionalist principles, while in the Säynätsalo Town Hall (1949-1952) he rooted his architecture in vernacular, topography and typology. Reflecting in 1947 on his own approach to design, Aalto explained to his Italian friend and colleague Ernesto N. Rogers how he worked from the initial sketch to the completed building, between experience and method. Rogers saw in Aalto's double critique of tradition and modernity a motive for the revision of the Modern Movement:

> *If Mies van der Rohe had produced a first synthesis, rationalizing organic architecture, twenty years later, Aalto made more organic rational architecture.*[8]

In 1954 Aalto moved from the atelier attached to his own home at Riihitie 20 in Helsinki to a new and larger purpose-built studio nearby at Tiilimäki 20. The new studio comprises of two wings, set at right angles, enclosing a stepped garden oriented towards the south and terminated by a third wall. One wing contains the main office space, where mostly the collaborators worked, while the other contains an atelier space dominated by a voluptuous column which combines the motifs of a stairs, a door, lanterns and a mezzanine. Aalto himself used to sit there drawing, his back turned against a ribbon window that curves gently around the garden. This curved wall, together with the curved steps of the sloping inner garden, gives the impression of an outdoor theatre or a ruinous school auditorium.

Aalto used to call the new studio *"my academy"*, a choice of words that is surprising since, for other Modern Movement architects, including Frank Lloyd Wright, Le Corbusier, and Walter Gropius, the academy was seen as the adversary. For Aalto, the name was both a pun about his pending nomination for the Academy of Finland (he was granted this honorary position in 1955) and an

acknowledgement of responsibility. He wrote in the building permit application for the new building:

> *My office, which has an exceptionally high workload at the present… has to provide training for numerous architects from abroad … The only solution I can see is to construct a special building … that would be a combination of my office and a kind of academy in miniature.*[9]

Aalto's use of the classical term academy denotes an active understanding of tradition that his biographer, Göran Schildt, has traced back to his early education in Jyväskylä.[10] Even when used informally, the name evokes a unique place and experience – the Academy of Plato founded in a grove outside Athens in 387 BC – and other meanings acquired through time: a professional community, a repository of culture, a research institution, etc.[11] It is thus a concept which fluidly captures an event and its influence, as Aalto indeed seemed aware of:

> *The basis of our work is friendly co-operation and the atmosphere is that of a family. All my collaborators are trained architects, none are mere draughtsman; thus, a practice with no organization, but on my responsibility, resting on common endeavour, not on discipline. Looking both backward and ahead I am deeply convinced of the great ability of those who have been working with me for many years. Many of them have distinguished themselves with buildings of their own design and this fills me with particular satisfaction.*[12]

Ultimately, the move to the new Studio confirmed Aalto's status as one of the masters of the Modern Movement.

In 1945, Bruno Zevi expounded his Organicist thesis by presenting Aalto and the Scandinavian architects' work as the European exponent of the approach pioneered by Frank Lloyd Wright in America. For Zevi, Organicism was not just an alternative but an improvement to the Functionalism of Corbusier and Gropius. If Functionalism had broken way from academicism by introducing new materials and technologies, Organicism rejected the latter's reductive view of science and technology by insisting on the idea of a *"humanization of architecture"*.[13]

In the second edition (1949) of his book *Space, Time and Architecture,* Sigfried Giedion acclaimed Aalto's work for its relation to place (and concretely to Finland), the history of architecture more broadly, and the problem of standardization, seen as modernity's decisive problem.[14] Later, in the 1965 and final edition of the book, Giedion aligned the pioneers and masters with an emerging *"third generation"* of modern architects, justifying the choice of the Danish architect Jørn Utzon by virtue of his proximity to Aalto: *"In 1945 he studied with Alvar Aalto and Gunnar Asplund. He regarded them as his Nordic*

teachers and later developed their tendencies further."[15]

Giedion created an expectation about the work of the Studio Aalto collaborators. But already in 1957, Rayner Banham had questioned the viability of this line of progression. Banham, who saw Aalto's example as that of *"unorthodoxy",* considered accordingly that the latter's influence was reflected in the divergences taken by the next generation.[16]

Banham, too, left only one (negative) alternative to the collaborators, but he anticipated well the competition growing between Aalto and his Finnish colleagues.

When they started their own offices, the Studio members, particularly the first generation of collaborators educated in the post-war years, found themselves in an awkward position: having started working *without* Aalto at a time when the latter was still active, these architects had to deal with both the intrinsic problem of finding the best rapport to the work made *with* Aalto, and the extrinsic problems that affected the profession at that time. Looking at his and his colleagues' professional trajectory, Tore Tallqvist, a collaborator of Aalto in 1965-1972, has identified this paradox exactly:

> *If you look at the history of the 20th century, the architectural tradition has continued, the next generation has started doing equally good designs. But there the tradition was broken somehow. This office was like a symphony orchestra … All their possibilities were used to the full, and great music was created here. But working alone seemed to be a problem for many, like Leppänen, whom I consider really talented. Working on their own didn't do justice to their skills.*[17]

As it will be seen, Aalto expanded the Studio by preserving a central position in the office organization. While this irreducible individual dimension partly explains the adaptability of the Studio to the changing circumstances, it could be asked whether it constituted also a limit, as Aalto's ageing brought with it a progressive dissociation between the Studio and its context. The dynamism of the *practice* during the 1960s presented likewise a problem to the collaborators. But in addition to this, the collaborators faced other kinds of challenge; for example, changes in Aalto's relative position within the Modern Movement posed a difficulty for them. While Aalto insisted that it was not desirable to be free from the bonds with the past, the more progressive architects addressed the new conditions by trying to create a correspondingly new architecture. But if the collaborators' awareness that knowledge is embedded in the materials and processes of the *craft* largely legitimates their appropriation of the Studio's products, it certainly contributed to their isolation in Finland at that time. Moreover, Aalto's decision to concentrate on design work and his apparent neglect for *theory* – which may have encouraged an actual neglect for theory among his collaborators – was

Jaakko Kontio and Kalle Räike, Lappeenranta University of Technology, I Stage (1969-1975).

Acess to the library wing through a stepped garden. Sculpture by Heikki Aspinen.

Kaarlo Leppänen, Valkeakoski Cultural and Administrative Centre (1966-1973).

The Vocational School is finished in whitewashed brick, the Library is finished in blue ceramic tiles.

Eric Adlercreutz and Nils-Hinrik Aschan, Jägarbacken Housing, Ekenäs/ Tammisaari (1968-1973).

Each group of four apartment blocks is centred on a community courtyard.

diametrically opposed to the enthusiasm for debate demonstrated by the younger generation of architects, then encouraged by the development in the fields of technology and computation, as well as by a Structuralist counter-reaction to it. Therefore, between the accusations of individualism and the critical revisions of Aalto's work that emerged a decade later, the 1960s were marked by a lack of reflection about the work of the Studio. Both those close to it and opposed to it failed somehow to understand how criticism could serve as a link between different generations. To counter this, the above-mentioned problematic provides roughly three hypotheses for examining the work of the Studio collaborators and for testing my claims of *continuity*.

Reflecting on the problem of Aalto's influence in 1979, Malcolm Quantrill suggested that modern architecture in Finland pivoted around Aalto for four decades, until this bond was broken when Aalto fell into a certain *"formalism"* and a *"technocratic"* trend arose in the late 1960s. *"I asked"*, wondered Quantrill in the late 1970s, *"if there appeared to be a new wave [in Finnish "aalto"], emerging that would assure the continuing international reputation of Finnish building design."*[18] To this purpose, Quantrill used both a wide lens and a sharp focus on Aalto, which allowed him to connect references fluently, including several designs by the Studio collaborators, but which also limited his survey to a kind of progress/decay narrative. For example, for Quantrill, Arto Sipinen's Raisio Town Hall (1977-1981) *"lacks youthful vitality"* and:

> *represents an indecisively eclectic view of Finnish modernism; as though, for example, Aalto's ideas had been filtered not through Ervi and Penttilä but through the secondary apparatus of Jorma Järvi.*[19]

On the other hand, the main building for Joensuu University (1973-1989), designed by the Studio's former collaborator Jan Söderlund (with Erkki Valovirta and Risto Marila), is for Quantrill:

> *not at all a tired replay of exhausted Aalto themes. The plan is compact and clean, while the massing and fenestration are refreshing in the variety they achieve using simple, restrained means.*[20]

To avoid this same effect, I've shifted the focus away from Aalto and concentrated as much as possible on the work of the Studio collaborators by following a thematic structure. More than determining exhaustively the historical connections between these architects, and as the focus on case studies indicates, the aim of this study has remained to reflect about particular works of architecture.

This approach may betray my position in relation to history: in reflecting on how the works of Kontio, Leppänen and Adlercreutz relate to Aalto's work, I have attempted to reflect, ultimately, upon what connects me myself to them and Aalto,

as an architect. And so, what was initially presented as a minor topic – the work of the Studio Aalto collaborators – has become an occasion to address something more essential, that is, to think how in the last fifty years, *modernization*, the *modernisms,* and the *design methods,* for example, have obliged us to reconsider the relevance of architecture. To evoke an argument posited by the Italian architect Giorgio Grassi in his article "Architecture, Dead Language?":

> *Architecture has become an experience based in the use of increasingly diverse and sophisticated means of expression, but also an experience increasingly strange and withdrawn from life, of which it has been in turn and always up to now its most privileged and direct interpreter. The language of architecture, common in the past, has become a strange group of discordant signs often incompatible with each other. Architecture, which has been always a privileged interpreter of common, elementary and immediate contents; architecture, whose distinctive character has been always linearity and clarity regarding its object. Architecture, that mode of expression, that world in which purpose always prevails, the tool: its specific object. It causes embarrassment to have to remind ourselves of these old definitions. Who would be interested in architecture under these conditions?*[21]

The background of the Studio Aalto

The first professional architects to become established in Finland arrived at a crucial moment in the early 19th century as the country ceased to be under Swedish rule and became part of the Russian Empire, as the Grand Duchy of Finland. The Italian-born Carlo Bassi and Prussian-born Carl Ludwig Engel, who trained in Stockholm and Berlin respectively, had a major impact in the planning and supervision of public works. The first private architectural practices in Finland emerged in the latter half of the century in response to industrialization and the specialization of building types. The Swedish-born architect Georg Theodor Chiewitz set up an atelier that was also an academy dedicated to lobbying, collecting architectural-historical artefacts and training. Formal education started in 1872 in the Polytechnic School in Helsinki, later Helsinki University of Technology, and today Aalto University. The profession rapidly consolidated its territory, inspired by the innovations of iron and concrete and the discussion of cultural identity. The combined house-atelier of the architects Gesellius-Lindgren-Saarinen built specifically for its purpose in a stunning rural location in Hvitträsk outside Helsinki, became the professional reference in the early 20th century. One of the partners of Gesellius-Lindgren-Saarinen, Armas Lindgren, was appointed as

a professor at the University of Technology in the year of Finnish independence in 1917, one year after Aalto started his studies.[22]

In 1923, and after a short period of training in Sweden, Aalto established his own atelier in Jyväskylä, the town where he had grown up, and where his father worked as a land surveyor. In the following year, he married and formed a partnership with architect Aino Marsio. The Aaltos started working on small projects for wooden villas and church renovations,[23] but they soon became involved in the Modern Movement debate, especially after moving to Turku in 1927 to be closer to their ongoing larger work.[24] In 1935, they moved again, this time to Helsinki, first to temporary accommodation and then into a house and atelier designed by themselves at Riihitie 20 in the district of Munkkiniemi. This marked the beginning of a prolific association with the industrialist and art patrons Harry and Maire Gullichsen, which led to the creation of the Artek furniture company and the design of the Villa Mairea (1937-1940), among other remarkable commissions.[25]

Thus, the Aaltos explored the basic themes of their career at a fairly young age, before Finland's three wars (1939-1945) disrupted their professional activity. Alvar Aalto divided his time among administrative and pedagogical duties, i.e. directing the Finnish Association of Architects (SAFA) between 1943 and 1958, as well as launching the Reconstruction Office in 1942 (later, SAFA's Standardization Institute), and teaching in the United States at the Massachusetts Institute of Technology (MIT) between 1940 and 1949. Aino Aalto's premature death in 1949 culminated tragically this period.[26]

In 1952 Alvar Aalto married and formed a partnership with his second wife, Elissa Aalto, who had been a collaborator at the Studio after graduating in architecture in 1949 (the partnership of Alvar and Elissa Aalto became officialised in 1958). The period of post-war reconstruction provided the Studio with the opportunity to concentrate again on building, first on housing and industrial buildings, and then on larger public buildings. Among the exceptional projects developed in the Studio during the next two decades are the campuses of the Helsinki University of Technology in Otaniemi (1949-1968) and the Jyväskylä University (1951-1970). Aalto tried to adapt to the new circumstances by expanding his office while preserving an individual, ethical dimensions typical of the atelier organizations. He soon doubled his team of collaborators and was forced to rent temporary office space adjacent to the ongoing building sites, as well as in the Finnish Engineers' Association building in Ratakatu 9 in the centre of Helsinki (a building Aalto himself had designed in 1948-1953), before building a new Studio building in 1954 (enlarged in 1962).[27]

By contrast, inspired by recent study trips to the United States, Aalto's former collaborators Aarne Ervi[28] and Viljo Revell,[29] introduced in Finland the principle of so-called *teamwork* offices.[30] Aalto observed with scepticism this growing interest in decentralized, scientific and multidisciplinary organizations.[31]

But the editor of Revell's complete works and director of the Finnish Museum of Architecture, Kyösti Ålander, could then barely hide his enthusiasm and praised the innovations of Revell's office in the following terms:

> *Such young architects and students came to this* [Revell's] *studio as wished to revitalize architecture, and who felt capable of doing so; in other words, the most talented ones. They were attracted by the method of working as well as by the advanced ideas. The assistants carried out their work independently, and Revell gave them instructions, mainly by way of criticism … The method of working also helped to make the assistants themselves independent, and it can be noted that many of the leading architects of today began their careers in this 'academy'.*[32]

Ålander's defence of Revell's office suggests a change in the perception of the Studio Aalto; for Ålander it is as if in *another* academy the work was carried out irrationally. But were Aalto's assistants really *less talented* than the others?

Curiously, to this impression of the Studio's work being the product of an individual genius have also contributed to the studies that were more sympathetic to the Studio, such as Zevi's somewhat simplistic defense of Aalto as a leader of Organicist architecture, and Schildt's three-part biography of Aalto published in the 1980s.

For example, Zevi's explanation about how Organicist architecture proceeded from the interior to the exterior and based on the observation of human needs – an argument which divided the field of architecture in the 1950s – is contradicted by the actual development of the Studio's architecture, increasingly aware of the issue of monumentality and the collective effort contained in available materials and forms. By identifying Aalto's contribution with an open architecture of flowing space, Zevi might have involuntarily contributed to it being overlooked by his own detractors.[33]

Schildt's biography – which I still consider the most complete reading of Aalto – might have had a comparable paradoxical effect. Schildt sheds limited light on the contribution of the collaborators. Even considering that his focus is on the relationship between Aalto's life and work, and though there is no point in denying his talent, the reduction of the collaboration to the *"administrative machinery that made it possible for his visions to come true"* seems unjust.[34]

From an interview with the Swiss collaborator Lisbeth Sachs, Schildt does nevertheless make a memorable reconstruction of the Villa Mairea design process, described as a creative flow combining *"a wealth of mutually incompatible ideas",* and therefore requiring the assistance of a collaborator to keep up a continuous dialogue between ideas, drawings, models and the building site.[35] But finally, even Schildt's preference for quoting non-Finnish collaborators can be questioned, since he himself admitted that *"the more taciturn Finns… also made the most*

significant contributions as office managers and project directors".[36]

Following the publication of Schildt's biography, the collaborators started documenting an oral history of the Studio, which has offered not only additional insight into the working routines, techniques and ideas, but also an introduction to the other individuals who worked in the Studio.[37]

In addition to contributing to this project, Harry Charrington, an English architect and a former collaborator of Elissa Aalto at Alvar Aalto & Co in 1985–87, wrote his doctoral thesis about the Studio Aalto's practices. Charrington recognized in the Studio Aalto's *"public spaces"* a way of combining the individual and the collective, history and modernity, play and reason. For Charrington, the Studio's *"public spaces"*, and moreover, the *"skills"* and *"conditions"* that supported their design, indicate a universality that has been absent in the depictions of Aalto's architecture. Charrington limited his scope to the work made in the Studio; however, his depiction of the Studio as a collective experience situated in a broader social-political circumstance, geographical-cultural context, and technical-artistic discipline indeed provided an important support for the present study.[38]

Neither Charrington, nor Schildt, however, addressed in their studies the work made independently by the Studio Aalto collaborators. In this respect, and just as he tended to overlook the contribution of the collaborators to the Studio, Schildt also seemed to expect their work to remain subservient to that of Aalto:

> *Aalto called his office 'my academy'. More appropriate would have been 'my workshop', since for hundreds of young architects, a stay of two or three years at Aalto's office was an important stepping-stone in their training, just as working in the studio of one of the great Renaissance masters once was for aspiring artists.*[39]

Paradoxically, Schildt disregarded the external difficulties that – according to himself – the Studio faced in its later years.[40] As he put it elsewhere, the 1960s represent an inflection point in the Studio's activities, marked by a decline in popularity both in terms of design office and place of employment, as attested by the number of delayed and cancelled projects, notably, the monumental plan for the Helsinki city centre, of which several unrealized versions were produced between 1959 and 1975.[41]

The above-mentioned project for the Helsinki University of Technology campus in Otaniemi illustrates well the ambiguities in the relationship between the Studio and its context during this period. For example, the construction of the campus promoted an opening up of society which soon turned itself into a source of criticism of the original plan. Thus, as the plan of Otaniemi was being completed in 1967, the government launched a second and even more ambitious university planning programme. For direct and indirect motives, several of the Studio collaborators were involved in the various university commissions from

the period; yet, and in spite of the endurance of a kind of professional network, such rapid turns of events called into question the experience that had just been acquired, as it is problematized in *Chapter 1*.

By contrast with Schildt, Charrington commented on the difficulties experienced by the collaborators after leaving the Studio, by stressing their excessive proximity to Aalto:

> *The singularity of such an architectural atelier was reinforced by the expectation that an architect employed in an atelier would leave after a few years to either find work in another atelier or to set up their own practice … The approach of the Aalto atelier was so particular that members of it remarked that if an architect stayed for more than five years they were lost to its culture and would not recover their own expression.*[42]

Charrington's comment on the Studio being *"so particular"* should not be confused with it being individualist, on the contrary. As mentioned above – and without disputing *"Aalto's status as the central figure in the history of the atelier"* – Charrington stresses precisely the collective dimension of the work of the Studio, going even beyond the social dimension discussed above, to indicate a broader cultural key to the understanding of the Studio's work, for example, by insisting on the Studio's identification with vernacular and classic architectures. Charrington concentrates in particular on the Seinäjoki Civic Centre as a case study, which he considers exemplary in *"issues regarding context, history, typology, pluralism and 'sense of place'"*.[43]

As will be discussed in *Chapter 2*, the past served as a stimulus and an instrument to involve a wide group of people in a project. Aalto's reliance on the materials and processes of architecture as a way to work with precision, without having to impose a methodology, is attested even in the architecture of the Studio, demonstrative of a creative way of relating to tradition.

Located at walking distance from the Aalto Riihitie house, where the office had until then operated and which Aalto continued to use as a more personal working space, the new Studio is protected from the street by a white-brick wall and spreads out in two levels and two wings forming an inner courtyard. Tallqvist has recognized in its at once simple and complex architecture what he considers to be essential dimensions of the architect's work – past and present, routine and imagination:

> *The inner courtyard following the contour to the terrain is an adaptation of the form of a Greek theatre, linking remembering and remembrance to the framework of the studio building. The service spaces are located on the entrance-level floor, which forms a territory of its own, dedicated to maintaining and maintenance. The main level office wing conveys a*

message of endeavouring and work, while the adjacent studio allows room for longing and dreams.[44]

The evocation of the form of the Greek theatre directs us to the question of *monumentality,* which for Aalto meant a deeper relationship with the city in its physical, temporal and symbolic dimensions.

The relationship between modern architecture and monumentality had been called into question in a famous essay from 1943, "Nine Points on Monumentality", written jointly by Josep Lluís Sert, Fernand Léger and Sigfried Giedion, and which launched an internal reaction to the principles of decentralization and functional zoning celebrated by the CIAM Athens Charter (1933). By asking whether modern architecture could be as enduring and significant as past architectures, Sert, Léger and Giedion envisaged the building of civic centres to serve as the meeting point between the previously separated functions of dwelling, work, recreation and transport. The paradox of creating a simultaneously modern and representative building is implicit in their own observation that: *"Periods which exist for the moment have been unable to create lasting monuments."*[45] Like Sert, Léger and Giedion, also Aalto felt the need for a cultural revision of the principles of the Modern Movement. Aalto's interest in monumentality is best exemplified in his projects for civic centres, above all, the Seinäjoki Civic Centre, a project which started with a commission for the Church and Parish Centre (1951-1966) and continued with a separate commission for the Town Hall (1958-1966), Library (1960-1965), Administrative Offices (1962-1968) and Theatre (1961-1988).[46]

In Finland, the rapid upsurge and decline of interest in projects for civic centres (most of Aalto's civic centre plans remained unrealized or uncompleted) reflects a specific historical stage in a country going through rapid urbanization, and moreover indicates a broader divergence between architectural positions as the supporters of the modern monumentality met the opposition of others willing to reassert the revolutionary origins of the Modern Movement. In this context, Aalto's work fell into accusations of traditionalism,[47] as also did the work of the Studio collaborators. For example, a certain hostility toward the latter can be read between the lines in Ålander's quote above. Against Ålander's call for *"advanced ideas"*, it can be objected that changes within the *craft* are manifested subtly, for both technical and poetical reasons. Such an understanding of the relationship between generations in fact opens a deeper perspective on the problem of authorship.

Slovenian architect and researcher Petra Ceferin has shown how the Museum of Finnish Architecture, which after its foundation in 1956 started documenting and promoting the nation's architecture internationally, contributed to this narrative of *"Aalto vs. the rationalists"*. The strategy, initially accepted by both parties, soon promoted both an exaggerated stress on Aalto's persona and an equally disproportionate counter-reaction. When seeking the reasons for why

the work of the Studio Aalto collaborators has remained so unstudied so far, this antagonistic climate should be taken in account.[48] As Ceferin observed, at some point in the mid-1960s, the selections of the Museum started favouring the rationalists:

> *This would indicate that his* [Aalto's] *work was not highly appreciated at the time by the leading architectural circle in Finland, in particular by those architects that were involved in the arrangements of the exhibitions.*[49]

In the 1969 Seminar on Finnish Architecture and Urban Planning organized by SAFA, the young architect Kirmo Mikkola, one of the regular organizers of the Museum of Finnish Architecture exhibitions, affirmed polemically:

> [Aalto] *has already become so much of an institution that his influence on the course of development is only slight. Aalto today is a natural object of respect, but no longer the paragon he was right up to the fifties. It is an honour to Finnish architects that no actual Aalto School does not* [sic] *exist here. Aalto can be criticised for the fact that he does not take part in the present debate, be has himself repeatedly stressed that is not his role. He has likewise exemplified the Finnish architect's desire to be apolitical by working simultaneously for West German big business and the Finnish Communists.*[50]

With greater hindsight, Kenneth Frampton returned to the discussion of Aalto's influence during the Aalto centenary anniversary in 1998 to insist that – whether *"constructivist"* or *"organicist"* – his influence inevitably spread:

> *First influencing those close to home, especially his Finnish apprentices of the immediate post-war years, then widening out to affect Scandinavia, and finally spreading further afield to touch the work of architects practicing in England, Spain, Portugal, and North America.*[51]

And yet, despite the emphasis on the *"Finnish apprentices of the immediate post-war years"*, Frampton mentioned only one case: Kristian Gullichsen.[52]

The son of Aalto's best clients and friends Harry and Maire Gullichsen, Kristian Gullichsen was a teenager when he joined the Studio in 1952 and worked on and off until 1963. He felt so close to Aalto that he later justified his departure from the Studio in almost Oedipean terms: *"We started to react and speak in his way, tell jokes his way, drink and even walk in his way. At that moment, I decided to quit."*[53]

Gullichsen's first projects are thus far from Aalto's interests at that time. For example, he and Juhani Pallasmaa designed a prefabricated wood construction

system for Ahlström, the Moduli 225 (1969-1970), which can best be compared with Aalto's experiments for the same company three decades earlier. It was already after Aalto's death in 1976, that Gullichsen returned – in what Colin St. John Wilson praised as *"cryptic quotations"*[54] – to the master's precision of geometry and light, e.g. in the Malmi (1977-1980) and Kauniainen (1980-1983) churches. In order to understand these shifts in Gullichsen's career, it is therefore necessary to introduce another major Finnish architect, Aulis Blomstedt.

Aalto and Blomstedt worked closely together at the Standardization Institute,[55] during which time they shaped opposed positions regarding the role of standardization and produced a divergence with a lasting impact in Finnish architecture.[56] Aalto saw the Institute's task as promoting the interaction between architects, craftsman and industry by indexing and refining the relevant building processes and products. Blomstedt, who had a more essentialist view on standardization, favoured a more proactive approach in steering industrial building processes and products. During the next decade, as Aalto withdrew from the architectural debate, Blomstedt gained influence over a young generation of architects: in 1953, he co-founded the Finnish CIAM group, called PTAH, which followed the CIAM counteraction being carried out by the Team 10 architects;[57] in 1958, he co-founded the magazine *Le Carré Bleu*,[58] and became the Professor of Architecture at the Helsinki University of Technology.

The so-called Constructivist architects, who gathered around the recently created Museum of Finnish Architecture, combined Blomstedt's interest in proportional systems, universality and industrial building with a socio-utopian perspective and developed into a kind of opposite school of thought to Aalto. Aalto's inability to connect practice and theory at that time, combined with the radicalism of the Constructivists, produced the misleading impression that the Studio dispensed with theory. Mikkola, who became one of the leading Constructivists, looked at the issue retrospectively:

> *Aalto in his last years produced one silent generation in Finland … Before this Aalto had been an exceptionally active architectural theoretician, social philosopher and cultural figure, but now he decided to withdraw into his studio and concentrate entirely on architecture … The mistakes were made by those who interpreted Aalto's statement as a directive.*[59]

As Mikkola and the Constructivists soon realized, Aalto's critiques to Functionalism and Rationalism supported, in fact, a consistent typological approach.

The emergence of Structuralist theory provided the opportunity to examine what Aalto described in his own words as an *"architechnology"* or a process of *"elastic standardization"*. As will be seen in *Chapter 3*, the unspoken method of the Studio allowed for the critical and experimental development of a group of

Kristian Gullichsen and Juhani Pallasmaa, Moduli 225 (1969-1970). MFA.

The prefabricated system consisted of foundations, frame elements and infill panels with different finishes. This particular unit was built temporarily in the yard of the Villa Mairea in Noormarkku, which is owned by the Gullichsen family.

Kristian Gullichsen, Malmi Church, Helsinki (1977-1980).

In contrast to the lightness of Gullichsen's earlier Constructivist works, the masses are here plastically arranged and suggesting monumentality.

problems, as in the atrium-apartment structure explored in the Hansaviertel block in Berlin (1954-1957), the Harjuviita blocks in Espoo (1961-1967), and other housing projects. However, the Studio's contribution to theory remained largely unaccounted until the late 1970s.

Peter Eisenman pointed in his doctoral thesis to the formal, internal coherence of Aalto's designs. But Eisenman's 1963 text remained unpublished until 2006, and it is at most indicative of the discussions then going on in a few English and American universities, especially under the influence of Colin Rowe.[60]

Robert Venturi, in his polemical and highly influential book *Complexity and Contradiction in Architecture*, took Aalto's architecture as a favourite example, and among others called for a revaluation of Aalto's approach to standardization by insisting that, contrary to the modern credo*: "a valid order … accommodates as well as imposes."*[61] But even Venturi was then unaware of the full scope of Aalto's theoretical contribution, as he involuntarily acknowledged by noting that, for him, *"Aalto's most endearing characteristic … is that he didn't write about architecture."*[62] The myth of Aalto's silence would only be overcome with the publication in 1979 of Aalto's collected writings in a volume edited by Schildt.[63]

Other Structuralist contributions from the late 1960s, such as the typological analysis of the city introduced by Aldo Rossi in Italy,[64] and Christopher Alexander's Pattern Language studies at the University of California, Berkeley,[65] ignored Aalto's architecture entirely. But indirectly, these reflections contributed eventually to the typological studies which followed later, especially after Aalto's death in 1976.[66] In the meanwhile, and yet without access to these syntheses, the Studio collaborators had to rely on themselves in order to reflect upon their experience of working with Aalto.

Research structure and method

Part I of the current study is organized thematically, thus allowing a certain overlapping between different events and projects in the period 1950-1970. Each of the chapters, 1. *Practice*, 2. *Craft* and 3. *Theory*, is nonetheless divided so that the sub-chapters 1.1, 2.1 and 3.1 can be read together as a sort of polyphonic description of the workings of the Studio Aalto, whereas the sub-chapters 1.2, 2.2 and 3.2 can be read, conversely, as a sort of triptych on the independent work of the Studio Aalto collaborators.

The internal subdivision of the chapters in Part I reflects also how the research progressed simultaneously on two levels. In order to accomplish a collective description of the Studio, it was necessary for me to overlook momentarily Aalto's figure and contextualize the Studio's work within its social, artistic and scientific contexts.

I have visited the Studio Aalto at Tiilimäki (which after the closing of the office Alvar Aalto & Co in 1994 became the official residence of the Alvar Aalto Foundation) several times, even using it as work space, and I have studied its archives of drawings and photographs (which are today housed in the Aalto Museum in Jyväskylä). In addition, I have met there in person a number of the former Studio collaborators and had the opportunity to discuss with them about their experiences. Furthermore, in order to get to know their own individual works, it was necessary for me to examine the relevant books, magazines and internet material, followed by site visits, during which I compiled the written and photographic notes that formed the basis for my reflections upon the circumstances of the collaborators as they pursued their own careers.

Part II of this study concentrates on a selection of architects and projects, and proceeds through a close reading of buildings, drawings, texts and other primary sources. Chapters 4, 5, and 6 begin with a brief introduction to each architect, followed by three sections subordinated to the main theme; each chapter's conclusions are grouped together with a general reflection in the final chapter. The choice of case studies covers a range of different themes – a university campus, a civic centre and a housing project, respectively – with each case being roughly anchored to a well-known project from the Studio – i.e. the Helsinki University of Technology, the Seinäjoki Civic Centre and the Hansaviertel housing block in Berlin. In order to contextualize the choice of cases within each architect's career, other projects are briefly presented through written and visual comparisons.

Chapter 4 concentrates on Jaakko Kontio and Kalle Räike's plan for Lappeenranta University of Technology. Kontio (Helsinki, 1924-2016), graduated in structural engineering from the Tampere Technical Institute in 1948, and later in architecture from the Helsinki University of Technology in 1954. Among the architects discussed closely in the current study, he was the first to join the Studio Aalto (collaborator 1954-1960) and the first to establish his own office, a partnership founded with Räike in 1957, later Architects Kontio-Räike-Kilpiä (1970-1989) and Kontio-Kilpiä-Valjento (1989-2004).

Before planning the Lappeenranta University of Technology, Kontio and Räike designed three buildings in Otaniemi, Kontio having earlier worked as Aalto's collaborator in the design of the campus. The analysis of the Lappeenranta project resumes the problematic opened in *Chapter 1* by examining the bonds established between the architects and the other agents involved in the plan – *clients, builders* and *users*, respectively.

I interviewed Kontio, sat in the ground-floor kitchen-dining room, the so-called *"taverna",* at the Studio Aalto in 2008, on which occasion he kindly offered me three volumes of his own writings. I visited the Lappeenranta University of Technology and gathered drawings and original photographs from the university archives, as well as from the Museum of Finnish Architecture.[67]

Chapter 5 focuses on Kaarlo Leppänen's Valkeakoski Cultural and Administrative Centre. Leppänen was born in Kuopio in 1929 and died in 2005, just prior to the commencement of my research. Leppänen, who was Kontio's university classmate, worked at the Studio Aalto while maintaining his own part-time atelier, from 1955 to 1975, and afterwards dedicated himself exclusively to the latter.

In the Valkeakoski project, the result of a winning entry in an architectural competition, Leppänen returned to Aalto's favourite theme of an urban design composition intended to be built as a slow process of growth over time. My analysis explores the discussion started earlier in *Chapter 2* and examines how Leppänen made use of the experience accumulated in the Studio's projects by distinguishing between three kinds of elements: *wall, room* and *city.*

Leppänen's son, architect Kari Leppänen, with whom I've been in contact since 2012, has secured his father's archive, including his collection of travel sketches. I visited the Valkeakoski Library and School buildings and consulted the original drawings, photographs and other documents from the Valkeakoski Myllysaari Museum archives.[68]

Chapter 6 examines the Jägarbacken housing in Ekenäs by Eric Adlercreutz and Nils-Hinrik Aschan. Adlercreutz, born in Helsinki in 1935, was a collaborator of Aalto in 1959-1965. He graduated from the Helsinki University of Technology in 1961, and founded a partnership with Aschan in 1962, which was enlarged and renamed A-Konsultit Architects in 1972. The new partners in the Helsinki-based office included Eric Adlercreutz's wife, architect Gunnel Adlercreutz, Hasse Hägerström, Tapani Kajaste and Staffan Lodenius, and the collective remains active today, despite some changes to the original formation.

Just as the planning of Jägarbacken started, Adlercreutz went on to do further studies at the University of California, Berkeley, where he attended Christopher Alexander's Pattern Language course. Adlercreutz's studies with Alexander after leaving the Studio Aalto encouraged me to reconsider the theoretical impasse described in *Chapter 3*, and to establish a triangulation between the work of these architects by using the concepts of *method, analysis* and *design*.[69]

I have met Adlercreutz on several occasions both at the A-Konsultit's office and at the Studio Aalto in Tiilimäki. I attended the opening of his exhibition *"Impressioni Italiane - Travel sketches and aquarelles"* (Studio Aalto, 2010), as well as his lecture titled "Pattern Language" held in Otaniemi in 2008. I visited the Jägarbacken area and collected copies of drawings, texts, photographs and other documents from the archives of A-Konsultit and the Museum of Finnish Architecture.[70]

1 For the sake of simplification, I refer to Aalto, but the above-mentioned partnerships should be taken into account throughout the current study. For more on Aino Aalto's contribution, see: Renja Suominen-Kokkonen, *Aino and Alvar Aalto – A Shared Journey. Interpretations of an Everyday Modernism* (Jyväskylä: Alvar Aalto Museum, 2007). Elissa Aalto gives her own account of the work of the Studio in Elissa Aalto, "L'héritage d'Alvar Aalto", in *Alvar Aalto, de l'œuvre aux écrits,* ed. Claude Eveno (Paris: Centre Georges Pompidou, 1988), 41-55.

2 Similarly, the references to Aalto's work include the contribution of the collaborators. Henceforth, I will refer to the list of collaborators compiled by Göran Schildt in the section "Employees at Alvar Aalto's office, 1923-1992", in *Alvar Aalto. A Life's Work: Architecture, Design and Art, ed.* Göran Schildt (Helsinki: Otava, 1994), 314-317.

3 Siza's reflections on Aalto were first presented in Álvaro Siza, "Préexistence et désir collectif de transformation", *L'Architecture d'Aujourd'hui* 191 (1977): 121. See also Álvaro Siza, "Alvar Aalto: Algumas referências à sua influência em Portugal", in *Alvar Aalto 1989 100*, ed. Rogério Ribeiro (Almada: Casa da Cerca, 1998), 213. Siza received the Alvar Aalto Medal in 1988.

4 Leon Battista Alberti, *On the Art of Building in Ten Books* (Cambridge: MIT Press, 1998), 3.

5 Georg Henrik von Wright, "The Myth of Progress", in *Architecture and Cultural Values*, ed. Maija Kärkkäinen (Jyväskylä: Alvar Aalto Symposium, 1988), 72. Von Wright was an acquaintance of Aalto.

6 A sense of pride is confirmed in the way how the Studio collaborators continued to be involved in Aalto-related activities, i.e. through the annual meetings of the so-called *"Alvar Aalto -klubi",* books, lectures and exhibitions, etc. The building at Tiilimäki has remained a meeting point up to today, and the Alvar Aalto Museum has invited former collaborators to host temporary exhibitions at the atelier room: e.g. Olli Lehtovuori (collaborator in 1955), *"Travel sketches"* (2009); Leif Englund (collaborator in 1955-1971), *"Architect Leif Englund"* (2009); Eric Adlercreutz, *"Impressioni Italiane – Travel sketches and aquarelles by architect Eric Adlercreutz"* (2010); on another level, Adlercreutz, Englund and Vezio Nava, an Italian-born architect (collaborator in 1961-1976, and a collaborator of Alvar Aalto & Co thereafter until 1988) became members of the Finnish Committee for the Restoration of Aalto's Vyborg (Viipuri) Library, with Adlercreutz as Chairman, a project which involved complex technical and political decisions due to the building's condition and its location in present-day Russia. Eric Adlercreutz et al., *Alvar Aalto Library in Vyborg. Saving a Modern Masterpiece* (Helsinki: Rakennustieto, 2009).

7 Because of the role played by structure (construction, form, etc.) in architecture, the discussion of Structuralism in architecture has multiple origins. In the context of the architecture of the 1960s, the association with the contemporary developments in the social sciences (i.e. anthropology and linguistics) should be highlighted. Lisbeth Söderqvist has provided a definition of Structuralism in architecture by distinguishing three major features: a mode of thinking through *"distinctive pairs"*, an interest in *"invariant structures",* and a counterpart interest in *"sign systems".* Lisbeth Söderqvist, "Structuralism in architecture: a definition", *Journal of Aesthetics & Culture* 3 (2011): 2. For an example of a Structuralist study focused on the relationship between history and theory, see Colin Rowe, "The Mathematics of the Ideal Villa: Palladio and Le Corbusier compared", *Architectural Review* 101 (1947), 101-104. Revised and reproduced in *The Mathematics of the Ideal Villa and Other Essays* (Cambridge: MIT Press, 1976), 1-27; for a Structuralist analysis focused on the relationship between form and semiotics, see Kevin Lynch, The Image of the City (Cambridge: MIT Press, 1960); for a Structuralist interpretation of the city based on the relationship between architecture and sociology, see Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961).

8 Ernesto N. Rogers, "L'Architettura Moderna dopo la generazione dei Maestri", *Casabella Continuità* 211 (1956), reproduced as "La arquitectura moderna después de la generación de los maestros", in *Experiencia de la arquitectura* (Buenos Aires: Nueva Visión, 1965), 228. Rogers had in mind Aalto's article "Architettura e arte concreta", published at his own invitation in *Casabella Continuità* in 1947, and reproduced as "The Trout and the Stream" in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997), 108-109. Rogers – like Aalto – accompanied the emergence of the Modern Movement in the 1930s, and the following process of revision in the 1950s. Rogers, whose writings have not yet been thoroughly collected and translated into English, exerted an enormous influence working as a partner of the architecture office BBPR, a member of CIAM, a professor in the Polytechnic University of Milan, and an editor of the Italian magazines *Domus* and *Casabella-Continuità*; Roger's writings, always written from an architect's point of view, launched a basis for discussing the role of history in architecture at three interweaving levels: that of the material durability of the city and its buildings, that of their social and cultural significance, including the aspect of the collective memory, and that of each architect's relationship with tradition. The latter point makes Rogers' contribution particularly important to the present study.

9 Aalto quoted in *Studio Aalto,* directed by Anssi Blomstedt (Helsinki: Alvar Aalto Museum, 2005), DVD. See also Alvar Aalto, "Studio Alvar Aalto", *Arkkitehti* 12 (1959). Reproduced in *Alvar Aalto's Studio, Helsinki,* ed. Päivi Lukkarinen, vol.11 of *Architecture by Alvar Aalto* (Helsinki: Alvar Aalto Foundation, 1999).

10 In the transition to the 20th century, Jyväskylä emerged as a centre for the promotion of Finnish

language, questioning the up to then undisputed status of Swedish as the literary language in Finland. As Schildt explained, institutions such as the Jyväskylä Lyceum (attended by Aalto) and the Jyväskylä's Teachers Seminar (later the University of Jyväskylä) played a critical role in this process of the legitimization of the Finnish language by fostering the study of ancient and foreign languages. Since Aalto's mother tongue was Swedish, his passage through the Lyceum made him especially aware of the problem of culture (indeed, multilingualism become an essential aspect of the Studio Aalto); as Aalto himself put it: *"seeing things outside one's own limited perspective or that of the surroundings – sows the seed of doubt … and on the highest plane doubt can be transformed into its apparent opposite, love in a critical sense"*. Aalto, "What is Culture?", keynote speech at the centenary celebration of Aalto's school, the Jyväskylä Lyceum, 1958. Reproduced in *Alvar Aalto in His Own Words*, ed. Göran Schildt (Helsinki: Otava, 1997), 16. For more on Aalto's early education, see Göran Schildt, *Alvar Aalto. The Early Years* (New York: Rizzoli, 1991), 35-39, 55-59.

11 For more on this subject see Nikolaus Pevsner, *Academies of Art, Past and Present* (Cambridge: Cambridge University Press, 1940), 1-24, 243-295.

12 Alvar Aalto, *Alvar Aalto. Band I 1922-1962,* ed. Karl Fleig (Zurich: Artemis, 1963), 7. Aalto's reference to the *"collaborators"* suggests a clarification regarding the use of the term in the present study: collaboration stresses an exchange – rather than a hierarchy, as implied, for instance, with the term assistant – between two or more members of a group.

13 An Italian Jew, Bruno Zevi was forced into exile in England and the United States. Thus Zevi's writings show a will to connect architectural history and design to a democratic political programme. In 1944 Zevi founded the Association for Organic Architecture. In 1945 he became a Professor at the University of Venice (later he was a Professor at the University of Rome) and published *Verso un'architettura organica*, which was translated to English in 1950. In 1948 he published *Saper vedere l'architettura* (English translation 1957). Bruno Zevi, *Towards an Organic Architecture* (London: Faber & Faber, 1950).

14 Giedion did not mention Aalto in the first (1941) edition of *Space, Time and Architecture,* but the latter's work became the fulcrum of the 1949 and subsequent editions of the book; see the chapter "Alvar Aalto: Irrationality and Standardization" in Sigfried Giedion, *Space, Time and Architecture: The Growth of a New Tradition,* 5th edition (Cambridge: Harvard University Press, 1967), 618-667.

15 Professor Olli-Paavo Koponen called to my attention that Jørn Utzon couldn't possibly have studied directly with Gunnar Asplund, who had died in 1940. Giedion probably meant that Utzon took Asplund as his master. Giedion also suggested the Finnish architect Timo Penttilä as a representative of the *"third generation";* curiously, Penttilä didn't work with Aalto (he was a collaborator of Aalto's collaborator, Aarne Ervi, in 1957-1959) but he may have taken Aalto as his master. For more on Penttilä's work, see, Roger Connah, *The School of Exile – Timo Penttilä for and against architecture theory, Datutop* 33 (Tampere: Tampere University of Technology, 2015). Giedion may be also suggesting that to take someone as a master doesn't require a direct personal experience, and that it can be easier if one's only distantly involved. Giedion, *Space, Time and Architecture,* 618, 672, 691. Giedion's essay on Utzon was published in an earlier version as "Jörn Utzon and third generation: three works by Jörn Utzon, Sydney Opera House, Silkeborg Museum, Zurich Theatre", *Zodiac* 14 (1964). The term *"third generation"* became then widely used to refer to the first post-war generation of modern architects; see, for example, Philip Drew, *Third Generation: The Changing Meaning of Architecture* (London: Pall Mall, 1972).

16 Rayner Banham, "The one and the few", *The Architectural Review* 723 (1957): 243-248. Other authors have pointed to this interaction within Aalto's oeuvre itself. See, for example: Henry-Russell Hitchcock, "Aalto versus Aalto: The Other Finland", *Perspecta: The Yale Architectural Journal* 9-19 (1965): 131-166.

17 "Conversation 15. Heimo Paanajärvi and Tore Tallqvist", in *The Mark of the Hand*, eds. Harry Charrington and Vezio Nava (Helsinki: Rakennustieto, 2011), 310.

18 Malcom Quantrill, *Finnish Architecture and the Modernist Tradition* (London: Chapman and Hall, 1995), 181-220. Quantrill refers in this quote to his own earlier article; see Malcom Quantrill, "Après Aalto Une Nouvelle Vague?", *Architectural Design* 12 (1979): 22-38. Quantrill's view can be compared, for example, with that of Dominique Beaux and Jacques Vasseur, "Les chemins de l'après-Aalto: pour une architecture humaine", *Le Carré Bleu* 3-4 (1994): 4-15.

19 Quantrill*, Finnish Architecture,* 209. Arto Sipinen (Aalto's collaborator in 1958-1960), a professor of architecture at Helsinki University of Technology in 1991-1992, designed, e.g. Imatra Town hall (1967-1970), Jyväskylä University new campus (1969-1989) and Espoo Cultural Centre (1980-1989).

20 Op. cit.*,* 217. Jan Söderlund (Aalto's collaborator in 1960-1961), a professor of architecture at Helsinki University of Technology in 1995-2002, designed, e.g. Kemi Cultural Centre competition (1st prize, 1963), Turku Student Village (1968-1979) and Länsi-Pasila housing, Helsinki (1980-1987).

21 Giorgio Grassi, "Aquitectura lengua muerta 1", in *Arquitectura lengua muerta y otros escritos* (Barcelona: Ediciones del Serbal, 2003/ 1984), 54, translated by the author. Grassi, who was a student of Rogers at the Polytechnic

University of Milan, returns to the idea of architecture as a *"dead language"* in several of his texts, including in the titles of two different articles. In addition to the above quoted article, a second "Architecture, Dead Language?" article has been published simultaneously in Italian and English, see Giorgio Grassi, "Architettura, Lingua Morta / Architecture, Dead Language", in *Architettura Lingua Morta / Architecture Dead Language, Lotus Documents 9* (Milan/New York: Electa, 1988).

22 For an outline of the history of architecture in Finland, see for example, Riitta Nikula, *Architecture and Landscape. The Building of Finland* (Helsinki: Otava, 1993).

23 Schildt, *The Early Years*, 122-147.

24 Alvar and Aino followed the international trends through magazines, conferences, and study trips, and thus became acquainted with Sven Markelius, Le Corbusier, and László Moholy-Nagy, among other Modern Movement architects who were then claiming a new role as mediators between industry and society. Göran Schildt, *Alvar Aalto. The Decisive Years* (Helsinki: Otava, 1986), 19-102.

25 Op. cit., 121-165.

26 Göran Schildt, *Alvar Aalto. The Mature Years* (New York: Rizzoli, 1991), 24-138.

27 Schildt, *The Mature Years,* 139-175.

28 Ervi, a major Finnish architect on his own, was Aalto's collaborator in 1935-1937. Ervi designed numerous projects, including the Oulujoki river power plants and housing areas (1942-1951), the Porthania building of the University of Helsinki (1949-1957), and the masterplan for Tapiola garden city in Espoo (1952-1968). For more on Ervi's collaboration with Aalto, see: Arne Hästesko, "Ervi's apprenticeship with Aalto", in *Aarne Ervi - tilaa ihmiselle,* eds. Eriika Johansson, Juhana Lahti, and Kristiina Paatero (Helsinki: Museum of Finnish Architecture, 2011), 51-55. For more on Ervi's teamwork practice, see Juhana Lahti. *Arkkitehti Aarne Ervin moderni kaupunkisuunnitelu pääkaupunkiseudulla. Suomalaisen suurkaupungin kaavoitust toisen maailmansodan jälkeen* (Jyväskylä: Taidehistorian seura, 2006), 81-93.

29 Revell, another major Finnish architect, was a collaborator of Aalto in 1936-1937, and 1943-1944. Revell's designs include the Lasipalatsi building in Helsinki (1935-1936, with Niilo Kokko and Heimo Riihimäki), the Industrial Centre and Palace Hotel in Helsinki (1948-1952, with Keijo Petäjä), the Mäntyviita apartment blocks in Tapiola, Espoo (1953-1954), and the Toronto City Hall in Canada (1961-1966, with Heikki Castrén, Bengt Lundsten and Seppo Valjus).

30 For example, Revell promoted the practice of co-authorship, which allowed his office to be very active in international competitions, notably, the Toronto City Hall, Canada (1st prize, 1961), co-authored with Bengt Lundsten, Heikki Castrén and Seppo Valjus; and the Peugeot Tower in Buenos Aires, Argentina (no prize awarded, 1962), co-authored with Castrén, Tavio Kapsi and Kimmo Söderholm (Aalto's collaborator in 1958-1961), and whose design principle was derived from multidisciplinary work with the structural engineers Erkki Juva and Kalevi Sassi. See, Antti Nousjoki, "Revell without Revell", *Arkkitehti* 6 (2010): 10-17. For more on Revell's office, see, Maria Didrichsen, ed., *Viljo Revell: 'It was teamwork, you see'* (Helsinki: Didrichsen, 2010).

31 These two ideas originated in the pedagogy of the Bauhaus and were implemented pragmatically in the anonymous, large-scale corporations of the United States. For example, after emigrating to the US, Walter Gropius established on the principle of teamwork organization his own architecture firm TAC – The Architects Collaborative; see Walter Gropius et al., eds., *The Architects Collaborative, 1945-1965* (Teufen: Arthur Niggli, 1966). For a discussion on the rise of teamwork organizations in the US, see, Michael Kubo, "The Concept of the Architectural Corporation", in *Office US Agenda,* eds. Eva Franch I Gilabert, Amanda Reeser Lawrance, Ana Milijački and Ashley Schafer (Zurich: Lars Müller, 2014), 37-45.

32 Kyösti Ålander, "Viljo Revell and his Studio", in *Viljo Revell. Works and Projects,* ed. Kyösti Ålander (Helsinki: Otava, 1966), 7-17.

33 On Zevi's concept of flowing space, see: Bruno Zevi, *Architecture as Space. How to Look at Architecture* (New York: Da Capo Press, 1993), 140-159,

34 Schildt, *The Mature Years*, 258.

35 In the particular case of the Villa Mairea, the Swiss architect Paul Bernoulli, collaborator in 1937-1941, and 1944. Op. cit., 152-161. Lisbeth Sachs was Aalto's collaborator in 1938.

36 Schildt, *The Mature Years*, 259. Schildt also interviewed the Norwegian collaborators Erling Bjertnaes (collaborator in 1927-1931) and Harald Wildhagen (collaborator in 1928-1930) and discovered, among other things, that they were hired by Aalto with the curious recommendation *"to take a close look at Asplund's library and Skandia cinema on their way in Stockholm"*. Schildt quotes Bjertnaes to explain that the collaborators provided a realist counterpoint to Aalto's chaotic process, concluding this passage by suggesting that Wildhagen, who was more experienced than Aalto with working with reinforced concrete, offered more than a little hand to Aalto in the design of the Paimio Sanatorium. Schildt, *The Decisive Years*, 40-44.

37 Harry Charrington and Vezio Nava have edited a collection of interviews of the Studio collaborators;

see Harry Charrington and Vezio Nava, eds., *Alvar Aalto: The Mark of the Hand* (Helsinki: Rakennustieto, 2011). See also an earlier collection of interviews: Louna Lahti, ed., *Alvar Aalto – Ex intimo. Alvar Aalto Through the Eyes of Family, Friends & Colleagues* (Helsinki: Rakennustieto, 2001).

38 Harry Charrington, "The Makings of a Surrounding World: The Public Spaces of the Aalto Atelier". (PhD diss., London School of Economics, 2008), 6-8. See also the related article: Harry Charrington, "Not a locked box: The everyday art of the Aalto atelier", *Architectural Research Quarterly* 14 (2010): 255-266

39 Schildt, *The Mature Years*, 259-260.

40 Op. cit., 305-313.

41 Schildt, *The Mature Years,* 252-257, 283-299. The Studio's payroll confirms a reduction in the number of employees after an annual peak of 50 in 1963: 34 in 1967; 21 in 1970; and 12 in 1975, the year prior Aalto's death. It should be noted that these are all year-round figures, including short-term and part-time workers; the number of full-time architects working simultaneously at the Studio roughly amounted to half of these totals. Schildt, "Employees at Alvar Aalto's office, 1923-1992", 314-317.

42 Charrington, "The Makings of a Surrounding World", 234.

43 Op. cit., 9.

44 Tore Tallqvist, "Terrain, Remembrance, and Landscape", *Arkkitehti* 6 (1998): A3.

45 José Lluís Sert, Fernand Léger and Sigfried Giedion, "Nine Points on Monumentality", in *Architecture Culture 1943-1968. A Documentary Anthology*, ed. Joan Ockman (New York: Rizzoli, 1993/1943), 29-30. For more on the CIAM debate, see Eric Mumford, *The CIAM Discourse on Urbanism 1928-1960* (Cambridge: MIT Press, 2002). In the context of this discussion, consider also Le Corbusier's plans for Saint-Dié in France (unrealized, 1945) and Chandigarh in India (1951-1956).

46 The Studio was involved at the same time in civic centre designs for Helsinki (1959, several unrealized versions), Rovaniemi (1961-1985), Alajärvi (1965-1982) and Jyväskylä (1965-1972) in Finland, and Wolfsburg (1960-1963), Leverkusen (unrealized, 1960) and Castrop-Rauxel (1965, unrealized) in Germany, among others.

47 For example, Gareth Griffiths has analysed the contradictory reception of Aalto's Enso-Gutzeit Building in Helsinki (1959-1962). Gareth Griffiths, *The Polemical Aalto. The Enso-Gutzeit Headquarters, Helsinki (1959-1962), by Alvar Aalto. A formal analysis. Datutop* 19 (Tampere: Tampere University of Technology, 1997), 25-46.

48 The persistence of this divide is confirmed by the way in which the collective exhibition about the work of Aalto's collaborators organized in 1986 passed almost unnoticed. I've been able to unearth only a photocopy of the catalogue from the Alvar Aalto Foundation library. *Alvar Aalto Context. Works by Alvar Aalto's Collaborators* (Jyväskylä: Alvar Aalto -klubi, 1986).

49 Petra Ceferin, *Constructing a Legend: The International Exhibitions of Finnish Architecture 1957-1967* (Helsinki: Finnish Literature Society, 2003), 34-37, 64.

50 Kirmo Mikkola, "Finnish Architecture of the 60' and Its Ideological Background", in 1969 *Seminar on Finnish Architecture and Urban Planning* (Helsinki: Finnish Association of Architects, 1970), 17.

51 Notably, Frampton placed Gullichsen, along with pre-war apprentices Ervi and Revell, among the *"constructivist"* group but found no example for the *"organicist"* counterpart. Kenneth Frampton, "The Legacy of Alvar Aalto: Evolution and Influence", in *Alvar Aalto: Between Humanism and Materialism,* ed. Peter Reed (New York: The Museum of Modern Art, 1998), 119, 126-127.

52 Frampton, it seems, needed to rely on secondary sources and lacked examples, which supports the feeling that the work of the Studio collaborators has remained unstudied. Frampton refers, for instance, to Marja-Riitta Norri and Severi Blomstedt, eds. *An Architectural Present – 7 Approaches* (Helsinki: Museum of Finnish Architecture, 1992).

53 Kristian Gullichsen, "Architecture is an Elephant", in *Architecture in the Year Zero. 8th Alvar Aalto Symposium,* ed. Esa Laaksonen and Merja Vainio (Helsinki: Alvar Aalto Academy: 2001). 14.

54 Kristian Gullichsen and Colin St. John Wilson, eds., *Gullichsen/ Kairamo Vormala* (Barcelona: Gustavo Gili, 1990), 8-10.

55 In its initial phase, the Standardization Institute developed under Aalto's supervision as the Chairman of SAFA. For instance, Aalto appointed his former collaborators Revell (1942-1943) and Ervi (1943-1945) to direct the Reconstruction Office.

56 The Aalto-Blomstedt rivalry has tended to obscure the common aspects of their work, namely, the aim of connecting architectural tradition with the contingencies of place and technology. Like Le Corbusier, but unlike Aalto, Blomstedt was obsessed with the theme of numerical proportions; this led him to create his own dimensional system, the *"Canon 60"*. For more about Blomstedt's contribution, see, Juhani Pallasmaa, ed., *Aulis Blomstedt. Architect: Thought and Form – Studies in Harmony* (Helsinki: Museum of Finnish Architecture, 1980).

57 The founding members of PTAH (Progrès, Technique, Architecture, Helsinki) were Blomstedt, Ervi, Pentti Ahola and Ilmari Tapiovaara. Under the influence of Structuralist theory, the Team 10 group exerted a crucial

if somewhat volatile influence in the architectural debate in 1950-1970. For more on their contribution see Max Risselada and Dirk van den Heuvel, eds., *Team 10 1953-1981. In Search of a Utopia of the Present* (Rotterdam: NAi Publishers, 2005).

58 The founding members of the journal *Le Carré Bleu* (published initially only in French, the language associated with CIAM) were Blomstedt (who had also been the editor of the magazine *Arkkitehti* in 1941-1945), Eero Eerikäinen, Reima Pietilä, Keijo Petäjä, Kyösti Ålander and the French architect André Schimmerling.

59 Kirmo Mikkola, "From the technological to the humane: Alvar Aalto versus Functionalism", in *Abacus* (Helsinki: Museum of Finnish Architecture, 1979), 137.

60 Peter Eisenman, *The Formal Basis of Modern Architecture* (Baden: Lars Müller Publishers, 2006 / original PhD dissertation 1963). The informal group influenced by Rowe included also Alan Colquhoun, Demetri Porphyrios, and Colin St. John Wilson, to name but a few who later studied Aalto's architecture. See, Alan Colquhoun, "Alvar Aalto: Type versus Function", *L'Architecture d'Aujourd'hui* 91 (1977). Reproduced in *Essays in Architectural Criticism: Modern Architecture and Historical Change* (Cambridge: MIT Press, 1981), 75-81; Demetri Porphyrios, "Heterotopia: A Study in the Ordering Sensibility of the Work of Alvar Aalto", in *Alvar Aalto,* ed. David Dunster. Vol. 4 of *Architectural Monographs* (London: Academy Editions, 1978), 8-19, which later formed part of his book *Sources of Modern Eclecticism: Studies on Alvar Aalto* (London: Academy Editions, 1982); Colin St. John Wilson, "Alvar Aalto and the State of Modernism", in *Alvar Aalto vs the Modern Movement. Proceedings of the International Alvar Aalto Symposium 1979,* ed. Kirmo Mikkola (Jyväskylä: Rakennuskirja, 1981).

61 Robert Venturi, *Complexity and Contradiction in Architecture* (New York: The Museum of Modern Art, 1977/ 1966), 41. In the preface to the book, Venturi quotes the Dutch architect and Team 10 member Aldo van Eyck to sustain his Structuralist point of view: as van Eyck put it, *"Modern architects … have been harping continually on what is different in our time to such an extent that they have lost touch with what is not different, with what is essentially the same."* Op. cit., 1.

62 Robert Venturi, "Alvar Aalto", *Arkkitehti* 7-8 (1976): 67.

63 See, Alvar Aalto, *Alvar Aalto. Sketches*, ed. Göran Schildt (Cambridge: MIT Press, 1979) (cf. more complete 1994 collection, *Alvar Aalto in His Own Words*).

64 Rossi and a number of Rogers's pupils at the Milan Polytechnic carried out a Neo-Rationalist revision of the relationship between modern architecture, the city and tradition. Note that for linguistic and other cultural reasons, the influence of this group, later known as the *Italian Tendenza,* was felt more directly in the Latin countries, in Switzerland and Germany, than in England or the Nordic countries. For example, the English translation of Aldo Rossi's 1966 book *L'architettura della città* dates only from 1982. Aldo Rossi, *The Architecture of the City* (Cambridge: MIT Press, 1982/ 1966).

65 Alexander's career is an example of how Structuralist theory accompanied the expansion of scientific research in the post-war period: born in Vienna in 1936, Alexander studied mathematics and architecture at Cambridge University in the UK before moving to the US, where, encouraged by the development of computation, he carried out successive interdisciplinary projects at Harvard University and at the Centre for Environmental Structure at the University of California, Berkeley. The Pattern Language research developed there has had an impact both in the fields of design and computer sciences. See also, Christopher Alexander, Sara Ishikawa and Murray Silverstein, *A Pattern Language. Towns, Buildings, Construction* (New York: Oxford University Press, 1977); Christopher Alexander, *The Timeless Way of Building* (New York: Oxford University Press, 1979).

66 A first moment in this process was the publication of memorial articles on Aalto; see, for example, the magazines *Arkkitehti* 7-8 (1976) and *L'Architecture d'Aujourd'hui* 91 (1976); also, the Architectural Association organized a research meeting in London on this occasion in 1976. A second important moment was the creation of the International Alvar Aalto symposiums in 1979. The first five symposiums focused directly on Aalto's work: 1979, "Alvar Aalto vs. the Modern Movement"; 1982, "Classical Tradition and the Modern Movement"; 1985, "Modernity and Popular Culture"; 1988, "Architectural and Cultural Values"; 1991, "Functionalism – Utopia or the Way Forward".

67 Jaakko Kontio, interview by Miguel Borges de Araújo (together with Tore Tallqvist and Olli-Paavo Koponen), tape recording, Helsinki, November 11, 2008. Jaakko Kontio, *Seitsemän Vuotta Alvarin Tähden [Seven Years for Alvar's Sake]* (Helsinki: n.p., 2004). For an abridged English version of this volume, see Jaakko Kontio, "Alvar Aalto's assistant 1954-60", in *Alvar Aalto and Helsinki*, ed. Eija Kämäräinen (Helsinki: WSOY, 1999), 33-57. Jaakko Kontio, *Euroopan Matka 4.4.1957 – 7.6.1957 [Trip to Europe 4.4.1957 – 7.6.1957]* (Helsinki: n.p., 2004). Jaakko Kontio, *Arkkitehtitoimistot Historia [Architectural Office History]* (Helsinki: n.p., 2006). The Lappeenranta University of Technology is discussed in "Lappeenranta – Skinnarila", *Arkkitehti* 3 (1970): 58-59. Kontio and Räike's proposal has been presented in "New land use plans: The Tampere University of Technology, the Lappeenranta University of Technology, Jyväskylä University, Kuopio University, Joensuu University, Oulu University, The College of Industrial Arts, Helsinki University". *Arkkitehti* 5 (1973): 29, 34-35. Finally, a monograph about the campus was

published during the course of my own research: Jaakko Nikkilä, *Muistelmia tulevaisuudesta. Lappeenranta teknilliisen yliopiston suunnittelu ja rakentaminen* (Lappeenranta: Etelä-Karjala-instituuti / Lappeenrannan teknillinen yliopisto, 2011). See Kontio's commentary on this book in Jaakko Kontio, "Asianosaisen puheenvuoro", in *Arkkitehtiuutiset* 10 (2012): 48-49.

68 The Valkeakoski Cultural and Administrative Centre was published upon the announcement of the results of the 1966 competition. Kaarlo Leppänen, "Valkeakosken kaupungin hallinto- ja kulttuurikeskuksen suunnittelukilpailu", *Arkkitehtuurikilpailuja* 4-5 (1966). Following the first stage, the municipality of Valkeaksoki printed its own publicity brochure about the building. Kaarlo Leppänen, *Valkeakosken vapaa-aikakeskus* (Valkeakoski, n.p., 1975). The history of the project is briefly discussed in Juhani Kivelä, *Kyläkirjastoista tietokeskukseksi. Sääksmäen ja Valkeakosken kirjastot 1862-2003 [From village libraries to information centres: Sääksmäki and Valkeakoski libraries 1862-2003]* (Valkeakoski: Valkeakosken kaupunginkirjasto, 2003), 143-159.

69 This meant that I had to study both Alexander's theory and Adlercreutz's views about it. See in this respect, Eric Adlercreutz, "Alexander's Pattern Language", review of *A Pattern Language* by Christopher Alexander, Sara Ishikawa and Murray Silverstein, and *The Oregon Experiment* by Christopher Alexander et al., Arkkitehti 5-6 (1979): 75.

70 Eric Adlercreutz, interview by Miguel Borges de Araújo (together with Tore Tallqvist), tape recording, Helsinki, December 10, 2010. For the plan of Jägarbacken see the unpublished report made by Eric Adlercreutz and Nils-Hinrik Aschan, *Jägarbackens bostadsområde* (Helsinki, n.p. 1968); Eric Adlercreutz and Nils-Hinrik Aschan, "Jägarbackenin asuntoalue", *Arkkitehti* 7 (1969): 46-47; Eric Adlercreutz and Nils-Hinrik Aschan, "Jägarbacken housing area", *Arkkitehti* 3 (1974): 51-53.

The Studio Aalto c.1960. AAM.

Standing (left to right): Eric Adlercreutz, Kimmo Söderholm, Arto Sipinen and Jorma Salmenkivi. Seated (clockwise from the front): Elissa Aalto, Kaarlo Leppänen, Erkki Luoma, Kalevi Hietanen, Maina Vatara, Helga Mattsson, Jaakko Kontio, Ritva Leena Hartikainen, Walter Moser, Matti Itkonen and Alvar Aalto.

Part I

Alvar Aalto, Helsinki University of Technology, Main Building.

The main square, flanked on the left by the Rector's Office and the entrance to the main lobby, and connecting on the right with the Library (outside the picture), is visually dominated by the volume of the auditorium halls. The sloping ceiling of the auditorium halls doubles itself as a stand for an outdoor amphitheatre.

1. Practice

Aalto produced over his long career an exceptionally consistent body of work. However, Aalto's career is, as Harry Charrington has noted, *"marked by distinct periods governed by circumstance and association"*. For Charrington, this sense of the present positions the Studio peculiarly between the lineage of the artistic ateliers that originated in the late 19th century and the modern commercial offices that emerged in the post-war years.[1]

From the point of view of *practice,* architecture is first and foremost an activity performed in a precise social and historical context. Aalto's move to a new and larger office space in 1954 can be thus regarded as his response to the design opportunities which came about with the implementation of a welfare state in Finland. While this bond to society stresses a collective aspect of the profession, the expansion of the Studio brings forth another (internal) dimension of the collective work of the architect. For example, for its size and complexity, a project such as the Helsinki University of Technology in Otaniemi (1949-1968) defies the idea of Aalto as a sole designer and invites an examination of the collaborative work in the Studio.[2] And yet, although Aalto needed to work in collaboration, for him the work of the architect preserved an individual dimension manifested in terms of an ethical and aesthetical responsibility to society.

Chapter 1.1 describes the internal organization of the Studio, where Aalto assumed a central position, and suggests that this form of collaboration both potentiated and constituted a limit to the Studio's adaptability. This is indicated, among others, by the Studio's difficulties in dealing with the political, economic and social changes in its later years.

Chapter 1.2 resumes the theme of the university plans by introducing a group of university projects made by different collaborators of the Studio, working independently. By briefly examining these projects, I problematize the successive and at times contradictory changes that affected the architectural profession in the third quarter of the 20th century in Finland. The collaborators' efforts to address the new conditions show their work to be a dialogue established with the other people involved in the project.[3] I conclude by pointing to Jaakko Kontio and Kalle Räike's Lappeenranta University of Technology as a suitable case study for *Chapter 4*.

1.1 Large commissions in post-war Finland: Helsinki University of Technology, 1949-1968

> *First, through its emphasis on the traditional role of the creative individual, the profession masks the growing significance of collective action. Second, design is believed to sprout from a series of independently made decisions rather than from the emergent sense made of a dynamic situation. Third, design and art have been separated from business and management concerns, in spite of the fact that the two domains are inextricably bound in everyday practice. And fourth, the image of the architect as a generalist – a Renaissance man – is countered by the challenges facing practicing architects who specialize in their marked for services.*
>
> (Dana Cuff)[4]

Individual and collaborative dimensions in the Studio Aalto

In his biography of Aalto, Göran Schildt compared negatively Aalto's master plan for the Summa Paper Mill (1954) with his earlier plan for the Sunila Paper Mill (1936), suggesting that Aalto may have not been sufficiently involved in the Summa project. One of Aalto's collaborators in Summa, Jaakko Kontio, took this remark personally and insisted that the work was always carried out together under Aalto's supervision. For Kontio, the gap between the Sunila and the Summa plans reflected, if anything, the decline of industry as a patron in the post-war years. Kontio considered that Enso Gutzeit's director William Lehtinen lacked in Summa the broad cultural vision demonstrated earlier by Ahlström's director Harry Gullichsen in Sunila.[5]

By the time Kontio joined the Studio Aalto in 1954, the Finnish state had become its most important client, as attested by such commissions as the plan for the campus of Helsinki University of Technology, the Jyväskylä University and the National Pensions Institute (1952-1956). In retrospect, these projects appear inseparable from the moment of transition of Finland into a welfare state, for they anticipate future conditions while avoiding the formalization which came about with it.

Although Aalto would hardly have accepted seeing his work described as the product of the living forces in society, it can be argued that many of the solutions in these projects were typified by the broader circumstances.

As Charrington has noted, even the longevity of Aalto's career suggests an ability to interpret and adapt to a changing reality. For example, upon winning the competition for the Helsinki University of Technology campus in 1949, Aalto felt immediately confident in resigning his professorship at MIT, justifying his decision to leave permanently the United States as follows:

> *I could of course for MIT give up one or two of my bigger works, but I can of course in no case abstain from building the new Technical University of my own country, which happens once in a millennium. Things like that are labor sacrum.*[6]

The expansion of the collaboration can thus be directly associated with a series of large and complex commissions. Until then, Aalto used to work in a small office at the Aalto House in Riihitie, comprised of double-height room with a library adjacent to it. Kontio recalled the distinctively familiar atmosphere of this office space, with *"only a sliding door separating it from the house's living room"*.[7]

The new studio was much larger, spreading through two wings and two floors. On the ground floor were the secretary's office, a garage used as a model workshop, an archive, and a "taverna" for meals and recreation (expanded into a new annex in 1962); on the upper storey was a single large office space subdivided by low partitions and a double-height atelier wing. These divisions suggested a more complex organization. For example, Vezio Nava recalled that the atelier room was tacitly considered to be Aalto's own space: just the distance from the door to the table where he used to sit sketching *"gave a sense of a royal audience to any meeting, as the visitor had to walk many metres to get there."* The atelier room was in fact effectively used by everyone, especially on occasions of intensive work, and in general *"for showcasing grand designs and large models … for meetings, entertainment, banquets and even small concerts."* Moreover, Aalto himself spent a large part of his day in the office sat discussing at the collaborators' tables. But even in the internal organization of this space emerges an ordering in the way that the tables were arranged in two rows, as Nava pointed out:

> [The tables] *on the right-hand side as we entered …. were organized as back-to-back pairs separated by wooden partitions; these were used by the older employees, most frequently in contact with Aalto – so that Aalto, coming out of his studio to meet his closest colleagues, could immediately establish eye contact with them. On the other side, against the garden wall and hidden from view, were the individual tables of younger employees.*[8]

A page from Jaakko Kontio's book *Seitsemän Vuotta Alvarin Tähden* (2004).

Kontio's caption reads: *"Aalto's studio in Riihitie at the turn of 1954/1955. On my table, which is on the left, are 1:100 drawings of the Otaniemi Main Building. Eating a modest lunch by the fireplace: me and* [Erkki] *Luoma sit discussing opposite from Sisko Mäkiniemi. Below is the trainee* [Kristian] *Gullichsen."* The move to the Studio Aalto in Tiilimäki was completed soon afterwards.

The office room in the Studio Aalto c.1959. AAM.

Jaakko Kontio (centre) and Erkki Luoma (right) working in the office wing. This room was designed for everyday work and concentration. The tables separated by partitions were reserved for the more experienced architects. The tables in the open space, lit by clerestory windows, were used by the younger architects.

The aspects mentioned so far support Kontio's feeling that the Studio's work was less a heroic achievement than the result of a joint effort. While Kontio's objections mentioned above coincide with the first two points mentioned by Dana Cuff's in her above-mentioned list of limitations of biographically-centred architectural research, the spatial articulations described by Nava remind us of her third and fourth points.

The expansion of the Studio implied no major changes, including in terms management and expertise, and in matters such as recruitment, timetables and salaries. Aalto's collaboration developed through a complementary mode: Aalto avoided forming large teams and worked directly with the project-architect. This meant not only that Aalto followed all the projects of the Studio – while the collaborators concentrated on one project at a time – but also that he contributed to the projects at intervals, while the collaborators were dedicated intensively to the same design.

Aalto typically started sketching alone until the initial idea evolved into plans and sections; at this point, he presented the design to one of his collaborators, and the latter's effort to refine it into a more accurate version raised new questions, ensuing a dialogue fed continuously by advice from engineers, experiments with models, feedback from clients, site visits, the response from builders, etc.[9]

This interpersonal approach has been compared with Aalto's teaching at MIT by Lee Hodgden, a former student who became a collaborator at Tiilimäki. Hodgden recalled that Aalto was extremely patient and perceptive over the drawing table: his comments were like his designs, *"didactic"* in an understated way, *"in the sense that he intended those who could read the lesson to see how the problem ought to be solved."*[10]

The organization described above demanded from Aalto a familiarity with his collaborators and imposed a maximum size for the team, constituted by roughly twenty-five architects, interior architects and architecture students.[11]

The question could be raised of whether Aalto's awareness of the collaborators' skills and his ability to distribute projects and tasks would have caused any distortions. For example, Kontio's organization and negotiation skills led to his appointment as office manager, a routine that seems to anticipate his preoccupation with the influence of the clients and builders in a project (as will be discussed later in connection to his own office). Likewise, the difficulties faced by the Studio in its later years, and especially by the office Alvar Aalto & Co after Aalto's death in 1976, seem to indicate that the experience of the collaborators was somewhat truncated. But not even the increasing design and management responsibilities assumed by Elissa Aalto – who was closer to the collaborators' generation when she became a partner of the Studio (informally in 1952 and formally in 1958) – altered this order.[12]

The Studio's way of working can be contrasted with the "teamwork" offices then emerging in Finland, which are characterized by a decentralized organization.

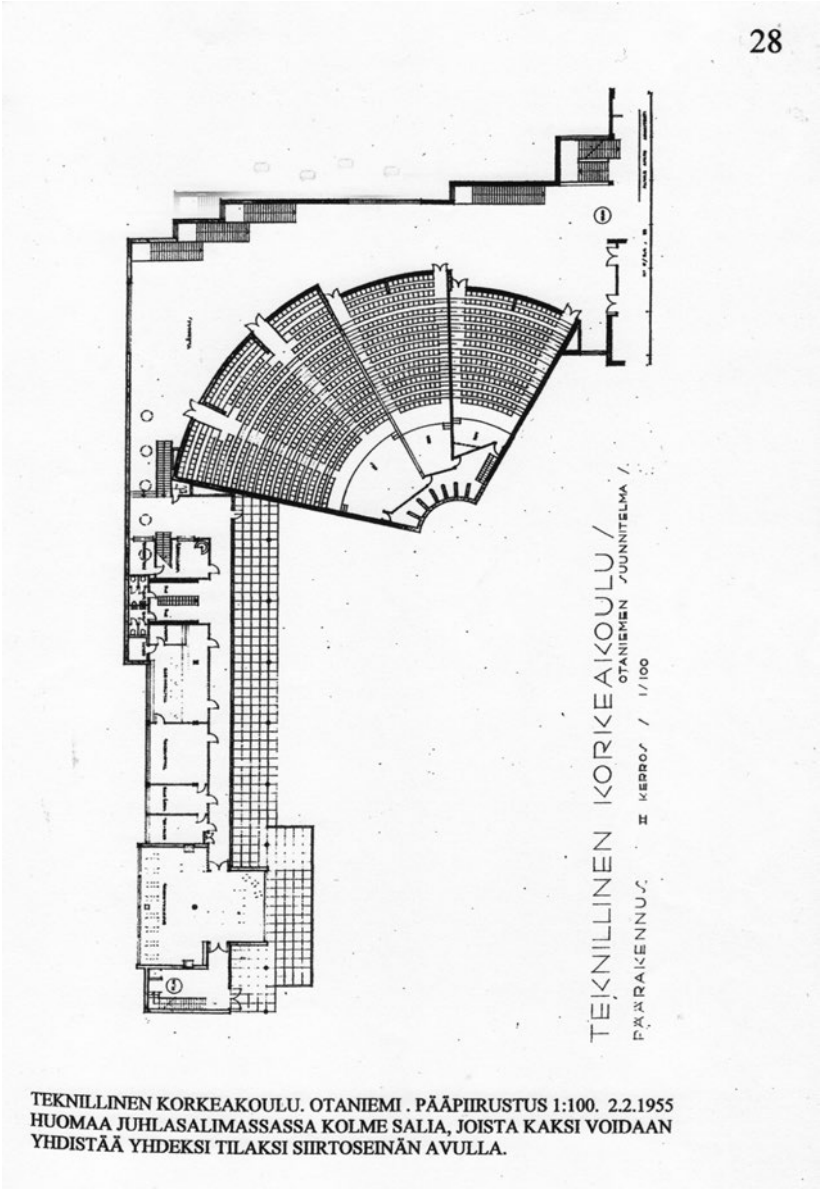
Contrary to the Studio Aalto, teamwork offices relied on objectivity and explicit methodologies in order to integrate various contributors and disciplines within the design process.[13] Aarne Ervi's office, for example, became known for involving architects, town planners, landscape architects and interior designers in its design process.[14] As mentioned in the *Introduction* to this study, the Studio's tacit approach and dependence on Aalto would become at some point in the 1960s a source of suspicion among colleagues and critics. Then again, one might raise the question of whether the teamwork's explicit and universal processes could provide a complete response to problems either. In other words, the disposition of the Studio Aalto may have provided access to dimensions that an organization driven by general concepts could not achieve.

Individual and social dimensions of the architect's work

Just as there seems to be an analogy between teamwork organizations, the open plan office spaces required for their practices, and the latter's tendency to produce generic designs, perhaps it is possible to establish a connection between the organization of the Studio Aalto, its architecture, and its products.

This correspondence is apparent in the case of a large and complex project such as the Helsinki University of Technology. The client's idea in this ambitious project, the first of its kind in Finland, was to expand university education by building a suburban campus integrating teaching and research facilitates with services, residences and a generous outdoor environment. Aalto planned the campus by placing the Main Building at its centre and scattering the other buildings around it. Moreover, Aalto designed the Main Building as a close-knit complex centred on the special main auditorium, making the linear wings and transversal connections extend from it. The Main Building divides the area in two: the north side was reserved for car access, while the sunlit side served as a fluid meeting point for students, teachers, staff and visitors. In other words, the Main Building orders both the plan and the profile of the campus, distinguishing spaces for socializing, studying and relaxing, whereas the secondary buildings are conceived as comparatively simple free-standing blocks sited directly in the terrain between the woods.

In addition to being perfectly justified in terms of the programme, this division between primary and secondary elements reflects also the internal organization of the planning and design process. Interestingly, this ordering between building elements – which can be observed even on a small level of scale, i.e. in a detail that suggests the special place of a part within the whole – prefigures also an ordering in the working tasks. Indeed, referring to the Studio's



A page from Jaakko Kontio's book *Seitsemän Vuotta Alvarin Tähden* (2004).

Kontio's commentary on his own drawing: "[Helsinki] *University of Technology. Otaniemi. Plan for building approval, 1:100. Notice that the mass of the auditorium contains three halls, two of which can be combined together by a moveable wall.*" The alternative tested here by Kontio was later abandoned in favour of a mass divided into two halls. The project architect during the construction stage was Eric Adlercreutz. Adlercreutz/A-Konsultit Architects designed an extension to this building in 2002.

working strategies, Charrington has described a careful prioritization between A and B problems:

> *Within the commercial parameters under which the atelier worked … certain buildings with a highly repetitive format and rudimentary cultural value, such as offices, were used to finance the attention and time commitment that a cultural building might require.*[15]

Aalto could soon demonstrate the utility of this principle of prioritization: once the master plan for the Otaniemi campus was approved, Aalto invoked it to claim for himself the design of the Main Building as well as a selection of secondary buildings, which would serve as building prototypes, suggesting in exchange that different architects could assume the design of the various other buildings under the master plan.

The implications of Aalto's strategy of prioritization in terms of his negotiation with the clients take us back to the discussion of the specific circumstances of the post-war period.[16] It could be said that during an initial stage in the implementation of the welfare state in Finland, the relationship between the state as a client and the designers remained very personalized, as the former engaged in some unprecedented efforts before actually consolidating its administration. A closer examination of the history of the planning of Otaniemi suggests that this transition was not without difficulties, however.

The planning of a new campus was an exceptional task, and the government decided to nominate an autonomous board to act as the client, instead of thrusting it to the National Board of Building, as usually was the case for public buildings. Sensing a new surge of public commissions, the National Board of Building reacted negatively and considered even recovering its original status as both client and designer of public buildings, which had been lost with the commercial emancipation of architecture in the late 19th century. The Finnish Association of Architects (SAFA), chaired by Aalto (1943-1958), opposed this reform, and when Jussi Lappi-Seppälä, who had just resigned litigiously from SAFA, was appointed to carry it out, SAFA declared a strike against the National Board of Building, which lasted from 1954 to 1957. As Jaakko Penttilä has explained, by being directly under the supervision of the Otaniemi Building Board, the University of Technology was able to circumvent the delays experienced by most public projects at that time.[17]

Furthermore, as Penttilä also explained, because Espoo, still after it converted into a borough in 1963, did not have the political influence nor the means to supervise such a complex plan until 1968, the Otaniemi Building Board could prepare, promote and protect the plan from external pressures with more autonomy than normal. Thus, though the project differs from Aalto's earlier private commissions in its scope, it can be compared with the latter in terms of

being directed by a limited circle. In 1968, the general plan become obligatory in Finnish towns, and it was at this point, paradoxically, as public reforms finally redistributed the responsibilities of the National Board of Building and the city of Espoo Town Planning Office, that the plan of Otaniemi became more vulnerable to demands for building density, traffic efficiency, etc.[18]

Aalto, who himself had been an advocate for the creation of regional and town planning organizations since the 1940s,[19] soon realized that this process also threatened to bureaucratize the dialogue between the various parts involved in the project. The Studio felt the impact of these changes through an escalation in the amount of drawings and paperwork required, as well as an increase of management issues. Occasionally, the Studio may have used its prestige to insist in carrying out practices that started to be non-standard, but it finally conformed to them.[20] Elissa Aalto recalled how it was hard for Aalto to accept this process of formalization:

> *His whole approach was that the architect could change his mind during construction, make changes – today, of course, that isn't really possible any more … When one looks at the drawings of the 1920s, one is amazed how few of them were needed for a building.*[21]

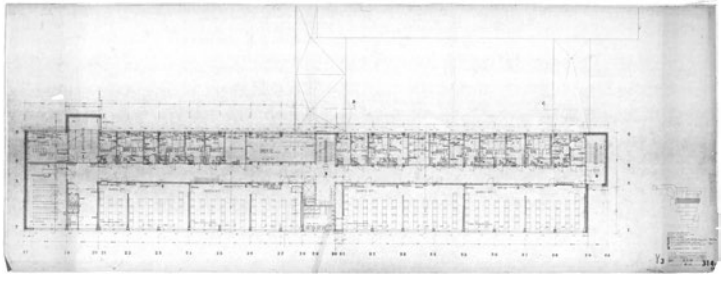
As seen earlier, one of the strategies used by the Studio to address large and complex projects was to distinguish between special and standard problems, that is, between solutions carefully worked out for the purpose, and standard solutions with great general application. At this point, it should be noted that the latter were by no means less important: in order to be used thoroughly, these standard solutions needed to be carefully thought out, as Kontio has explained in regard to the design of the seemingly modest Mining Laboratory for the Technical Research Centre in Otaniemi:

> *Far-reaching decisions affecting Otaniemi's overall character were made in connection with its construction. Should the area be brick-faced? What kind of architectural character would arise from the window surfaces, voids and the cross sections of laboratories? For many years, the Laboratory served as an archetype for other plans.*[22]

The similarity between the brick, wood and copper details used in Otaniemi and the National Pensions Institute shows that these standards were readapted not just within the same project, but from one project to another. Aalto's experience directing the Standardization Institute and his idea of *"elastic standardization"* granted him great insight in this respect, but equally important for this practice was the balance between craftsmanship and industry provided at that time. Aalto himself had no doubts in praising the *"quality of workmanship"* and the spontaneity of the *"Finnish worker's contribution"*:

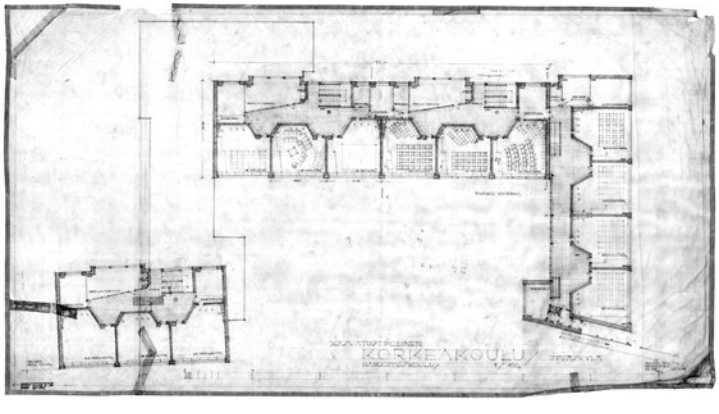
Alvar Aalto, Helsinki University of Technology, Sawmill Building (1952-1954).

The Sawmill Building served as an auxiliary facility during the construction of the campus before it became a laboratory for the Department of Forest Products Technology.



Alvar Aalto, Helsinki University of Technology. AAM.

Plan of a standard linear block. The corridor is placed asymmetrically to provide wide classroom spaces on one side of it.



Alvar Aalto, Jyväskylä College of Education, Institute of Pedagogics (1951-1954). AAM.

Plan of the classroom wings. This hybrid solution combining linear and centralized spatial organizations exemplifies Aalto's humanist way of taking responsibility for the users: feeling that the prospective teachers could benefit from being familiarized with what he considered to be a school's ideal scale, Aalto divided the corridor into smaller segments.

In Finland it is possible, all criticism aside, to achieve quality on a level that is not usual in most parts of the world, and that has a direct positive effect on our architectural culture. This is noticeable both in industrial production and in individual efforts.[23]

For Kontio, Vuoksenniska Church in Imatra (1952-1956) represented the climax of an era in which building specifications left a margin to be resolved by the builders on site, meaning that similar solutions could be detailed with great variation:

The window manufacturer set up a workshop inside the church. They measured the openings and built the windows on site, they hardly needed our carefully measured drawings.[24]

Typical of this period was that architects and builders could extend their cooperation through a series of projects, thus feeding a system of mutual exchanges. Even this practice, however, started to be conditioned by more and more rigid building processes, building codes, building consultants, detailed tenders, and other bureaucracy, as revealed at the end of Kontio's anecdote:

There was a problem with the tax office because if you buy a window from a factory you have to pay VAT and the tax office claimed there was a window factory inside the church.

The plan of the Otaniemi campus comprised essential characteristics of the post-war period, attesting to both the individual and the social dimensions of the architect's work: a socially progressive, if also paternalist commission; a mix of conditions of material scarcity and technical ingeniousness; a society willing to attain consensus after three traumatic wars; and an architect that embraced these special circumstances, promising a qualitative response but demanding professional autonomy. Nevertheless, as the procedure of democratization and massification of universities occurred at a faster pace and in a more dramatic manner than had been anticipated, the Otaniemi campus came under criticism even before its completion.[25]

Aalto's idea of a spatially hierarchized *"forest campus"*, but also its aesthetics, were then considered outdated. For example, Aalto decided that the campus buildings should be clad uniformly in red brick, with the exception of the partial marble cladding on the one side of the main library building and on the inner courtyard of the Department of Architecture. Aalto's effort to distinguish what he considered to be the special role of the former units within the whole would have been completed with the placement of a collection of classical columns in

the centre of the courtyard of the Department of Architecture to serve as examples for the prospective architects.[26] The symbolic moment of the clash between the architect and the users occurred following the inauguration of the Department of Architecture, and shortly after the international student protests of May 1968, when students occupied the newly installed building and daubed the marble cladding with graffiti. The classical columns, which Aalto proposed to be imported from Italy, were never installed.[27]

1.2 Continuing changes: university planning in the 1960s in Finland

> *For some time now, the sixties and its achievements have been considered the pinnacle of all that is hideous … Yet the sixties looked to the future, a future that is now …* [It] *was an exceptionally interesting, versatile, contradictory and baffling time ... Behind it lay the familiar social upheaval that hit Finland later and harder than other countries: the disintegration of rural society, economic restructuring, massive waves of migration and emigration, motorization. In building the changes were just as extreme: a major transition to industrial building, new housing settlement production and mechanical ventilation. Architectural ideals changed just as rapidly … It was a time of prophesies, compulsive growth pressures, problem solving, taking bulls by the horn.*
>
> (Vilhelm Helander)[28]

Formalization of the planning administration

The Aalto plan for Otaniemi inaugurated a unique period of commissions for university buildings in Finland, and which overlap in multiple ways. The Finnish strategy for higher education was initially concentrated in a few universities and regional institutes. However, the rapid increase in the influx of students obliged the government to abandon this gradual process in favour of a more ambitious programme launched in 1967. In the words of architect Professor Erkki Koiso-Kanttila: *"A million square meters of university and college space will be built here by 1981 … over one and a half times as much university space as had been built in the fifty-year period 1917-1967."*[29]

Until the mid-1960s, the plan for Otaniemi had been the major reference for university building commissions. Aalto himself became involved in the planning of the campuses for the then Jyväskylä Institute of Pedagogics (University of Jyväskylä since 1967) and the University of Oulu (unrealized, 1956), and even the relative differences between projects by different architects during this period tend to strengthen its overall cohesion. But the second generation of university plans announced some important transformations in the practice. Since many of Aalto's collaborators, not necessarily because any direct association, became involved in a number of these projects, I will discuss some of them briefly.

The competition for the campus of the Helsinki University of Technology was immediately followed by that for the University of Helsinki's Department of Agriculture in Viikki (1950), won by Veli Paatela.[30] The Viikki site was a beautiful forest and meadow north-east of the Helsinki centre and accessible by public transport, and the brief for the campus included teaching, research and residential facilities. On this occasion, Aalto was a member of the competition jury, alongside the Professor of Urban Planning Otto-Iivari Meurman, who had also served on the jury of the Otaniemi competition, and who was an expert in the garden city principles (Meurman was also by then a member of the Tapiola garden city planning board).

Paatela's competition entry, *"Succus fimi equini"*,[31] has obvious similarities with the above-mentioned projects – notably, the way in which nature inspires an ideal order – reminding us that projects usually start, even before the architect becomes involved in the planning, in the vision of the client. The university and student housing blocks are placed separately, the former next to the main road on the summit of a hill, and the latter directly amongst the rocks and forest, so that the fields extending to the south can be used freely as the Department of Agriculture's *"laboratories"*. The distinct buildings are connected by a series of outdoor walkways, with a special auditorium building marking the central entrance.

While the heating plant and the student housing blocks were completed ahead of schedule, the construction of the main facilities was delayed by the earlier mentioned SAFA strike, and progressed slowly until 1971. As also mentioned earlier, this interval witnessed major changes in the administration, including the roles of the National Board of Building, town planning, and local building board departments. The development of the Viikki campus plan attests to both the positive and estranging effect of these changes: governmental regulations attempted to raise standards by imposing awkward limitations; demands for increased spatial ratios and energy-efficiency ratios resulted in the addition of more stories and covered hallways between the wings. While increased density may have made the building more comfortable to use, it also compromised the free articulation between the buildings and landscape.

This course of development raises some comparisons with the planning of the Helsinki University of Technology, which, as it was seen earlier, benefited from an exceptional planning regime during the late 1950s. Penttilä has noted how Meurman played a decisive role in this process: first, by convincing the Helsinki University of Technology to move from their premises in central Helsinki to a suburb; then, by preparing the preliminary reports that led to the choice of the Otaniemi site and programme; and finally, by supervising the development of the plan as a member of the Otaniemi Building Board, including the designs made by architects other than Aalto. As Penttilä explained: *"before approving a plan for a building project, the board always asked for statements … from Meurman*

Veli Paatela, University of Helsinki, Viikki campus student residences (1950-1953).

The freestanding buildings sit directly on the rock outcrops. The red-brick walls suggested in an initial design stage were replaced by yellow calcium-silicate brick walls.

Veli Paatela, University of Helsinki, Department of Agriculture (1950-1971).

A view of the southern courtyard: note the lower special wing in the centre. Elsa Mäkiniemi (later Elissa Aalto) participated in the preliminary studies for the 1949 Otaniemi campus competition as one of Otto-Ilivari Meurman's students (Penttilä, "Building Alma Mater", 12). Later, she joined Paatela's office and took part in the team which won the competition for the Department of Agriculture ("Conversation 3. Jaakko Kontio and Veli Paatela", 136).

and Aalto's office."[32]

During this period the Otaniemi Building Board made a series of direct commissions, including, but not exclusively, from a few collaborators of the Studio. That was the case in the projects for the Department of Mechanical Engineering (1963-1967), the Flow Laboratory (1963-1967) and the Mechanical Engineering Laboratory (1962-1965) – assigned to Jaakko Kontio and Kalle Räike,[33] and which will be discussed in *Chapter 4* – the Department of Mining (1964), assigned to Märta Blomstedt and Olli Penttilä,[34] and the Department of Chemistry (1967) and Hydraulic Engineering Laboratory assigned to Aili and Niilo Pulkka[35].[36]

Each of these buildings takes a subordinate part in Aalto's plan, adapting to the particularities of the site and programme, and exploring different expressions, combining a cast in-situ concrete framework, brick walls, and wood and copper window and door frames. Blomstedt and Penttilä's design for the Department of Chemistry, which was built in three stages, attests to the flexibility of standards proposed by Aalto. The resulting complex is formed by a composite volume with two standard slabs sliding past each other, a larger wing running parallel to this on the rear side of the plot, and a restaurant hall connecting these two groups with an inner courtyard.

Industrialization of the building processes

The tendency in Finland towards decentralization in the university plans from the post-war years has an important exception in the University of Helsinki's Porthania building (1949-1957), designed by Aarne Ervi. This is partly explained by the fact that the project resulted from a competition originally held in the 1930s. Ervi skilfully employed different configurations to fit the building's mass, scale and texture into the existing urban block, but using the latest available technology and giving it a contemporary expression.

Thus, if Ervi and Aalto's buildings have in common a humane and considered approach to details, they contrast in their approach to technology. For example, Kontio recalled that when he started working on the Otaniemi project, his job extended from the drawing table to the construction site, where, as he explained, a sawmill building was being constructed strategically in advance "*to handle the huge trees that had to be felled in Otaniemi's forests"*, so that the wooden parts produced there were then installed one by one in the campus buildings.[37] In contrast with this pragmatism, the Porthania building, the construction of which started only a couple of years later, became the first building in Finland to be entirely assembled from prefabricated parts. Whereas Aalto tried to make the most of limited resources and existing craftsmanship, Ervi – as Sirkka-Liisa Jetsonen has pointed out – tried to influence the client in order to secure the most progressive

alternative.[38]

The comparison shows that the rapid economic and industrial development provided architects with an unusual range of alternatives; from the outset, the possibility to choose between the use of cast in-situ and prefabricated concrete. Erkki Mäkiö has explained that the evolution of concrete technologies, *"from the beginning of the century to the end of the 1950s"*, should be considered as a complex of processes maturing at different speeds:

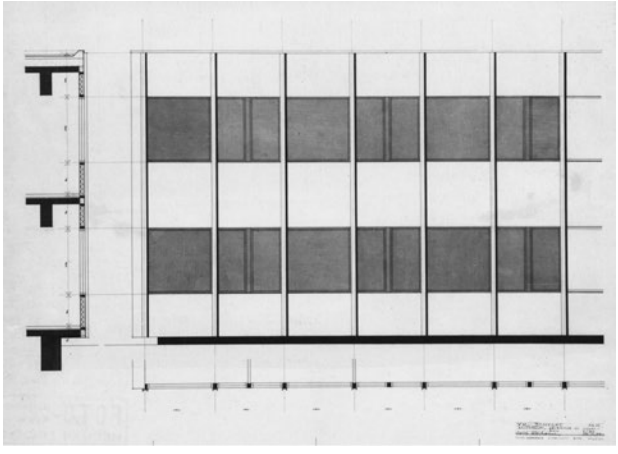
> *The change made thick walls thin, massive outer walls separate, warm façades cold, heavy frames light, replaced craft work with the use of machines, making on site with prefabrication, individual building with standards, custom-making with system building, human energy with cranes, mixing concrete on site with ready-mixed concrete, brick-laying with the use of large-scale moulds, timber floors with reinforced concrete. At the same time, these developments marked a shift from repairable toward disposable building.*[39]

The war itself – as Mäkiö also observed – played a decisive role in this evolution. It did so, first, by allowing some primitive features to resist longer than could have been expected, and then by promoting the organizational infrastructure which later favoured a technological boom. Equally refined and competitive alternatives coexisted in the transition to the 1960s, but during the next decade the choices flattened as industrial production increased its control and precision, and contributed to dividing conception and construction phases.

Toivo Korhonen's Institute of Social Sciences building, later the University of Tampere (1958-1961), in central Tampere, consists of two wings crossing at right angles. Korhonen placed the shortest wing parallel to the main street, at the highest point of the site. He located the main entrance at this point, so that the restaurant on the opposite side offers a panoramic view over the terraces and courtyards formed by the lower perpendicular wing, as the latter follows the sloping terrain. As opposed to Aalto and Ervi, Korhonen searched for an expression intrinsic to the processes of industrial production, using repetition, clear-cut geometries, large glass surfaces and metal fittings.[40]

Presumably on the basis of this experience, Korhonen planned and designed a series of university projects during the next two decades, including Tampere University of Technology in the new suburb of Hervanta (1973-1983). The Hervanta campus is structured along a huge rectangular court with blocks placed at right angles on each side of this axis and connected to each other through raised passageways.

I recalled earlier how my interest in the work of the Studio Aalto collaborators had originated in my perplexity upon arriving at the Hervanta campus, after having visited Otaniemi. And what a surprise it was to find out that the former had



Toivo Korhonen, Institute of Social Sciences, University of Tampere (1958-1961). MFA.

Cross-section and elevation. Korhonen searched for an abstract expression intrinsic to the industrial building processes.

Institute of Social Sciences, University of Tampere. MFA.

The strict repetition of the same building elements makes it hard to determine the scale of the volumes. In this photograph by Simo Rista, the highway emerges as an adequate reference for comparison.

Jaakko Kontio and Kalle Räike, Helsinki University of Technology Mechanical Engineering Laboratory, Otaniemi campus (1962-1965).

The Mechanical Engineering Laboratory, located immediately next to the Department of Mechanical Engineering (also designed by Kontio and Räike), accommodates special machines and room requirements. The inner side of the building connects to the yard through large windows and gates. The outer side of the building is clad in red brick.

been largely planned and designed by one of Aalto's collaborators![41] Korhonen's plan for the Hervanta campus had little in common with Otaniemi in respect to its urban concept, spatial structure and building technology. Korhonen designed also a few buildings within the plan which inadvertently expose the limited possibilities of prefabricated building technology, both in terms of spatial and visual expression. The tension between collective and individual dimensions and between special and standard elements – so vivid in Otaniemi – succumbed in Hervanta to an indifference to order.

Unlike most other contemporary plans for universities, in their plan for Lappeenranta University of Technology Kontio and Räike insisted in using the concrete cast in-situ frame and red brick cladding solution introduced by Aalto in Otaniemi. This was an additional motive for me to choose their plan as a case study in *Chapter 4*.

The next red-brick campus to be built in Finland was the University of Joensuu designed by Jan Söderlund and Erkki Valovirta, commissioned in 1973 – at a time when the Lappeenranta University of Technology was already under construction – and entirely revised between 1979 and 1985 by Söderlund, Valovirta and Risto Marila. The University of Joensuu was built using a hybrid building technology combining prefabricated elements and red brick as a cladding for the walls. An interesting feature of this plan is its location on the edge of the Joensuu city grid. The architects responded to this by connecting slab blocks at right angles to form open-courtyards, and by making the special wings project inwardly and outwardly from this matrix in order to accommodate a specific programme or to signal a specific point in relation to the city.[42]

Social emancipation

The consolidation of the welfare state in Finland brought with it an increase in the administration and planning organizations. Meanwhile, and to some extent as a product of these changes – i.e. developments in healthcare, education, mobility, etc. – society itself became more capable of voicing its expectations. In reaction to a growth of bureaucratization, people called for actual power to influence the projects, and Aalto's humanist conception of the user – whom he liked to call *"the little man in the street"* – started to be considered insufficient.

The construction of several new campuses in Finland in the 1960s concurred with the transformation of the universities themselves into more open institutions, a process that has contributed to the shaping of the free, egalitarian, and scientific-oriented nation we known today, and in a record period of time which, as Vilhelm Helander specified, *"peaked at the end of the decade and declined in the mid-seventies with the onset of the energy crisis"*.[43]

Under these conditions, the planning, design and construction of the

universities went through successive readjustments in the balance of power, but also within the very limitations of each successive arrangement. Perhaps this period of extreme vitality and intense political activism didn't provide the ideal conditions for the architect's work: architects were drawn into these important questions, yet, they were also seen as obstacles for a more democratic building process. In commercial practices, the figure of the architect gave way to anonymous, multidisciplinary organizations. In decision-making boards – as will be seen when examining Kontio and Räike's Lappeenranta University of Technology – architects were easily replaced by other groups hitherto poorly represented; yet, the question remained of whether the new representatives (which, from the moment they got their seat on the board, ceased by definition to be part of the disfavoured group) could act any better on the behalf of the whole than the architect-experts they had just substituted.

For the architects, the new circumstances posed important problems beyond the political arena, especially in the architectural domain proper, where the topic of the *users* became central. A basic definition refers to the users as the people who inhabit the building; Adrian Forty, in his examination of architectural terminology, has refined this idea by contrasting it with the figure of the client: the users inhabit the building but do not have the power to influence the building's conception. According to Forty, an awareness to this distinction in the 1960s gave rise to two different interpretations: one, the idea of the users as a disfavoured group, and the other, a more undercurrent conception of the users as an *"unknown"* agent.[44]

This interest in the theme of the users is a consequence of the ambiguities raised by the prospect of an architecture for mass society. The tendency to generalize industrial building processes and modular systems underpinned a conflict between the intentions of addressing the users' concerns, and of potentiating their actions. Within the scope of the CIAM congresses, the discussion about an architecture capable of adapting to social change, and of being flexible for individual appropriation, converged with the concept of *"open form"*.[45] On this basis, Candilis-Josic-Woods proposed a compact open building plan – later known as *"mat-building"* – for the Berlin Free University competition (1963-1973), a project which was immediately well received in Finland.[46]

The concept of the open form and the mat-building model underlie the winning competition entries for the Oulu University by Kari Virta (1967-1968),[47] Kuopio University by Juhani Katainen (1971), and Jyväskylä University (1969-1970) by Aalto's former collaborator Arto Sipinen. Sipinen's plan for the further planning of the Jyväskylä University campus stands out for being directly connected to Aalto's 1951 plan, and therefore, for presenting quite literally a direct alternative to it.

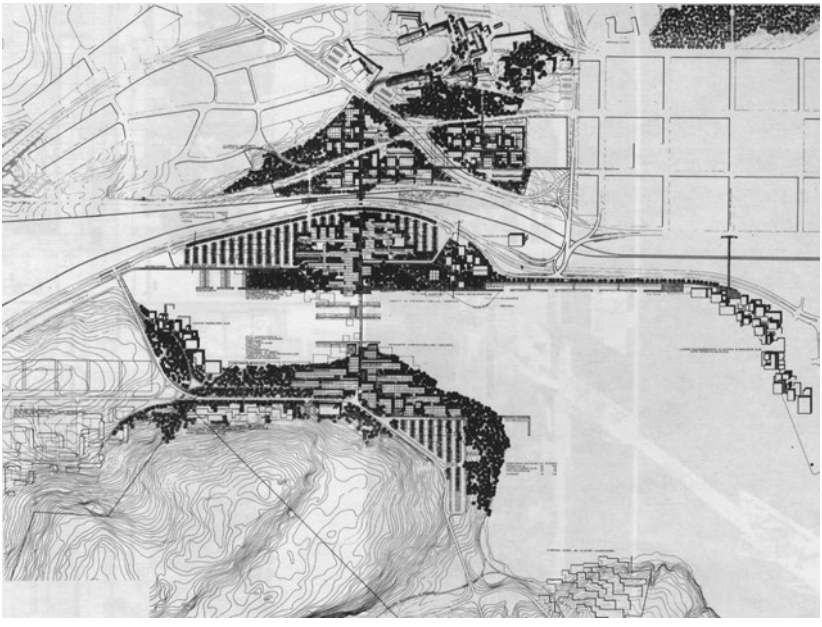
At this point, it is necessary to give a short introduction to Aalto's Jyväskylä University plan, a project which, from its adherence to a broad landscape and cultural ideal to the use of red brick, has obvious points of contact with that

of the Helsinki University of Technology. Aalto's Jyväskylä campus stands on Seminaarinmäki (Seminar Hill), a beautiful ridge south-west of the city centre, where the Jyväskylä Teachers Seminar – famous for its role in fostering the Finnish language – was established in 1863. As in Otaniemi, Aalto used the Main Building to divide the area into two: to the west, the individual buildings are grouped around an open stadium; on the east, they form a denser cluster integrated into the existing urban blocks, including the original red brick college buildings. Aalto's projects for this particularly sensitive area included several building extensions, and culminated in 1970 with an unbuilt proposal for a new library building on a prominent plot with century-old buildings and mature trees. Aalto required additional time to work out a delicate design with an irregular plan for his location, but the university responded with successive amendments to the programme in order to increase the building volume, and the incompatibilities between the two parties finally forced him to withdraw from the project. Sipinen had just then won the international competition for the further planning of the campus, and with Aalto's agreement, the design of the University Library was handed to him.[48]

Contrary to Aalto, Sipinen suggested an orthogonal plan based on a cubic module to be built with a combination of prefabricated concrete elements, a steel frame and brick infill cladding. Sipinen addressed in this way the expectations for flexible space and a direct visual expression at that time. Such a turn of events, which had been announced by the 1970 competition, anticipated a new stage of development in the campus, which would continue through the 1980s and 1990s under Sipinen's direction.

Sipinen's original competition entry is based on a system of modular units extending across the Jyväsjärvi lake to connect with the opposite side, and somehow evoking the image of growth and change of Japanese Metabolism architecture.[49] Sipinen's plan went through significant alterations, however, and it was finally implemented in a more conservative way in distinct stages that roughly correspond to two groups of buildings sited on either edge of the lake. Closer to Aalto's campus, the Mattilanniemi area (1979-1988) is comprised of linear building blocks, built using a prefabricated concrete frame and clad in red brick. The Ylistönrinne complex (1990-1999), located on the opposite side of the lake and predominantly painted white, results from the aggregation of different L-shaped volumes, thus producing a picturesque building mass that stands out against the forest background. The evolution of these projects suggests that Sipinen himself started to doubt the initial concern for the actual users' expectations – the very active group of students and teachers at that specific moment in the late 1960s in Jyväskylä – as well as the corresponding principles of spatial flexibility and direct expression, indeed, of spatial and visual neutrality.

What, then, is an architecture that would be more open to user participation? As Forty has observed, the correct estimation of this quality is more difficult to make than what it would seem at first. By the nature of its activities, the case of



Arto Sipinen, Competition for the extension of the University of Jyväskylä (1st prize, 1970). MFA.

Sipinen's plan is based on modular units that connect the campus designed by Aalto (above) to the southern shore of the lake Jyväsjärvi, extending over the water in a way that evokes Kenzo Tange's 1960 Metabolist plan for Tokyo Bay. Sipinen's plan was finally revised and implemented through discrete design stages during the next three decades.

Arto Sipinen, University of Jyväskylä, Library, Administration and Arts Buildings (1974). Photo by Manuel Montenegro.

The blocks designed by Sipinen (foreground left and background right) observe the height of the existing buildings. The extension of the blocks alters their relative scale, however. Red brick is used in the façades as infill to the steel frame structure.

the universities – which are public institutions with short user cycles, but a long durability and a broad indirect impact in the region – exacerbates the ambiguity referred to by Forty. Under great pressures in the late 1960s, the architects may have failed to come up with an entirely satisfactory conception of the *"user"*, and how to work towards such a potential. As Forty suggested, perhaps users can be captured only as a negative, unknown agent:

> *The 'user' does not tolerate attempts to be given particularity: as soon as the 'user' starts to take on the identity of a person, of specific occupation, class or gender, inhabiting a particular piece of historical time, it begins to collapse as a category.*[50]

1 Charrington contrasts Aalto's adaptability to that of his talented (but less accomplished) contemporary Erik Bryggman, who continued working in the atelier manner. Harry Charrington, "We don't need to be so dogmatic", in *The Mark of the Hand,* eds. Charrington and Nava (Helsinki: Rakennustieto, 2011), 56.

2 Aalto's collaborators in the competition phase were Jean-Jacques Baruël, Sven-Gustaf Boström, and Elsa Mäkiniemi (later Elissa Aalto). Aalto's collaborators in the planning and design stage included Kalevi Hietanen, Juhani Jauhiainen, Jaakko Kontio, Juhani Kulovesi, Kalevi Ruokosuo, Keijo Ström, Heikki Tarkka and Marja-Leena Vatara. Aalto's collaborators in the design and construction stage included Vatara, Hietanen, Kulovesi, Eric Adlercreutz, Theodore Booth, Jean-Pierre Cousin, Scott Hamilton, Reino Huhtiniemi, Matti Itkonen, Mikko Karjanoja, Marjatta Kivijärvi, Johan Korsström, Thor Laurén, Ilona Lehtinen, Federico Marconi, Rainer Ott, Teofilo Senn, Hans Slangus, Pirkko Söderman and Per-Mauritz Ålander. Jaakko Penttilä, "Building Alma Mater. Alvar Aalto and the Otaniemi Campus", in *University of Technology, Otaniemi 1949-1974,* ed. Mia Hipeli, vol. 13 of *Alvar Aalto Architect* (Helsinki: Alvar Aalto Foundation/ Alvar Aalto Academy, 2008), 12, 15, 27.

3 For a discussion about the relationship between the architect and the different agents involved in a project (centred on the theme of residential architecture) see: Ana Luísa Rodrigues, "A habitabilidade do espaço doméstico. O cliente, o arquitecto, o habitante e a casa" (PhD diss., Universidade do Minho, 2008).

4 Dana Cuff, *Architecture: The Story of Practice* (Cambridge, MA: MIT Press, 1991), 250. The social dimension of the profession is also emphasised in Spiro Kostof, Preface to *The Architect. Chapters in the History of the Profession*, ed. Spiro Kostof, xvii-xx (Oxford: Oxford University Press, 1977).

5 Kontio, *Seitsemän Vuotta,* 11-15. Kontio refers to Schildt, *The Mature Years* (New York: Rizzoli, 1991), 283.

6 Aalto, 1949 letter to the MIT administration, quoted in Schildt, *The Mature Years,* 128.

7 Kontio, *Seitsemän Vuotta,* 3-4.

8 Vezio Nava, "Tiilimäki 20", in T*he Mark of the Hand,* 26-28.

9 Tore Tallqvist. Interview by Miguel Borges de Araújo (with Olli-Paavo Koponen). Tape recording, April 9, 2010, Studio Aalto, Helsinki. Tallqvist's account can be compared, for instance, with that of his Swiss colleague Karl Fleig (Fleig was Aalto's collaborator in 1953-1959, and editor of Aalto's *Complete Works*). See Karl Fleig, "The Architect in his Workshop", in Karl Fleig, ed. *Alvar Aalto. Band II 1963-1970* (Zurich: Artemis, 1971), 9-11.

10 Schildt, *The Mature Years,* 120-121. Hodgden (collaborator 1955), along with Colin Rowe, John Hejduk, Bernhard Hoesli and others, was a member of the so-called "Texas Rangers" group of architects who taught at the University of Texas and later at Cornell University.

11 In addition to these, the Studio employed a secretary, a cook and a chauffeur. Charrington, "We don't need to be so dogmatic", 62-64.

12 Elissa Aalto gives an interesting account of this final stage of the Studio, largely dedicated to the completion and renovation of earlier designs. Elissa Aalto, "L'héritage d'Alvar Aalto".

13 Having originated in the Bauhaus, the principle of *teamwork* was pragmatically adopted in the United States for providing a productive and expandable type of organization. It can be argued that Aalto shaped his Studio partly in reaction to the large-scale and anonymous organizations that he got to know during his stays in the United States. For example, the Studio Aalto project description starts with these provocative words: *"Pan American Overseas Airlines, do you have a seat for me tomorrow to Finland? Thus, I leave behind the so-called architects' offices where architects draw standing up at their drawing boards. Architecture, building art, cannot be created in enormous, open-plan offices."* Aalto proceeds to explain that, inasmuch as he acknowledges the *"collective aspect"* intrinsic to the profession, he rejects a *"teamwork system"* which fails to provide *"peace for the individual to work in."* Aalto, "Studio Alvar Aalto". It is as if Aalto's return aeroplane trip to Helsinki (and the building of a new Studio) signified the end of a period during which he considered even establishing himself in the United States. A recently published book on Aalto's friend, the Finnish-American architect Eero Saarinen, throws new light onto the enigmatic opening line in Aalto's text. Susanna Santala describes how Saarinen's career took a huge turn with the design of the TWA Terminal in New York (1953-1958), as the demanding programme imposed upon Saarinen by the aviation industry forced him to develop a pseudo-scientific and entrepreneurial approach modelled on its own corporate clients (i.e. including management and marketing specialists, etc.). Saarinen's office grew eightfold in a short period, forcing him to divide it into decentralized teams. But as Santala notes, Saarinen himself soon realized that he spent so much time in meetings that he had no time left for designing. Susanna Santala, "Laboratory for a New Architecture: Airport Terminal, Eero Saarinen and the Historiography of Modern Architecture" (PhD diss., Helsinki: University of Helsinki, 2015), 146-157. After reading Santala's description, I could not help thinking that Aalto had Saarinen's dilemma in mind when he put forward his aviation metaphor.

14 For more on the role of interior designers in Ervi's office, see Susanna Aaltonen, "Aarne Ervi's office

community as seen by the interior designer Lasse Ollinkari", in *Aarne Ervi - tilaa ihmiselle,* eds. Eriika Johansson, Juhana Lahti, and Kristiina Paatero (Helsinki: Museum of Finnish Architecture, 2011), 84-103.

15 Charrington, "Not a locked box", 257.

16 For details about the negotiations with the clients in Otaniemi, see Jaakko Penttilä, "Building Alma Mater", 31, 36, 45.

17 Op. cit., 10. See also Asko Salokorpi, "Towards New Achievements – Finnish Architects in the 1950s", in *The Work of Architects. The Finnish Association of Architects 1892-1992,* ed. Pekka Korvenmaa (Helsinki: Rakennustieto, 1992), 152-153. Lappi-Seppälä himself had been an Aalto collaborator in 1933-1934. A curious note is that Kontio himself worked for the National Board of Building for some time after graduating in civil engineering in 1948; coincidentally, he later worked for Lappi-Seppälä's private office before joining the Studio Aalto in 1954. Kontio's experience was possibly valued when working as Aalto's collaborator in the Otaniemi plan. Kontio, "Alvar Aalto's assistant", 41.

18 For example, Penttilä mentions that between 1950 and 1970 the number of cars registered in Finland grew from 27 000 to 712 000. Among other problems, the growth of car-parking areas threatened the original landscape concept (Aalto himself made a few proposals for multi-storey parking lots, which were not built). Traffic planning was eventually given to a specialized firm, Viatek. Penttilä, "Building Alma Mater", 16-19.

19 For more about the creation of regional and town planning organizations in Finland, see Mikael Sundman, "Urban Planning in Finland After 1850", in *Planning and Urban Growth in the Nordic Countries*, ed. Thomas Hall (London: Chapman & Hall, 1991), 86-91.

20 For example, Charrington has described the Studio's pragmatism on the use of drawing notations, which followed the recommendations of SAFA, with plans, elevations, and sections, drawn at the scales of 1:200, 1:50, 1:20 and 1:1. Charrington, "Not a locked box", 261.

21 Elissa Aalto, "Following the line", in *The Line. Original Drawings from the Alvar Aalto Archive*, ed. Kristiina Paatero (Helsinki: Museum of Finnish Architecture, 1993), 20.

22 Kontio, "Alvar Aalto's assistant", 40-41.

23 Alvar Aalto, "Finland Builds: Exhibition at the Ateneum, Helsinki", *in Alvar Aalto. Sketches*, ed. Göran Schildt (Cambridge: MIT Press, 1979/1953), 114.

24 "Conversation 3. Jaakko Kontio and Veli Paatela", in *The Mark of the Hand,* eds. Charrington and Nava, 133-134.

25 Penttilä, "Building Alma Mater", 36-37. Penttilä explains that Aalto's hierarchized conception of the institution directed him to spatially hierarchized design, and he gives the example of the main festival square subordinated to the rector's office. According to Penttilä, this was the basis for the objections shown by the younger generation of architects, who instead sought to produce a non-hierarchized society by designing non-hierarchized space. But in this same passage, Penttilä also observed that Aalto's festival square turned ironically into the stage for the student demonstrations that would conduct to a democratization of the university administration. If inadvertently, Penttilä's conclusion suggests that the potential of Aalto's hierarchized solution, which in fact did not prevent unknown (even subversive) activities, may have been underestimated. Certainly, there is more to be said about the relationships between space and use than what it was then assumed.

26 Aalto compared this operation with the installation of a research laboratory for technology students. Alvar Aalto and Elissa Aalto, "Main Building of the University of Technology. Project Description", Arkkitehti, 4, 1966. Reproduced in *University of Technology, Otaniemi 1949-1974,* ed. Mia Hipeli, vol. 13 of *Alvar Aalto Architect* (Helsinki: Alvar Aalto Foundation/ Alvar Aalto Academy, 2008), 82. See also Penttilä's commentary, Penttilä, "Building Alma Mater", 45-46, 60.

27 Roger Connah, "He who released the piglet [interview with Tapani Launis]", in Roger Connah, *The Piglet Years – The Lost Militancy in Finnish Architecture*, *Datutop* 28 (Tampere: Tampere University of Technology, 2007), 37. Tapani Launis, one of the promoters of the protest, was Aalto's collaborator in 1962.

28 Vilhelm Helander, "The Sixties Today", in *Architecture and Cultural Values,* ed. Maija Kärkkäinen (Jyväskylä: Alvar Aalto Symposium, 1991), 44.

29 The new plans included the School of Industrial Arts in Helsinki, the School of Theatre in Helsinki, and the Institutes in Jyväskylä, Oulu, and Tampere, which were later upgraded to universities. New institutions were created in Joensuu, Kuopio, Lappeenranta, Tampere (University of Technology) and Vaasa. Erkki Koiso-Kanttila, "The programming of university planning and construction", *Arkkitehti* 3 (1970): 43.

30 Veli Paatela, Aalto's Collaborator in 1946-1948. National Public Health Institute (1958). Helsinki Töölö Hospital extension (1948-1962). Veli Paatela and his wife, architect Kaija (Hurtta) Paatela, were also close friends of Alvar and Elissa Aalto. The Paatela family has been exceptionally involved in architecture: Veli Paatela was the son of the architect Jussi Paatela, nephew of the architects Toivo and Marja Paatela, and brother of the architect Jaakko Paatela; Veli's son, architect Mikael Paatela, has taken over the direction of the office up to today. For more

about the Paatela Architecture Office, see: Petra Havu, ed., *Arkkitehtitoimisto Paatela-Paatela & Co. Vuodesta 1919. Projekteja & Skissejä* (Espoo: Arkkitehtitoimisto Paatela-Paatela & Co, 2003).

31 The competition motto *"Succus fimi equini"* can be roughly translated as *"juicy horse manure"*, a curious turn on Aalto's habit of naming competition entries in Latin, i.e. the Otaniemi entry was named *"Ave alma mater, morituri te salutant"* [*"Hail to the university, those who are about to die salute you"*], referring to the Roman gladiators' greeting before entering the arena. For more on the Viikki campus, see: Veijo Muroke, "The Departments at Viikki. Veli Paatela 1949-71", in *Yliopiston Helsinki / University Architecture in Helsinki,* ed. Eea Pekkala-Koskela (Helsinki: University of Helsinki, 1989), 208.

32 Penttilä, "Building Alma Mater", 16. The division between planning and design tasks in Otaniemi had a precedent when Hekki and Kaija Siren (2nd prize in the Otaniemi planning competition in 1949) were asked to design the Student Village and disagreed with having to submit to Aalto's plan. The Board sided with Aalto and the Sirens had to rework their proposal (the residences were completed just in time for the 1952 Olympic Games). "Conversation 3. Jaakko Kontio and Veli Paatela", 136. A subsequent episode involved Heikki Siren's father, the Professor of Architecture J.S. Sirén, who demanded a separate competition under Aalto's plan for the design of the Main building. The Board again sided with Aalto. Penttilä, "Building Alma Mater", 26. Sirén was then invited to design the Department of Chemistry (he had designed the Chemistry Laboratory extension in the old premises in Hietalahti), but he fell ill, and the building was finally designed by Aili Pulkka and Niilo Pulkka. Panu Nykänen, *Otaniemen yhdyskunta. Teknillinen korkeakoulu* 1942-2008 (Helsinki: WSOY, 2007), 193.

33 Note that the different authorships within the Otaniemi plan aren't always well identified. Timo Koho, for example, states under a photo of Kontio and Räike's Department of Mechanical Engineering that: *"the whole of the Otaniemi campus is marked by the consistency of its materials. However, Aalto designed very different faculty buildings for the area. The Department of Architecture and the Department of Mechanical Engineering differ from each other completely in their architectural character."* Timo Koho, *Alvar Aalto – Urban Finland* (Helsinki: Rakennustieto, 1997), 54.

34 Olli Penttilä was an Aalto collaborator in 1953-1958.

35 Aili Pulkka was an Aalto collaborator in 1938 and 1945. Niilo Pulkka's work with Pekka Rajala and Kaarlo Leppänen is discussed in the *Chapter 5.*

36 The Department of Civil Engineering (1959-1964) was a direct commission made to the former director of the National Board of Building and Professor of Construction at Helsinki University of Technology, Antero Pernaja (together with Nils-Henrik Sandell). Notable exceptions to this procedure were Hekki and Kaija Siren's Otaniemi Chapel (1954-1956), Reima and Raili (Paatelainen) Pietilä's Dipoli Student Union building (1961-1966) – Raili was, incidentally, an Aalto collaborator in 1956-1957 – and Kurt and Thua Moberg's Urdsgjallar Swedish-speaking Students Union building (1962-1966), which came about through separate competitions.

37 Kontio, "Alvar Aalto's assistant", 40.

38 Sirkka-Liisa Jetsonen, "Realism or Dreams – Public Building in the 1950s", in *Heroism and the Everyday – Building in Finland in the 1950s,* ed. Riitta Nikula (Helsinki: Museum of Finnish Architecture, 1994), 206.

39 Erkki Mäkiö, "Changes in Building Techniques", in *Heroism and the Everyday – Building in Finland in the 1950s,* 209-213.

40 Toivo Korhonen, a collaborator of Aalto in 1952-1954, and 1964. Toivo Korhonen, "Yhteiskunnallinen Korkeakoulu, Tampere", *Arkkitehti* 6 (1961): 91-112.

41 For more on the Tampere University of Technology campus in Hervanta, see, "New land use plans", *Arkkitehti* 5 (1973): 28, 32-33. See also Korhonen's preliminary report for Tampere University of Technology, Toivo Korhonen et al., *Tampere Teknillinen Korkeakoulu, Hervanta. Käyttösuunnitelman tarkistus. Rakennus- ja tilajärjestelmät. Inventointi.* (Helsinki: Rakennushallitus, 1972).

42 Jan Söderlund and Erkki Valovirta, "Joensuu University", *Arkkitehti* 4 (1979): 16-23; for the final version of the plan, see Jan Söderlund, Erkki Valovirta and Risto Marila, "University of Joensuu Main Building", Arkkitehti 8 (1985): 20-29.

43 Helander, "The Sixties Today", in *Architecture and Cultural Values,* 44.

44 It was in the former, simple sense that the concept of user was first accepted, explains Forty, but it was in the latter, critical sense – as adopted in the writings of Henri Lefebvre and Herman Hertzberger – that the concept has survived today. Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture* (London: Thames and Hudson, 2000), 312-315.

45 The term *"open form"* was introduced by the Finnish-born Polish architect Oskar Hansen in the 11th and final CIAM congress, held in Otterlo, Netherlands (1959). Hansen published soon after an article about the *"open form"* in the Finnish based magazine *Le Carré Bleu*, which helps to explain the rapid diffusion of the concept in Finland. Oskar Hansen, "La forme ouverte dans l'architecture – l'art du grand nombre", *Le Carré Bleu* 1 (1961): 4-5.

46 See, for example: André Schimmerling, "L'Universite Libre de Berlin*", Le Carré Bleu* 1 (1964): 1-5 : http://www.lecarrebleu.eu/PDF_INTERA%20COLLEZIONE%20LCB/FRAPN02_CARR_1964_001.pdf [accessed August 1, 2018]. The term *"mat-building"* was coined retrospectively by Allison and Peter Smithson.

47 Virta's plan and the concept of open form are discussed in Juha Vuorinen, "Hyvinvointivaltion avoin muoto" (PhD diss., University of Helsinki, 2005).

48 Kristo Vesikansa, "Seminaarinmäki Architecture After Alvar Aalto", in *Jyväskylä University 1951-71,* ed. Mia Hipeli, vol. 16 of *Alvar Aalto Architect* (Helsinki: Alvar Aalto Foundation/ Alvar Aalto Academy, 2009), 101-105. The Jyväskylä University Library was published in: Arto Sipinen, "Jyväskylä University Library", *Arkkitehti* 1 (1975): 39-43.

49 Tange's Tokyo Bay project was widely discussed in the 1960s. See, for example, J. Osterreich, "Architecture et Civilisation Technique", *Le Carré Bleu* 1 (1963): 1-8. See : http://www.lecarrebleu.eu/PDF_INTERA%20COLLEZIONE%20LCB/FRAPN02_CARR_1963_001.pdf [accessed July 31, 2018]

50 Forty, *Words and Buildings,* 312. One may wonder if the architects of the 1960s could have overestimated the novelty of the concept of *"user participation".* The problem was hardly new, and – as Forty has shown – it demanded a profound, still on-going reflection; see, for example, Aalto's ideas about participatory building processes and spatial flexibility and adaptability in connection with his housing for post-war reconstruction projects. Alvar Aalto, "An American Town in Finland", in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997/1942), 128.

Alvar Aalto, Seinäjoki Centre (1951-1988).

View from the civic square showing typical motifs: the use of ceramic tiles as the cladding material, the creation of an artificial topography, the discrete parts forming an urban composition with a distinct profile, and the suggestion of a process of building growth through time.

Alvar Aalto, Studio Aalto. AAM.

View of the atelier wing showing a large-scale model of the unrealized plan for Helsinki City Centre (1959-1975).

2. Craft

In *The Other Tradition of Modern Architecture,* Colin St. John Wilson distinguished two currents within Modern Movement architecture. One was formed by the architects who limited their concerns to questions of economy and technology, and the *other* was formed by the architects – from different times and places, including Aalto – who remained aware of the broader cultural implications of making spaces for man and his institutions. Identifying himself with the latter group, St. John Wilson referred to a shared understanding of architecture as a *"practical art"*.[1] In a different article, *St. John Wilson* complemented his idea of architecture as a *"practical art",* by pointing out that because of its double bond to purpose and play, the *craft* of architecture involves a sense of adherence to and transformation of a given language.[2]

Accordingly, for St. John Wilson, the typical Aalto motif resulting from the juxtaposition *"of two lines, one straight, the other serpentine",* often interpreted in terms of his genius, attests on the contrary to Aalto's receptivity to the materials already available, i.e. in the form of altered landscapes, ancient theatres and medieval hill towns, etc.[3] We are reminded of a famous statement made by Adolf Loos just at the moment when his Modern Movement colleagues were claiming a *"revolution"* in 1924: *"An architect is a mason who has learned Latin. Modern architects seem more like Esperantists, however."*[4]

Chapter 2.1 discusses Aalto's identification with modern, classical and vernacular architecture. I suggest that this was a factor of cohesion for the Studio, which allowed it to integrate different experiences and to continue working with great precision; for example, in a long-term project such as *the Seinäjoki Civic Centre (1951-1988).* Moreover, I suggest that the materials and the processes accumulated by the Studio during its lifetime may have facilitated the absorption of individual contributions.

Chapter 2.2 concentrates on a group of projects made independently by the Studio collaborators, and which can be easily associated with Aalto's architecture. Architects and critics may have questioned at some point the legitimacy of the collaborators to continue building upon the Studio's work; I confront such reservations and set out to examine the former collaborators' projects less for their novelty than for the way in which they acknowledge the internal dynamism of the *craft.* By the end of the chapter, the choice of Kaarlo Leppänen's Valkeakoski Cultural and Administrative Centre – a project that resumes Aalto's favourite theme of the civic centre – as a case study in *Chapter 5* will begin to appear more clearly justified.

2.1 Tradition and Aalto: Seinäjoki Civic Centre, 1951-1988

> [Tradition] *cannot be inherited, and if you want it you must obtain it by great labour ... The existing monuments form an ideal order among themselves, which is modified by the introduction of the new (the really new) work of art among them. The existing order is complete before the new work arrives; for order to persist after the supervention of novelty, the whole existing order must be, if ever so slightly, altered; and so the relations, proportions, values of each work of art toward the whole are readjusted; and this is conformity between the old and the new. Whoever has approved this idea of order … will not find it preposterous that the past is altered by the present as much as the present is directed by the past. And the [architect] who is aware of this will be aware of great difficulties and responsibilities.*
>
> (T.S. Eliot, as modified by Colin St. John Wilson)[5]

Aalto as a master of the Modern Movement

Colin St. John Wilson refers to a famous essay by the poet T.S. Eliot to sustain his idea of a culture-based *"other tradition"* in architecture.[6] Eliot's claim that tradition is both necessary for and altered by the new, provides a point of view to the work of the Studio Aalto, helping to problematize both the Studio's relationship to tradition and the collaborators' relationship to the Studio's body of work (as a specific part of this tradition). But as Eliot put it, *"*[Tradition] *cannot be inherited … you must obtain it by great labour"*.

In the transition to the 20th century, the introduction of reinforced concrete and steel-frame technologies promoted concurrently the separation between constructive and cladding elements, and the emergence of a spatial paradigm. These changes threw architects into an existential crisis, as attested in Le Corbusier's 1923 ultimatum: *"architecture or revolution"*.[7]

At the beginning of his career, Aalto had to catch up with the events announced in Central Europe. Aalto's awareness of the new challenges can be traced back to his student years, as he himself recalled:

> *When students at the University of Technology in Helsinki are in a facetious mood and want to make fun of a professor, they will start with*

the words: 'Otto Wagner says…' Bringing architecture into harmony with contemporary needs required a prolonged struggle which, as we all know, was largely carried on in Vienna.[8]

Aalto absorbed these influences rapidly, but he did not simply take the superiority of the modern materials and technologies for granted. A well-known example is when he created a bent plywood alternative to the Bauhaus chrome tube furniture and famously defended this approach with a rational argument about sensory values:

> *The demands that the* [Marcel Breuer] *chair failed to meet – excessive reflection of sound and light, high thermal conductivity – are actually merely the scientific names of the elements that together make up the mysterious concept of 'comfort' … Thus we might say that one way to produce a more humane built environment is to extend our definition of rationalism.*[9]

As Aalto became increasingly familiar with the properties and associations of each material, he rediscovered links between modern, classical and vernacular architecture. A case in point is the Viipuri Library (1927-1935), in which the successive design revisions made during a prolonged project schedule reflect a process of study and transformation of the architecture of the past, a continuum rather than a rupture with it.

In 1923, Adolf Behne made an important distinction between Functionalist and Rationalist tendencies in Modern Movement architecture. According to him, Functionalist architects regarded purpose as a driver of change, and consequently emphasized the transitoriness of the institutions. Rationalist ones, on the contrary, perceived modernization as a force pushing towards the standard and universal:

> *The functionalist prefers to exaggerate the purpose to the point of making it unique and momentary (a house for each function!) but the rationalist takes the purpose broadly and generally as readiness for many cases, simply because he gives thought to the enduring qualities of buildings, which perhaps see many generations with changing requirements and, therefore, cannot live without leeway.*[10]

The two tendencies described by Behne can be recognized in the Viipuri Library. Aalto's sensitivity to the contingent in the institutions is coupled with an understanding of architecture as a durable artefact: each part is designed for its purpose yet inserted into a cubic container.[11] Aalto's own project description expressly refers to this double-origin:

> *When I designed the Viipuri City Library (and I had plenty of time, a*

whole five years), I spent long periods getting my range, as it were, with naïve drawings. I drew all kinds of fantastic mountain landscapes, with slopes lit by many suns in different positions, which gradually gave rise to the main idea of the building. The architectural framework of the library comprises several reading and lending areas stepped at different levels, with the administrative and supervisory centre at the peak. My childlike drawings were only indirectly linked with architectural thinking, but they eventually led to an interweaving of the section and ground plan, and to a kind of unity of horizontal and vertical construction.[12]

In contrast to Bruno Zevi, who highlighted the open aspect of Aalto's architecture and its continuity with nature, Ernesto N. Rogers and Sigfried Giedion were among the first to recognize in its simultaneous bond to nature and culture a creative path for the revision of the Modern Movement. For example, Rogers suggested that the Säynätsalo Town Hall (1947-1952) operates as a translation of the architecture of the Mediterranean city into a centre for a modern industrial community in a Nordic environment.[13] Rogers and Giedion's concerns about modern architecture's relationship to tradition and the city should be considered within the context of the physical and spiritual destruction caused by World War II in Europe. Already in 1943, Giedion, Josep Lluís Sert and Fernand Léger forecast an important turn in the Modern Movement with their manifesto "Nine Points on Monumentality", to which I will return later in this chapter.[14]

The design of civic centres and the theme of monumentality became focuses of the work of the Studio through successive elaborations of the urban unit – composed of monument, square and residence – achieved in Säynätsalo. Indeed, Giedion identifies in the subsequent Seinäjoki Civic Centre project solutions for all kinds of problems, from spatial to temporal integration, room configuration and scale, construction and decoration. As he put it:

> [The Seinäjoki civic centre] *is dominated by the Council House, its upper chamber set back to emphasize its volume. The exterior walls are clad with dark-colored glazed enamel bricks ... Although the Council House is the dominating element, the whole complex is a group form containing the library ... and a small theatre. These buildings do not surround an enclosed space; instead they are held together by the relations of their three volumes ... The element of space construction which underlines most strongly the relations between volumes and space is the stairway, which rises from the earth like the spread-out base of a truncated pyramid … Is it after all a stairway? There would never be such a large crowd of people to give a rational justification for its dimensions … Such a plan would have contributed to the glory of any Greek agora.*[15]

Alvar Aalto, Rovaniemi Centre (1961-1985).

View from the civic square: each part expresses something about its purpose. The library is preceded by an entrance portico and lit through large skylights. In the background, the undulating volumes of the Lappia Hall signify the theatre and concert hall and the congress centre contained within it. Difference is countered by solid and void relationships, the pavement grid, among others.

Alvar Aalto, Finlandia Hall (1962-1975). AAM.

Kaarlo Leppänen, standing inside a large-scale working model of the auditorium hall, including the internal visual/acoustic cladding elements. Leppänen himself designed the 1991 building renovation (a second building renovation was carried out by A-Konsultit Architects in 2011).

For Aalto, tradition cannot be superficially reduced to a matter of references. Instead, the architecture of the past provides at once a confirmation of its sense of purpose and an excuse for play – and it must be, therefore, *"obtained by great labour"* in the sense defended by T.S. Eliot above. Similarly, for the Studio, tradition functioned like a shared memory, both directing and absorbing different individual contributions. The Seinäjoki project, which involved many collaborators over several decades and different stages, is exemplary of this process, which seems the opposite of the individualism of which Aalto has been so often accused.

This mode of collaboration suggests a broader cultural identification between members. When, in 1954, two former Aalto collaborators, Claudia and Edouard Neuenschwander, published the first (unofficial) monograph on Aalto's work – significantly referring to the *"Atelier Alvar Aalto"* in its title – the authors drew attention precisely to the connection between the Studio and its cultural context, including the geography, folklore and industrialized situation of Finland. With their foreign eye, the Neuenschwanders captured synthetically the position of the Studio in relation to the existing building traditions – from the transitoriness of wood constructions to the monumentality of stone churches and castles – and building examples in Finland – from the sauna to Helsinki's Senate Square designed by Carl Ludwig Engel (1822-1840), and the Helsinki Railway Station designed by Eliel Saarinen (1904-1909), among others.[16] But this cultural identification cannot be limited to local references, however: in Aalto's architecture there is a counterpart interest in foreign cultures and architectures, starting from his obsession with the classical world,[17] and extending to his interest in the work of Gunnar Asplund and Le Corbusier, among others. Thus, shared local and international, and modern and ancient references provided a basis for the working collaboration.

At this point, it could be asked whether this sense of shared culture was preserved through the Studio's lifetime. One comes to think, for instance, that while Alvar and Aino's trips to Italy in the 1920s were typical of a generation, Alvar and Elissa's trips to the Mediterranean in the 1950s were more exceptional, as many architects started turning their interests elsewhere, to the modern centres. Likewise, whereas the architects born up to the late 1930s combined, like Aalto, the experience of peasant and cosmopolitan life,[18] the architects born in the post-war years were raised in a more one-sided cosmopolitan and industrially-oriented Finland. Considering that, at the turn of the 1960s, Aalto was thirty years older than the average age of his collaborators, it is plausible that this reciprocal identification started getting thinner.

Before I move on to discuss the internal aspects related to the experience contained in the materials and processes of the Studio, I will briefly trace another important element of cultural binding between Aalto and the collaborators: namely, their architectural education. It should be kept in mind that until 1959

the Helsinki University of Technology provided the only course in architecture in Finland; moreover, the school's curriculum remained remarkably stable from the time of the appointment of Professor Armas Lindgren in the transition to the 1920s,[19] and under the charge of Professor J.S. Sirén between the 1930s and the late 1950s, when Professor Aulis Blomstedt took over and the influence of the Bauhaus was more explicitly accepted.

As is well known, the relationship between Aalto and Sirén was notoriously cold, among other things because Aalto himself had applied for the professorship in 1931 but lost out to Sirén. This did not make the experience of the school incompatible with that of the Studio, however. As Sirén's assistant, Osmo Lappo – himself a contemporary of Kontio, Leppänen and Adlercreutz – has explained, Sirén was a classicist who, by meeting with a generation of students who were attracted by Functionalism, was forced to achieve a dialogue by stressing *"the basic elements of architecture"* and thus allowing a pluralist approach.[20]

Among the few changes introduced by Sirén was the separation of design and history, which hitherto had been integrated, into two different disciplines. History maintained an important status, however, especially under the professorship of Nils Erik Wickberg.[21] Wickberg, whose survey of Finnish Architecture became the canonical history of Finnish architecture,[22] was able to connect modernity to antiquity; he proposed to students small design exercises which demanded a historical consciousness, and organized study trips abroad which inspired in successive generations a sense of architecture's materiality, scale and locality.[23]

Wickberg's stimuluses proved valuable to many young architects when they joined the Studio, and many of them pursued this link to the classical world further, encouraged by Aalto's inspiration.[24] For example, in 1957 Kontio borrowed the Studio's Volkswagen after a work related visit to the Berlin Hansaviertel block and, with Aalto's blessing, travelled to Italy with his wife, Maria Kontio.[25] Leppänen, in turn, recalled accompanying Aalto to the project sites in Siena and Bologna in the mid-1960s, and stopping on the way to visit a marble quarry in Carrara which, as he put it, *"has had a certain historical weight and tradition since Michelangelo"*.[26] Finally, Eric Adlercreutz and his wife and office partner, Gunnel Adlercreutz, have spent a season in Italy regularly each year – and what is more, the architectural sketches resulting from these visits were displayed in the exhibition *"Impressioni Italiane – Travel sketches and aquarelles"*, held in the Studio Aalto in 2010.

An almost complete treatise

By the 1950s the Studio Aalto stood out among contemporary offices, both in terms of the maturity shown in respect to tradition and in terms of the materials and processes that it had accumulated. While this synthesis functioned as a practical instrument to integrate different individual contributions, it might have

also entailed the risk of inhibiting an open exchange between the collaborators and Aalto, and even between the Studio and tradition as a whole.

The publication of the first volume of Aalto's *Complete Works* in 1963 further substantiated the Studio's treatise.[27] Aalto's co-editing, and the selection of examples in plans and sections to scale, sketches, black-and-white photographs and project descriptions, make it comparable to Le Corbusier's *Complete Work* series.[28] Corbusier's books, which Aalto eagerly collected, are an example of the influence of publications in the reception of an oeuvre, serving ambiguously a window to his work. The publication of Aalto's book possibly had a similar effect in mediating the relationship between Aalto and its context. The dissemination of the Studio's work became both a motive of identification inside it and a motive of competition outside it – particularly in the Finnish scene, where, as it will be seen in the next subchapter, two seemingly opposite reactions converged to stress the individual dimension of Aalto's architecture.[29]

The emphasis on the individual dimension of Aalto's architecture (implicitly or explicitly) creates the expectation of seeing the collaborators contribute with equally significant individual careers. Such an Expressionistic, even psychological, interpretation for the individual departures made by the Studio collaborators is attested, for example, in this commentary on Arto Sipinen's career after leaving the Studio Aalto made by Pekka Suhonen:

> *Sipinen has remarked in various connections that Aalto should not be imitated, an attitude that underscores the importance of his* [Sipinen's] *'Miesian' stage. For Sipinen, this has partly meant a distancing from Aalto, the pupil's well-known reaction against a mentor and his need to go his own way, though not indicating any final revolt. Respect survived and lives on, possibly yielding new fruit in the 1970s.*[30]

While architecture involves an emotive, individual encounter with the materials and process of the craft, the sense of affirmation of one's voice described by Suhonen indicates a kind of individualism for its own sake. St. John Wilson's defence of architecture as a *"practical art"* mentioned at the start of this chapter leaves little margin for this view, however.

Once we accept the limits and potential of the Studio's "treatise", we are ready to problematize the use of drawing as the favoured process to interact with it. As Elissa Aalto explained, in the Studio Aalto the designs were usually developed through orthogonal projections rather than figurative perspectives, axonometrics or conceptual diagrams:

> *Although Aalto himself was such a skilful draughtsman and could have made fine perspective drawings, for some reason he avoided them – there aren't very many. Generally, the office's drawings are fairly simple. Perhaps*

> *this drawing style originates in some way from the asceticism of the 1930s: when the style of a period is simple, the drawings are very simple, too.*[31]

This preference for drawing in plan and section tells much about the collaborative nature of the work done in the Studio. Plans and sections presented an abstract means to both direct and absorb the contributions of the different individual collaborators. Ilona Lehtinen has noted both the openness and precision of Aalto's drawings: *"When you saw one of his sketches,"* she explained, *"you thought, well, that's the starting point ... But when the building was finished you noticed how ... the important stuff was already in the sketch."*[32]

This way of working helps to explain why the exceptionally large amount of drawings produced in the Studio remained anonymous or simply signed under Aalto's name – a fact that denotes both his artistic authority and a sense of collective purpose, and that makes it a practical impossibility to establish individual authorships. Instead of attempting to counter this, I will assume this intricacy of contributions as further evidence of a method of collaboration that is based on cooperation rather than competition.

Charrington has correctly pointed out the importance of drawing in the Studio by stressing the potential of the method of sketching and drafting on transparent paper to promote a subtle and continuous process of corrections and transformations, and admitting reciprocal exchanges between members:

> *The poetic qualities of both the Aalto's atelier's sketches and working drawings are communicated by their suggestiveness, not their completeness, and in their omissions as much as their inclusions … It was for the job architect to dig out from Alvar Aalto's palimpsest the first suggestion of a definite form and relate it accurately to the site through establishing measured site sections and plans.*[33]

In contrast to this quality of abstraction and anonymity, drawing, as the skill to connect real and imagined space through bi-dimensional traces on paper, also depends on the concrete, artistic aspect of the *craft* symbolized by the skilful use of the hand. It reminds us that the materials and processes of architecture are – more than just the building materials and processes in the strict sense – the specific measurements and forms that make part of the design of cities, rooms, walls, etc.

Thus, as Charrington has also noted, Aalto relied much on certain collaborators, on their individual experiences and skills, and *"perhaps the most remarkable of those figures was Leppänen, the job architect for the Vuoksenniska Church and the Finlandia Hall, who seemed to not only become Aalto's architectural manner, but to evolve it."*[34]

Working in the Studio required a sense of admiration and empathy, and even Leppänen's impressions of his initiation in the Studio can barely hide this:

> *Aalto was drawing his first sketches with his yellow 6B pencil … At that time, we still drew with a wooden T-square. I myself used a fine, reddish ruler, perhaps of pear-wood. I remember that the left-hand edge of the drawing-board was not quite straight, and the elderly ruler, too, was warped. But with its help Vuoksenniska was designed. The dimensions were calculated from drawings made with these tools. But since the architectonic form of the church is so complex, any possible mistakes in the dimensions are invisible.*[35]

It is possible that this sense of pride of belonging to the Studio may have prevented a completely open dialogue at times. On other occasions, this identification might have worked bidirectionally, so that just as the collaborators gained familiarity with Aalto's works and processes, Aalto learned conversely about their ideas and talents, thus renewing his own.

Aalto himself was well aware that nothing can be said twice. His understanding of this dynamic condition can be observed in his use of familiar solutions, which were less meant to increase productivity than to inspire transformations and new particularizations. Father Barnabas, the client of the Mount Angel Abbey Library in Oregon in the United States (1964-1968), made a curious observation in this respect upon meeting with Aalto and the *"office chief"* Leppänen:

> *[Mr. Aalto] mentioned that libraries and the place of libraries in our civilization remain constant … He has two libraries approaching the construction stage, his Oregon Library and the library for the Finnish Technical Institute … Mr. Aalto has recently refused to accept other libraries as projects until these two are finished. The reason he gives is interesting. One of the people in his studio having a difficulty might ask the others how they are solving certain problems. He would then copy a solution designed for another problem and the institution would be cheated in not having a solution organically worked out to suit its own peculiar needs.*[36]

The tension between *"constant"* institutions and the need for *"organically worked out"* difference in this passage confirms Aalto's understanding of *craft* as an open, but subtle process of change.

2.2 Aalto in the work of the Studio Aalto collaborators

> *For the ancients, imitation provided also the structure for articulating the history of an art or technique; imitation was what kept an art or technique moving on. The approach must not be confused with a principle of continuous progress, such as … in modern histories of technology or science. In discussions of imitation, the model of the great antecedents is always represented as exemplary; if those who follow alter the model, they are not necessarily surpassing it but translating it into their own voice. The possibility of decline is always on the horizon, particularly in the wake of a brilliant period.*
>
> (James S. Ackerman)[37]

Ornament

James S. Ackerman's description of the classical concept of *"imitation"* contains a critique of the modern artists' and critics' obsession with the idea of hiding and exposing their influences.

The modern bias towards originality has contributed to a progressive dissociation between architecture and the fine arts. The latter's emphasis on the individual developed in a manner that architecture (practical art) could not follow. From time to time, architects have diverted their focus from the sense of purpose or, in the way of a counteraction to this, attempted to remove subjectivity entirely from the design process. This divide is evident among the Modern Movement architects and critics, at turns aligned with the artistic avant-gardes, or strictly concerned with questions of technology and economy.[38]

We are reminded of St. John Wilson's call for a conception of architecture as *"practical art",* with its allusion to the handling of materials and to a slow evolution in the modes of employing them. This is why I have resorted to the use of the term *craft,* which still preserves something of the sense of *"sustenance and security"* provided by the classical idea of *"imitation",* as Ackerman put it:

> *Imitation stressed community, the solidarity of the maker of the present experiences with his ancestors and teachers – ancestors whom he engages in a contest of skill and imagination. No major writer of the ancient or*

Veli Paatela, Finnish Red Cross Hospital extension, Helsinki (1957-1962).

View of the entrance canopy; the low brick walls and ribbon windows present a variation of the brick, wood and copper construction used by Aalto.

Jyrki Paasi, Sea Traffic Control Centre, Helsinki (1988).

Juxtaposition of windows of varying sizes. The undulating motif is used here in a way not previously tried by Aalto: the curving brick courses leave the concrete lintels visible and suggest that the elements such as overhanging bays are non-load bearing.

> *Renaissance worlds meant it to promote the sort of frozen authority we call academic.*[39]

By stressing the role of the new, modern critics have often failed to recognize the legitimacy – in the case of architecture, even the necessity – of creating by imitation, as made evident, for instance, by Asko Salokorpi:

> *Aalto's obvious leading position has inspired other architects to seek other means of expression – a measure that has done much to stimulate the Finnish architectural scene. Heikki Siren and Veli Paatela, for example, who at one stage were both clearly influenced by Aalto's use of brick, have established their own line. Imitators of Aalto outside Finland are only found in Denmark and Italy.*[40]

By associating brick architecture with Aalto's signature, Salokorpi fails to discern the motives for Aalto's preference for brick and thus forces a path for the Studio collaborators.

Brick combines a practical value related to its availability and durability, with a cultural value derived from its sensorial, formal and symbolic qualities. For Aalto, brick evoked architecture for being both natural and artifice, process and form.[41] This broad understanding of the value of brick is demonstrated, for example, by Aalto's collaborator in the project for the Baker House Dormitory in the United States (1947-1949), Veli Paatela. Paatela has recalled that, *"as soon as it was announced that the MIT Dormitory in Boston would be brick, brick agents started crowding the office with suitcases full of shiny, perfect bricks. Machine-cut, oil-fired bricks."* Aalto asked him instead to search for still active but archaic manufacturers, after which Paatela was able to find a small factory that produced just the right kind of brick: *"they only extracted one layer of clay every year and then let the sun burn the surface again. Sun-dried. The colour variations in the wood-fired kiln bricks were quite big: yellowish, purplish, all black, red, different reds; all kinds of nuances."*[42]

The technological developments in the early 20th century and the social changes associated with that period placed a challenge on ornament. The adoption of industrial materials and processes promoted a tendency towards simple, *sachlich* products. In the 1950s and 1960s, this tendency resulted in an obsession with the display of steel frames, exposed concrete surfaces and prefabricated building elements. Representatives of this sensibility in Finland include Aalto's former collaborators Aarne Ervi and Viljo Revell, as well as a younger generation constituted by Osmo Lappo, Pekka Pitkänen, Arno Ruusuvuori, Heikki and Kaija Siren, and others.[43]

Aalto recognized that under the new circumstances, brick still maintained a decorative value. While being a familiar material, brick allowed for a margin of combination between industry and craftsmanship. Brick can be differentiated

through the choice of clay, the shape and proportion of the blocks, the process of fabrication and finishing, the type of bond, the quality of the mortar, etc. The Experimental House built on the island of Muuratsalo (1952-1953) on Lake Päijänne in Central Finland stands as a study on the expressive possibilities of brick and a demonstration of Aalto's awareness of its potential. It was only sensible from the collaborators' perspective to make use of this experience in their own designs. For example, Paatela used brick in the University of Helsinki's Department of Agriculture in Viikki, discussed in *Chapter 1,* and in the Finnish Red Cross Hospital extension in Töölö (1957-1962), Helsinki, among other projects.

For the more orthodox modernist architects, even more than the use of brick, Aalto's use of ceramic tiles – a material that is non-loadbearing and therefore openly ornamental – was most likely seen as eccentric. In this respect, it is worth mentioning the trajectory of Aalto's collaborator Kristian Gullichsen, who, as mentioned in the *Introduction,* was one of the main proponents of Constructivism in the 1960s before making a second inflection towards a more comprehensive position. For example, Gullichsen's project for the Malmi Church in Helsinki (1977-1982) is built in concrete, clad with brick and punctuated with decorative blue ceramic tiles.

The use of brick has remained a distinctive feature of the work of many of the Studio collaborators, even when used in ways not previously tried by Aalto. For example, Jyrki Paasi, in the Sea Traffic Control Centre in the peninsula of Katajanokka in Helsinki (1988), explored the decorative value of brick by referring deliberately to a familiar motif – a lintel – which is transformed to express a renewed relationship between elements. The distinction between the constructive and cladding layers is suggested by the undulating brick courses which remind us of their non-load bearing role.[44]

Admiration can be the basis for any meaningful reaction. I have suggested how the Studio consolidated a group of materials and processes which served themselves as a reference for the collaboration – not just in a technical but also in a creative way, in the sense of a *"structure for articulating an art"* stated by Ackerman. For the same reason, and despite the impatience demonstrated by modernist critics at that time – for example, consider the Kyösti Ålander's and Kirmo Mikkola's comments quoted in the *Introduction* to this study – there was no motive for the collaborators to force a rupture with the experience acquired up to then, as they started working on their own. But equally important, and as Ackerman also points out, any truly original contribution both adds to and alters the existing order – or as he put it, *"the possibility of decline is always on the horizon"*.

Composition

Many of the labour and material savings projected by the Modern Movement

architects in the 1920s did not become palpable until the 1960s. Paradoxically, as industrial processes matured at this point, thus confirming some of the earlier theses, a reverse postmodernist reaction started to emerge, which aimed to reassess cultural specific processes and elements. It could be argued that Aalto had already foreseen this outcome by avoiding any hasty rejection of ornament in his projects. The same could be said in relation to his confidence in composition rather than function.

A turning point in the critique was Robert Venturi's 1966 book *Complexity and Contradiction in Architecture*, which took Aalto as a main protagonist. In challenging the modernist bias for the new, as well as its reductionism and exclusivism, Venturi called for a reconsideration of Aalto's architecture in terms of its universality rather than its particularity – a view which could have indirectly supported the position of the Studio collaborators.[45]

Notably, Venturi starts his book by referring to the poet T.S. Eliot and his complex view of tradition which was mentioned at the start of this chapter.[46] Eliot's *"historical sense"* allows Venturi to find in Aalto's architecture a formal quality beyond the usual interpretations made in terms of a causality between function and form. For example, Venturi's observation that in Aalto's architecture, *"a balance, or perhaps a tension, is achieved between the rectilinearity of standard techniques, and the diagonal which expresses exceptional conditions",*[47] concurs with St. John Wilson's later remark on the Aaltian space resulting from the juxtaposition between a straight line and a free line. Aalto reiterates function just as often as he uses familiar forms to evoke the richness of man's life and institutions. As Venturi puts it:

> *Aalto's complexity is part of the programme and structure of the whole rather than a device justified only by the desire for expression. Though we no longer argue over the primacy of form or function (which follows which?) we cannot ignore their independence.*[48]

The Studio collaborators often reinstate familiar Aalto motifs in their own designs but remaining sensitive to the dynamics between form and content. For example, Matti Porkka's Aine Art Museum in Tornio (1986) – the articulated building profile of which presents an obvious link to Aalto's architecture – results from the careful *"juxtaposition"* (to use Venturi's term) of different rooms, each designed according to its purpose, as expressed in the choice of different skylights for the top-lit exhibition and library spaces.[49]

"Order must exist before it can be broken", explains Venturi at one point. Order does not have to be intrinsic to the design, and convention is another manifestation of order, he clarifies. Against the modernist belief system, Venturi accepts that architects cannot invent the cultural system but only interact with it, that is, by using and transforming the materials already available in the city,

Keijo Ström and Olavi Tuomisto, Alppila Church and Parish Centre, Helsinki (1953-1957).

The main Church space is elevated on a podium and turned directly to the street. The courtyard entrance on the left serves the Parish Centre and residences.

Per-Mauritz Ålander, Rurik Packalén and Karl-Erik Hagner, Society of Technology, Helsinki (1959-1962).

On the outside, a cubic mass fits into the corner site of an urban block. On the inside, each room has been designed for its specific purpose. The conference room on the top floor is lit by a special skylight.

which therefore appears as the practical and symbolic source and destiny of the architect's work. *"Convention is what we have",* remarks Venturi on the use of known building elements and methods, continuing:

> *I am taking the limited view, I admit, but the limited view, which* [Modern Movement] *architects have tended to belittle, is as important as the visionary view, which they have tended to glorify but have not brought about … Architecture is evolutionary as well as revolutionary.*[50]

For Venturi, this understanding of the architect's work as the *"unconventional organization of conventional parts"* can be traced back to Renaissance architects' effort to create by means of the appropriation of the elements and methods of Roman antiquity.[51]

Keijo Ström and Olavi Tuomisto's Alppila Church and Parish Centre in Helsinki (1953-1957) is a building complex formed by a dominant volume and a series of subordinate volumes grouped around it, forming a raised courtyard that is linked to the street via an external stairway. The building plot lies at the edge of the city's orthogonal street grid, so that the main feeder street cuts across it and defines a difficult, almost triangular-shaped area. Ström and Tuomisto solved this geometry by dividing the southern wing into small sections. In a single sweep, they adjusted the volume of this building, containing residential apartments, to a more appropriate domestic scale, and attributed more prominence to the church building. As a complement to this strategy of formal fragmentation, the architects designed the church space as a composite building by aggregating in the same volume two different halls connected by a movable partition. The larger hall has a dark redbrick floor and special whitewashed bricks and ceramic tiles on the walls, and with the light directed into the space from either side of the altar.[52]

Several of the strategies described in *Complexity and Contradiction* are displayed in the Alppila Church; among others, the use of exceptions in order to accommodate to the site and the circumstances – resulting in a kind of *"order out of the inconsistencies"* – but also *"the exaggerated unity"* which grants a certain monumentality to the building complex.[53] Like in Venturi's preferred architecture, the Alppila Church favours *"complex and contrapuntal rhythms over simple and single ones."*[54]

The asymmetrical composition of the Alppila Church reminds us of how Aalto's designs manipulate visual perception. As Antón Capitel has noted, Aalto used relatively modest geometrical means to achieve rich spatial configurations and sequences. As Capitel also added, the three-dimensional surfaces of the Vuoksenniska Church are the exception that proves the rule: even the most complex of Aalto's rooms have been designed with just one plan or section, which is linearly extruded or rotated.[55]

As opposed to cultural and religious buildings, the Studio collaborators have

faced a few programmes which have no direct precedent in Aalto's architecture. For example. with the maturation of the welfare state, Finland saw the emergence of modern commercial centres, a very dynamic programme informed by research about building logistics, traffic engineering, marketing strategies, etc. Aalto's strategy of combining different parts into complex compositions appeared at odds with the tendency of commercial centre buildings to form increasingly large and flexible containers.[56]

Aalto completed just one commercial centre in Finland, a linear open shopping arcade intended for campus use in Otaniemi (1960-1961). By the time Aalto's project was built, his former collaborator Erkki Karvinen became involved in a series of commercial centre projects in the suburbs of Helsinki. Karvinen's point of departure was a two-storey high deck combining sheltered and outdoor galleries around an open market square. Karvinen's Puotinharju Shopping Centre, "Puhos" (1964-1965), develops the deck theme by combining a grid plan and a fan-shape, thus reinterpreting a formal motif from Aalto's architecture. Karvinen's building still strikes us with its grace, even after the extensions made during the 1980s spoiled its original clarity.[57]

As Capitel has put it, Aalto used fans, indents, skewed orientations, and undulating lines as *"aprioristic forms",* as something given by the *"discipline of architecture"* itself:

> [Aprioristic forms] *carry in themselves common and operative design devices … they appear previous to the work of the architect, who extracts them from reality – from geometry, from nature – and they have their own qualities, their principles, which the architect confirms and directs while designing. It brings to mind Michelangelo's sentiment that the statue existed hidden in the block of marble, but the artist had to reveal it.*[58]

More than a superficial quotation of Aalto's architecture, the fan used by Karvinen in Puotinharju represents a device to introduce a centre and a scale into an otherwise indeterminate grid plan. Karvinen transformed the intersection between the two different geometries into an outdoor atrium with various shopping galleries extending radially from it, thus fusing form and content in an original way.[59]

Analysing Aalto's strategy of fragmenting and exaggerating familiar forms, Peter Eisenman proposed the concept of *"dual reading"* as Aalto's compositional technique. For example, Eisenman described how the rectangular courtyard plan of the Säynätsalo Town Hall complex is defied by its diagonal access (Eisenman is referring to the complete plan for the area which includes a series of unrealized residential blocks). By using these blocks to orientate the access towards a vertical volume – the double-height council chamber) that is placed asymmetrically from, and outside of, the centre of the composition – Aalto achieves a *"spiral movement"*

and a *"picturesque quality"*. The archetypal courtyard is mixed with another unexpected element; as Eisenman summed it up: *"Aalto's systems are essentially composite in a similar sense to those of Le Corbusier, combining a dominant volumetric order and a secondary movement order"*.[60]

Eisenman's formal analysis shows how Aalto used the transformation of familiar forms as a compositional strategy. Eisenman suggests that form cannot convey meaning by itself; but in the sense that it adheres to and transforms an existing body, form can never by entirely emptied from symbolic associations either. St. John Wilson is stressing precisely this bond between form and content when he refers to the relationship between order and freedom in Aalto's designs for civic centres. The positions of Eisenman and St. John Wilson deserve to be contrasted. For instance, St. John Wilson describes the centralized plan in the Marl Town Hall in Germany (unbuilt, 1957) with its raised courtyard, from which a series of different wings open to the surrounding park, much like the palm and fingers of a hand:

> *Form lies in a sustained appreciation of their civic purposes, representational as much as operational; a sensitive response to the character of the site; and the invention of an organic order supple enough to respond to the many differentiated demands in its pattern of use but articulate enough in embodying those characteristics to produce a form that is vivid and intelligible.*[61]

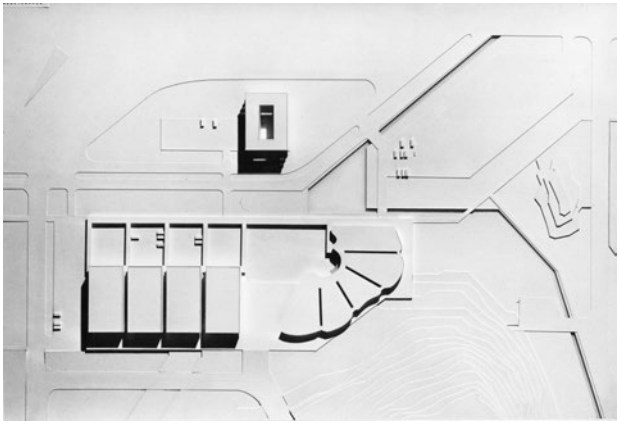
Monumentality

At a short walking distance from each other in the centre of Helsinki are three buildings which, separated by almost three decades, can be quite easily identified with each other: the Swedish-speaking Society of Technology (1959-1962), designed by Per-Mauritz Ålander,[62] Rurik Packalén and Karl-Erik Hagner; the Forum commercial block (1978-1986), designed jointly by four former Studio collaborators, Kaarlo Leppänen, Kari Hyvärinen, Jaakko Suihkonen and Ilona Lehtinen;[63] and an office building at the corner of the streets Annankatu and Kansakoulukatu (1987), designed by Paavo Mänttäri.[64]

Ålander-Packalén-Hagner's building combines office spaces with an underground auditorium, shops on the street level and a club room above. Each part was designed according to its specific purpose and clad with materials pleasant to the touch and sight as well as offering pleasant acoustics. For instance, the entrance lobby has a polished red-brick floor and rough whitewashed brick walls, while the auditorium comprises a wooden undulating ceiling. The building volume follows the urban code for the area; the external surfaces – formed by alternate bands of prefabricated concrete plates and ribbon windows – are unassuming;

Erkki Karvinen, Puotinharju Shopping Centre "Puhos", Helsinki (1964-1965).

Some of the commercial centres designed by Karvinen at that time were later considered obsolete and have been demolished. "Puhos" has witnessed a second generation of vendors coming in and remains in use, though it is in need of repair.



Puotinharju Shopping Centre "Puhos". MFA.

The open square in the centre was later extended, thus creating a full circular courtyard.

and yet, the building stands out from other contemporary office buildings in that it evokes motifs from the surrounding 19th century buildings, including the elaborated corner that accentuates its special position in the urban block, and the decorative indentations in the window frames.

Leppänen, Hyvärinen, Suihkonen and Lehtinen's Forum commercial block, a complex which evolved from a winning competition proposal, comprises various office buildings and a commercial centre with an atrium at its core, which connects an urban block diagonally, from the lower northern entrance at the corner of the streets Mannerheimintie and Simonkatu, to a second upper entrance at a point standing roughly opposite the Society of Technology building. Compared to the original competition entry, the built atrium is relatively modest in spatial terms; however, through its colossal skylights and fine cladding materials, the building still retains a link with other inner atriums in the centre of Helsinki, including Lars Sonck's Helsinki Stock Exchange (1911), Sigurd Frosterus' Stockmann department store (1916-1930) and, of course, Aalto's Rautatalo building (1951-1957) and Academic Bookstore (1961-1969).

Mänttäri's office building on Annankatu, a hundred metres west of the Forum, standing also on the corner of the block, is clearly recognizable due to its combination of polished red granite and red-brick walls, and narrow bay windows and decorative battens that run up against the cornice to suggest a dematerialization of the building mass.

As suggested earlier, neither ornament nor composition should be hastily reduced to a question of individual expression – on the contrary. As Demetri Porphyrios has suggested, Aalto's use of form instead denotes a typological – and therefore collective – understanding of it. As Porphyrios explains, Aalto's seizing of existing traditions indicates that *"architecture bases its meaningfulness, intelligibility and legibility … not on novelty or individual expressionism, but on the affinities, allusions or sympathies the type is capable of establishing."*[65]

Similarly, each of the above discussed solutions used by the collaborators for urban corner blocks, surfaces, fittings, etc., reveals a common approach that can be traced beyond Aalto's work to Romantic and Classical styles widely adopted in Finland.[66] Perhaps even more than the sensorial and spatial dimensions discussed above, it is this cultural-symbolic aspect – the architects' play with the nuances of a broader form language – that makes the Studio's architecture so distinct from its contemporaries.[67]

In 1943, Sert, Léger and Giedion projected a major turn on the CIAM principle of urban decentralization and functional zoning by suggesting that the *"planner, architect, painter, sculptor, and landscapist"* should combine their efforts to create from *"modern materials and new techniques"* urban cores aimed to satisfy the people's collective *"aspiration for monumentality, joy, pride, and excitement"*. The integration of these primarily symbolic spaces in the central, and in many cases historical, areas of the city led then to a discussion that culminated in the

Kaarlo Leppänen, Kari Hyvärinen, Ilona Lehtinen and Jaakko Suihkonen, Forum Commercial Centre, Helsinki (1978-1986).

Concrete column decorated with metal sheet and stone plates.

Forum Commercial Centre.

Concrete column visible inside a store's protruding glass frontage.

8th CIAM congress, "The Heart of the City" (1951).[68]

Aalto agreed with Sert, Léger and Giedion in that man necessitates spaces which survive him and remain as experiences and symbols in the collective memory of successive generations.[69] Moreover, Aalto considered that the voracity of the modern processes, including the spread of industrial and residential areas, placed a series of direct and indirect challenges on the closely-knit town unit formed by residences, monuments and *"public areas open to all, squares, parks, and covered galleries in which all citizens could gather, without segregation"*. Aalto saw a possible solution in grouping the civic institutions into larger entities capable of substantiating their special position in relation to the other constructions which, according to him, *"didn't inherit the status of the public buildings in the community or town plan."*[70]

But contrary to Sert, Léger and Giedion – who had envisaged an architecture of lightness and transitoriness, as adopted by Ervi in his plan for the Tapiola garden city in Espoo (1953-1961) – Aalto responded with building complexes that celebrate gravity, collective memory and a poetics of the ruin.[71]

The path suggested by Aalto for the problem of monumentality involved the difficult operation of establishing the appropriate distance regarding the models of the past. More than an exercise on expression, Aalto saw in this a possibility of communicating through architectural forms.[72] Leppänen's interpretation of Aalto's architecture points to this dynamic process, requiring both admiration and abstraction:

> *Aalto saw the sources of European culture and architecture in Greek and Roman antiquity. He often travelled in the Mediterranean countries, and sketched … In his architecture, one can recognize classical formal elements; for example, the form of the amphitheatre as a natural form for a meeting place, although it is true that he often deformed it to suit his own architectural solution.*[73]

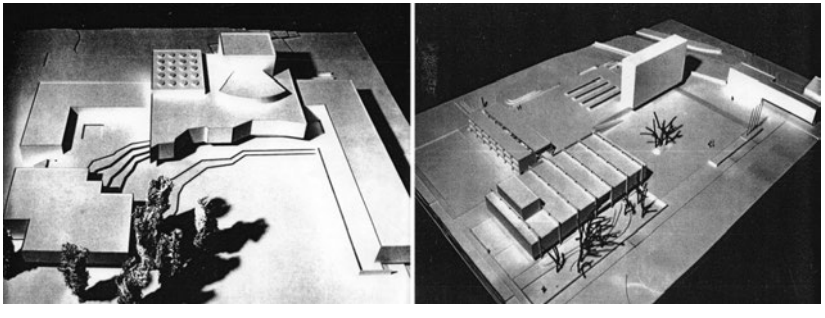
Monumentality suggests, therefore, a contribution to the construction of the city as a cultural artefact. On this issue, we are reminded of another famous definition by Loos:

> *If we were to come across a mound in the woods, six foot long by three foot wide, with the soil piled up in a pyramid, a sombre mood would come over us and a voice inside us would say: 'There is someone buried here'. That is architecture.*[74]

Aalto's idea of the monumental civic centre was resumed by Leppänen in his design for the Valkeakoski Cultural and Administrative Centre, which will be examined in-depth in *Chapter 5*. Like Aalto's civic centre projects, Leppänen's

Matti Porkka, Aine Art Museum, Tornio (1986).

The building profile is articulated by the different skylights used in the exhibition and library rooms.



Competition for the Valkeakoski Cultural and Administrative Centre (1966). MFA.

Models of the 1st and 2nd prizes by Kaarlo Leppänen, and Jan Söderlund and Paavo Mykkänen, respectively. Note that Leppänen creates an artificial topography and combines the different parts around a central space. Instead, Söderlund and Mykkänen play with low, medium and high rectangular prisms to create two separate squares.

complex combines multiple parts – library, school, theatre and office building – each designed according to its purpose, but forming an identifiable whole, a *Stadtkrone*. From the competition motto *"Agora"* to the evocation of classical forms, Leppänen's approach can be easily contrasted with that of Jan Söderlund and Paavo Mykkänen, whose 2nd prize entry in the architectural competition presents a more abstract composition of volumes in space.[75]

1 Colin St. John Wilson, *The Other Tradition of Modern Architecture. The Uncompleted Project* (London: Black Dog, 2007), 96-117, 123-139. This book expands on a previous article published on the occasion of the 1st International Alvar Aalto Symposium, St. John Wilson, "Alvar Aalto and the State of Modernism".

2 Colin St. John Wilson, "Functionalism and the Uncompleted Programme", in *Functionalism – Utopia or the Way Forward? 5th Alvar Aalto Symposium,* ed. Maija Kärkkäinen, (Helsinki: Alvar Aalto Foundation, 1992), 156-173.

3 St. John Wilson, "Alvar Aalto and the State of Modernism", 91.

4 Adolf Loos, "Ornament and Education", in *Ornament and Crime. Selected Essays,* eds. Adolf Opel (Riverside: Ariadne Press, 1997), 184-189 (1924). On Loos' understanding of architecture as practical art, see also the following articles in the volume Adolf Loos, *On Architecture,* ed. Adolf and Daniel Opel (Riverside: Ariadne Press, 1995): "The Old and the New Style in Architecture", 31-36 (1898); and "Architecture", 73-85 (1910).

5 T.S. Eliot, "Tradition and the Individual Talent", in *Selected Essays 1917-1932* (New York: Harcourt, Brace & World, 1964/1911). Quoted in Colin St. John Wilson, "The Historical Sense", *The Architectural Review* (1984): 66-70. Note that St. John Wilson has deliberately adapted T.S. Eliot's passage from poetry to architecture.

6 St. John Wilson, "The Historical Sense", 67.

7 As José Miguel Rodrigues called to my attention in a private conversation, for Corbusier, this hesitation regarding whether it would be necessary or not to abandon architectural tradition was followed by a renewed engagement with it. In a famous letter exchange with the architect Karel Teige, Corbusier tried to call his colleague and friend to reason by insisting that while a state of crisis may demand radical formulations – *"the house is a machine for living in"* – the problem of architecture remains the same, or as he put it, "[but] *a machine for living in – how?"*. Le Corbusier, "In Defense of Architecture", in *Oppositions Reader: Selected Readings from a Journal for Ideas and Criticism in Architecture, 1973-1984,* ed. K. Michael Hays (New York: Princeton Architectural Press, 1998/1929), 599-614. For more on the relationship between the Modern Movement and classical tradition, see José Miguel Rodrigues, *O mundo ordenado e acessível das formas da arquitectura* (Porto: Edições Afrontamento, 2013).

8 Alvar Aalto, "Between Humanism and Materialism", in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997/1955), 176.

9 Alvar Aalto, "Rationalism and Man", in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997/1935), 90-91.

10 Adolf Behne, *The Modern Functional Building* (Santa Monica: The Getty Research Institute, 1996/1923), 137-138.

11 The relationship between content and form, interior and exterior, approximates Aalto's work from Le Corbusier. Corbusier's 1923 book Vers une architecture captures this ambivalence in an extraordinary way: *"Our eyes were made for seeing forms in light. The primary forms are beautiful because they can be read"*, explains Le Corbusier, before concluding, paradoxically, *"the plan proceeds from within to without: the exterior is the result of an interior."* Le Corbusier, *Vers une architecture* (Paris: Flamarion, 2008), xvii-xviii (1923). For a comparison between Aalto and Le Corbusier at this respect, see Colquhoun, "Alvar Aalto: Type versus Function", 75-78.

12 Aalto, "The Trout and the Stream", 108.

13 Ernesto N. Rogers, "La responsabilidad ante la tradición", in *Experiencia de la arquitectura* (Buenos Aires: Nueva Visión, 1965/1958), 122-130.

14 Sert, Léger and Giedion, "Nine Points on Monumentality", 29-30.

15 Giedion, *Space, Time and Architecture,* 657.

16 Eduard Neuenschwander and Claudia Neuenschwander, *Finnische Bauten / Bâtiments finnois / Finnish Buildings: Atelier Alvar Aalto 1950, 1951* (Zurich: Verlag für Architektur, 1954), 8-34. Curiously, the book was published with a different name in another series, see: Eduard and Claudia Neuenschwander, *Alvar Aalto and Finnish Architecture* (London: Architectural Press, 1954). The Neuenschwanders were Aalto's collaborators in 1949-52 and 1950-1952, respectively.

17 Aalto's enthusiasm for the classical world included both the experience of architectural sites, and a broader cultural interest in philosophy and literature that can be traced back to his education in the Jyväskylä Lyceum. Schildt has suggested that Aalto's references to classical antiquity granted a temporal depth and therefore universality to the collaboration in the Studio; as Schildt put it, the classical reference *"furnished him with comparisons and the substance of his reasoning."* This view is confirmed by Aalto's use of Latin phrases, and Greek and Roman building names – i.e. the *academy* – in various projects. Schildt, *The Mature Years*, 262. Among Aalto's contemporaries, Erik Bryggman and Hilding Ekelund (who became a professor at the Helsinki University of Technology), among others, took on a similar "living" understanding of history. See, for example, Hilding Ekelund, "Italia la bella - Matkarapsodia", *Arkkitehti* 2 (1923): 17-28.

18 For more about Aalto's childhood spent in a farm in Ostrobothnia, see Schildt, *The Early Years,* 43-48.

19 Lindgren introduced major school reforms at the time that Aalto was a student. One of the ideas

discussed in the context of these reforms was the creation of an *"academy"* to bridge the school and the professionals, *"a two-year scheme, focusing on contemporary design and planning problems, competitions for travel grants, and foreign lectures"*. Merja Härö, "Schooling Architects – On Systematic Architectural Education in Finland", in *The Work of Architects. The Finnish Association of Architects 1892-1992,* ed. Pekka Korvenmaa (Helsinki: Rakennustieto, 1992), 215-218. The proposal of an academy was not implemented, but it nevertheless possibly inspired Aalto. On another level, Schildt has singled out Lindgren's influence as a role model for Aalto, who even wrote an obituary in his memory in 1929. Schildt, *The Early Years,* 79-85, 110-112. The following excerpt from Aalto's writing shows his admiration for his former professor: *"Throughout school we felt that we were studying with a colleague. It has been said that this kind of radiation is the distinctive mark shared by all true pedagogues … cultivated discussion, an informal tone in the drawing class, a drop of black humour … The department was one great family, never subjugated, but given a cultivated inner discipline by a paternal authority."* Aalto quoted in Schildt, *The Early Years,* 81.

20 Osmo Lappo, "Johan Sigfrid Sirén – Architect of Form and Responsibility", in *J.S. Sirén. Architect. 1889-1961*, ed. Severi Blomstedt (Helsinki: Museum of Finnish Architecture, 1989), 11.

21 Härö, "Schooling Architects", 217.

22 Nils Erik Wickberg, *Finnish Architecture* (Helsinki: Otava, 1965/1959).

23 Vilhelm Helander, "Nils Erik Wickberg, an Engaging Personality", in *Quo Vadis Architectura? Architectural Tendencies in the Late 1930s, 1940s, and the Early 1950s*, ed. Tom Simons (Helsinki: Helsinki University of Technology, 2008), 26-31. Wickberg was on very good terms with Aalto, and he and his students visited Aalto's office and building sites on various occasions. See, Nils Erik Wickberg interview with Louna Lahti, in *Alvar Aalto – Ex intimo. Alvar Aalto through the Eyes of Family, Friends & Colleagues* (Helsinki: Rakennustieto, 2001), 43.

24 Kontio and Leppänen took part in Wickberg's 1951 excursion to Scandinavia, which included, among various site visits, a meeting with Poul Henningsen. "Conversation 5. Jaakko Kontio, Ilona Lehtinen and Veli Paatela", in *The Mark of the Hand,* eds. Charrington and Nava, 156. Adlercreutz took part in Wickberg's 1957 excursion to Provence. See the detailed itineraries in Mikael Sundman, ed., *Nils Erik Wickberg 90 10.9.1999* (Helsinki: Rakennustaiteen Seura, 1999), 135-136.

25 See Kontio, *Euroopan Matka 4.4.1957 – 7.6.1957.*

26 The use of Carrara marble can be traced back as far as Ancient Rome. Kaarlo Leppänen interview with Louna Lahti, in *Alvar Aalto – Ex intimo* (Helsinki: Rakennustieto, 2001), 110, 117.

27 Aalto, *Alvar Aalto. Band I 1922-1962*; Fleig, ed. *Alvar Aalto. Band II 1963-1970*; and Elissa Aalto and Karl Fleig, eds. *Alvar Aalto. Band III Projects and Finland Buildings* (Zurich: Artemis, 1997). The editor, Karl Fleig, was a Swiss architect and Aalto's collaborator in 1953-1959.

28 Schildt tells that Aalto had been postponing invitations from several publishers for some time when the Neuenschwanders' book was published in 1954. Aalto immediately regretted not having anticipated this, and finally took the offer from the Artemis/Girsberger publishing house which had been publishing Le Corbusier's *Complete Works*. Schildt, *The Mature Years,* 173-174.

29 For example, Revell and Ervi soon started preparing what could be seen as their responses to Aalto's *Complete Works*: Kyösti Ålander, ed., *Viljo Revell. Works and Projects* (Helsinki: Otava, 1966), published posthumously after Revell's sudden death in late 1964; and Pertti Solla ed., *Raportti Rakennetusta Ympäristöstä*: *Aarne Ervin Arkitehtuuria* (Helsinki: Finnish Association of Architects, 1970). This growing individualization helps to understand why many young architects considered it preferable to avoid working at the Studio Aalto in order to pursue their *own* style. See, for example, Aarno Ruusuvuori, "An Architectural Autobiography. Questions to Aarno Ruusuvuori", interview by Riitta Nikula and Marja-Riitta Norri, in *Aarno Ruusuvuori. Structure is the Key to Beauty* (Helsinki: Museum of Finnish Architecture, 1992), 53.

30 Suhonen concedes that *"the mature Sipinen is closer to Aalto's methods in his own office, which he has tried to keep small"*, and concludes by connecting Sipinen's plans for town centres (including the unrealized 1989 plan for Töölönlahti Bay in Helsinki, which succeeded Aalto's own unrealized plan for the area) with his working experience at the Studio Aalto. There might be a mistake in this passage, however, as Suhonen states that *"working for Aalto, Sipinen had already participated in the plan competitions held for the centre of the city of Avesta in Sweden and the centre of Helsinki."* This couldn't have been the case since Aalto's plan for Avesta dates back to 1944. Pekka Suhonen, "Light and matter, moonlight on water and classicism – On the architecture of Arto Sipinen", in *Arto Sipinen. Architect* (Hollola: Studio Artomaa, 2001), 12-13.

31 Elissa Aalto, "Following the line", 20. In view of that, Aalto's ability to relate work in plan and section with visual perception appears as a key to his architecture; on Aalto's skill at handling building profiles as seen from the human eye, see, Daniel García Escudero, "Alvar Aalto. El dibujo como herramienta de proyecto", Arquitectura en dibuixos exemplars. Escola Técnica Superior d'Arquitectura del Vallès: http://www.etsavega.net [accessed March 15, 2012].

32 "Conversation 14. Ilona Lehtinen", in *The Mark of the Hand,* eds. Charrington and Nava, 284. Lehtinen

was an Aalto collaborator in 1961-1976.

33 Charrington, "Not a locked box", 259-260.

34 Charrington, "We don't need to be so dogmatic", 64. Various collaborators made similar observations. Vezio Nava, for example, insisted that in the projects in which Leppänen worked *"it seems that Aalto got so carried by the talent of his colleague that his architectural language became exalted."* Nava, "Tiilimäki 20", 44. See also, Charrington and Nava, eds., *The Mark of the Hand,* 240, 255, 305-307, 323.

35 Kaarlo Leppänen, "Recollections of Alvar Aalto", in *The Line: Original Drawings from the Alvar Aalto Archive*, ed. Kristiina Paatero (Helsinki: Museum of Finnish Architecture, 1993), 128.

36 "Fr. Barnabas' Helsinki Report", http://www.mountangelabbey.org (accessed October 27, 2008).

37 James S. Ackerman, "Imitation", in *Origins, Imitation, Conventions: Representation in the Visual Arts* (Cambridge: MIT Press, 2002), 135-136.

38 In the late 1950s, this gave rise to a heated debate between Banham – who hesitated between associating design with either artistic rupture or scientific progress – and Rogers – for whom architecture remained a matter of purpose and cultural representation. As seen in the *Introduction* to the current study, Banham's view led him to project Aalto's influence as a negative path. Furthermore, Banham's influence in Finland at that time was also stronger than that of Rogers, which meant that Rogers' interest in *"continuity",* and in such themes as *"ornament", "composition"* and *"monumentality",* received comparatively less attention than Banham's call for innovation. For more on this debate, see, Rayner Banham, "Neoliberty: The Italian retreat from Modern Architecture", *The Architectural Review* 125 (1959): 230-235; Ernesto N. Rogers, "L'evoluzione dell'architettura. Risposta al custode dei frigidaires", *Casabella-Continuitá* 228 (1959): 2-4.

39 Ackerman, "Imitation", 137.

40 Asko Salokorpi, *Modern Architecture in Finland* (London: George Weidenfeld and Nicolson, 1970), 41. It can be objected that the act of transferring Aalto's solutions to another context already contains a creative possibility. On the work of the Danish architect Jean-Jacques Baruël (Aalto's collaborator in 1948-1954), see Jaime Ferrer Forés, "Alvar Aalto and Jean-Jacques Baruël", Alvaraaltoresearch.fi. <http://www.alvaraaltoresearch.fi/articles/alvar-aalto-and-jean-jacques-baruel/#.UZskmKyoZ8E> [accessed May 5, 2013].

41 For a cultural interpretation of Aalto's use of brick, see, Juhani Pallasmaa, "Surface, Touch and Time", in *Alvar Aalto. The Brick,* ed. Hanni Sippo (Helsinki: Alvar Aalto Museum, 2001).

42 "Conversation 3. Jaakko Kontio and Veli Paatela", 131.

43 Salokorpi, *Modern Architecture in Finland, 41-58*.

44 Jyrki Paasi, "Sea Traffic Control Centre", *Arkkitehti* 5 (1988): 68-70. Jyrki Paasi was an Aalto collaborator in 1976. Previous to that, he had worked in the office of Aalto collaborator Aarno Ervi.

45 Venturi, *Complexity and Contradiction*, 18.

46 Venturi, *Complexity and Contradiction*, 13-14.

47 Venturi, *Complexity and Contradiction*, 50.

48 Op. cit., 18.

49 Matti Porkka, Aalto collaborator in 1961-1971.

50 Venturi, *Complexity and Contradiction*, 41-42.

51 Op. cit., 43-44.

52 Keijo Ström and Olavi Tuomisto, "Alppilan Kirkko", *Arkkitehti* 3 (1957): 147-152. Aalto collaborators between 1947-1955 and 1949-1955, respectively. Their other works include Saarijärvi Chapel (1957), Pietasaari Paper Mill (1960), Porraskoski summer house (1963) and Helsinki-Vantaa Airport (1964).

53 Venturi, *Complexity and Contradiction*, 42.

54 Op. cit., 88.

55 Antón Capitel, *Alvar Aalto: Proyecto y Método* (Madrid: Akal), 40, 141.

56 For a discussion of the challenges placed by the rapid development of commercial programmes to the profession in Sweden in the 1960s, see Claes Caldenby, "A twofold movement. Swedish architecture in the 1960s between production adapted building and the 'haven of beauty'", in *Universal versus Individual. The architecture of the 1960s,* eds. Pekka Korvenmaa and Esa Laaksonen (Helsinki: Alvar Aalto Academy, 2002), 38-39.

57 Erkki Karvinen was an Aalto collaborator in 1951-1958. Karvinen's other shopping centres in Helsinki include Kannelmäki (1959), Kulosaari (1960), Konala Riihipellonkuja (1961), Puotila (1961), Maunula (1962), Konala Kolsarintie (1963), Myllypuro (1965) and Laajasalo (1973). Erkki Karvinen, "Puotila Shopping Centre, Helsinki", Arkkitehti 1 (1962): 18-24. See also: Anne Salminen, Sari Saresto and Mira Vierto, *Ostari – Lähiön sydän* (Helsinki: Helsingin kaupunginmuseo, 2004).

58 Capitel, *Alvar Aalto: Proyecto y Método*, 77.

59 Judging from the selections made for the "Finland Builds" exhibitions in 1970 and 1976, this compositional strategy (combining rational and functional inputs) started losing influence to organicist and (more

often) constructivist approaches: e.g. the Pietiläs' Student Union building Dipoli (1962-1966) and Sipinen's Imatra Town Hall (1966), respectively. Jorma Maunula, ed., *Suomi Rakentaa 4. 1965-1970* (Helsinki: Finnish Association of Architects, 1970); Jorma Maunula, ed., *Suomi Rakentaa 5. 1969-1976* (Helsinki: Finnish Association of Architects, 1976).

60 Eisenman, *The Formal Basis of Modern Architecture*, 237-267. Eisenman's formal analysis was carried out under the influence of his mentor, Colin Rowe, and of his doctoral supervisor, Leslie Martin. Martin's interest in the formal aspect of Aalto's architecture is discussed in the *Chapter 3* of the current study.

61 St. John Wilson, *The Other Tradition*, 129.

62 Karl-Erik Hagner, Rurik Packalén and Per-Mauritz Ålander, "Tekniska Föreningens hus/ The house of TFiF – The Society of Technology", *Arkkitehti* 11 (1962): 246-256. Ålander, an Aalto collaborator in 1959-1963. Part of the building is currently in use as a budget hotel.

63 Kaarlo Leppänen, Kari Hyvärinen, Ilona Lehtinen and Jaakko Suihkonen, "Open competition of ideas for Forum block", *Arkkitehtuurikilpailuja* 5-6 (1978): 2-11. Hyvärinen, an Aalto collaborator in 1963, 1968-1972; Suihkonen, an Aalto collaborator in 1957-1972.

64 Mänttäri was an Aalto collaborator in 1960-1967. As an example of the bond maintained between the collaborators and Aalto's work, when the cafeteria originally designed by Aalto for the Rautatalo building was shut down in the 1980s, Mänttäri was responsible for transferring the furniture to a new location on the second floor of the Academic Bookstore, where it stands today. When the Rautatalo cafeteria was reopened in 2018, it was furnished with new furniture.

65 Porphyrios, *Sources of Modern Eclecticism,* 26.

66 In addition to Porphyrios, this aspect of the interaction between international, regional and individual dimensions in Aalto's architecture has been discussed by, among others, Kenneth Frampton, *Modern Architecture: A Critical History* (London: Thames and Hudson, 1992), 192-195. Aalto's awareness of the cultural exchanges between Romantic and Classical styles can be traced back to his student years, and the period of Finnish independence; for more on this, see: Eeva-Liisa Pelkonen, *Alvar Aalto: Architecture, Modernity, and Geopolitics* (New Haven: Yale University Press, 2009), 10-27.

67 The granite, marble and brass details which decorated the columns and parapets of the Forum commercial block were replaced by white plaster and streamlined aluminium rails during the restoration of the building (SARC Architects, 2013). This indicates that, despite the architects' intentions, these decorative elements have been considered unfashionable within only a few decades of its construction. The contradiction suggests both the failure of the original designers to grasp the essential and the lack of appreciation by the following designers.

68 Sert, Léger and Giedion, "Nine Points on Monumentality", 29-30. For a discussion of the city as an enduring organism slowly transformed by discrete interventions, see: Lewis Mumford, *The City in History. Its Origins, Its Transformations, and Its Prospects* (New York: Harcourt, Brace & World, Inc., 1961).

69 The concept of collective memory, which relates the aspects of the physical permanence and cultural meaning of the city, is central to the Structuralist analysis; see, for example: Lynch, *The Image of the City,* 4; and Rossi, *The Architecture of the City,* 130-137.

70 Alvar Aalto, "The Decline of Public Architecture", in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997/1953), 210. Aalto considered the programme of the civic centre to be superior to the other ones. Accordingly, he thought that civic centres should be designed in order to avoid the fate of most of the commercial centres from that time, which were rapidly abandoned and replaced by new ones. For example, Karvinen's "Puhos" Shopping Centre has to date managed to avoid this end possibly just by chance.

71 This aspect has been pointed out by Alan Colquhoun and Demetri Porphyrios, among others. See, for example: Alan Colquhoun, "Alvar Aalto: Type versus Function", 78; Demetri Porphyrios, *Sources of Modern Eclecticism. Studies on Alvar Aalto* (London: Academy Editions, 1982), 48-55; Anthony Radford and Tarkko Oksala, "Alvar Aalto and the expression of discontinuity", *The Journal of Architecture*, Volume 12, issue 3 (2007), 257-280.

72 This same approach had allowed, for example, Lars Sonck – before Aalto – to search, via Camillo Sitte, for modern solutions by looking at consolidated medieval townscapes. Lars Sonck, "The arrangement of our small towns", in *Abacus Yearbook* 3, eds. Asko Salokorpi and Maija Kärkkäinen (Helsinki: Museum of Finnish Architecture, 1983), 36-44. (1901). Eric Adlercreutz's 1984 essay "The fall and rise of public space", which proposes a revaluation of Sonck's writings, focuses again on this process. As Adlercreutz put it: *"Sonck emphasizes the importance of scale, the dimensional proportion between man and his surroundings and refers to Porvoo old town with its spatial richness deriving from its medieval building pattern"*. Eric Adlercreutz, "The fall and rise of public space", in *Changing Trends and Timelessness* (Helsinki: SAFA, 1984), 29-30. Note that Adlercreutz's article, starting from the choice of the title, contains a reference to Aalto's 1953 article "The Decline of Public Architecture" mentioned above, but also to Jane Jacobs' 1961 book *The Death and Life of Great American Cities.* On Adlercreutz's view of the problem of the new and the old in Aalto's architecture, see also: Eric Adlercreutz, "Minun Aaltoni" [My Aalto], a paper presented

at the University of Helsinki Department of Art History, October 15, 1998; and Eric Adlercreutz, "Alvar Aalto: kaupunkiympäristössä" [Alvar Aalto: in the urban environment], in *Alvar Aalto ja Tammisaari,* ed. Mia Hipeli (Tammisaari: Christine & Göran Schildt Foundation, 2003), 6-17.

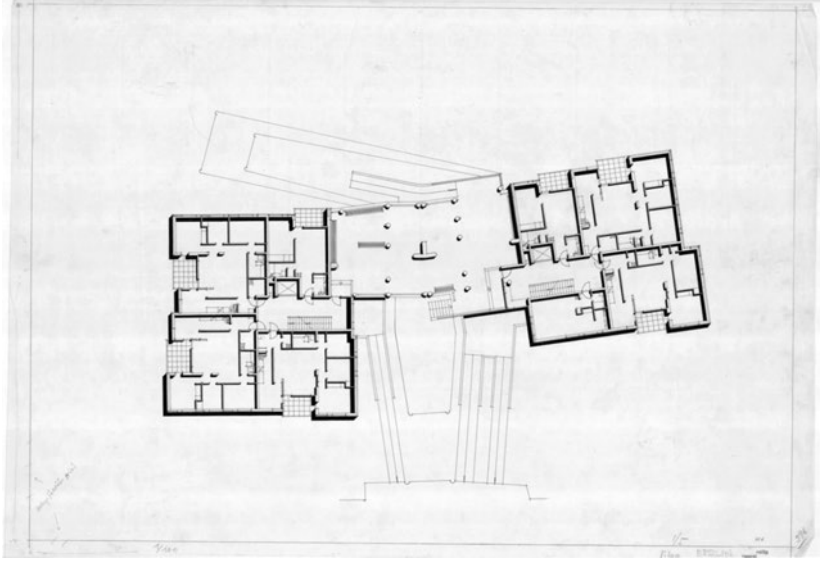
73 Kaarlo Leppänen, "The design process of Alvar Aalto", in *Changing Trends and Timelessness. Seminar on Architecture and Urban Planning* (Helsinki: SAFA, 1984), 64.

74 Loos, "Architecture", 84.

75 Leppänen, "Valkeakosken kaupungin hallinto- ja kulttuurikeskuksen suunnittelukilpailu", 5, 10.

Alvar Aalto, Hansaviertel atrium-apartment block, Berlin, Germany (1955-1957).

The view from the northern side of the block, showing the volume as two articulated point-blocks. Seen from the southern side, the block is perceived as a single volume.



Hansaviertel atrium-apartment block. AAM.

Ground floor plan, showing the outdoor access hall between the two clusters of apartments. In the upper storeys, additional apartment units fill-in the middle space.

3. Theory

The theory of architecture within the context of modernity leads inevitably to a discussion about the role of science (i.e. the conceptual construct for obtaining knowledge through observation and experimentation) in design.

In a famous description of the nature of scientific knowledge, Karl Popper claimed that scientific progress occurs in the form of provisional hypotheses that cannot be proven true, only false.[1] Thus, successive periods connect with each other by putting forward improved hypotheses on the same problems. Elsewhere, referring to the need for scientific knowledge, Popper insisted on its universality by distinguishing it from the world of *"subjective experiences"* and the world of *"physical objects",* in what has since become known as Popper's *Three Worlds* epistemology.[2]

In his book about the idea of *type* in architecture, Carlos Martí Arís referred to Popper's description to provide an explanation of the relationship between architecture, science and art. According to Martí Arís, science and art represent the polar moments of the architect's *method:* conceptualization and particularization, respectively. Drawing from Popper's *Three Worlds* epistemology, Martí Arís proceeded to explain how architects, supported by their *"subjective experiences",* move bi-directionally from *"physical objects"* to *analysis* (science), and from *"universals"* to *design* (art). The concept of type – as a *"formal structure"* that is both permanent and open – is critical to this exchange; thus understood, the type provides, as Martí Arís put it, a *"response to the disjunctive between historicism and experimentalism"* in modern architecture.[3]

Among other examples, Martí Arís makes a short but significant reference to Aalto's implicit use of a typological approach, adding that the emergence of Structuralist theory in the 1970s has helped in challenging the hitherto dominant interpretations of his architecture as *"the paradigm of a sensitivity without rules and logic argumentation".*[4]

Chapter 3.1 discusses Aalto's awareness of the limitations of science by examining his critiques of Functionalism and Rationalism. As opposed to the prevailing conception of (industrial) standardization, Aalto's idea of *"elastic standardization"* and his method of research through creative and critical iterations of a problem – what he used to call the *"architechnological laboratory"* – indicates a typological approach that is illustrated, perhaps better than in any written explanation, in his housing projects seen as a series that culminates in the design of the Hansaviertel atrium-apartment block in Berlin (1955-1957).

Chapter 3.2 discusses the rise of Structuralist theory as an occasion for

reflection on Aalto's architecture and focuses on the theoretical activity (or the absence thereof) of the Studio collaborators. Aalto's *"silence",* strengthened by the passivity of the Studio members, and combined with the hostility of the Constructivist opposition, concurred to delay the Structuralist reception of the Studio's work. Eric Adlercreutz's interest in Christopher Alexander's *Pattern Language* theory at that time presents an exception to this general rule and explains the choice of the Jägarbacken Housing as a case study in *Chapter 6*.

3.1 Aalto's critique of Functionalism and Rationalism: Hansaviertel atrium-apartment block, 1954-1957

> *No one has misunderstood our position about the superficial imitation of old forms for new problems. Now our task must be to clarify the idea that we do not want new forms for old, already solved, problems. We do not want any new forms unless they are dictated by the problem.*
>
> (Poul Henningsen)[5]

A process of *"elastic standardization"*

The discussion of the relation of architecture to science reached a peak just as Aalto was starting his career. In 1923, Adolf Behne observed an important distinction between Functionalist and Rationalist design principles by contrasting their ideals of adaptation and flexibility, respectively. According to Behne, the Functionalist principle of *"adaptation to the events in a space"* contains implicitly a *"biological relativism"*; however, as he also observed:

> *The built house neither grows nor dies ... A house stands firmly on its site, in permanent surroundings, and can only endure time, never create it.*[6]

With this explanation, Behne clarified also the counterpart Rationalist principle of searching for *"the most appropriate solution for many cases"*.[7]

Aalto was attracted to, but also confused by, these questions. His Standard Apartment block in Turku (1927-1929) attests to a Rationalist approach by focusing on the economy of the building structure and the industrial building processes. In the Paimio Sanatorium (1929-1932), by contrast, Aalto analysed problems meticulously and designed solutions for the purpose. But in the Aalto House (1934-1936) it is no longer easy to associate the design with either one of the Functionalist/Rationalist methodologies: modern comfort is combined with an atrium plan adapted to the sloping terrain and detailed with local craftsmanship. As it will be seen, the dichotomy established here between the principles of economy and difference turned into a basis for future housing projects, which Aalto designed as variations on the same theme.

Aalto matured his position, influenced by his Nordic colleagues Gunnar Asplund and Poul Henningsen, among others. As seen in the introductory quote to this chapter, Henningsen criticized the possibility of replacing experience entirely by method; he considered the former indispensable for the latter as a carrier of both solved and common solutions, as well as unresolved problems. Henningsen saw architectural problems as a complex containing problems with one solution, problems with various equivalent solutions, and problems with no apparent solution. Accordingly, scientific methods can help architects to identify these problems and gradually improve its components, but the architect must address the whole at any given point, and therefore his task involves logic, ethics and artistic choices.[8]

Aalto's 1940 essay "The Humanizing of Architecture" reveals a similar point of view: *"an object in the architectural field may be functional from one point of view and disfunctional from another"*, Aalto explains, and continues:

> *If there were a way to develop architecture step by step, beginning with the economic and technical aspect and later covering the other more complicated human functions, then purely technical functionalism would be acceptable; but no such possibility exists. Architecture not only covers all fields of human activity; it must be even developed in all these fields at the same time.*[9]

If there is a part in every architectural problem that remains unknown, Aalto's conclusion is that architects must engage with and simultaneously accept the limits of science:

> *Architectural methods sometimes resemble scientific ones, and a process of research, such as science employs, can be adopted also in architecture. Architectural research can be more and more methodical, but the substance of it can never be solely analytical. Always there will be more of instinct and art in architectural research.*[10]

Both Henningsen and Aalto presented an important objection to Functionalist and Rationalist positions by refusing the idea of a direct route from analysis to design. Their legitimation of experience and intuition as part of the architect's method presupposes the use of an intermediate conceptual structure – a type in the sense defined by Martí Arís – integrating experience, but consistent and open to experimentation.

In view of the increasing interest in industrial standardization at that time, it is worth contrasting Aalto's conception of type to that of other Modern Movement architects. In the mid-1930s, Harry Gullichsen, the director of one of the leading wood industry companies in Finland, the Ahlström company, asked Aalto to develop a prefabricated wooden house system, later known as the AA-system.

Aalto was already an expert in industrial design but feeling that the production of houses posed a somewhat different problem, he went on a series of study trips to the United States to learn from the various features related to its conception, production and commercialization. The AA-system subsequently designed by Aalto had relatively little application, but it provided him a crucial moment of reflection by confirming that place and permanence, with all its material and cultural implications, established a substantial variance between architecture and the other fields of design.[11]

Aalto consequently rejected the Fordist mode of standardization that was established in the United States and proposed instead his own principle of *"elastic standardization"*, combining a principle of economy and difference. The war in Finland soon brought about a housing shortage and consequently the opportunity for Aalto to develop his alternative through a plan for post-war reconstruction from which resulted two related projects: a research institute at MIT in the United States, and a Finnish government department responsible for the coordination of the building industry, which later became SAFA's Standardization Institute.[12]

The institute at MIT combined research purposes with a design studio exercise for students that included the analysis of a specific site, the development of a standardized building system made of 1:1 scale timber prototypes, and the design of complete units taking in consideration their adaptability to topography and flexibility to change. Aalto described this process as *"architechnology":*

> *Architecture should always have the means to solve the problem of a building's organic connection with nature (including people and human life as the most important consideration).*[13]

If the aim of the MIT project was to prepare future products and architects (and thus anticipate reality), then the Standardization Institute sought to overcome other limitations of professional practice: architecture is expansive, and therefore conservative to change, but such kind of organization made it possible to pursue independent, long-term objectives.

The SAFA Standardization Institute expanded rapidly and absorbing multiple, at times contradictory, influences. For example, in America Aalto visited Frank Lloyd Wright in Taliesin, where, in response to the Great Depression, the latter had established the so-called Fellowship. Wright used the Fellowship, a complement to the practice supported by the fees paid by architectural apprentices, to develop two experimental projects: the Broadacre City and Usonian Houses.[14] In 1942, Ernst Neufert travelled to Helsinki to present his manual *Bauentwurfslehre* [*Architects' Data]* (1936), and the following year Aalto participated in an excursion of Finnish architects to Nazi Germany at Neufert's invitation to acquaint themselves with the process of standardization and industrialization as practiced there. Neufert's aim was to normalize dimensions for the industrial design era rather than to design

Alvar Aalto, Kauttua stepped terrace house, Eura (1937-1939).

The forest slope has been modified to provide individual entrances to the different apartments within the block. The balconies in each apartment stop short of the edge of the roof in order to grant the necessary privacy to the apartment below.

Alvar Aalto, Experimental House, Muuratsalo (1952-1953).

The Experimental House was built to test solutions for foundations, posts, heating and brickwork. The house was occasionally used as a workplace during the summer, as Eric Adlercreutz recalled: *"*[it was] *the summer of 1960 when Per-Mauritz Ålander and I went to Muuratsalo for three days to work. Possibly the Surveying and Architecture Departments for Helsinki University of Technology ... In the evening a fire was lit in the atrium ... I felt honoured to be able to see him at such close quarters".* ("Conversation 11. Eric Adlercreutz", 232).

the industrial products themselves.[15]

From 1943 onwards, the Standardization Institute focused on the production of the Building Information File, a database with resources about building to be shared by designers, producers and clients, and which since then has had a huge impact in speeding up office work and steering the efforts of the building industry in Finland.[16] However, Aalto soon became disappointed with the materialist course taken by the Standardization Institute. Similarly, he expressed his frustration with the MIT teaching and research activities by professing a now all-too-famous statement:

> *The days when I was a teacher – in America – that's when I should have spoken and written … My students wanted to know – everything if possible. One of the questions they asked was how to make good art. I said 'I don't know' … God made paper for drawing architecture on. Everything else – at least to me – is a misuse of paper.*[17]

An *"architechnological laboratory"*

From the 1950s onwards, Aalto became less interested in debate and concentrated on design work. This was generally understood as him discrediting theory; even his collaborators – Kaarlo Leppänen, for example – were of the opinion that Aalto *"felt that theorizing would cause the tree of architecture to dry up"*.[18] This view is contradicted, however, by the insight given by Aalto's writings, and even by the collaborators' references to Aalto's communicative skills.

In retrospect, Aalto's *"silence"* seems circumstantial: partly a consequence of an overflow of design work, partly a reaction to an obsession with theory at that time – an issue I will return to later – and partly a result of his own awareness of the difficulties of verbalizing architectural ideas. Instead, Aalto started to emphasize by this time the need to think architecture through *"materia"*.[19]

Eric Adlercreutz offered a subtle interpretation on this point. For Adlercreutz, Aalto did not like to explain, but he still expected the collaborators to reflect about the problems at stake:

> *I sometimes felt he* [Aalto] *wasn't quite sure of a particular solution, and we were expected to get on with it. He did give us the keys though, but it was down to us… a certain doubt and uncertainty, he didn't need to cover those up with authority or anything. A part of this profession, which is not an easy one.*[20]

Aalto's conviction that architecture should engage more directly with its own materials could have been partly a consequence of his dissatisfaction with

the course of his research projects on *"elastic standardization"*. While teaching at MIT, Aalto felt that his students were too eager for explanations. Paradoxically, in his attempt to bypass verbal explanations, Aalto put forward in 1942 a curious analogy between architecture and language, by suggesting that standardization should provide a kind a building grammar:

> *The 'language of architecture' resembles written Chinese, which has thousands of characters that can take ten years to learn. In fact, the architect tends to spend a disproportionate amount of time familiarizing himself with articles of various 'makes'.*[21]

Aalto's linguistic analogy underlines both the idea of a given structure, and of a fluency between the whole and the parts of this structure:

> *The purpose of standardization in architecture must be to provide the elements, the 'cells', of which the building, the 'organism', is composed. Just as in nature, every cell is related to the whole, so in architecture the parts must be 'conscious of the whole'. When designing the parts, one must know the desired result; at least, one must have a notion, a conception of what it is to be.*[22]

Aalto's linguistic analogy gives us a closer insight into his idea of *"elastic standardization"*. For him, standardization constitutes a long-term strategy to counter the process of specialization and fragmentation of the practice promoted by modernization. Thus understood, a process of *"elastic standardization"* is the opposite of the strategy of standardizing industrial building processes and products followed by the Standardization Institute.

Aalto may not have been able to articulate his linguistic principle systematically, or even connect it to a broader discourse. However, his analogy suggests a comparison with the Structuralist theories that emerged in the post-war period. Furthermore, the projects of the Studio themselves attest to this *"structural"* consistency, with solutions being confirmed and transformed from one project to the next.[23]

As already mentioned, in the design of his own home, the Aalto House, Aalto defined the key problem for the design of a house: the conflict between technological and cultural factors. He returned to this problem in the stepped terrace house in Kauttua (1937-1939), where he combined a modern dense block with the Finnish ideal of a detached house close to the ground. The solution was a stepped building in which the roof of the lower apartment forms a terrace to the one successively above. The Kauttua stepped terrace house shares with the Aalto House an idea rather than a concrete image; it is this flexible idea or conceptual structure that serves to mediate between assimilated experience and

experimentation on a case-by-case basis. The Kauttua housing and the Aalto House remain thus equidistant from both existing (vernacular) models and the Functionalist/Rationalist formulas.

The same problem in a different context lies behind the solution for the Hansaviertel housing block in Berlin, a commission received in the scope of the Interbau – International Building Exhibition organized in what was then West Berlin as a showcase of Modern architecture. The Interbau programme asked for a dense block comprised of relatively small apartment units. Instead of following abstract *"Existenzminimum"* plans associated with the Neue Sachlichkeit modernism in Germany in the 1920s and 1930s, Aalto tried to work around the given constraints by hybridizing atrium house units into a double-point apartment block. The conflict between economy and difference is solved by updating an old organization: in each apartment unit, individual rooms are gathered around a central room that expands outside through a balcony.[24]

Aalto essayed morphological variations of this apartment block type in a group of seven freestanding blocks built in Harjuviita, Espoo, as well in a series of unrealized plans from the period.[25] However, a close comparison reveals a discrepancy in terms of these projects' relation to the urban scale. It can be added that from this viewpoint the Hansaviertel block represents a more coherent atrium type since in this case two clusters of apartments form a double-point block with a common entrance hall in the centre.[26] In Harjuviita, each freestanding block consists simply of four corner atrium-apartments, with a fifth single-room apartment placed like a wedge between two family apartments on the southern side. If elegant in themselves, the latter lack the urbanity provided by the Hansaviertel's common ground-floor entrance hall, thus exposing Aalto's indebtedness to Functionalist/Rationalist planning. I therefore disagree with Tafuri and Dal Co when they refer to the Berlin block as an example of Aalto's architecture being complementary to nature and *"not appropriate to urban typologies"*.[27] For me, the design of the Berlin atrium-apartment block indicates, on the contrary, an inflection of Aalto's method towards the city.

Aalto was aware that architecture, in being a culture-bound and durable product, resists experimentation. The design process tries to compensate for the building's matter-of-factness by using words, drawing, scale models and prototypes, etc. The design process can thus be seen as a laboratory that allows for a certain degree of freedom.

The Studio used drawings as the primary means of experimentation: plans and sections provided fast, inexpensive and accurate ways to research spatial dimensions, configurations and compositions. At a time when some architectural offices in Finland started questioning the value of spatial research through the construction of scale models, Aalto insisted in having a model workshop permanently installed in the garage at Tiilimäki. In addition to cardboard and wooden models, the Studio used prototypes, which, more than just a 1:1 scale

Alvar Aalto, National Pensions Institute Housing, Helsinki (1952-1954).

The plan of the blocks takes in account already existing rural routes and structures, but it assumes its new urban condition by introducing a small square and an arcade. The construction combines vernacular and industrial elements, e.g. prefabricated concrete balconies, brickwork, and carpentry in partitions, soffits and canopies.

Alvar Aalto, Korkalorinne Housing, Rovaniemi (1956-1960).

The plan of the block is similar to that of the National Pensions Institute Housing. In this case, however, the blocks are freestanding and open towards the sun and nature. The apartments on the ground level have direct outside access. The cladding material is whitewashed brick.

model, made it possible to test a new element in a real environment, or conversely, a familiar element under extreme conditions. Moreover, Aalto considered his formal experiments with painting, wood or bent plywood as part of the *"architechnological laboratory";* and in his Experimental House, among other innovations, he purposely exaggerated the possibilities of assembling bricks in order to practice *"the art of play",* as well as to observe the effect of weathering on different kinds of bricks and tiles.[28]

As both Schildt and Charrington have pointed out, Aalto's approach to experimentation is indebted to the Bauhaus' workshops and the views of László Moholy-Nagy, among others. However, as they also noted, the Studio departs in important aspects from this influence.[29] For example, as Charrington explained, contrary to the Bauhaus ideal of fusing the contributions of designers and craftsman, Aalto took a more realist stand by maintaining a dialogue with the specific conditions and the opportunities available.[30] The design process was thus understood as an open, but also collective process of exchanges, extending from the office drawing table to the building site considered as *"as the largest model of all"*.[31]

In this sense, the typological method of the Studio presents something more concrete that the Functionalist/Rationalist *tabula rasa*, and yet more open than a model. Indeed, Adlercreutz remarked that in the Studio, all kinds of questions could be taken into consideration during the design process. For example, he recalled working closely with Aalto in the design of the Nordic Union Bank in Helsinki (1960-1965), where the main idea was to complete an existing urban block with a modern office building. At some point, Aalto became especially absorbed with an apparently small issue, the nature of which made Adlercreutz realize that reason alone can't cover the whole scope of design decisions:

> *Alvar also drew columns for the covered roof terrace. It would have been a small arcade, a temple motif. But he wasn't convinced about it himself. He asked [Engineer] Malmberg to design it so that the pillars were not load-bearing, so that they could be removed. At that time, in the early '60s this was a shocking thing to suggest because all the young architects were into puritanical constructivism. He noticed I was a bit surprised about his little Erechtheion up there. He looked at me with raised eyebrows and said: 'Vi ska inte vara dogmatiska' ['We don't need to be so dogmatic'].*[32]

3.2 The emergence of Structuralism in architecture

> *Perhaps the most outstanding feature of Aalto's work, and one which seems related to his study of Italian towns, is the way in which he strives to make each building into a social microcosm … he even aims at the same spatial hierarchy in individual apartments, as in the Hansaviertel apartment block … the subsidiary elements are freely grouped around the central core. The building becomes a kind of town, whose outer elements take up their positions as if through a tropism.*
>
> (Alan Colquhoun)[33]

Design methods

Aalto's blurt on the *"misuse of paper",* quoted earlier, can be misleading: Aalto did not dispense with theory, he simply did not want to forcefully reduce architecture to it. Thus, his distancing from the scientific-oriented debate can be considered largely a reaction to the excesses at that time, which lead him to turn his interests elsewhere, as he had insinuated in the pages of *Casabella Continuità* in 1954:

> *In my mind, there is always a journey to Italy. It may be a past journey that still lives on in my memory; it may be a journey I am making or perhaps a journey I am planning. Such a journey is probably necessary, a conditio sine qua non for my work.*[34]

Aalto's colleagues didn't immediately understand Aalto's point about the role of memory in design, which in fact carries a sense of universality. Similarly, Aalto's use of intuition was hastily questioned; for instance, Richard Llewelyn-Davies commented on Aalto's choice to abandon his teaching post at MIT to concentrate in practice in these terms:

> *He* [Aalto] *returned deliberately to a simpler, less advanced society where he felt he could master the problems of design, and produce work which would satisfy himself … Aalto's personal solution is of course no answer for us, who work in rapidly advancing and changing countries. We must face, and try to solve, the problem of knowledge.*[35]

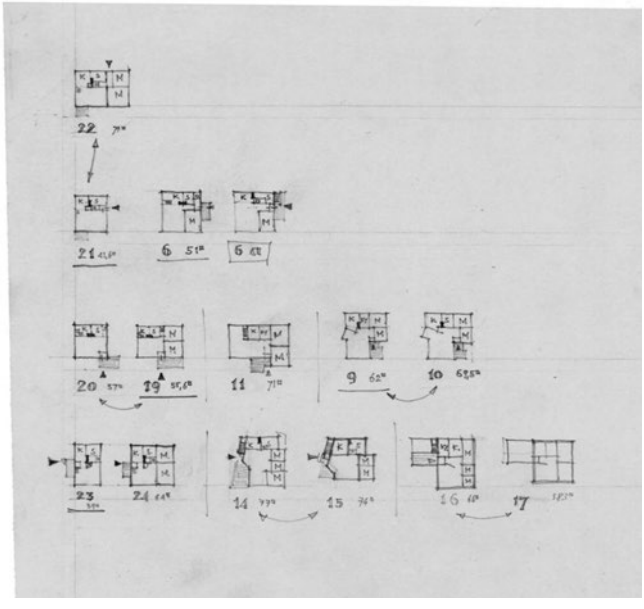
The Bauhaus claimed that the introduction of the machine demarcated a new field, overlapping art and architecture, but specifically concerned with the problem of reproducible objects. With the closure of the school in 1933, the field of design methods was resumed in the Anglo-American universities, which received their expatriate members, and after 1953, in the Ulm School of Design in Germany, under the direction of Max Bill and Tomas Maldonado. The discussion on whether this design paradigm could cover the theme of the house, only some elements within it, or even expand to include the whole built and social environment, was followed closely in Finland.[36] A case in point is the Helsinki Design Lab seminar held on the island of Suomenlinna in 1968 in which, among others, Christopher Alexander, Buckminster Fuller and Victor Papanek participated.[37] In the same year, Toivo Korhonen took part in the PREVI experimental housing project in Lima, Peru (where Alexander was also involved), with a proposal for a modular courtyard house system.[38]

The developments in science and technology during the war years promoted the emergence of computation and a consequent new interest in design methods. In the UK, Aalto's friend, Leslie Martin, influenced strongly this line of research, first as a Professor at the University of Cambridge after 1956, and later as the founder of the Centre for Land Use and Built Form Studies (today, the Martin Centre). Curiously, the first project carried out by Martin in 1967 – a comparative study of the pavilion and courtyard models – is at least indirectly indebted to the centralized spaces of Aalto's architecture via the raised open courtyard of the Säynätsalo Town Hall.[39]

But in a pivotal article also from 1967, Alan Colquhoun suggested that architects were placing too many expectations upon science: *"at whatever stage"*, he insisted, *"the designer is always faced with making voluntary decisions"*. For Colquhoun, the scientific curiosity that had allowed modern architects to criticize academicism fell into a scientific determinism and an artistic counterreaction to it; as he put it: *"a vacuum has been left where previously there was a body of traditional practice."*[40] Colquhoun suggested that architects should instead stick to the object of their work, using scientific processes to engage with specific architectural objects and their cultural conditions:

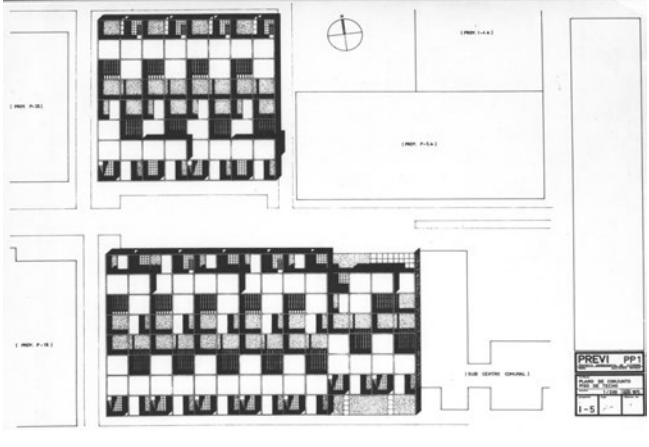
> *My purpose in stressing this fact is not to advocate a reversion to an architecture which accepts tradition unthinkingly … The characteristic of our age is change, and it is precisely because of this that it is necessary to investigate the part which modifications of type solutions play in relation to problems and solutions which are without precedent in any received tradition.*[41]

Colquhoun's article is part of a group of typological studies which emerged over the next years, including Demetri Porphyrios' in-depth analysis of Aalto's



Alvar Aalto, AA-System for the Ahlström company (1940). AAM.

The elements of the AA-System were designed according to an additive principle in order to maximize the adaptability of house design. The prefabricated houses were implemented to a limited extent.



Toivo Korhonen, PREVI experimental housing project, Lima, Peru (1968). MFA.

The houses connect with the street on one side and form a well-defined urban block. Each house is subdivided into four modules, which can vary from open to closed configurations.

work. The introductory quotation to this chapter taken from Colquhoun's 1977 article on Aalto confirms this trend, with Colquhoun referring to the recurrence of centralized spaces as a *"constant"* of Aalto's architecture.[42]

Influenced by the Structuralist (and Post-Structuralist) philosophy of Michel Foucault, Porphyrios evoked the concept of *"heterotopy"* to further describe the ordering in Aalto's architecture. The latter combines, contrasts and transforms available types. As Porphyrios put it: "*Typology, breeding on recurrence, habitual recognition, identity in the familiar, transmitted values, and dignity in custom, resuscitated an interest in tradition.*"[43] Tracing the origins of Aalto's typological approach, which is described as both methodical and subjective, Porphyrios argues that, while the concept of type became topical in Italy in the late 1950s, Aalto had to discover it fairly on his own; or better, rediscover it, since, as Porphyrios also points out, typology had been an essential feature of Aalto's classical education, as he demonstrates by quoting an early article by Aalto:

> *Nothing old is reborn, but it never completely disappears either. And everything that has ever been, always re-emerges in a new form.*[44]

Considering Aalto's intense exchange with Italy at that time, Porphyrios hint should, however, be reconsidered. It is tempting to speculate about Aalto's proximity to Ernesto N. Rogers,[45] the father figure of the Tendenza architects, who would later demonstrate the use of type as a means to relate the scientific and artistic dimensions of architecture.[46] Even the increasing influx of Italian and Swiss architects to the Studio at this point suggests that Aalto felt that they, at least, shared his understanding. In addition to Leonardo Mosso's case, which is discussed below,[47] we can consider, for example, Federico Marconi's description of the Hansaviertel apartment:

> *Aalto had managed to recreate – on a smaller scale – a Pompeian house, where everything was centred around a courtyard. This typology is to me unsurpassed in domestic architecture; he managed to create big, centred, living spaces, the measurements of which were greater than the physical dimensions … A theme from antiquity revived with a modern twist, making it available to the 'ordinary man' as he said.*[48]

In view of this, it is surprising that typology would take a long time to exert an overt influence in Finland, but also that Aalto's work would remain neglected by the Tendenza architects. Among the Modern Movement architecture, the Tendenza architects chose to concentrate on the more unequivocal approaches of Adolf Loos and Mies van der Rohe, and the connection to Aalto did not occur. Similarly, on the Finnish side, and whether because Aalto did not or could not articulate it in words, the typological approach of the Studio never became as

explicit in Aalto's lifetime as his own crtiques to Functionalism and Rationalism.

Team 10 and the PTAH group

Aalto remained sceptical of the strict formulations adopted by CIAM and the Garden City planners. Nonetheless, as seen in connection with the Harjuviita project, his preference for freestanding blocks directly connected with nature confirms his indebtedness to the modern theories of decentralization and zoning.[49] Aalto used intuition to question the idea of a linear process from analysis to design, and developed solutions that express this artistic process. In Harjuviita, the introduction of a wedge-shaped apartment between rectangular units produces a distortion in the plan, an irregularity that Aalto turned into a means to adapt the volumes to the sloping terrain, as well as to create a sense of identity between the otherwise dispersed point blocks.

Adlercreutz recalled how Aalto's bias for particularization became obvious to Adlercreutz himself one day while he was attending a meeting between Aalto and Otto-Iivari Meurman concerning the plan for Kivenlahti (unrealized, 1964): the two wise men had trouble finding common ground because Aalto kept pointing out exceptions to Meurman's systematic presentation and categorization.[50]

After the 6th CIAM congress, held in Bridgewater in England in 1947, the CIAM went through a period of internal reassessment, broadening its interests towards place and culture. In the 7th congress, held in Bergamo in Italy in 1949, the CIAM participants submitted their presentations in the so-called *grille* format, which facilitated comparisons between projects with different historical and geographical conditions. The 8th CIAM congress, held in Hoddesdon in England in 1951, accentuated this trend by concentrating on the theme of the "Heart of the City".[51]

Aalto became less and less involved in the CIAM activities; but he still followed the debate;[52] for example, lecturing in Germany during the sensitive period of war reconstruction, Aalto evoked the condition of recent and generally sparse urbanization in Finland to refute abstract models of urban renewal. Aalto made it very clear that a situation of *tabula rasa* was a difficulty to be avoided:

> *It is certainly not at all easy simply to build in a new city in the midst of primeval nature … traditions cannot be wholly cast off and regarded as used objects which have to be replaced by something new. In human life continuity is a vital necessity.*[53]

After the 9th CIAM congress, "La Chartre de l'Habitat", held in Aix-en-Provence in France in 1953, the Finnish architects followed the debate through

the local group PTAH. The members of PTAH were involved in the organization of a follow-up regional CIAM meeting to be held in Imatra the following year, to which Aalto and a few international guests, including Ernesto N. Rogers, Sverre Fehn, and Konrad Wachsmann, were invited. It could be expected that Aalto's architecture would gain topicality – Aalto's collaborator Erkki Luoma[54] even took part in PTAH's activities in its initial stage – but the opposite occurred.[55]

The PTAH architects were far more interested than Aalto in theory. Encouraged by Blomstedt's tenure as Professor of Architecture at Helsinki University of Technology (1958-1966), the PTAH group followed the CIAM dissident group Team 10 – which had been formed during the 10th CIAM congress, held in Dubrovnik, in the former Yugoslavia, in 1956 – in exploring anthropological, linguistic and phenomenological perspectives.[56] Looking back, it seems that this increasingly complex (if also more fragmented) reflection could have formed the basis for the critical reassessment of Aalto's work; but just as Team 10 assumed a rupture with the older generation Modern Movement architects after the final CIAM congress in Otterlo, in the Netherlands (1959), the PTAH architects soon became a centre of opposition to Aalto, and the members of the Studio became unwelcome.[57]

It has been assumed that the origin of this divide was the divergence that emerged between Aalto and Blomstedt when the two worked together in the Standardization Institute; i.e. Blomstedt's obsession with connecting problems of proportions with industrial standardization, but personal quarrels between the two architects probably also played a part. The result was that the PTAH architects misjudged the universality of Aalto's contribution, while the Studio collaborators overestimated its idiosyncrasies. Aalto's apparent neglect of theory demanded more reflection; but what followed instead was a passivity that lasted until the late-1970s, when some of the collaborators started teaching at universities.[58]

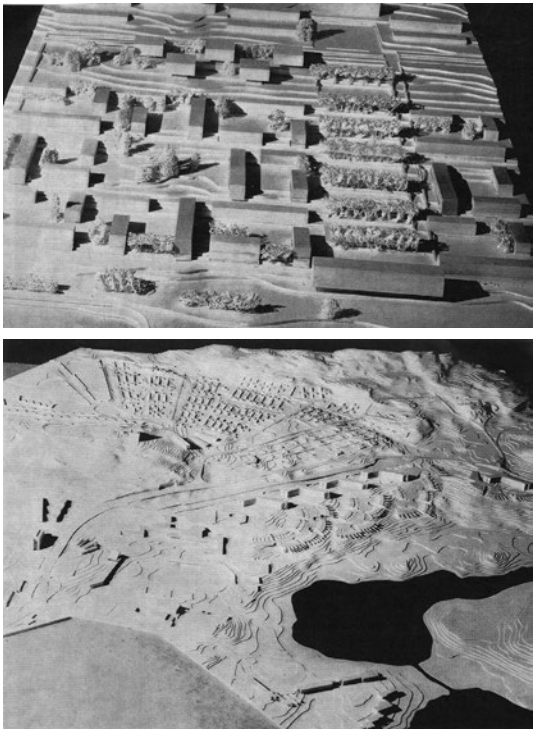
An exception to this is the case of Mosso, who put forward a Marxist-structuralist interpretation of Aalto's architecture in various articles and exhibitions, which reflect the Structuralist method of concentrating on *"relationships between things"* rather than on the things themselves. By contrasting the international and local dimensions of Aalto's work, Mosso highlighted the Studio's sensitivity to the conditions of production by way of connecting vernacular and experimental poles, as discussed earlier in connection with the idea of laboratory.[59]

Adlercreutz's case required a distancing from the Studio's work through a secondary influence. In 1968, he joined the Centre for Environmental Structure at the University of California Berkeley, where Christopher Alexander had started what is still considered today one of the most serious attempts to resolve the relationship between architecture and science, that is, the Pattern Language studies.[60]

Alexander's concept of pattern as a conceptual device for articulating analysis and design invites comparison with the idea of type described by Martí Arís.

Lauri Silvennoinen, Pihlajamäki Housing, Helsinki (1960-1965).

The blocks play with the proportions of rectangular volumes, and the visual contrast between vertical and horizontal elements, and open and closed surfaces.



Competition for the Kortepohja area in Jyväskylä (1965). MFA.

Models of the 1st and 2nd prizes by Bengt Lundsten (above) and Erkki Luoma (below). Lundsten's proposal is all in favour of system and modularity, while Luoma's for place and particularization.

In their own different ways, both Alexander and Martí Arís call for an analysis centred on the *"constants"* of architecture – and thus, implicitly suggest that design constitutes a counterpart *"system of differences"*. By sustaining a tension between repetition and variation, a typological method implies, among other things, a rediscovery of the meanings of place and history, as will be seen in *Chapter 6.*

Finnish Constructivism

In the post-war years, the urgency of the reconstruction and the rapid technological development steered the activities of the Standardization Institute towards a materialistic course, contrary to Aalto's principle of *"elastic standardization"*. The impetus given by the Building Information File to the field of industrial standardization was strengthened with the creation of the Housing Reform competition, organized periodically after 1953, and which provided a shared point of reference for public housing administration, town planning departments and designers. The experimental projects carried out in the Tapiola garden city – e.g. Aarne Ervi's Mäntytorni point block (1953-1954) and Viljo Revell's Mäntyviita slab blocks (1953-1954) – attest to the concerted efforts of the different parties to establish building prefabrication at that time.[61]

Lauri Silvennoinen's housing blocks in the Helsinki suburb of Pihlajamäki (1960-1965) were the first in Finland to be entirely built from prefabricated elements. The repetition of similar building elements produces a contrast between the natural and built landscape, a stunning – but ultimately visual – exploration of the properties of solidity, height and extension. Compared with subsequent developments, Silvennoinen's design is almost romantic; for him, it was not merely a case of accepting the inevitably of the machine, but to achieve it through an original expression, or as he put it: *"Building is always bound to the material used, and its inexorable natural laws; the victory over constraint depends to a decisive degree upon artistic skill."*[62]

As Jere Maula has explained the combined effects of urbanization and social change led to an increasing demand for housing and to a growing interest among architects in the field of urban planning. As Maula also noted, the latter is confirmed, first, by a rise in the number diplomas in urban planning submitted within the Department of Architecture at Helsinki University of Technology, and later, by a shift in the practice, with many professionals moving from small ateliers into municipal planning departments and large consultancy and planning offices.[63]

The 1960s are thus characterized by a concurrent interest in industrial design and urban planning, with its reliance on science and a focus on the future. Pihlajamäki was only one among many residential suburbs built in Finland at that time. Another important landmark in terms of housing projects from this period

Kari Hyvärinen, Koivunvesa and Koivunpahka Housing, Espoo (1980).

The apartments and row houses form a semi-enclosed courtyard. The concrete construction is clad with red brick. Wood and steel details in the gallery and canopy form a minor order of elements.

A-Konsultit/Eric Adlercreutz and Mikko Heikkinen, Kartanonkaari Housing, Helsinki (1978-1982).

The gallery between the public and semi-public realms. The passage to the inner courtyard is on the left. The prefabricated concrete elements are clad in brick.

is the 1964 competition for the Kortepohja district in Jyväskylä. The winning entry by Bengt Lundsten, a compact grid plan formed by modular units to be built with prefabricated technology, brings together the two previously mentioned tendencies, adding a techno-utopian dimension to Blomstedt's aesthetic-rationalist concerns mentioned earlier. Within the scope of the current study, the second prize entry, awarded to Aalto's collaborator Erkki Luoma, is significant in that it follows a diametrically opposed principle of adapting freestanding blocks picturesquely to the topography.[64]

The Kortepohja plan, the further design stage of which was carried out by Lundsten and Esko Kahri, announces the emergence of the Constructivist movement, which dominated the Finnish architectural context until the 1970s. For the Constructivists, a new design discipline was to replace what they saw as an old-fashioned form-giving art, architecture. Accordingly, the Constructivists considered Aalto's principle of *"elastic standardization"* an escape from the urgent social questions of that time. Aalto wanted to secure the widest range of processes and products, while the Constructivists wanted to achieve only the best of them.[65]

The Constructivist position is best captured in Gullichsen and Pallasmaa's Moduli 225 building system, an open building system aimed at the construction of lightweight units, and their assembly limited to the fewest possible, carefully proportioned and detailed, prefabricated wooden elements and fittings. This project anticipated a separate commission from the concrete building industry, the so-called BES system (1970), to research a similar open building system aimed at large housing projects. However, the translation of the modular principle to a more complex architectural problem brought about several new questions.[66] The BES system, developed by Gullichsen, Pallasmaa and Matti Seppänen, among others, made it possible to build large housing blocks by using only a few wall and slab elements; but the clumsy products obtained through this low-cost building process rapidly precipitated the rejection of the Constructivist theses by its own proponents. One of the paradoxes of the search for industrial building standards is that it creates a dependence on advanced technology, which is the opposite of its own aspiration for universality.[67]

The dominance of the Constructivist movement can be observed also in the lack of place-oriented housing projects in Finland at that time: an exception to this is the Pietiläs' Suvikumpu housing complex in Espoo (1962-1969); Aalto, too, was involved in a major commission for the Gammelbacka area in Porvoo (1966, unrealized). The Gammelbacka project would have provided the opportunity to test his concept of *"elastic standardization"* applied to a large-scale plan; the housing blocks were to be assembled from prefabricated parts that would have allowed, for instance, the construction of undulating forms and some degree of adaptation to the terrain. Yet, according to Schildt, Aalto's strategy encountered the inflexibility of the government-subsidized housing programme and remained unrealized.[68]

The 1972 Housing Reform competition, organized under the supervision of Olli Lehtovuori,[69] announced an inflection in this technological course by following a tendency observed in the Nordic countries towards dense and low-rise plans with a richer spatial structure. Eric Adlercreutz took part in the competition as a member of the Osuuskunta YS-palvelu team, which won a series of prizes with multiple entries, all of them having in common the use of courtyards and atriums, and the exploration of overlapping levels of public and private building. The solutions presented here attest to a renewed concern with social and cultural considerations, which can be hinted already in Adlercreutz and Aschan's 1968 plan for Jägarbacken housing, as will be seen in *Chapter 6*.

Nevertheless, it was only in the late 1970s, and to some extent as a response to the changing economic conditions that brought a new environmental awareness,[70] that the problem of standardization was definitely directed towards differentiation – i.e. the maximization of spatial and visual flexibility and the adaptability of the prefabricated building systems – for example, in the KEKO experimental housing project introduced by the city of Helsinki in 1978, and through a related research project commissioned by the concrete building industry, the Inhabitant BES system (1979).[71] Examples of this development are the Koivunvesa and Koivunpahka housing blocks designed by Aalto's collaborator Kari Hyvärinen's in Espoo (1980).[72]

1 Karl R. Popper, *The Logic of Scientific Discovery* (London: Hutchinson & Co, 1972/ 1959). In connection with Popper's position, it is worth mentioning Thomas S. Kuhn's description of scientific knowledge progressing through *"paradigm shifts"*. In a typical Structuralist fashion, Kuhn tried to overcome what he saw as a naïve nature-culture dichotomy and question the universal status of science by arguing that the latter is inevitably conditioned by the context in which it is produced. Accordingly, Kuhn challenged Popper's description of a continuous process of corrections by acknowledging that cultural processes offer resistance and impulsion to scientific revolutions. Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962).

2 Karl R. Popper. "Three Worlds" The Tanner Lecture on Human Values, delivered at the University of Michigan, April 7, 1978.

3 Carlos Martí Arís, *Las variaciones de la identidad. Ensayo sobre el tipo en arquitectura* (Barcelona: Ediciones del Serbal, 1993), 15-43.

4 Martí Arís refers to the studies of Demetri Porphyrios and Rafael Moneo: Demetri Porphyrios, "The retrieval of memory: Alvar Aalto's Typological conception of design", *Oppositions* 22 (1980): 54-73; Rafael Moneo, "Principios tipológicos de Alvar Aalto" (unpublished paper presented at the Semana Cultural de la Escuela de Arquitectura de Barcelona, Febrero 1981). For Martí Arís, Aalto's understanding of the concept of type derives from his interest in biology; i.e. Aalto considered the forms of urban and social organization as part of the broader biological realm. Op. cit., 190.

5 Poul Henningsen, "Tradition and Modernism", in *Nordic Architects Write. A Documentary Anthology,* ed. Michael Asgaard Andersen (London: Routledge, 2008/ 1927), 20.

6 Behne, *The Modern Functional Building*, 123-124. The terms Functionalism and Rationalism have been used by other authors in slightly different senses. For example, Alan Colquhoun resumed Behne's distinction, pointing at the different Functionalist and Rationalist emphases in the *"why"* and the *"how"* of things, respectively. However, Colquhoun refers to Behne's Functionalism as *"organicism"* (the idea of a *"causal relationship between functions and forms"*) and to Behne's Rationalism as *"formalism"* (the abstract *"type of thought which stresses rule-governed relationships"*). Colquhoun's choice of terms provides an additional distinction between pre- and post-war rationalisms (the latter corresponding to the Neo-Rationalism of the Italian Tendenza, which considers *"the invariant elements of architecture as irreducible beyond the experience of architecture itself, as a social and cultural reality"*). Alan Colquhoun, "Rationalism: A Philosophical Concept in Architecture", in *Modernity and Classical Tradition: Architectural Essays 1980-1987* (Cambridge: MIT Press, 1991), 74-79, 84. An alternative to Colquhoun's organicism/formalism pairing is that of expressionism/constructivism. In Finland, Functionalism (or *"funkis"*) has sometimes stood for both of Behne's categories, indistinctly. See for example: Raija-Liisa Heinonen, "Some Aspects of 1920s Classicism and the Emergence of Functionalism in Finland", in *Alvar Aalto,* ed. David Dunster. Vol. 4 of *Architectural Monographs* (London: Academy Editions, 1978), 20-27. Kirmo Mikkola, in turn, refers to Functionalism as a historical episode within a broader *"rationalist tradition",* inspired by the visual arts, and the metaphors of the organic and the machine. Kirmo Mikkola, "The Rationalist Tradition", in *Alvar Aalto: Points of Contact* (Helsinki: Alvar Aalto Museum, 1994), 29.

7 Behne, *The Modern Functional Building*, 124-138.

8 Henningsen, "Tradition and Modernism", 31-33.

9 Alvar Aalto, "The Humanizing of Architecture", *The Technology Review,* Nov. 1940. Reproduced in *Alvar Aalto in His Own Words, ed. Schildt,* 102.

10 Aalto, Op. cit., 103.

11 Pekka Korvenmaa, "Aalto and Finnish Industry", in *Between Humanism and Materialism,* ed. Peter Reed (New York: The Museum of Modern Art, 1998), 81-84.

12 Aalto, "An American Town in Finland", 128-131.

13 Alvar Aalto, "The Reconstruction of Europe is the Key Problem for the Architecture of Our Time", *Arkkitehti* 5, 1941. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 155-157.

14 The Usonian Houses were low-cost, 1-2 storey family houses, which shared a number of standardized features: e.g. a cellular plan centred on an all-purpose kitchen and living room, a concrete footing with integrated heating system, the use of concrete blocks, wooden partitions, battens and joints, etc. Wright's experiments certainly influenced Aalto's ideas about standardized housing and regional planning. For example, Aalto was so impressed with what he saw on his visit to Taliesin that he immediately reported about it to Aulis Blomstedt, who was then his colleague at the Standardization Institute. Schildt, *The Mature Years,* 102. For more about Wright's Usonian houses, see: John Sergeant, *Frank Lloyd Wright's Usonian Houses: The Case for Organic Architecture* (New York: Whitney Library of Design, 1976).

15 Schildt, *The Mature Years,* 67. Charrington has suggested also the influence of vernacular Japanese architecture, which Aalto studied through exhibitions and books, and which became a strong inspiration for the

Constructivist movement that was (paradoxically) opposed to Aalto's mode of elastic standardization. Charrington, *The Makings of a Surrounding World,* 81.

16 The unit of the Building Information File are building cards submitted in a similar format, and thus easy to archive, index and personalize; for the same reason, however, the system is also prone to promote formalization. For an outline of the Building Information File system, see Karl-Erik Michelsen, "The Finnish Building Information File", in *The Work of Architects: The Finnish Association of Architects 1892-1992,* ed. Pekka Korvenmaa (Helsinki: Rakennustieto, 1992), 128-137.

17 Alvar Aalto, "In Lieu of an Article", *Arkkitehti,* 1-2, 1958. Reproduced in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997), 264.

18 Leppänen, "The design process", 65.

19 See Aalto's interview with his collaborator and editor Karl Fleig: Alvar Aalto, "The Relationship Between Architecture, Painting and Sculpture", in *Alvar Aalto, Synopsis: Painting Architecture Sculpture,* ed. Bernhard Hoesli (Zürich: Birkhäuser, 1970), 24-26. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 268.

20 "Conversation 11. Eric Adlercreutz", 234-236.

21 Alvar Aalto, "The Flexible Stair", text dated 1942, in the SAFA archives. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 164.

22 Op. cit., 165.

23 Schildt refers to this systematic aspect of the Studio's work: he distinguishes Aalto's critique of Functionalism as the principle that form is determined by function, and Aalto's critique of Rationalism (which Schildt limits to the principle of creating machine-oriented products) from Aalto's own biology-derived idea of type as structure. Schildt does not explore, however, the possibility of Aalto having used the history of architecture itself as the object of his method (a hypothesis that is closer to the Neo-Rationalist position described by Colquhoun). Schildt, *The Decisive Years,* 205-223, 264.

24 Alvar Aalto, "Building Height as a Social Issue", *Arkkitehti* 7-8, 1946.

25 For instance, in the plans for high-rise apartment blocks in Solna (1958) and Stockholm (1957) in Sweden, and in the plans for Karhusaari and Hanasaari in Espoo (1959). Schildt has referred to this kind of positive development of a problem as an important part of the Studio's design method, see, Schildt, *The Mature Years,* 264.

26 The ingenious solution explored in the Hansaviertel means that a centralized spatial structure can be recognized at two different scales: in the atrium that orders the space for the family and for its individual members, and in the entrance hall that orders family and neighbourhood realms. Tore Tallqvist called this to my attention in a personal conversation.

27 Manfredo Tafuri and Francesco Dal Co, *Modern Architecture / 2* (Milan: Electa, 1980), 338.

28 Alvar Aalto, "Experimental House at Muuratsalo", *Arkkitehti* 9-10, 1953. Reproduced in *Alvar Aalto in His Own Words,* 234-235. Aalto's preference for spatial research is discussed in Elke Krasny's comparative study of architecture offices. Elke Krasny, "Alvar Aalto: The Creator created paper to draw architecture on", in *The Force is in the Mind. The Making of Architecture,* ed. Elke Krasny (Basel: Birkhäuser, 2008): 14-19.

29 As Charrington explained, Moholy-Nagy developed at the Bauhaus a series of exercises on the *"individual's sensory experience"* and *"biological integration"*; Moholy-Nagy later became the head of the New Bauhaus in Chicago. Charrington has traced Aalto's interest in material experimentation to other Aalto's acquaintances, including Frederick Kiesler (the head of the Laboratory for Design-Correlation at Columbia University in New York), Richard Neutra (curiously, like Kiesler, a Viennese disciple of Adolf Loos, before establishing himself in the United States), and the Finnish philosopher Yrjö Hirn and his theory of play. Charrington, *The Makings of a Surrounding World,* 82-84, 120-121, 147, 184-185, 193-194.

30 As an example, Charrington discusses the external dialogue Aalto maintained with the cabinet-maker Otto Korhonen and the lamp-maker Viljo Hirvonen. As Charrington pointed out: *"Hirvonen made prototypes of the Aalto atelier's lamp designs, testing them with Aalto and members of the atelier and slowly evolving a family of designs from the seed of Poul Henningsen's PH-lamps from which they stemmed. As Kaarlo Leppänen says, this is 'how the design process should work, rather than finalising designs on paper'."* Charrington, "We Don't Need to be so Dogmatic", 66-67.

31 An extreme example is the design changes introduced in the later stages of construction in the House of Culture in Helsinki (1952-1958). Aalto and the client, the Finnish Communist Party, agreed about a staggered construction schedule and the use of volunteer labour. Mauno Kitunen (collaborator 1953-1958) recalled how Aalto turned the project's tight budget into an opportunity to refine the project on site; i.e. Aalto had the idea for the entrance canopy already well after the inauguration. "Conversation 6. Kristian Gullichsen and Mauno Kitunen", in *The Mark of the Hand,* eds. Charrington and Nava, 161. See also, "Conversation 8. Mauno Kitunen", in *The Mark of the Hand,* eds. Charrington and Nava, 187-188.

32 "Conversation 11. Eric Adlercreutz", in *The Mark of the Hand,* eds. Charrington and Nava, 240.

33 Colquhoun, "Alvar Aalto: Type versus Function", 78.

34 Alvar Aalto, "Journey to Italy", *Casabella Continuità* 200 (1954). Reproduced in *Alvar Aalto in His Own Words,* 38. Charrington has pointed out the influence of Johann Wolfgang von Goethe and his *Italian Journey* (1816) on Aalto. Charrington, *The Makings of a Surrounding World,* 159. Coincidentally, Roberto Rossellini's film *Viaggio in Italia* (*Journey to Italy),* which dwells similarly on the relationship between life, science and art, premiered later in 1954.

35 Richard Llewelyn-Davies, "Deeper Knowledge: Better Design", *The Architects' Journal* May (1957), 769-772, quoted in Ceferin, *Constructing a Legend,* 130.

36 See, for example, Tomas Maldonado, "Challenge to architectural and industrial design training", *Arkkitehti* 4 (1968), 66. Note that the interest in design methods in Finland accompanies the development of design studies in the Institute of Industrial Arts in Helsinki.

37 The organizers of the Helsinki Design Lab seminar, held on Suomenlinna, Helsinki, July 1-3 and July 15-20, 1968, were Harri Hintikka, Matti Kaje, Juhani Pallasmaa, Yrjö Sotamaa and Tom Simons (Simons was an Aalto collaborator in 1963). Helsinki Design Lab 1968 Archive: http://helsinkidesignlab.org/lists/tags/1968.html [accessed August 11, 2014]

38 The PREVI project faced the problem of housing from a global perspective, and problematized two paradoxical tendencies: industrial production and participative processes. For an overview of the PREVI competition, see: Tomeu Ramis, "What is PREVI?", Digital Architectural Papers, Issue 9, PREVI Revisited: http://www.architecturalpapers.ch/index.php?ID=91 [accessed Feb 8, 2015]. Korhonen's design was published in Maunula, ed., *Suomi Rakentaa 5. 1969-1976*.

39 Leslie Martin was the President of the Royal Institute of British Architects (RIBA) at the time when Aalto was awarded their Gold Medal in 1957. The research led by Martin focused on factors of density and light exposure, and to a large extent made use of computers in order to legitimize the advantages of the courtyard solutions already preconized in Martin's design work. It is worth comparing the University of Cambridge Harvey Court (1958-1962), designed by Martin with Colin St. John Wilson and Patrick Hodgkinson (himself a collaborator of the Studio Aalto in 1954), with Aalto's Säynätsalo Town Hall. For more on Martin and the work of the Centre for Land Use and Built Form Studies, see, Richard MacCormac, "Buildings, ideas and the aesthetic sense", *Architecture Research Quarterly,* Volume 4, issue 4 (2000): 300-302; Lionel March, "'Setting out the possibilities': Leslie Martin and the advancement of architecture knowledge", *Architecture Research Quarterly,* Volume 4, issue 4 (2000): 298-300.

40 Alan Colquhoun, "Typology and Design Method", in *Essays in Architectural Criticism: Modern Architecture and Historical Change* (Cambridge: MIT Press, 1981/1967), 46-47. Colquhoun was closely acquainted with Martin's circle.

41 Op. cit., 50.

42 Colquhoun, "Alvar Aalto: Type versus Function", 75-81. See also Frampton, "The Legacy of Alvar Aalto", 125-126; Frampton refers directly to Colquhoun's work on Aalto in "'Not Individual Property'. The Ideas of Alan Colquhoun", *OASE* 87 (2013): 35-39.

43 Porphyrios, *Sources of Modern Eclecticism*, 113.

44 Alvar Aalto, "Painters and Masons", *Jousimies* (1921). Reproduced in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997), 30-31

45 Charrington has stressed this point by connecting Aalto's interest in the *"Mediterranean hill-town"* to Rogers' interpretation *"of a 'historical continuity manifested by the city and existing in the minds of its inhabitants"*. Charrington, "We don't need to be so dogmatic", 83.

46 As mentioned in the *Introduction*, by problematizing the role of history in architecture, Rogers launched the basis for a historically conscious practice that influenced the work of Giancarlo Di Carlo, Giorgio Grassi, Vittorio Gregotti, and Aldo Rossi, among others. An important reference to the typological debate is Giulio Carlo Argan's 1962 text "On the Typology of Architecture", which re-establishes a link with the then forgotten definition of type established by Quatremère de Quincy in *Le Dictionnaire Historique d'Architecture* (1825).

47 Mosso, an Italian architect, was Aalto's collaborator in 1956-1959; he became a professor at the Turin Polytechnic and at the University of Bologna and founded the Instituto Alvar Aalto in Torino in 1979. Between 1957 and 1963 Mosso reviewed several projects by Aalto for the magazine *Casabella Continuità*. Particularly notable is Mosso's defence of Aalto's polemical project for the Enso-Gutzeit building (1955-1962), which he sees as Aalto's reinterpretation of the palazzo type in the specific setting of Helsinki's waterfront. Leonardo Mosso, "Nel centro storico di Helsinki la sede Enso-Gutzeit di Aalto", *Casabella 272* (1963): 4-25.

48 "Conversation 10. Federico Marconi", in *The Mark of the Hand*, 218. Marconi (Aalto's collaborator in 1959-1962) had been Rogers' student and was personally recommended to Aalto. For example, Marconi makes use of a typological view to distinguish the abstract-geometric from the particular-poetic dimensions in Aalto's work. Federico Marconi, "Valore di Alvar Aalto", in *Alvar Aalto 1898-1976*, ed. Paolo Angeletti (Roma: Leader

Arte, 1983), liv-lv. Among the Finnish collaborators, note the recurrence of centralized spatial structures in Ström and Tuomisto's architecture. In addition to the courtyard of Alppila Church, mentioned in the previous chapter, see their design for an atrium summer cottage: Keijo Ström and Olavi Tuomisto, "Saarimaja Porraskoski, Lammi", *Arkkitehti* 2 (1963): 79-81.

49 Consider also, for instance, the suburban plans for Viitaniemi in Jyväskylä (1957-1961), the high-rise apartment blocks in Bremen, Germany (1958-1962), and in Lucerne, Switzerland (1964-1967).

50 Adlercreutz, interview by Borges de Araújo, 2010.

51 Mumford, *The CIAM Discourse*, 168-215.

52 Aalto attended the preparatory CIRPAC meeting in Zurich before the 6th CIAM congress (Bridgewater, England) in 1947; he did not attend the 1949 meeting (organized just a few months after Aino Aalto's death), however. Aalto did continue to retain close contact with some of the individual members of CIAM, including Le Corbusier, Giedion and Rogers. Mumford, *The CIAM Discourse*, 169.

53 Alvar Aalto, "Schöner Wohnen" [More Beautiful Housing], lecture delivered in Munich, Nov. 15, 1957, Aalto Archives. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 260-261.

54 Erkki Luoma, an Aalto collaborator in 1954-1968. Later Luoma worked in partnership with Mauno Kitunen, and among their designs are the apartment blocks in Itäinenkatu in Turku (1960) and Hämeenpuisto in Tampere (1963).

55 Marja-Riitta Norri, "Heroes and Matter – Notes on the 1950s", in *Heroism and the Everyday – Building in Finland in the 1950s*, ed. Riitta Nikula et al. (Helsinki: Museum of Finnish Architecture, 1994), 201.

56 This interest in interdisciplinarity – i.e. connecting the methods of the natural and social sciences – is typical of Structuralism. See, for example, Reimä Pietilä's morphological studies: Reima Pietilä, "Theme, The Morphology of Expressive Form", *Le Carré Bleu* 1 (1958): 4-6. See also Keijo Petäjä's essays on form and perception: Keijo Petäjä, "Perception de L'Espace Réel, I", *Le Carré Bleu* 1 (1959): 1-3; "Perception de L'Espace Réel, II", *Le Carré Bleu* 2 (1959): 1-2 ; "Perception de L'Espace Réel, III", *Le Carré Bleu* 3 (1959): 1-6.

57 See, for example, Charrington, *The Makings of a Surrounding World,* 89-91.

58 For example, Heikki Hyytiäinen (Aalto collaborator in 1964-1972), Tarkko Oksala (Aalto collaborator in 1968) and Tore Tallqvist taught about Aalto at the Helsinki University of Technology and Tampere University of Technology. See: Heikki Hyytiäinen, "Alvar Aalto asuntojen rakentajana" [Alvar Aalto as designer of houses], in *Juhlakirja Olof Hansson*, ed. Erkki Helamaa (Tampere: Tampere University of Technology, 1979), 65-79. See also: Radford and Oksala, "Alvar Aalto and the expression of discontinuity"; and Tore Tallqvist, "The timelessly topical in Alvar Aalto's work", in *Changing Trends and Timelessness. Seminar on Architecture and Urban Planning* (Helsinki: Finnish Association of Architects, 1984), 69-77.

59 Mosso started researching the Studio archives early on and co-organized the large Aalto exhibition in the Palazzo Strozzi in Florence in 1965. See: Leonardo Mosso, ed., *L'Opera di Alvar Aalto Catalogo della Mostra* (Milan: Edizioni de Comunità, 1965); Leonardo Mosso, *For a Systemic and Structural Reading of Alvar Aalto* (Jyväskylä: Alvar Aalto Museum, 1980). Mosso's analysis is discussed in Pelkonen, *Architecture, Modernity, and Geopolitics*, 182-188.

60 The magazine *Arkkitehti* published a call for participation in the course, see "Ympäristö Tutkimuksen Keskus", *Arkkitehti* 4 (1968): 62. A Finnish translation of Alexander's famous, earlier article "A City is Not a Tree" and a review of Alexander and Serge Chermayeff's book *Community and Privacy* written by Jaakko Ylinen were also published in *Arkkitehti* 7-8 (1966) and *Arkkitehti* 4 (1967), respectively.

61 For an outline of housing architecture in post-war Finland, see Erkki Helamaa, "Building Finland. Housing Architecture 1940-1980", in *The Work of Architects: The Finnish Association of Architects 1892-1992,* ed. Pekka Korvenmaa (Helsinki: Rakennustieto, 1992), 138-149.

62 Lauri Silvennoinen, "Pro Contra Kone", *Arkkitehti* 7-8 (1964), 118-119. Silvennoinen was an Aalto collaborator in 1952-1954; among his other works are the Roihuvuori Church, Helsinki (1963-1970), and the Tammisalo Church, Helsinki (1966).

63 Jere Maula, "Architects and Urban Development in the 1960s and 1970s", in *The Work of Architects. The Finnish Association of Architects 1892-1992,* ed. Korvenmaa, 180-185.

64 The competition results were published in *Arkkitehti* 4 (1965); Museovirasto, "Kortepohjan asuma-alue", Museovirasto: http://www.rky.fi/read/asp/r_kohde_det.aspx?KOHDE_ID=197 [accessed 22.12.2009].

65 Mikkola, "The Rationalist Tradition", 29. The Constructivist position is reminiscent of the argument put forward decades earlier by the Neue Sachlichkeit and the path followed by those who considered that industry had produced a definitive break in architecture.

66 Marja-Riitta Norri, "Prefabricated Madness. Housing Construction in the 1960s and 1970s", in *Tehdään Betonista. Concrete in Finnish Architecture,* ed. Jouni Kaipa (Helsinki: Museum of Finnish Architecture, 1989), 55-57.

67 Partly in reaction to the negative impact of this experiment, Gullichsen's and Pallasmaa's subsequent

career took a markedly different trajectory, with each of them searching in his own terms for a particularized architecture. This is how Mikkola – the other distinguished member of the Constructivist movement – looked back at the shortcomings of their own endeavour: *"We saw the conflict between the prevailing expressionist trends and technological development; and behind it we saw the social mission of the housing problem. We believed that constructivist architecture would prevail with the sheer force of efficiency, and that with it we could 'smuggle' socially progressive ideas onto the desks of decision-makers. But since we were, after all, unable to change the facts of society, the ultimate result was only a relative increase in social inequality, reflected in the crushing concrete tenements on the fringes of our cities."* Mikkola, "The Rationalist Tradition", 32. Mikkola's article is based on a lecture from 1972; it is possible that this particular excerpt has been revised later, but, even in this case, it demonstrates that Mikkola was very much aware of his own contribution.

68 Schildt, *The Mature Years,* 89-91 and 286-287. It has been noted how the undulating forms of the Gammelbacka houses are also evident in the plan for the San Lanfranco housing estate in Pavia in Italy (unrealized, 1966), co-authored by Mosso. The latter project makes a more systematic use of the curve motif, however. For more on the Pavia project, see Schildt, ed. *Alvar Aalto. A Life's Work,* 187; and Pelkonen, *Architecture, Modernity and Geopolitics,* 187.

69 Olli Lehtovuori, "Asuntoreformikilpailu", *Arkkitehti* 7-8 (1972): 33-42. Lehtovuori (an Aalto collaborator in 1955) established his career both through the public administration and a private architectural practice founded jointly with Heikki Tegelman and Pentti Väänänen; an example of Lehtovuori-Tegelman-Väänänen's work is the Kultapossu housing in Pieksämäki (1967), formed by diagonally arranged cubic blocks, with the entrances located at their intersecting corners; this project was published together with a diagram that demonstrates how the later arrangement solves the distinct problems raised by car traffic access (reserved for the area to the north) and pedestrian access to the park area on the south. Maunula, ed., *Suomi Rakentaa 4. 1965-1970*. Lehtovuori has written regularly on housing themes in the journal *Arkkitehti.* See, for example: Olli Lehtovuori, "Where Are the Porches and Gateways Gone?" *Arkkitehti* 2 (1971): 48.

70 This environmental perspective is attested by, for example, Bruno Erat and Matti Niemi's passive solar energy house prototype developed for VTT, the Technical Research Centre of Finland (1977). Bruno Erat and Matti Niemi, "Eko experimental housing in Kilo", *Arkkitehti* 8 (1979): 38-41. Bruno Erat, Swiss architect, an Aalto collaborator in 1967-1968.

71 Norri, "Prefabricated Madness", 57.

72 Kari Hyvärinen, "Koivunvesa and Koivunpahka Housing", *Arkkitehti* 7 (1980): 32-35. I purposely refer here to a lesser known architect and design, but note that other Studio collaborators were involved in relevant housing projects at that time, such as the plans for Katajanokka, Malminkartano and Länsi-Pasila areas in Helsinki. See, for example, Kristian Gullichsen, Mattiveikko Salo and Timo Koivu, "Residential buildings Linnankatu 11 and Katajanokanranta 1, Katajanokka, Helsinki", *Arkkitehti* 6-7 (1981): 28-33; Jan Söderlund and Erkki Valovirta, "Länsi-Pasila experimental construction area, Helsinki" [after a competition held in 1979], *Arkkitehti* 6 (1987): 29-34; see also: Jan Söderlund, Erkki Valovirta and Ari Malmio, "Matruusinkatu 4 and Amiraalinkaty 3 Housing Companies, Katajanokka, Helsinki", *Arkkitehti* 6-7 (1981): 34-39. A-Konsultit / Eric Adlercreutz's Katajanokka and Malminkartano projects are mentioned in *Chapter 6*.

Part II

Jaakko Kontio and Kalle Räike, Vuoksenniska High School, Imatra (1957-1960).

The High School stands close to Alvar Aalto's Church of the Three Crosses (1955-1958), where Kontio worked as a collaborator at the same time. The different wings adapt to the slope and define a levelled open courtyard.

Vuoksenniska High School.

A view of the inner hall. Kontio and Räike introduced here a special kind of column which combines the motifs of a stairs and access to the stage, mezzanine and skylight.

4. Jaakko Kontio (and Kalle Räike): Lappeenranta University of Technology, 1969-1975

In a 1961 article published in the Italian magazine *Casabella Continuità* and dedicated to the introduction of recent architecture in Finland, the architect and critic Francesco Tentori justified the selection of a group of works by Aalto's former collaborators as follows:

> *Not everyone, of course, can have the inexhaustible capacity for creating ever new forms of space, as does Aalto. But what impresses one most about him – after his rich spatial poetry – more than in any other contemporary master, is the ease with which his particular morphological and syntactical elements have been translated into all of the best architecture.*[1]

Tentori's choice is an exception to the usual criteria for presenting Finnish architecture at that time, which tended to concentrate on Aalto's work and/or an alternative to it. In his article, Tentori introduces and discusses Jaakko Kontio and Kalle Räike's Vuoksenniska High School (1957-1960) and their apartment block on Prinssintie street in Helsinki (1958-1959) as examples of a harmony existing between architects, clients, builders and users. There is no *"showy, technical display"* in these projects, observes Tentori, nor *"the artificiality of revivalism … not anything revolutionary, but simple and honest building technique."*[2]

In Kontio and Räike's office, established in 1957, converged the experiences of the two most influential architects in Finland at that time. Kontio, who graduated in both engineering and in architecture, worked briefly with Jussi Lappi-Seppälä before joining the Studio Aalto, where he worked from July 1954 to April 1960.[3] Räike had equally outstanding references, having been Aulis Blomstedt's close collaborator. Until Kontio retired in 2004, the partnership assumed various other formations, i.e. Architects Kontio-Räike-Kilpiä (1970-1989) and Kontio-Kilpiä-Valjento (1989-2004).

After closing his office, Kontio prepared a series of volumes containing his work and memoirs.[4] In his writings, Kontio recalls the years working with Aalto as intense and fulfilling. However, he refers to the experience of directing his own architectural office – with the double burden of designing and managing responsibilities – as comparatively harder than being an office collaborator. Kontio associates the growth of Kontio and Räike's office with an upsurge of work in the early 1960s, which made it possible to move the team from its original premises

Jaakko Kontio and Kalle Räike, Roihuvuori High School, Helsinki (1959-1961).

The classroom wing forms together with the sloping volume of the main hall a carefully designed yard, the character of which is derived from the direct juxtaposition of the building and the forest. Note how the doors of the main hall open straight into the yard.

Jaakko Kontio and Kalle Räike, Porvoo Technical Institute in Askola (1959-1965).

A view of the school complex: parallel linear wings slide past each other and direct the visitors towards the entrance.

Porvoo Technical Institute.

A view from the staff residences. The roof of the lower unit creates a terrace for the one above, and successively upwards. The conservatories, added later, attest to the flexibility of the design.

Porvoo Technical Institute. MFA.

In this picture taken by Pertti Ingervo (who himself worked regularly with Aalto), Kalle Räike stands on a bridge which is barely above the water level. The staff residences are in the background on the left, and the school itself is in the centre of the picture. The image of Räike measuring the flooded river is strangely metaphorical for the changes then going on.

in the Helsinki suburb of Kulosaari to a central location at Meritullinkatu 9. By the mid-1960s, the office employed roughly ten architects, including a few former colleagues from the Studio Aalto.[5] But Kontio describes this as a contradictory period for the office: a peak in terms of volume and variety of projects – including schools, churches, parish centres, sports halls, hotels, apartment blocks and single-family houses, etc. – and yet, in his view, a low point for the profession. Kontio's frequent mentions of the clients and builders involved in the various projects suggest the significant influence of these relationships on his work, and hint at the impeding conflicts. For instance, in the following passage, Kontio describes a hostile environment, which seems just the opposite of the harmony described in the above quote from Tentori:

> *Architects usually blame the juries when they miss the point. But in the late 1960s there was no alternative, competitions had to follow the Mies van der Rohe way … The most depressing aspect of this period was the advent of prefabricated concrete elements. We were once designing an apartment block in Valkeakoski when the contractor and the engineer came to tell us that the elements were ready and thus we could start making the drawings.*[6]

Kontio and Räike's work itself reflects the ongoing challenges and contradictions at that time. For example, the enthusiasm regarding technology shown in their Helsinki Ice Stadium (1963-1966) – where they resolved the problem of enclosing the main hall with a challenging hyperbolic paraboloid cable-roof structure – contrasts with their reluctance to work with a new kind of prefabricated element system in the above-mentioned apartment blocks in Valkeakoski, named respectively Jyräänkallio, Putaankari and Kassakari (1964-1971).

A further comparison could be made between Kontio and Räike's designs for the technical institutes in Porvoo (1959-1965) and Heinola (1965-1970), both based on their winning entries in invited architectural competitions. The first complex is formed by small-scale units built with a cast in-situ concrete frame, adapted to the terrain and expressively clad with white-plastered brick walls. In contrast, the Heinola design uses prefabricated elements assembled in a longitudinal volume consisting of alternating building and courtyard modules, in a way not unlike the *"Mies van der Rohe way"* suggested above.

In order to better understand Kontio and Räike's professional doubts, it is necessary to discuss their position in regard to the *clients, builders* and *users* in the plan for the Lappeenranta University of Technology.

Jaakko Kontio and Kalle Räike, Helsinki Ice Hall (1963-1970). MFA.

In this photograph, taken during the construction by Juha Jernvall, it is possible to understand the principle of the cable-truss roof structure system developed by the Swedish engineer David Jawerth in the late 1950s.

Helsinki Ice Hall.

The multipurpose hall was originally planned for the 1965 Ice Hockey World Championships. A planned second stage, including a small hall and a hotel, was not built.

4.1 Clients

To whom is the architect responsible? … A program for the school as written by a group of administrators would be wholly different from one prepared by teachers, pupils, maintenance staff, or by parents … The architect in our society usually feels a moral responsibility to accommodate the needs of each of these groups, but in many instances where they are incompatible the decision and the program will reflect the balance and imbalance of power within the system. Decision-making power is always in the hand of those who control the money; in public schools they are the administrators, watched over by higher public officials and by taxpayers … In addition, banks and other mortgage-granting institutions influence design decisions because of their concern that the proposed structure satisfy not only the needs and taste of the borrower but of potential purchasers in the event that the borrower should default. This predisposes them toward conservative designs and against experiment.

(James S. Ackerman)[7]

Suburban location

For over two decades, as the country transformed from an agricultural to industrial and service-based economies, the plan for Helsinki University of Technology absorbed the efforts of various parties in Finnish society. This effort scarcely met the latter's expectations, however, as the combined effect of the demographic boom, urbanization, and social change made the influx of students rise dramatically over the same period. The government was forced to take additional measures, and the prospect of the creation of a series of new regional universities raised great agitation in the cities expecting to host them. In eastern Finland, for instance, the competition between the cities of Joensuu, Kuopio and Lappeenranta led to the foundation of three separate institutions, each with its own specialized fields. The latter was granted the field of technology, then seen as a strategic area, and the plan for the Lappeenranta University of Technology advanced immediately in 1967.

As Jaakko Nikkilä explained in his history of the university, the city of Lappeenranta had been already contemplating this possibility for some time. One of the scenarios considered was the reuse of existing facilities dispersed

around the city, and another was to place the future university within the city's old fortifications.[8]

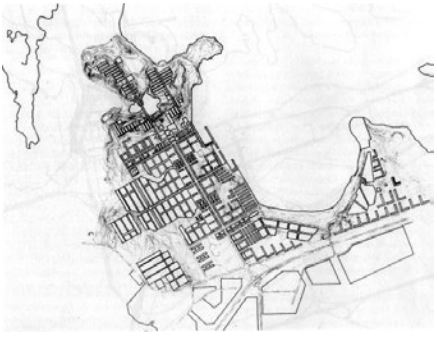
The former military area, located north of the city centre, presented a promising point of departure; but then again, adding new buildings, including special laboratories and a nuclear reactor several storeys high, to an 18th century environment consisting of timber and stone constructions would have required skill and patience – whereas building the campus in a suburb offered comparatively few constraints. That was probably what led the city officials to take an anticipatory move in 1965 and buy an estate of 102 hectares on the peninsula of Skinnarila, six kilometres northwest of the city centre.[9]

Once the decision was taken, the author of the city's town plan, Olli Kivinen, was asked to amend the master plan for the Skinnarila area. Kivinen proposed locating the campus's teaching facilities on the north end of the peninsula. On its south end, the campus faced a new residential area, together forming a compact urban district cut through by an access road. Like other town plans from the period, Kivinen's plan was based on statistics that overestimated the effects of post-war growth. The population of Lappeenranta was expected to double in size from 50 000 by the year 2000, but peaked then at 70 000, and as the projections of suburban expansion did not materialize, the area reserved for the new district, roughly three times the campus area itself, remained sparsely occupied. Eventually, it proved difficult to convince even the Student Association to build its student residences so far away from the city centre. Furthermore, as the campus started to grow in the mid-1970s, heavy industry vacated Lappeenranta's city centre, leaving behind a series of potential plots and buildings in the downtown area.

In 1968 the Lappeenranta University of Technology created its own Building Board. The Main Building designed by Aalto for Otaniemi was then nearing its completion and the Professor of Mechanical Engineering at Helsinki University of Technology, Torsti Verkkola, was invited to prepare the preliminary programme for the new university.[10]

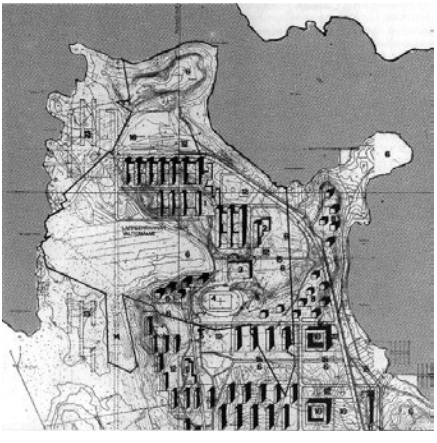
At the same time, the National Board of Building asked for a consultancy from the University of Stuttgart's University Planning Central Archive in order to create a new model for the concept and location for the new universities.[11] Later that same year, Kari Virta won the international design competition for the campus of the University of Oulu, and his proposal became the pilot project for the generation of university plans in Finland.

These contradictory follow-ups show that the city of Lappeenranta had been obstinate with its move. The report from the University of Stuttgart, for instance, expressly recommended a central location for the campus.[12] More importantly, Virta's compact, socially-driven concept for Oulu seemed to be in contradiction with the choice of a site which offered as its main asset its natural features, suggesting more likely a dispersed occupation.



Olli Kivinen, Master plan for the Skinnarila area, Lappeenranta (1967). LUT.

The university campus merges with a residential orthogonal grid on its southern side. The planned access is axial to the campus.

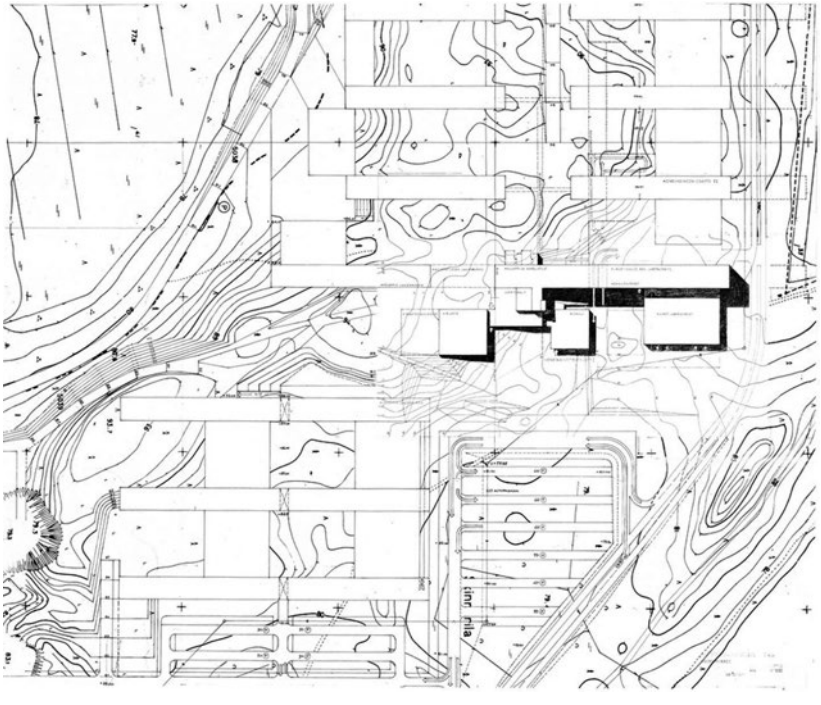


Jaakko Kontio and Kalle Räike, Lappeenranta University of Technology (1969-1989). LUT.

The Main Building, placed in a forest area south of the existing Skinnarila Manor, is served by a highway which runs along the eastern shore of the peninsula. The currently existing residential and service areas were not built according to this plan.

Lappeenranta University of Technology. LUT.

Aerial view, c.1975.



Lappeenranta University of Technology. LUT.

Plan of the Main Building, with a linear wing connecting three special wings (from left to right): the library, main hall, and laboratory. Extensions to the Main Building could in theory be made systematically by adding new parallel wings to it.

Compactness

As mentioned in *Chapter 1*, the decision to locate Helsinki University of Technology in a partly forested and agricultural area outside Helsinki was essential to the idea of combining the teaching-studying and living facilities with a generous landscape and outdoor life. The client's clear-mindedness in this respect – the autonomous Building Board personified by Otto-Iivari Meurman – was key to the success of the project. Furthermore, the creation of the Otaniemi Building Board allowed the client and the architect to avoid the normal process of supervision of the National Board of Building; later, this autonomy was used to steer clear of the local planning authorities. Meurman and Aalto negotiated directly regarding the planning and design decisions. This process may have been paternalistic rather than democratic, but from the architectural point of view, it guaranteed that the decisions conformed to the main concept, even when Aalto had to concentrate on the construction of the Main Building and the design of the various departments and laboratories were assigned to different offices. It was at this stage that Kontio – who had been working on the plan as Aalto's collaborator – was invited to design the earlier-mentioned Mechanical Engineering Laboratory (1962-1965), as well as the Flow Laboratory (1963-1967) and the Department of Mechanical Engineering (1963-1967).[13]

When these buildings were successfully completed, the National Board of Building's representative, Risto Ruso, invited Kontio and Räike to visit Lappeenranta, and proposed that they plan also the new university campus. Kontio recalled:

> *At his suggestion, we travelled to Skinnarila equipped with skis. We skied across the forest area and thought about the placement of the main building and road network. And we remembered how we had done the same kind of surveys together in Otaniemi.*[14]

The Skinnarila site had indeed somethings in common with Otaniemi: a peninsula with a gently sloping topography, consisting of forest, flat fields and vast shorelines, and hitherto occupied by an early 20th century manor house. But there are important differences between the two commissions which deserve to be examined.

As discussed earlier, since the launching of the Otaniemi plan, Finland developed its administrative structure by introducing reforms that made the planning processes less hazardous (in the sense that they limited individual power), but also softer (as they diluted the responsibilities of the various parties involved). In Lappeenranta, the replacement of one synthetic point of view by many specialized ones is attested to by the absence of architects in the Building Board. For a comparison, in Otaniemi there had been two architects and one

architectural student.[15]

Another important difference was that the Lappeenranta University of Technology resulted from a direct commission. Since Finland has since a tradition (going back to the 1860s) of promoting open competitions for the design of public buildings,[16] the decision to handle the project to Kontio and Räike directly raised even some controversy among colleagues.[17] It should be said that this choice was not unparalleled, however; this was the case, for instance, in the campuses for the University of Joensuu (1972-1985) by Jan Söderlund and Erkki Valovirta, and Tampere University of Technology (1973-1983) by Toivo Korhonen. The criterion in all these projects seems to have been the architects' previous experience in the planning and design of university buildings.

We have seen, through the example of the Otaniemi campus, that competitions can help the client prepare itself for the project. In addition to professional transparency, competitions also promote bold and new ideas. Aalto, himself a great competitor, used to say that along with an occasion for public discussion, competitions provide inexpensive research for the client.[18]

But by the same token, it could be argued that competitions demand excessive unpaid work from the architects (the exception are invited competitions, where all participants are guaranteed a payment), and that competitions dissuade the refinement of experience. If in Lappeenranta the idea was to build upon the existing experience, then one would expect to see a further improvement on that experience or at least to see it clearly affirmed. Yet, in spite of some similarities between the two projects – particularly at the lower levels of scale, where Kontio and Räike adopt a series of typical configurations, dimensions and details – the plans follow different strategies.

In Otaniemi, Aalto relied on small units to explore the interpenetration of buildings and landscape. In Skinnarila, Kontio and Räike introduced the idea of a continuous complex laid over an orthogonal grid. The preference for a compact building complex is common to all the university plans from the period, and among other things reflects – perhaps even more than a serious interest in the exploration of the possibilities of social interconnectedness underlying the compact model – the influence of the National Board of Building's guidelines and standards regarding spatial and energy efficiency.[19]

The land use plan by Kontio and Räike, which concentrates on the main university building, gives only a vague indication of the future development of the campus research, services and residential areas (indications nevertheless rejected during the course of the planning). The architects placed the Main Building nearly in the same position proposed by Kivinen on the north end of the peninsula of Skinnarila, but with the orientation of the wings shifted at right angles in relation to the latter's plan, thus oriented north to south. A new feeder road was opened parallel to the shoreline (rather than running through the centre of the peninsula), passing tangential to the Main Building and leading directly to the

car park and bus terminal.

The draft plan proposed by Kontio and Räike consists of a series of 15-metre-wide prisms placed parallel to each other at 45-metre intervals and connected along a transversal hallway. The first three planned buildings – from a total of seven – were designed and built in separate stages by Kontio and Räike, and this basis served for the implementation of new designs up to the present day.

The design of Stage I was completed in February 1971. It comprises a standard wing containing workshops and classrooms and terminating at one end with lecture halls and the administration, as well as three individual wings containing the library, the main entrance and canteen, and a special laboratory, respectively. Also included in this proposal, but to be built at a later stage, was a main auditorium with a trapezoid plan and inclined elevation. This special volume, which remained unbuilt, would have provided the vertical counterpoint to the group. The final revision of this project is dated June 1972. The lack of substantial differences between the first and the final revisions reflects, on the one hand, the architects' experience and conservative approach to the problem and, on the other hand, the lack of objections from the client. Plausibly, the client's priority was to have the university ready and functioning as soon as possible.

This need to proceed on a tight schedule suggests yet another comparison with Otaniemi, where the successive delays provided the occasion for the testing and maturing of solutions. For example, in Otaniemi, Aalto proposed strategically to build the secondary buildings ahead of the main ones in order to guarantee that the entire complex would be built (the strategy was possible since the Helsinki University of Technology continued operating in its existing premises in the city centre until the construction of the new campus was completed). In Skinnarila, by contrast, the first unit to be built was that containing the main services and administration. The construction of Stage I was completed in autumn 1974; Stage II, comprising the Chemical Engineering Department, advanced immediately afterwards, and the extension was inaugurated in 1979; Stage III, including the Energy Department and the special nuclear reactor, was completed in 1989.

4.2 Builders

In electing particular methods of construction and specific architectural elements, the designer and client have to consider first the availability of the products, the materials, and the labor skills required, and second the cost of available options in relation to the benefits promised … Conflicts between aesthetic and economic considerations are among the most frequent; the designer may elect brick exterior walls rather than exposed concrete because he thinks they look better and harmonize with surrounding buildings, but he may be unable to justify the high cost of the hand labour involved in masonry work as against formwork or concrete … In our time, the number of elements that can be made to order is steadily decreasing; the execution, for example, of hand-carved ornament is virtually a lost art; increasingly the choice of architectural detail is limited to what is offered in manufacturers' catalogs.

(James S. Ackerman)[20]

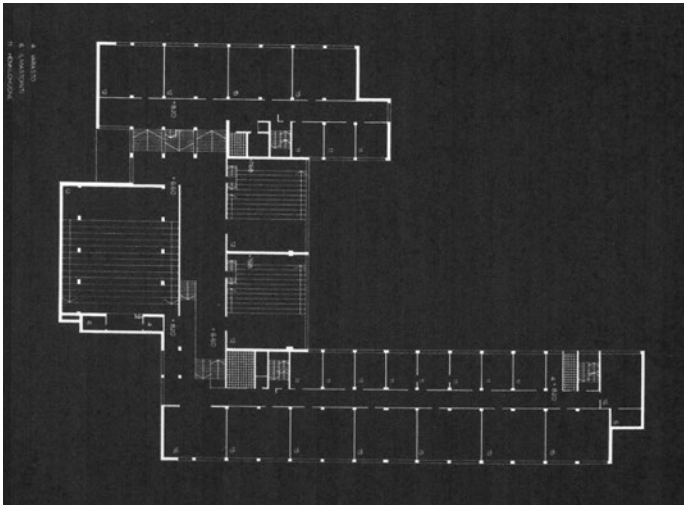
Cast in-situ concrete

As seen in *Chapter 1*, the post-war period in Finland provided contradictory conditions for building. In the case of Otaniemi, for example, the scarcities of the recovery years, combined with the availability of cheap, skilled hand labour, partly made it easier for Aalto and the engineer Magnus Malmberg to convince the client to make the walls of the buildings more durable by using a deep brick masonry construction and a mortar-bed 2.5 millimetres thinner than the standard 15 millimetres.[21] Furthermore, the piecemeal construction of the campus over two decades offered the occasion for Aalto to experiment with the constructional and decorative possibilities of a cast in-situ concrete frame clad both internally and externally with brick. Paradoxically, this range of options became reduced as the economic conditions in Finland improved and, for example, in the later extensions to the Main Building Aalto and Malmberg had to resort to manufactured half-bricks which simulate a monk bond.[22]

Generally, architects decide the technology they want to work with within a specific context. The 1960s were a period of rapid material affluence in Finland, which radically transformed the relationship between the architect and the builders. When Kontio and Räike started designing the Department

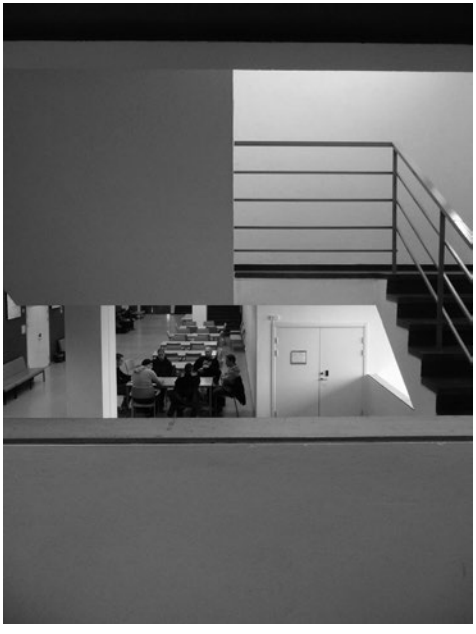
Jaakko Kontio and Kalle Räike, Department of Mechanical Engineering, Helsinki University of Technology (1963-1967).

While the building forms an inner courtyard, the main theme is a cantilevered hall that is turned towards its external side. The expression of the exposed concrete plinth and the proportion of juxtaposed narrow and full-height ribbon windows, among others, brings to mind the architecture of Aulis Blomstedt. The Main Building designed by Aalto is visible on the background.



Department of Mechanical Engineering. MFA

Second floor plan. The longitudinal corridor divides the standard wings asymmetrically. The special rooms are placed in the transversal segment between wings.



Department of Mechanical Engineering.

A view from the mezzanine of the spatially articulated lobby.

Jaakko Kontio and Kalle Räike, Department of Mechanical Engineering, Flow Laboratory, Helsinki University of Technology (1963-1967).

This double height room, originally designed to accommodate special machines, has been converted into a cafeteria for the Aalto University Digital Design Laboratory.

of Mechanical Engineering in Otaniemi in 1963, in-situ concrete construction was mainstream and prefabricated concrete technology was fast developing. The Mechanical Engineering building, which stands opposite Aalto's Main Building on its northern side, is an example of how Kontio and Räike – following the principles put forward by Aalto, and before him by Le Corbusier – made the most of the in-situ concrete's adaptability both horizontally and vertically. The building's U-shaped plan is carefully placed in relation to the terrain and vegetation; the inner courtyard serves strictly as a light source, and the main entrance, standing on the building's external side, is marked by a cantilevered volume. Studying the cross section allowed them to combine within this volume the entrance, a double-height lobby fed by multiple flights of stairs, a series of different halls and a canteen. The emphasis on this transversal wing confirms a general tendency in Otaniemi towards larger and more compact building volumes (rather than freestanding slabs) and represents the most visible variance in relation to Aalto's original master plan. Furthermore, in comparison with Aalto's buildings in the campus, the interiors of the Department of Mechanical Engineering make use of the constructive frame to express a cubic modulation of space reminiscent of Aulis Blomstedt's architecture, in particular the Helsinki Workers' Institute extension (1955-1959) in which Räike worked as Blomstedt's collaborator.

Kontio and Räike's Lappeenranta University of Technology can be compared with the Department of Mechanical Engineering, and hence with Aalto's buildings in the Otaniemi campus, in terms of its cross-sectional type, spatial expression and detailing. The design of the standard wing in the Lappeenranta project resumes a solution introduced by Aalto in Otaniemi, in which a longitudinal corridor divides the slab into a wider workshop side and a narrower service side. The relative autonomy between the structural and spatial elements means that the latter can be modelled and altered with greater freedom according to need. This potential is explored in Lappeenranta by Kontio and Räike, for instance, in the library, where a mezzanine opens towards a large curtain wall, and in general for instance, in subtle ceiling height variations, in partition walls which end short of the ceilings, or ceilings which end short of the building's external envelope. The details in Lappeenranta are well-built – e.g. the oak window and door frames, sills and rails, etc. – even if without the sophistication of those attained in Otaniemi – e.g. without the chamfered slab edges that allow natural light deeper into the interior, or the monk bond used to mark the buildings of special status in the campus. As in Otaniemi, the concrete frame of the Skinnarila buildings is clad with a single or double masonry wall, a half-brick deep. Kontio and Räike even chose the red brick from the same Paloheimo brickworks for the exterior walls (for the interior ones, they used chalk brick from the company Paraisten Kalkki).[23]

Prefabricated concrete

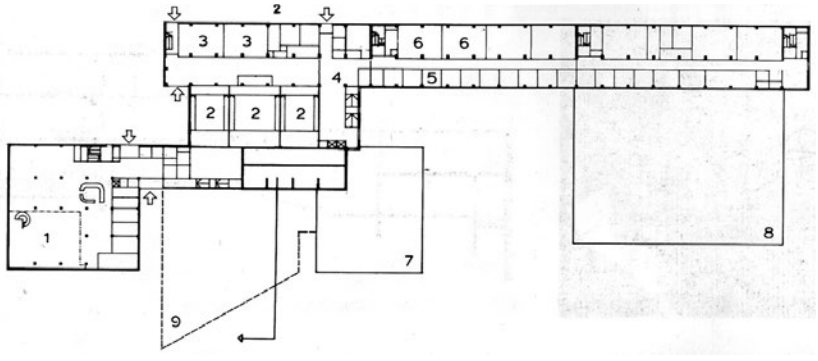
Between the completion of the Department of Mechanical Engineering in 1967 and the start of the plan for the Lappeenranta University of Technology in 1969, prefabricated concrete technology became widespread in Finland. Kontio and Räike themselves had the opportunity to experiment with the new technology in their project for the Heinola Technical Institute; but in Lappeenranta, they insisted in a solution which – as we have seen – can be traced back via the Department of Mechanical Engineering to the start of Aalto's *"red-brick period"* in the late 1940s.[24] Thus, the campus of Skinnarila, particularly the first stage completed in 1974, presented – as Nikkilä observed – one of the last attempts in Finland to build a large public building entirely on site.[25]

Kontio's explanation for the use of prefabrication in the Heinola Technical Institute, published in the magazine *Betoni* (4/1968), provides (as a negative) some insight into the option chosen in Lappeenranta.[26] Kontio emphasises the experimental character of the Heinola project, stressing that this particular commission provided from its inception favourable conditions to explore the new technology, and with the broader aim of testing *"the efficacy of prefabricated concrete technology, taking into account its use in school building projects."*[27]

The prefabricated elements used in Heinola consisted of pre-stressed pillars and beams, which allowed the creation of large spans, and with sandwich elements for the facades, which presented a notable technical achievement by compacting the finishing and insulation layers into light and efficient prefabricated elements. In Otaniemi, the exterior walls, including the one-brick-deep outer leaf, the intermediate filling, and the inner cover of plaster and ceramic tiles, could grow up to 50 centimetres. As Erkki Mäkiö has pointed out, in a world of increasing quantification, where budgets have to account for all quantities of materials and every square metre of space, even a small reduction in the wall depth resulted in important savings.[28]

But perhaps the most important change claimed for the new prefabricated systems concerned the construction process itself. Concrete elements can be accurately planned and manufactured, and then transported to the site and assembled by a reduced number of semi-skilled workers, consequently avoiding the lengthier and more unpredictable process of casting concrete on site.

In his article, Kontio claimed that the competitiveness of the prefabricated construction was increased because, unlike in-situ concrete construction, the former can progress all year round without winter interruptions, and in the case of the Heinola project, moreover, because the elements could be produced by a local manufacturer, thus dispensing with the otherwise expensive transportation costs.[29] Kontio's reasoning shows that he did not simply accept the new solutions deterministically. His endorsement of prefabricated technology recognizes a potential in the systematic quality of the new technology but, unlike other techno-



Jaakko Kontio and Kalle Räike, Lappeenranta University of Technology, Stage I. LUT.

Second floor plan. The rooms in the standard wing are placed asymmetrically on each side of the corridor. The special wings extend from the latter to the courtyard: library wing (1), main hall and restaurant (7), and laboratory space (8). The dotted triangular area between the library and the main hall was reserved for the construction of an auditorium (9), which was not built.

Lappeenranta University of Technology.

A View of the courtyard showing the staggered windows motif. The planned auditorium extension would have partly occupied this space.

utopian viewpoints voiced at that time, is based on a practical evaluation of the circumstances rather than on a general ideology. Nevertheless, a certain enthusiasm in Kontio's text – which can partly be explained by the technical character of the magazine *Betoni* (a magazine produced by the Concrete Association of Finland for the purpose of promoting concrete construction) and it being targeted at building professionals – appears contradictory, not so much in regard to the different path subsequently taken in Skinnarila, but rather with his own later accounts of the emergence of concrete prefabrication as *"the most depressing aspect of this period"*.

Kontio observed that the systems used in Heinola favoured the creation of the type of flexible workshop spaces required by the spatial programme of a technical institute. Similarly, he found the rough external appearance of the concrete elements to be appropriated for a school used *"predominantly by boys"* (sic). By the same token, Kontio conceded that the system would be less suitable for creating a richer spatial articulation and expression, i.e. create spaces to be used *"predominantly by girls"*. On this point, Kontio is hinting that in architecture, economy may amount to more than reducing a design system to a few components and combinations, or economising with the building process *per se*. It is implicit that notwithstanding their efficiency and economy, the new prefabricated concrete systems could not offer the same range of solutions as cast in-situ technology.[30]

In addition to its spatial flexibility and adaptability, cast in-situ technology promotes a dialogue between the architect's design and its material execution on the building site, where the solutions are often improved and personalized by the skills of the builders. By contrast, the principle of prefabrication presupposes the anticipation of construction within the planning and design stages, as well as limiting a certain choice of suppliers and products. As still evident in Finland today, the effect of this change was a brutal reduction in spatial and plastic possibilities: it took decades to lessen the negative impact of this by expanding the company catalogues, i.e. by gluing different surface finishes to the sandwich elements, a development that often perversely heightened the complicated nature and expressive limitations of the concrete elements.[31]

The previous explanations suggest some of the motives that may have led Kontio and Räike to return to a cast in-situ concrete construction in the Lappeenranta University of Technology. The competition introduced by prefabrication meant, however, that the conditions for the use of cast in-situ construction were no longer the same than in Otaniemi. In this respect, it is telling that Kontio and Räike tried to work with a familiar building contractor, a consortium of two local companies, Evälahti and Potinkara, the builder Kauko Evälahti being an acquaintance from the time when Kontio worked as a collaborator of Aalto on the design of the Church of the Three Crosses in Imatra.[32]

It could be expected that the quality of building construction would simply rise with the technological progress and the improvement of the economic conditions in Finland. Seen retrospectively, this was generally not the case. In

Kuva 1. Palolaitos kootuna. Pystyynnostettujen pilareiden kannattamat primäärijänteet työpajahalleissa ovat noin 30 m pitkiä. Nälden varaan on ladottu ripselementit ja edellisvyt. Julkisivut ovat pääasiassa kerroselementeistä tehtyjä.

Teksti ja kuvat

Arkkitehti Jaakko Kontio

Täyselementtirakenteinen ammattikoulu

Täyselementtitekniikkaa on lähinnä käytetty asuintalojen ja teollisuus-varastohallien rakentamisessa. Sen sijaan julkisten tilojen toteuttaminen on tapahtunut yleensä traditionaalisilla tavoilla. Betonielementtejä on käytetty viimeksimainituissa lähinnä vain julkisivumateriaaleina.

Ryhdyttäessä suunnittelemaan Heinolan seudun ammattikoulua, ei tiedossa ollut, että massaa olisi tehty täyselementtisiä koulurakennuksia. Siten ei työryhmän käytettävissä ollut toisten kokemuksia tältä alalta.

Syyt täyselementtitekniikan valitsemiseen

1. Kyseinen ammattikoulu on poikkeustapauksen. Tämä merkitsi sitä, että käytännöllisen työopetuksen suunnittelut hallitilat olivat huomattavan suuria tuotteettisen opetuksen vaatimiin tilaihin verrattuina. Koska hallitilat vastaavat teollisuuden työhalleja, katsottiin valittu rakennustapa teknisesti mahdolliseksi.
2. Rakennustyö oli suunniteltu suoritettavaksi 2—3 vuoden aikana. Koska valtio rahoittaisi työtä, työmaa seisoisi keskeytyksettä. Tällöin elementtirakentamisen edut talvityönä tulisivat esiin.
3. Rakennuspaikan läheisyydessä sijaitsee elementtejä valmistavia tehtaita, jolloin kuljetuskustannukset olisi muodostuisi liian suuriksi ja kilpailuakin oletettiin syntyvän.
4. Halutttiin saada kokemuksia elementtirakentamisen sovelluvuudesta koulukohteeseen ja sen vaikutuksesta rakennuskustannuksiin.
5. Koulusuunnitelma perustui kutsukilpailuissa voittaneeseen ehdotukseen. Työryhmä, jonka

Kuva 2. Ripaleyelementteihin on asetettu valuun L-levy alustilkan parantamiseksi. Betonipinnat käsiteltiin yleisesti Vetonit-tasoitteella ja maalattiin Latex-maalilla.

10

Page from Jaakko Kontio's article in the magazine *Betonituote* 4 (1968).

Kontio uses the Heinola Technical Institute, a project which resulted from a winning competition entry in 1965, to discuss the pros and cons of prefabricated concrete element technology. Kontio and Räike's competition entry motto *"Sarjakytkentä"* [Serial connections] denotes the technically progressive character of the project.

Jaakko Kontio and Kalle Räike, Lappeenranta University of Technology. LUT.

The building under construction: the horizontal slabs protrude slightly from the pillars to carry the load of the masonry walls.

addition to the motives from industry discussed above, it might be speculated that during that same period labour costs increased sharply. Besides, it is conceivable that part of the financial savings obtained by cheaper building processes ended up being transferred to other areas than architecture (a supposition which would require a study of the ratios reserved for building in comparison with the total budget for higher education, including research materials, human resources, etc.). More certainly, it seems that for the clients – in this case, the state – building quality and durability gave priority to the prospect of building more and faster, and the short-term gains allowed by off-site manufacture came at a price.

4.3 Users

To some extent … the problem is not that the architect fails to give people what they want but that people don't know how to want – that is, how to formulate their real needs and to distinguish what they perceive as needs from mere habits of behaviour and clichés of expression. The architect cannot compensate for this failure because both he and his clients are moulded by the existing social and ideological structure; the building they seek to realize is the shell of some social institution and cannot relevantly be more successful in design that the institution can be in function. Truly imaginative architecture that has worked has usually been built for vigorous, confident, and creative institutions. The uncertainties of our present institutions are revealed by the meaningless formalism of their new buildings, and the fault does not lie more with the designers than with the clients and users.

(James S. Ackerman)[33]

Open form plan

A comparison between the issue of *Arkkitehti* dedicated to Helsinki University of Technology (4/1966) and two later issues of the same magazine dedicated to the new generation of universities (3/1970 and 5/1973), shows how magazines follow closely the changes in society's expectations. The former takes a strictly professional viewpoint: it presents the Otaniemi Main Building through a set of drawings to scale, a written description by Aalto himself, and a selection of impeccable photographs of the various spaces which stresses the authority of the work.[34] The latter issues, by contrast, present themselves as a kind of forum, gathering the different views of designers and critics, administrators, students, engineers, social scientists, etc. Plans, elevations and sections give way to essays, research reports, schemes, and statistics tables.[35]

The sequence suggests that critics and designers converged in their concern to promote change towards a more democratic society.

The major inspiration at that time regarding university planning was Candilis-Josic-Wood's plan for Berlin Free University (1963-1973).[36] Among other aspects, this project inverts the usual hierarchy between primary and secondary spaces by letting streets, corridors and infrastructure establish the dimensions and the directions of an otherwise modular plan. Accordingly, the external image of the

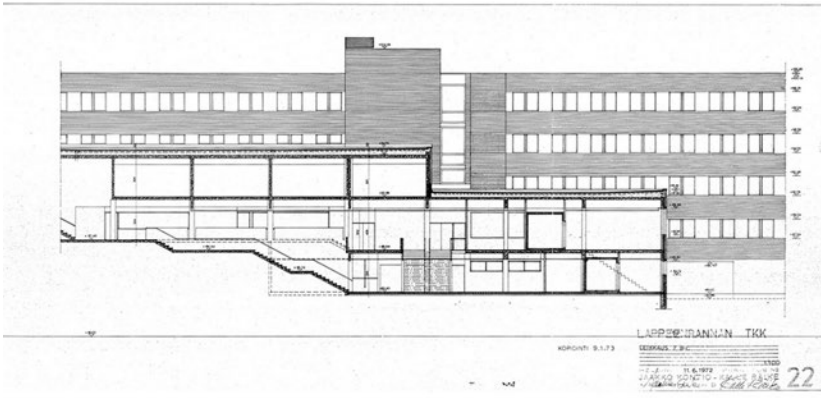
campus as a complex with a definitive building profile is replaced by the experience of a continuous interior space, with the spaces of transition becoming also more important than the (relatively neutral) rooms. Although only a small fragment of Candilis-Josic-Woods' so-called "mat-building" was completed, their project became a worldwide model for the construction of universities, including in Finland, as is evident in Kari Virta's plan for the University of Oulu (1967-1982).

Like the Berlin Free University, Virta's plan for the University of Oulu is a compact complex, laid over a polycentric grid and regulated by connecting major and minor channels, i.e. car traffic, circulation, ramps, bridges, mezzanines, mechanical ventilation, internal TV infrastructure, etc. The rooms thesemselves are undifferentiated and flexible. Virta's aim was also to avoid any kind of representation: *"the form of the university proposed in the development plan is by no means final, simply an overall picture drawn up on the basis of current data"*.[37] In spite of Virta's intentions, paradoxically, the effect was to invest the aspect of representation with a new strength: an architecture characterized by the lack of composition, the use of a ready-made components, and a direct (rather than articulated) language, as attested, for instance, in the preference for exposed materials or a simple layer of paint applied in a factory as finishes (a choice, moreover, made in accordance with a functional, rather than visual, colour-scheme).

The open form plan presented a challenge to the conception of a campus put forward by Aalto in Otaniemi. The dispersed model and the hierarchy between primary and secondary buildings adopted in Otaniemi followed a principle of hygiene and an ideal relationship with nature. The compact grid model corresponded instead to a principle of interdisciplinarity and a productive social environment. Thus, the experience acquired by Kontio – first as Aalto's collaborator, then in designing together with Räike several projects within the plan of Otaniemi – was faced with different expectations.

Kontio and Räike preserved some elements from Otaniemi but discarded other ones that could be described as characteristic for it, following in part the tendency towards flexible space, but without taking full advantage of the possibilities suggested by this alternative. In the plan of Lappeenranta, the relative ordering between buildings is altered: instead of a distinction between building landmarks and freestanding wings that follow the terrain in a picturesque way (as is the case in Otaniemi), in Skinnarila, the special programmes are contained within relatively unassuming wings, whereas the standard slabs – sited on the sloping terrain but brought up to a fixed height – assume the character of a plateau (an effect which was involuntarily accentuated, since the dominant vertical volume of the auditorium designed by Kontio and Räike was not built).

However, and contrary to Virta's University of Oulu, the compactness of the grid plan proposed by Kontio and Räike does not translate into actual spatial interconnectedness. In fact, the Kontio and Räike's design can be best described as



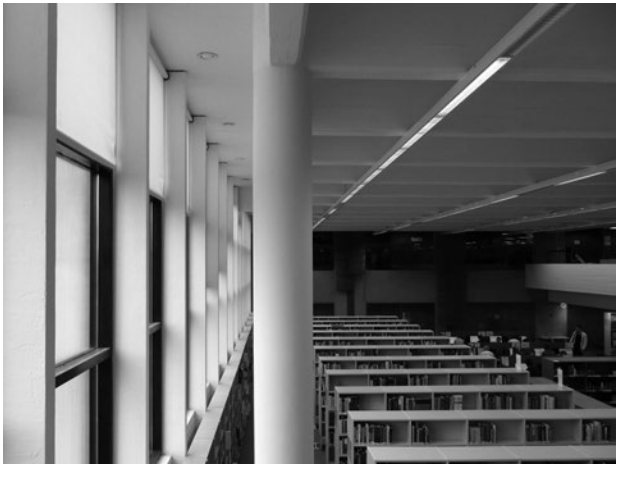
Lappeenranta University of Technology. LUT.
Section through the Main Building showing spatial interlocking.

Lappeenranta University of Technology.

The ceiling panelling ends short of the vertical plane to reveal the slab-beam construction. The stepped wall motif articulates the proportion of the internal stairways with that of the external slope. The double masonry wall is made of red-brick and chalk-brick panels on the outside and inside, respectively. At some point during the design stage, the client suggested using chalk bricks on both sides, but the architects insisted on the solution previously used in Otaniemi.

Lappeenranta University of Technology.

The library: a view from the upper part of double height space, entirely finished in exposed concrete.



Lappeenranta University of Technology.

Note how the cantilever allows the glass curtain wall to run quite independently from the slab-beam frame.

a fishbone plan, as it took years of planning development until a second transversal connection finally fed the circuit. Furthermore, wings rising up to six storeys and transversal connections concentrated on intermediate storeys hamper the effective communication between the various departments.

In Otaniemi, Aalto had been able to avoid the impression of overwhelming corridors by dividing them into smaller sections placed just off an axis, but the more rigid geometry adopted in Skinnarila resulted in longer and less interesting corridors. One exception to this is the main stairway between the entrance hall and the library, which forms the building's most distinctive space.

The interiors of the Lappeenranta University of Technology can be seen as an attempt to move towards a more popular language, as in Virta's Oulu University. Kontio and Räike chose saturated primary colours for the different interior spaces: e.g. blue linoleum floors, red carpets and yellow upholstery on the furniture. The original strong colours have since been replaced, however, by a monochromatic colour scheme.

Unknown user

In addition to the principle of flexibility, the university plans from the 1960s reveal a concern with the idea of a building's growth and change overtime. A series of utopian projects from that time envisaged structures which could be permanently transformed by the users' interaction, thus assuming every kind of possibility at any given time. This vision was discussed, for example, by Juhani Pallasmaa in the pages of *Arkkitehti* in 1967:

> *Planning is turning away from the individually directed and intuitive to the collective and methodically controlled, from the planning of a single object to the planning of general systems and structures, and from the planning of the permanent and final to the planning of the throw-away, the changing and the varying. Instead of planning forms, we are acquiring control and organization over the forces producing forms (technical, economic, social, physic). A constant process is compensating for the permanent, the happening for the fixed visual form and the measurable for the sensorily perceptible. This means a fundamental change in art and the task of the planner.*[38]

Although Pallasmaa's forecast was somewhat exaggerated, the dynamics he described reflect the anxieties resulting from the architects' awareness of their position regarding a rapidly changing society.

In this regard it is worth recalling Forty's definition of the *users* as the people who inhabit the building but have no power to participate in its conception and design, a definition that Forty himself completed with a reference to the

Dutch architect Herman Hertzberger and his effort to establish a conception of the architect for whom the measure of success *"is the way spaces are used, the diversity of activities which they attract, the opportunities they provide for creative reinterpretation."*[39] Instead of predicting the disappearance of the profession, Hertzberger highlights here, on the contrary, the increased responsibility of the architect as a mediator between the interests of the clients and users.

A comparison can be made between Hertzberger's position and the techno-utopian, Constructivist and Metabolist projects of this period, which trusted in technological precision as a means to create mobile or interactive systems, but which, contrary to their progressive intentions, have often resulted in clumsy spaces and inflexible products. On a pragmatic level, the Lappeenranta University of Technology stands as a counterexample to these projects, with the successive renovations and extensions to the campus suggesting that the plan possesses – if only inadvertently – this quality of flexibility. The geometry proposed by Kontio and Räike indicates how the complex can grow over time by adding new parallel wings to the Main building and transversal connections between them, and this strong geometric rule ultimately invites the idea of introducing exceptions to it, as it can be seen in the building extensions made later by different architects. The space between the wings presents a generous reserve for the potential later construction of wings and passageways. Furthermore, the distinction between constructive and spatial elements guarantees the possibility of spatial and visual corrections in a more natural way than the complicated sandwich-element technology. Even the choice of brick, a material which ages well and that communicates more universally than its more modern counterparts – i.e. exposed fair-faced concrete and sheet metal – proved to be appropriate. The several interventions made to the campus by different architects during the last three decades – notably, the new Main Building by Architects APRT (2000), which converted the former facade into an interior space – only strengthen this point.[40]

On a deeper level, however, the plan of Lappeenranta still suffers from an unprecedented emphasis on the demands of the actual users, which implied conversely a neglect of the dimensions of place and permanence.[41] For example, the fact that Kontio and Räike readily accepted to work on a vacant and peripheral site that could hardly sustain the kind of urban social activity that the compact model was purportedly trying to emulate. Perhaps the hidden motive for it was that this tabula rasa – presented in the name of the user – allowed for the exploitation of the high-density ratios inherent in the compact model, which certainly met the interests of the client (more than the users themselves).[42]

Aalto's approach in Otaniemi had been the opposite of this. Aalto considered it necessary to be cautious about the specific brief, in order *"to find out what in reality is behind the programme"*, and therefore satisfy its wishes in a manner *"that your work will retain social value and general usefulness for all human beings."*[43]

Aalto's plan suggests that one way to pursue this ideal is to value the geography

Jaakko Kontio and Kalle Räike, Herttoniemi Parish Centre and Retirement Home (1963).

The complex consists of a linear wing and a special hall that stands out from it, at once signalling the entrance. The 50-year-old building was marked for demolition after falling out of service in the late 2000s – the photo was taken at the start of the demolition works in 2015. The building no longer exists.

Jaakko Kontio and Kalle Räike, Lappeenranta University of Technology. LUT.

The auditorium designed by Kontio and Räike would have provided a vertical counterpoint to the complex. The extension designed by APRT Architects (2000) in part resolved this by turning the original main hall and restaurant (in the centre of the picture) into an interior space, thus increasing the volume and standing of the main building.

APRT Architects, Lappeenranta University of Technology extension (2000).

The original entrance and main hall were converted into an interior space. The external red-brick walls were preserved but the windows were removed, thus turning the restaurant into a mezzanine that overlooks the new hall. As the columns of the former portico ceased to have a special status, the decorative battens were also removed, leaving the concrete exposed.

Lappeenranta University of Technology. LUT.

Aerial view c.2010. The three first buildings designed by Kontio and Räike stand in the centre of the university complex. The new Main Building by APRT stands in a skewed position in the foreground. Heikkinen and Komonen's Stage VII extension (2002-2004) is placed in a perpendicular position contrary to the original plan (left), thus creating an enclosed courtyard. Heikkinen and Komonen's extension in fact offers a welcome spatial exception within the same grid system.

and history of the place: the Otaniemi plan was from the outset based on the natural and built features of its location. The campus was centred on the main auditorium of the Main building, the building having been placed on the exact location of an existing manor house, even utilizing its gardens, tree-lined alleys and vistas. As suggested in *Chapter 1,* the same of principle of spatial and temporal integration was used in the Jyväskylä Institute, as confirmed in this excerpt from Aalto's project description:

> *The town plan for Jyväskylä does not offer a fixed point for the overall solution to the university city. Its fixed point must be sought from the more important and less changing milieu … Treated like a park, the area becomes a first-class milieu, with a cheerful disposition, a correct orientation and, with regard to its views, directed towards the volcanic cone shape of Ronninmäki; in other words, something that is also related to the landscape.*[44]

Aalto's description brings us to some final comparisons. Like Otaniemi, Skinnarila also used to be an agricultural estate with a manor house. Unlike in the case of Otaniemi, in the case of Skinnarila, the decision was made was to preserve the existing manor house building, which still stands on the northern extreme of the campus and is used for various events. Hoever, if in regard to the former we can say that the demolished building still exerts its influence in the form of the campus, in the latter case – and since Kontio and Räike did not contemplate any existing gardens, routes and vistas – it can be said that the old structure has in fact been neglected.

Similarly, by grouping the wings into a single building, a large area of the forest had to be felled in Skinnarila, and as a result, the boundary between the buildings and landscape was further accentuated. To add to this contrast, the compact building model, with its profusion of interior corridors and sheltered alternatives, made the scenic outdoor walks – which had been an integral part of the circulation in Otaniemi – superfluous. No matter how cold Finnish winters might be, is it too romantic to believe that these walks provide a necessary psychological, physical and social complement to the time confined to the university's interior spaces? Indeed, all of these considerations had been contemplated in Aalto's broader understanding of the user.

1 Francesco Tentori, "Finland: works by the architects Keijo Ström and Olavi Tuomisto, Jaakko Kontio and Kalle Räike", *Casabella Continuità* 252 (1961): 35.

2 Op. cit., 34-39. The Vuoksenniska High School was later published in Finland; see Jaakko Kontio and Kalle Räike, "Vuoksenniskan yhteiskoulu, Imatra" *Arkkitehti* 3 (1962): 30-37.

3 Note the period of overlap between 1957 and 1960, during which Kontio worked both with and without Aalto. In the Studio, Kontio worked, among other projects, on the Seinäjoki Church (1951-1960), the Vuoksenniska Church (1955-1958), and the plan for Helsinki University of Technology (1949-1968). Kontio occupied for a brief time the post of Helsinki City Architect (1962-1963), before concentrating full time on his own office.

4 As Kontio himself explains in an introductory note, these writings were intended for his family and close friends – and thus were never offered for publication. It should be stressed that, with the exception of his journal titled *Euroopan Matka*, [European Trip] Kontio's *memoirs* are recollections of events and sometimes responses to other peoples' views of those same events.

5 E.g. Karl Fleig, Leif Englund, and Jaakko Suihkonen. The inclusion of a detailed list of collaborators in Kontio's memoirs confirms his awareness of the collaborative dimension of the office work. See: Kontio, *Arkkitehtitoimistot Historia*, 1-4 and Appendix 2.

6 Kontio, *Arkkitehtitoimistot Historia,* 3-4. One may ask whether Kontio's mention of the *"Mies van der Rohe way"* should be understood as a critique of Mies' work or the work of his disciples.

7 James S. Ackerman, "Transactions in Architectural Design", in *Distance Points: Essays in Theory and Renaissance Art and Architecture* (Cambridge: MIT Press, 2001), 25.

8 Erik Kråkström presented a proposal for the renewal of the Lappeenranta fortress area in 1964. See Nikkilä, *Muistelmia tulevaisuudesta,* 14-16.

9 This was a large and remote site, even in comparison with the Otaniemi campus for Helsinki University of Technology. The Otaniemi campus, which demanded a much more complex organization, occupied an area of 135 hectares, eight kilometres west of the centre of Helsinki and immediately adjacent to the garden city of Tapiola.

10 Verkkola was for that reason well acquainted with Kontio and Räike, who had then just recently designed the Department of Mechanical Engineering in Otaniemi (1962-1965). Nikkilä, *Muistelmia tulevaisuudesta,* 28-29. The final buildings designed by the Studio Aalto in Otaniemi were the Main Library (1961-1970), the water tower (1968) and the sports field Maintenance building (1971).

11 The Finnish architect Antero Markelin was at that time professor at University of Stuttgart. Koiso-Kanttila, "The programming of university planning and construction", 43.

12 Nikkilä, *Muistelmia tulevaisuudesta,* 18.

13 Later, Architects Kontio-Räike-Kilpiä also designed the VTT Research Department (1981) in Otaniemi.

14 Kontio, *Arkkitehtuuritoimistot Historia,* 98.

15 The Lappeenranta Building Board was chaired by the rector Erkki Kinnunen and city mayor Jarmo Kölhi. Other members included Tom Bröckl (representative of local industry), Lars Gahmberg (Student Union), Mikko Kaarna (regional elector), Valto Käkelä (Minister of Finance), Antero Kivi (Government advisor), Matti Louekoski (Ministry of Education), Lauri Hotinen (Ministry of Industry and Trade) and Risto Ruso (National Board of Public Building). Nikkilä, *Muistelmia tulevaisuudesta,* 26. For a comparison with the Otaniemi Building Board, see Nykänen. *Otaniemen yhdyskunta*.

16 See Pertti Solla, "Architectural Competitions in Finland", in Pekka Korvenmaa (ed.), *The Work of Architects: The Finnish Assocation of Architects 1892-1992* (Helsinki: The Finnish Association of Architects, 1992), 269-281.

17 See, for example, Markku Komonen, "Rakennushallitukselle vastineen johdosta", *Arkkitehtiuutiset* 10-12 (1971): 27.

18 Alvar Aalto, "Aims as SAFA Chairman", speech held in 1963, SAFA archives. Reproduced in *Alvar Aalto in His Own Words,* ed. Göran Schildt (Helsinki: Otava, 1997/1963), 159-160. It should be noted that Aalto was no champion of transparency; Päivi Lukkarinen has shown, for example, how Aalto won the invited competition for the Jyväskylä Institute of Pedagogics after having participated off the record in the preparation of the competition brief. Päivi Lukkarinen, "Acropolis in the Pine Forest", in *Jyväskylä University 1951-71,* ed. Mia Hipeli, vol. 16 of *Alvar Aalto Architect* (Helsinki: Alvar Aalto Foundation/ Alvar Aalto Academy, 2009), 11.

19 Kai Saurama, ed., *The Finnish Building Administration from 1961 to 1986. 175th anniversary publication* (Helsinki: The Finnish National Board of Building, 1986), 6-7. Note that from the point of view of the client, the possibilities of compact buildings concern not just people's circulation, but also the efficiency of the systems of

security control, heating and mechanical ventilation, etc. Considering the latter aspect in particular, the practices imposed by these *"efficiency"* standards seem rather questionable today.

20 Ackerman, "Transactions in Architectural Design", 26-27.

21 "Conversation 11. Eric Adlercreutz", 233.

22 Penttilä, "Building Alma Mater", 49.

23 Note that the Paloheimo company modernized its machinery and automated its production during the 1960s. Kauko Leiponen, *Suomen Tiiliteollisuus 1860-1978* (Helsinki: Suomen Tiiliteollisuusliitto Ry/ Tiilikeskus Oy, 1981), 268-273. Nikkilä called to my attention the connection between the Paraisten Kalkki Company and Tom Bröckl, the representative of the local industry in the building board.

24 Regarding Kontio's interest in Aalto's *"red-brick period"*, see: Jaakko Kontio, "Alvar Aalto and the use of brick", in *Alvar Aalto. The Brick,* ed. Hanni Sippo (Helsinki: Alvar Aalto Museum, 2001).

25 The later design stages were built using a variety of building technologies. Nikkilä, *Muistelmia tulevaisuudesta,* 33.

26 Jaakko Kontio, "Täyselementtirakenteinen ammattikoulu", *Betonituote* 4 (1968): 10-12.

27 Kontio starts by arguing that prefabrication had been hitherto largely associated with industrial and residential buildings, and in the case of public buildings, limited to facade elements. But there were previous examples of public buildings entirely assembled from prefabricated parts, notably, the Porthania building by Ervi (1949-1957), discussed earlier in *Chapter 1*. Op. cit., 10,12.

28 Mäkiö has claimed that the interactions between technology and more competent building codes and briefs have directly and indirectly influenced building form, for example: *"as an external wall, brick is, because of the need for heat insulation, thicker than structure dictates. A thick brick wall as an external wall is wasteful in building terms … It is clear that such considerations directed the development of building."* Mäkiö, "Changes in Building Techniques", 212.

29 Kontio, "Täyselementtirakenteinen ammattikoulu", 10.

30 Kontio's awkward distinction between departments for *"boys"* and *"girls"* seems anachronistic compared with the progressive social expectations at that time. Op. cit., 11.

31 Norri, "Prefabricated Madness", 57-59.

32 Kauko Evälahti used to work for one of Aalto's best clients, the forestry industry company Enso-Gutzeit. The latter offered to the Imatra Parish the plots where the Vuoksenniska Church was to be built, and also invited Aalto to design it. Kontio, *Seitsemän Vuotta,* 11-15. Kontio and Räike later designed two buildings for the Imatra Parish: the Tainionkoski Funerary Chapel (1960–1962) and the Parish Centre offices (1965-1968). Kontio and Räike worked directly with Evälahti for the first time in the Vuoksenniska High School, and later in a series of other projects in Imatra, including the Evälahti Company's headquarters (1961-1963). Kontio, *Arkkitehtitoimistot Historia,* 5, 27-31, 35-36, 69-70.

33 Ackerman, "Transactions in Architectural Design", 29-30.

34 Alvar Aalto and Elissa Aalto, "Helsinki University of Technology, Main Building, Otaniemi", *Arkkitehti* 2 (1966): 53-70.

35 *Arkkitehti* 3/1970 discusses in particular the preliminary conception and planning stage of the new universities in Finland, including the Skinnarilla site in Lappeenranta for Lappeenranta University of Technology, while *Arkkitehti* 5/1973 follows the development of the new universities, including Kontio and Räike's plan for Lappeenranta University of Technology. The changing attitudes can be perceived on a more superficial level, with advertisements for specialized products (preferentially those used by Aalto in Otaniemi) in the issue of *Arkkitehti* 4/1966, being replaced in the later issues by more generic advertisements for cars, cognac, etc. Incidentally, *Arkkitehti* 3/1970 introduced a new model of brick panels to be glued to concrete elements, which gives further evidence of how Kontio and Räike were working against the trends with their solution for a precast concrete frame and brick walls; see "Moduulitiili", *Arkkitehti* 3 (1970): 74.

36 The project for the Berlin Free University was discussed in *Arkkitehti* 3/1970, for example, in an essay by Horst Linde, the director of the University of Stuttgart University Planning Central Archive who had acted as the National Board of Building's consultant concerning the planning of new universities in Finland. See also, André Schimmerling, "Projet Pour l'Universite de Berlin", *Le Carré Bleu* 1 (1964), 1-5: http://www.lecarrebleu.it/en/1-1964/ [accessed 13.8.2018].

37 Kari Virta, "Location and plan for Oulu University", *Arkkitehti* 3 (1970): 44-45. See also: Vuorinen, "Hyvinvointivaltion avoin muoto".

38 Juhani Pallasmaa, "The Tenses of Planning", *Arkkitehti* 5 (1967): 31.

39 Forty, *Words and Buildings,* 312-315.

40 Architects Artto Palo Rossi Tiikka, "Curved campus portal. Lappeenranta University of Technology, 5th building phase", *Arkkitehti* 3/2001: 52-59; see also, Matti Kaijansinkko, "Brick and still raster", *Arkkitehti* 3/2001:

46-51.

41 With few exceptions, the new university plans tended to concentrate on the spatial and visual features of the mat-building model in abstract, remaining fairly indifferent to their location. Candilis-Josic-Woods' preoccupation with the problem of inserting the mat-building into the city was especially salient in their plan for the Frankfurt-Romberg centre (unrealized, 1963), and widely discussed in the scope of their participation in the Team 10 group. This aspect has been mentioned by Debora Domingo Calabuig, Raúl Castellanos Gomez and Ana Abalos Ramos, "The Strategies of Mat-building", in *The Architectural Review* 1398 (2013): 90-91. Another example of a mat-building which establishes a profound relationship with its place is Le Corbusier's plan for the Venice Hospital (unbuilt, 1965).

42 See, for instance, the examples presented in Horste Linde, "University planning – today's task", *Arkkitehti* 3 (1970): 32-34; and Juhani Katainen, "The university milieus / some examples from abroad", *Arkkitehti* 5 (1973): 55-61.

43 Alvar Aalto, "The Villa Mairea", text in the Aalto Archives, dated 1939. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 226.

44 Alvar Aalto, "Urbs", text dated 21.5.1951. Reproduced in *Jyväskylä University 1951-71*, ed. Mia Hipeli, vol. 16 of *Alvar Aalto Architect* (Helsinki: Alvar Aalto Foundation/Alvar Aalto Academy, 2009), 50.

Kaarlo Leppänen, Niilo Pulkka and Pekka Rajala, Rovaniemi Bus Station (1956-1962).
The undulating roof unites the cargo and passenger terminals and a small hotel on the upper floor.

Kaarlo Leppänen, Niilo Pulkka and Pekka Rajala, Sodankylä Bus Station (1962).
The station consists of a simple prism cut out by two inclined planes that create a sloping roof and a wood-clad portico, respectively. In this sequence, Leppänen, Pulkka and Rajala designed also the Kemijärvi and Nurmijärvi bus stations.

5. Kaarlo Leppänen: Valkeakoski Cultural and Administrative Centre, 1966-1973

In 1956, Kaarlo Leppänen, Niilo Pulkka and Pekka Rajala won the architectural competition for the Rovaniemi Bus Station. The Bus Station building, completed in 1962, has a rectangular plan divided into two terminals by a central double-height hall (now demolished), connecting the passenger and cargo wings at each side with a small hotel and restaurant on the upper floor. The building is covered by an undulating roof, the profile of which stands out in the townscape and relates it to the far wider landscape.[1]

The precision found in the architecture of the Bus Station reminds us immediately of Aalto's way of making architecture. Harri Hautajärvi has noted how the station's undulating roof is crossed transversally by a skylight which resembles that used over the altar in the Vuoksenniska Church (1952-1956), the project on which Leppänen was indeed working at the same time in the Studio Aalto.[2] It can be added that the undulating roof solution used in the Bus Station actually anticipates the curving motifs of Aalto's Lappia Hall (1969-1976) located only a few hundred metres away.

Leppänen worked in the Studio Aalto between November 1955 and February 1975, and his influence in some of the most important projects of the Studio at that time has been widely recognized by his own colleagues. They have recalled that Leppänen was a gifted draftsman, capable of knitting plans and sections into expressive spatial unities.[3] Yet, it can be difficult to distinguish exactly what Leppänen took from the Studio and what he brought to it during over two decades of collaboration. When confronted with the question, Tore Tallqvist replied with disarming openness:

> *I'm sure Kale has had an effect on the Vuoksenniska Church … Alvar was influenced by the people working in his office, as early as the late 20s and the 30s. Alvar has always used all sorts of influences available to him and developed them.*[4]

The extended period of collaboration between Aalto and Leppänen suggests a cultural identification, a connection further attested to in affinities for travelling, drawing, painting and sculpting.[5]

Leppänen's own house-atelier in Helsinki was located in a Jugendstil apartment block on the peninsula of Katajanokka, immediately east of the city centre. There, he designed a number of public buildings – including schools, libraries and courthouses – his most-well known projects being arguably the

Kaarlo Leppänen, travel sketch from the architecture students' 1951 excursion to Scandinavia with Nils-Erik Wickberg. KL.

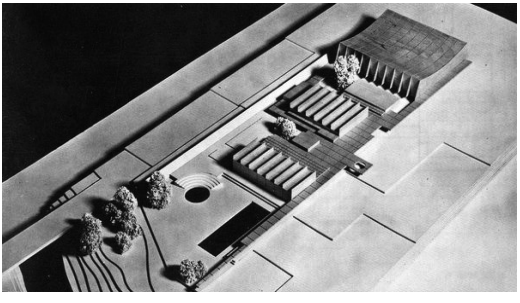
The Old Town in Aarhus, Denmark: note Leppänen's sensibility to surface and texture.

Kaarlo Leppänen, Helsinki Main Library in Itä Pasila, Helsinki (1986). KL.

Kaarlo Leppänen working with his own hands on a decorative relief.

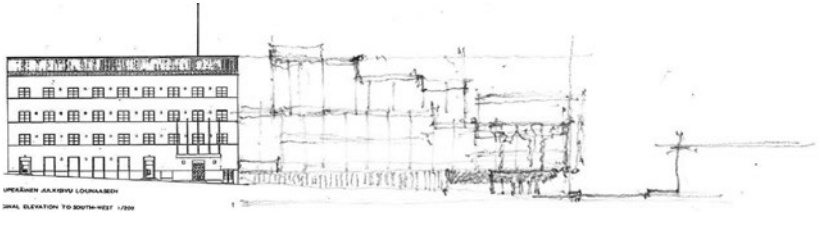
Kaarlo Leppänen, Competition entry for the Parish Cemetery and Chapel, Vaasa (3rd prize, 1968). MFA.

The contrast between different plot grids becomes the motive for locating the access to the chapel and service buildings. The new sections are organized in a fan shape and an undulating motif, respectively.



Kaarlo Leppänen and Vezio Nava, Competition for the Seinäjoki Swimming Pool and Sports Hall (purchased, 1973). MFA.

The outdoor swimming pool is completed by an outdoor theatre. The smaller halls are covered with saw-tooth roof structures. The larger hall is closed with a cable-roof structure which, albeit in a simpler form, is reminiscent of Aalto's competition entry for the Sports and Congress Hall in Vogelweidplatz, Vienna, Austria (unrealized, 1953).



Kaarlo Leppänen, Competition entry for the Music and Arts Centre,Jyväskylä (no prize awarded, 1997). KL.

The plot is adjacent to Alvar Aalto's Defence Corps building (1926-1929) – and represented on the left of Leppänen's sketch – and diagonally opposite to Aalto's Administrative and Cultural Centre (1964-1982). Leppänen's composition is accentuated in the inner side of the block and fragmented towards its corner.

Helsinki Main Library in Pasila (1986) and the renovation of Aalto's Finlandia Hall (1991-1999) – the latter, a project he had previously worked on a Studio collaborator.

While still working for Aalto, Leppänen started his own office and worked in teams formed with colleagues from the Aalto Studio on numerous architectural competitions.[6] As it can be confirmed by consulting *Arkkitehtuurikilpailuja* [Architectural Competitions] the supplement to the magazine *Arkkitehti* dedicated to architectural competitions, Leppänen received many monetary prizes and honorary mentions in the competitions he entered, but comparatively few of the first prizes he won actually led to the building being constructed.[7]

An exception to this is the 1966 competition for the Valkeakoski Cultural and Administrative Centre, in which Leppänen's entry, *"Agora"*, was chosen as the winner from among forty entries. The Valkeakoski project offered Leppänen the opportunity to design a civic centre, a theme that was very dear to Aalto, as seen in *Chapter 2*.[8] The original proposal for the Valkeakoski Cultural and Administrative Centre consisted of buildings for a Library and a Vocational School – completed in 1971-1973 and well received by the community – and a Theatre and an office extension to the nearby Town Hall – which were scheduled for a second construction stage. Though Leppänen continued to revise the project up until the mid-1980s, this second stage proved to be too demanding a task for the city, and the complex was never completed.

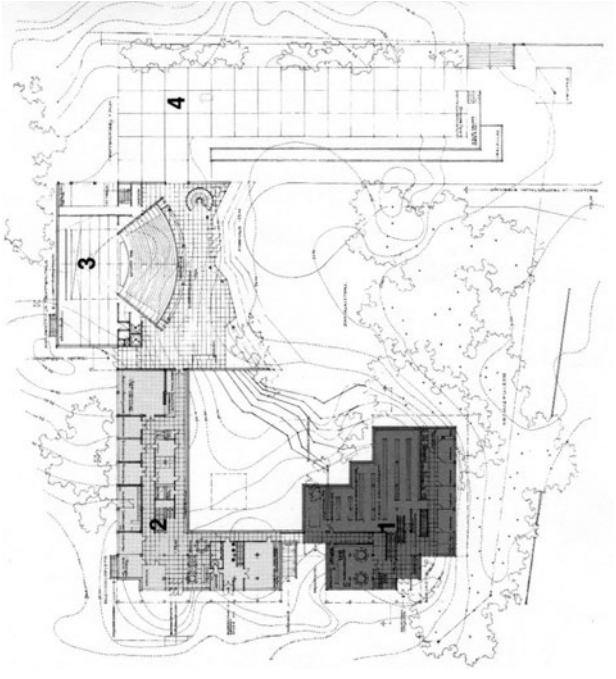
In order to examine Leppänen's project from the point of view of *craft,* I will introduce a distinction between three scales of elements, which in reality cannot be separated in his work: the *wall,* the *room* and the *city.*

Kaarlo Leppänen, Meri-Rastila Parish Centre, Helsinki (1993).

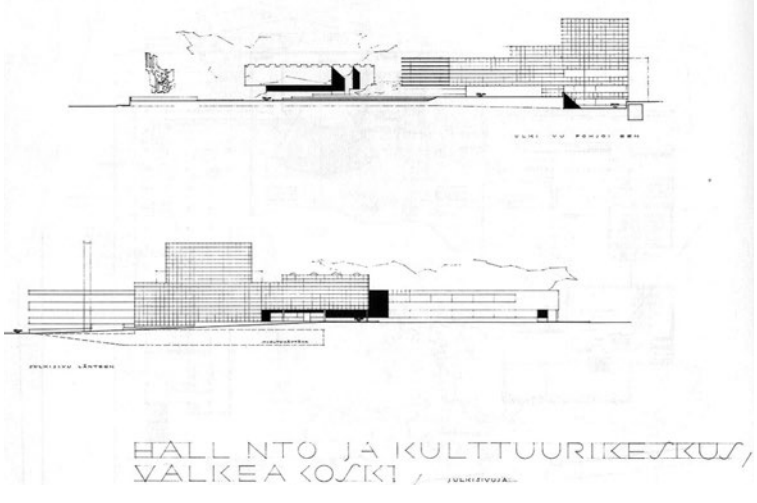
A composition of parts: the chapel is signalled by a lantern, turned against the street and connected to the yard by a projecting canopy. The club room on the other side of the building complex is covered by a composite roof.

Kaarlo Leppänen, Niilo Pulkka and Pekka Rajala, Rovaniemi Bus Station (1956-1962).

The modern exposed concrete canopy is juxtaposed with a concrete column covered with a wooden recreation of a classical motif.



Kaarlo Leppänen, Valkeakoski Cultural and Administrative Centre. VC.
Plan: 1. Library, 2. School, 3. Theatre (unbuilt), 4. Administrative Offices (unbuilt).



Valkeakoski Cultural and Administrative Centre. VC.
North and West elevations.

5.1 Wall

The word, the spoken or written word, has the most immediate impact on human beings; in contrast, matter speaks more slowly. This may explain why the materials that we are still using are so ancient. They need a long testing period to become effective in human civilization.

(Alvar Aalto)[9]

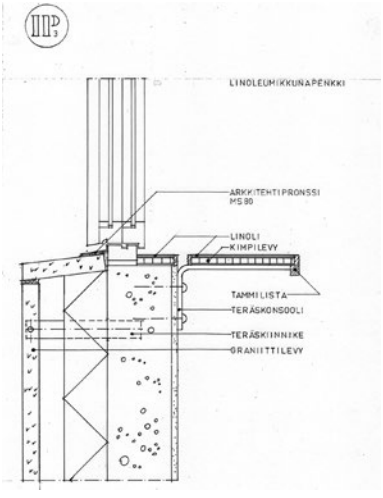
Choice and assemblage of materials

The exterior walls of the Valkeakoski Vocational School are finished in whitewashed brick resting on a plinth made of finely cut granite plates in alternating half- and full-height courses. The walls of the adjacent Library are clad with dark blue ceramic tiles. The latter are flat and wider than those used, for instance, in Aalto's Seinäjoki Town Hall, completed in 1965. The north side of the complex is marked by a park, while the main access occurs via a discontinuous portico on the south side, the soffit of which is clad in wooden panelling and with built-in lamps. The window and door frames are finished in a brass cladding – and pushing the main entry doors to each building feels heavy.

Leppänen's conservative choice of materials raises questions about him repeating ideas from Aalto's work. Aalto did not endorse a return to the past. Rather, he considered that materials, first used as found in nature, would undergo gradual refinement, and occasionally were transformed into new composite materials, and these in turn were also then subject to a continuous process of correction.[10] Aalto remarked that in architecture the stock of available materials improved and expanded slowly, and that consequently the component of experimentation remained more limited than in other fields*: "Everything we make is built to last at least the next forty years, sometimes even 150 years or more."*[11]

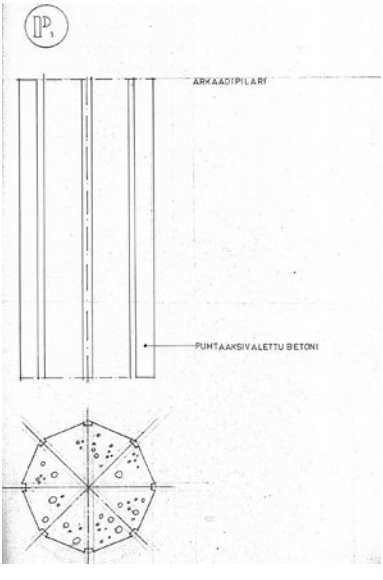
Leppänen complemented Aalto's previous explanation, referring to durability as a qualitative concept, meaning an understanding of the materials and their life-cycles, including their process of deterioration: *"One should be able to read the age of a building from its face, its façade. This thought implies an organic aging process."*[12]

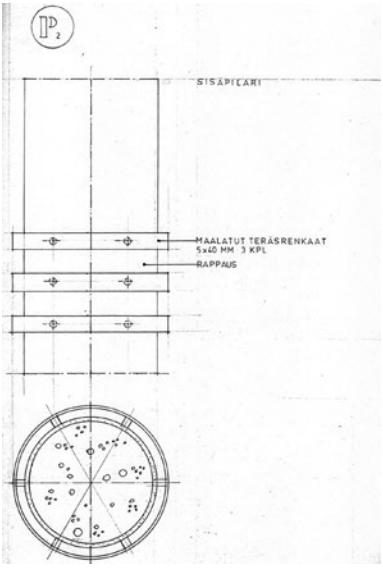
This preference for materials that are physically tested and culturally assimilated acknowledges a universal level of perception and understanding. The entrance to the Library in Valkeakoski combines a red ceramic tile floor with a dark wooden ceiling, thus producing a sensorial contrast with the bright and



Kaarlo Leppänen, Valkeakoski Cultural and Administrative Centre (1966). VC.

Detail of a window sill: the concrete frame is clad with granite plates on the outside, and wood and linoleum on the inside. Other variations of the inner detail include a simple oak boarding, and a composite solution with wood and ceramic plates.





Valkeakoski Cultural and Administrative Centre. VC.

Detail of an exterior exposed concrete column (left): the expression alludes to wood via stone construction. The columns In the interior spaces (right) have been given a smooth plaster finish.

lofty reading room on the upper floor. The transition from an open exterior to a low and dim interior, and finally to a lofty "open interior" space is both intuitive and memorable. Across this route, details capture one's attention: the stairs are covered with a soft carpet fixed with brass fittings, a gentle curve at the top of the handrail (the original upholstery has since been removed), and finally, a library reception desk designed for the purpose by Leppänen himself.

Equal consideration was given to the choice of materials on the exteriors of the different parts of the complex. The reinforced concrete frame is clad with stone, brick and ceramic tiles in order to establish visual associations between the different parts of the building, and between the building and the town. As Leppänen himself explained when referring to Aalto's architecture:

> *Blue ceramic was used mainly in the building's hierarchically most significant parts, to reveal the placing and position of the main spaces in the whole building. The elevations of the building should reflect the inner arrangement and also relate the building to its near surroundings.*[13]

Summarizing the issue as evident in the works of both Aalto and Leppänen, the modernity of architecture results less from the choice of certain modern materials than from a reflective understanding of the various possibilities at any given time. A new technology does not make the existing ones immediately obsolete, but rather alters their role. In primitive times, explained Aalto, wood was the sole building material, later it became an auxiliary to stone construction, and finally it gained new possibilities as a secondary building material: *"the working of wood means something different to me than it did say, to people in the Middle Ages."*[14]

But this same principle implies that not even the most admirable of Aalto's solutions can be simply taken for granted; the craft cannot avoid this dynamism. Aalto himself did not accept a conventional use of materials.

In Valkeakoski, Leppänen used wood as a surface material for its haptic properties and symbolic authority in boards, grids, frames, battens and pieces of furniture. Furthermore, he used wood as an auxiliary material during the construction process, as attested by the marks of the wood formwork on the exterior columns of the colonnade, which recreate a kind of classical fluting. These marks are an example of how an old material can inspire a decorative motif for a new one. The interior pillars, by contrast, have been given a plaster finish, and in special cases punctuated with three steel rings, as if representing a column base.

Leppänen revealed yet another understanding of the role of ornament when he suggested placing a monumental relief on the side façade of the library in order to give scale and character to an otherwise plain wall. However, this latter piece was never installed. Finally, Leppänen showed how cladding and panelling can function as a kind of ornament to accentuate and correct particular aspects; for example, the undulating wall that heightens the presence of the staircase in the

school's vestibule. Leppänen later explained this strategy in relation to Aalto's Finlandia Hall:

> *An architectural mistake was made when the balcony balustrade was cast out of concrete – Aalto didn't like precast concrete because it fixes the form too firmly and is difficult to rectify. Anyway, I told Aalto that the form is too harsh, the balcony protrudes … Aalto instantaneously asked me to put a wooden grille on there like so and change the direction to soften it … the mistake and the remedy form a good piece of architecture together.*[15]

In both Aalto's and Leppänen's architecture, the constructive and spatial elements converge or diverge intentionally as a way of ordering rooms and parts of rooms in relation to each other. In the secondary rooms, these systems merge into a plain and constructive expression, while in the main rooms, they give way to the visual and plastically articulated.[16]

Leppänen originally planned the Cultural and Administrative Centre as an ensemble made of four buildings enclosing a central space, and he characterized each part differently in order to provoke comparisons between them. In addition to the Vocational School and Library buildings, Leppänen also designed an office building extension – an L-shaped block including an arcade on the inner side – and a Theatre – partly contained in a free form envelope. If the Theatre and office building extension had been built, the juxtaposition of the stripped-down façade of the former with the latter's undulating wall would have given the Theatre building an appropriate dramaticality. Used to express contrast, the undulating motif, which Leppänen used also in the ceiling of the School's auditorium, therefore reflects the relevance of vision within the overall process of spatial perception, as Leppänen explained regarding the Finlandia Hall: *"Acoustics are not just about what can be measured … a human hears with his whole body."*[17]

Technical and artistic expression

Leppänen's drawings suggest that he conceived the undulating wall of the Theatre as a curtain wall, but there are no known documents explaining how he had intended to detail it. One may speculate whether he would have used a contrasting glass curtain wall, or simply brick, granite, ceramic tiles, or even the Carrara marble plates as used in the Finlandia Hall (and which caused so much political controversy as well as also later technical problems).

After the introduction of reinforced concrete technology in the late 19th century, the task of refining it and integrating it with other materials fell upon the architects of Aalto's generation. It could be said that Aalto's architecture explores the association of concrete with paint, plaster, wood, copper, ceramic, brick,

Kaarlo Leppänen, Valkeakoski Cultural and Administrative Centre, Library building.

The reinforced concrete frame behind the ceramic tile facade is revealed only as the columns touch the ground.

Kaarlo Leppänen, Valkeakoski Cultural and Administrative Centre, Vocational School building.

A view from the inner courtyard: the concrete frame, which is concealed from the exterior, can be hinted at from the use of horizontal windows and non-load bearing brick panels.

granite and marble. For instance, in the exteriors of the Seinäjoki Town Hall (1958-1965) and in the interiors of the Seinäjoki Library (1960-1965), Aalto explored the use of reinforced concrete in composite solutions, fusing solidity and purpose to an extent that ultimately suggests the dimension of individuality in architecture. But it would be a mistake to reduce Aalto's contribution to this last point.

Leppänen recognized the more universal dimension of this synthesis, which he saw as a constructively sound, as well as visually, tactilely and acoustically precise way of building:

> [Aalto] *saw the structure of a building as a serving component which had to adapt to the spatial form. Structure was always included and fully integrated into the architectural, space-making factors. For Aalto, structure was like bones in humans, surrounded by muscles, nerves, veins, and skin.*[18]

When looking at Leppänen's own buildings, one gets the feeling that he did not consider the work he did with Aalto or on his own as separate things. He used solutions with which he was familiar – often, solutions to which he had himself contributed first as a collaborator – and gave them general validity. But if Leppänen's designs reinforced the technical validity of Aalto's solutions, they also partly emptied them of their artistic value.[19]

Judging from the absence of buildings in Finland by other architects technically aligned with Aalto's "form language", as shown in exhibitions and publications, this aspect was much valued by critics at that time. As was suggested in *Chapter 2,* an artistic criterion is desirable, but an exaggerated emphasis on aesthetics may lead to the disregard of the limitations that solidity and purpose impose on architecture, and which make a building very different from, say, an art object in a museum collection. Moreover, in their attempt to promote originality, modernist critics risked falling into a kind of *"determinism of the new"*, that is, a situation in which each new generation successively ignores the previous efforts. As Ernesto N. Rogers put it, partly in reaction to the excesses observed at that time, in architecture *"works which use forms emptied of their substance are formalist … But works of the architects that assume the experience of the talented and embodied it in their own, not only are valid, they contribute to the diffusion of a language."*[20]

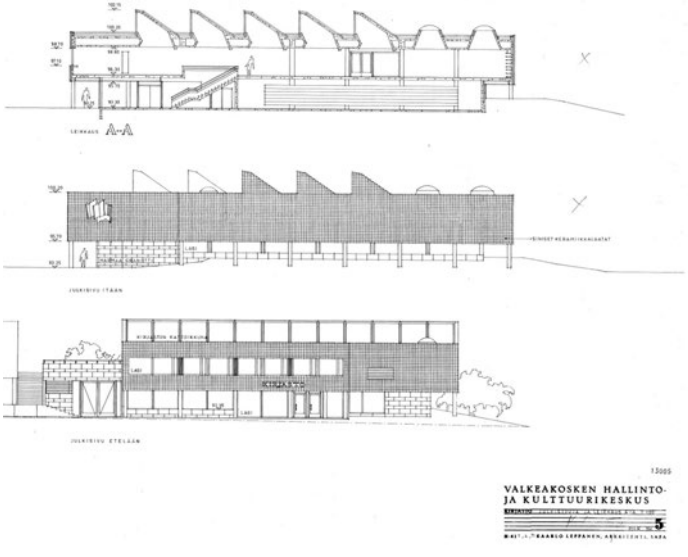
This search for originality helps to understand why many of the architects of Leppänen's generation started experimenting with the use of concrete in the structural skeleton and external envelope of their building. From the artistic standpoint, this route had the advantage of avoiding direct competition with Aalto. A famous example of this *"brutalist"* sensibility is Pekka Pitkänen's Chapel of the Holy Cross in Turku (1965-1967), a masterpiece in its own right. Pitkänen's building demonstrates the merits of attempting fresh starts: the effect of surprise and the silence achieved by using exposed concrete throughout led to a result that

was particularly appropriate for a ritual space. Then again, Pitkänen's building exposes also the limits of experimentation: in order to accomplish an image of simplicity, Pitkänen had to go to great lengths of technical sophistication – and yet, as Pitkänen himself recognized, the solution offered little general applicability:

> *We regarded concrete as a nearly everlasting material which had to remain clearly in sight. It required no covering with any 'false' surface layer … A real problem with the concrete of the 60s was that it has not resisted humidity and frost in the long run as durably as we believed. Concrete technology was not advanced enough.*[21]

Leppänen's indifference to the trends of the 1960s in Finland, e.g. his use of ornament and composition in Valkeakoski, make this case distinct from earlier and later uses of similar motifs by other architects. Moreover, the similarities to Aalto's work, which in other eras would have been accepted naturally – but which in Leppänen's time were among the reasons why his work was neglected – seem increasingly less relevant. In fact, from a historical point of view, their exceptionally might have only turned into an additional motive of interest.

Leppänen, travel sketch of the Parthenon, Athens (1960). KL.
Leppänen's view of the Ancient Greek ruins.



Kaarlo Leppänen, Valkeakoski Library, KL.
Longitudinal section: note how the compressed space of the entrance expands upstairs.
East and south elevations.

5.2 Room

In primitive times, the load-bearing frame of the building was virtually the only problem and the basic problem of architecture … The diminishing importance of the frame has made room for other problems and new basic elements in the architectural process.

(Alvar Aalto)[22]

Structure and space

The development and increased use of steel and concrete gradually allowed a freer treatment of mass and space. While wood and stone have an inherent material economy which can only occasionally transcend the human scale, steel and concrete have virtually no physical limitations, and therefore can be large without ever becoming monumental. Yet, this increased freedom also meant an increased responsibility for architects.

Both Aalto – as the opening quote attests – and Leppänen were aware of this problem. For example, the use of steel and concrete would have allowed Leppänen to solve the room programme for the Valkeakoski Cultural and Administrative Centre as a single structure. However, feeling that the invention of such a new form was unnecessary, he instead divided the programme into smaller parts, each preserving familiar associations with the familiar forms of the library, school, theatre, office, courtyard and square respectively.

Accordingly, the Vocational School is arranged as a L-shaped plan, with two storeys of workshops and classrooms positioned along the outer perimeter, and thus turned southwards and westwards towards the light, and a single-storey exhibition gallery turned in the opposite direction around a raised inner courtyard. At the end of the building's shorter wing, Leppänen altered the structural module to accommodate an auditorium, which required a special spatial configuration, with a wider span, a stepped stage, and an undulating ceiling. From the outside, the auditorium is signified by a small step in the building mass. At this point, Leppänen interrupted the continuous ribbon window by a closed brick wall, and on the lateral side, he placed a single window opening, its composite frame echoing the motif of the auditorium's stepped stage.

The Library is covered by large skylights which announce their presence from a distance and serve the main library space, located on the upper floor. While

Valkeakoski Library. Ari Yrjänä/VMM.

At the client's request, Leppänen redesigned the central reception desk in the 1980s: the desk is now separated into three parts, with a higher shelf that visually blocks the open space.

Valkeakoski Library.

Entrance transition. Note the use of the Artek 69 chairs designed by Aalto.

both the School and the Library have a colonnade on the south side, its meaning changes somewhat as it transpires that three sides of the Library are lifted up on pilotis. The main library space is accessed from a vestibule on the ground level, where there is also the newspaper reading room and exhibition rooms. Leppänen designed a complex stair with two flights turned towards the entrance, and a service flight running contrariwise between them. There is a play with symmetry and perspective, as the first stair as one enters is also slightly wider than the other.

The main library space is organized as an open space covered by five massive longitudinal beams divided transversally into square modules. Although, as there are no internal walls, the furniture can be arranged flexibly, Leppänen suggested a division between children and adult's areas, with a reception desk placed centrally, and with a second subdivision according to the type of illumination: shelving areas, 2.5 metres high and topped with conical skylights, and reading areas covered by a saw-tooth skylight rising up 5 metres.[23]

In Aalto's architecture, the idea of the library as a raised hall lit from above can be traced back to the Viipuri Library, a solution which can in turn be traced back to Gunnar Asplund's Stockholm Public Library (1922-1928). The limitation of outward views and the use of skylights as a light source have thus been justified by Aalto: *"reading a book involves both culturally and physically a strange kind of concentration"*, demanding from the architect *"to eliminate all disturbing elements."*[24] In the Valkeakoski Library, Leppänen followed yet another principle of Aalto's architecture by combining artificial and natural light sources, and designed specific lamps for the purpose.[25]

The other two buildings included in Leppänen's project can be analysed only in terms of their initial designs. In particular, the plan for the unrealized Theatre building, which was to be located immediately north from the Vocational School, was based on a simple segment of a circle – the main theatre auditorium – and partly enclosed by an undulating external wall. Leppänen's idea was to use the space between the former and the latter to create a charged foyer and mezzanine space. As Venturi pointed out, *"perhaps the boldest contribution of orthodox Modern architecture was its so-called flowing space, which was used to achieve a continuity of inside and outside."*[26] In contrast to this, Leppänen designed the inside and the outside with relative autonomy from each other, and even making use of the space created between them as a result of this strategy. As Venturi also explained, discontinuity between the inside and the outside acknowledges the fact that these spaces serve different purposes, even if at some moment their differences must be reconciled:

> *Architecture as the wall between the inside and the outside becomes the spatial record of this resolution and its drama. And by recognizing the difference between the inside and the outside, architecture opens the door once again to the urbanistic point of view.*[27]

Valkeakoski Library.

The vertical side of the saw-tooth skylight is prolonged to produce a hard shadow line.

Valkeakoski Library.

In this case, the curved surfaces produce a soft shadow line. Natural and artificial light sources coincide with each other.

Kaarlo Leppänen, Helsinki Main Library, Itä Pasilä (1986).

Large skylights span the double-height hall and suggest continuous extension. However, the internal space is organized around a particularized, circular motif.

Helsinki Library.

A view of the lecture hall: light, acoustics and infrastructure support the undulating wall motif.

Indeed, sensing that the theatre's stage tower – which, rising to a height of about 18 metres above the ground, would have been the highest element in the entire complex – could claim too much attention, Leppänen scaled it down by dramatizing the form of the lower base containing the foyer. These subtle articulations between inside and outside space can be compared to that of Aalto's Essen Opera House (1959-1988). Leppänen, who was the project-architect at the Studio Aalto at that time, recalled how it was essential to find the proper balance between content and form in that project:

> *We designed Essen in Riihitie and we had a free form plan. The stage was supported by four cruciform pillars ... Aalto hated a towering stage, nor should it be dominant where the flies and storage areas become the tallest and noblest part of the building. He wanted to assimilate it within the overall massing.*[28]

Exterior and interior

Leppänen put as much effort into the design of the space between buildings as he did in the design of the buildings themselves. As the project's competition motto *"Agora"* indicates, he was looking at the model of the classical Mediterranean architecture in which volumes configure a public space.

In the northern latitudes, in Finland, however, the problem of designing an enclosed outdoor space is heightened by the dramatic variations in the weather and sunlight: the low solar angle makes narrow exterior spaces shadowy and chilly, and wide exterior spaces desolate during the long winters. To solve this conflict between functional and symbolic aspects, Leppänen divided the outdoor space into two levels – a raised narrow space and a lower larger one – connected by a series of artificial platforms. Leppänen's intention was that, depending on one's position, the central space would acquire either the intimate character of a courtyard or the representative character of a square. However, as the complex was not entirely completed, the resulting space has the feel of a rear yard, connected through terraced levels to an open area of grass below.

Leppänen's original design shows that he was aware of how Aalto manipulated the configuration and scale of spaces. In Aalto's architecture, exterior and interior spaces often duplicate or merge with each other – i.e. recreating the experience of a landscape within an interior space, or that of a room within an exterior space – as Leppänen noted when comparing the Vuoksenniska and Seinäjoki churches:

> *The actual background was that he* [Aalto] *was commissioned to build a church in* [Vuoksenniska] *Imatra that would fulfil the multiple demands*

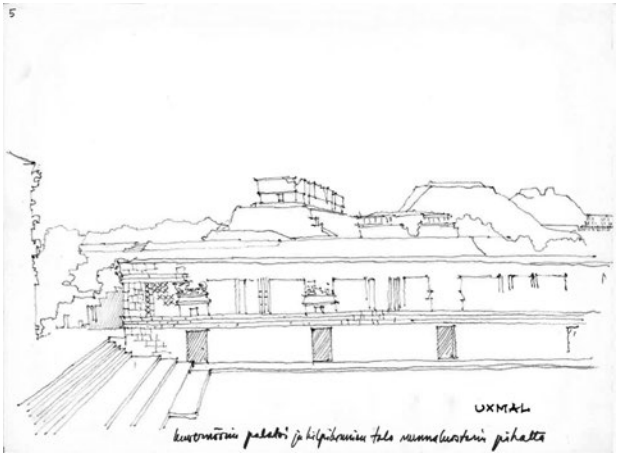
of a modern industrial community. That's why it's in three parts: there's the basic church and two other churches which you can use for a jumble sale or to play ball. And the doors in the back are wide so that you can stay outside too. It's the same in Seinäjoki, when the back doors are opened the entire courtyard serves as a church.[29]

This strategy of combining and/or fragmenting (both interior and exterior) spaces produces a tension between flexibility and adaption that is essential also in Leppänen's projects. In Valkeakoski, each space is partly closed to evoke a familiar archetype, and partly open to conform to a contingent feature, as demonstrated by the solutions for the library and the courtyard.[30]

As mentioned in *Chapter 2,* the technological developments and the emergence of a new spatial paradigm in the first half of the 20th century contributed to a crisis among Modern Movement architects. A feeling of doubt arose among the profession; in this context, Le Corbusier's rejection of the notion of a rupture with the architecture of the past, in favour of a process of creative engagement with it, suggested a possible alternative.

In trying to understand these developments, Sigfried Giedion proposed a division of the history of architecture according to three related spatial conceptions. The first era was characterized by the *"interplay between volumes"*, and was succeeded by the mastering of the *"interior space"*, and, finally, a modern era characterized by the exploration of the *"interpenetration of inner and outer space",* as Giedion put it.[31] This dialectic structure allowed him also to establish a bond between modernity and the past. For Giedion, the modern relationship to tradition, characterized by an attempt to preserve by transforming it, could be compared to that shaped at the end of the Renaissance era: "[With Michelangelo] *our mental picture of the renaissance begins to evaporate"*. Later in the same volume, Giedion hinted at a parallel between this transition, which he saw as the prelude of a new (Baroque) stage – and Aalto's position in relation to the Modern Movement. With Aalto, suggested Giedion, *"it was possible to strive for further development and to dare the leap from the rational-functional to the irrational-organic"*. Thus, Giedion distinguished the task of the first generation of Modern Movement architects, who launched the theses, from that of the masters, who proposed the prototypes, and from the so-called third generation, on whom he placed the expectation of furthering the dialogues between universal and particular, and between past and present.[32]

To conclude, the architects of what Giedion called the third generation faced a difficult task: the search for continuity comes with the risk of eroding the tradition itself. For Demetri Porphyrios, this was indeed the significance of Aalto's contribution, as he explained: *"heterotopic syntax, particularized composition, and typological design aimed, of course, at salvaging man's fading authenticity by instituting respectively indeterminateness, individualism and tradition as signs of*



Leppänen, travel sketch of Uxmal, Mexico (1965). KL.

Leppänen's sketch of the Ancient Maya ruins stresses the relationship between terrain and buildings.

Leppänen, Pukinmäki High School and Library, Helsinki (1985).

The library entrance transition: Leppänen manipulates height differences even in a two-storey building, which results in accentuating the horizontality of the composition.

creative endurance". And yet, continued Porphyrios, none of these solutions could guarantee per se the success of the work. It required an active sensibility, or as he put it:

> *If continuity was praised, it was not because novelty was despised, but rather because the latter would lose its significance if not measured against a relatively stable transmitted context.*[33]

In view of Giedion's, and even Porphyrios' interpretations, there is no reason to emphasize too much the opposition between the followers of Aalto's expressive form language – like Leppänen – and the minimalism of the above-mentioned Pitkänen and others, including Aarno Ruusuvuori, and Heikki and Kaija Siren.[34] On the contrary, the differences between the works of each group represent the dynamic exploration of the spatial possibilities opened by the same technological and cultural conditions, thus combining architecture's sense of purpose and play. In other words, these architects' works corroborate Le Corbusier's view that, for the architect, the problem presents itself in this way*: "the house is a machine for living … how?"*[35]

Risto-Veikko Luukkonen and Aarne Hytönen, Valkeakoski Town Hall (1953).

The Cultural and Administrative Centre seen in relation to the existing Town Hall (in the foreground).

Valkeakoski Vocational School and Library.

The contrast between the Vocational School (left foreground) and Library (left background) buildings and the high-rise residential block (centre background) heightens the presence of the former, thus indicating their special status in the town.

5.3 City

Formerly public events, spectacles, and ceremonial processions played an important role in civic life: the citizens were often personally and directly involved in such activities. For this reason, the placement of public buildings in the city and in relation to each other was so precisely weighed. They were parts of a living organism that was constantly renewed. Urban architecture still has an important task in reflecting the inner life of cities. It must ensure that the buildings that represent public life and citizens' shared spiritual needs – the needs to which a city owes its very existence – also form the city's inner silhouette.

(Alvar Aalto)[36]

Urban composition of parts

Located 150 kilometres north of Helsinki, between the lakes Mallasvesi and Vanajavesi, Valkeakoski is surrounded by rapids which were for a long time occupied by grain mills, before the establishment of the paper industry in the late 19th century. Valkeakoski grew as a closely-knit wooden town dominated by large red-brick factories. At the turn of the 1960s, it reached a population of 15,000 and began a plan of urban renewal that promoted the decentralization of residential areas, leading to the demolition of existing blocks of wooden houses and opening the way to the construction of new civic, service and commercial centres.[37] The competition for the Cultural and Administrative Centre occurred within this context; a beautiful plot on the southern bank of the canal built between the two lakes was reserved next to the then recently built Town Hall (1957) and across the bridge from the town's main market square.

In his prize-winning proposal, Leppänen reinstated Aalto's solution of an urban composition of parts, merging with the topography and profiled against the sky. Approached from the south, the complex would present itself with two ample colonnades – corresponding to the volumes of the Vocational School and Library, respectively – placed in false symmetry on either side of a central stairway. Behind this civic front, Leppänen designed an unexpectedly intimate inner courtyard, centred on a reflecting pool, and overlooking a sequence of descending terraces.

Aalto warned that in spite of their cultural and symbolic status, public buildings could hardly compete in terms of size with other modern constructions.

In the Avesta Civic Centre in Sweden (unrealized, 1945), for instance, he proposed arbitrarily skewing the plan from the urban grid *"to create a charming contrast"* and thus reclaim a special attention.[38]

Leppänen did not follow this principle in Valkeakoski, but rather observed another of Aalto's strategies. The civic buildings were gathered within a precinct, removed from the commercial and residential areas, and closed to the car traffic. Appearing from afar like a compact *Stadtkrone*, the plan developed in fact as a series of juxtaposed parts, loosely arranged around two outdoor spaces. The profile of the building group is low and articulated and consequently distinct from the urban fabric. As Leppänen observed about Aalto's architecture: *"the city doesn't have to be so tall in the centre, it can be lowest in the centre and rise towards the edges. Quite surprising!"*[39]

Approached from the east – where the complex is intersected at right angles by a second axis – Leppänen sought to dramatize the contrast between the civic and recreational purposes of the public complex by combining them in a single view. From this point of view, the dark blue volume of the Library building in the foreground would stand in counterpoint to the Theatre building, placed deeper in and rising above the Citizens' Square. But the latter was never built and this Citizens' Square – intended to be surrounded by public arcades – has remained an open lawn.

Rogers and Giedion, among others, have noted that Aalto's civic centres evoke the image of the Italian town by combining distinct parts into a composite plan. But Aalto did not simply accept a form-content convention; the significance of this evocation resides in the fact that he uses it to deliver a modern interpretation of the original by transforming the relationships between familiar elements. For example, in the Säynätsalo Town Hall, the tower (rather than the courtyard or "piazza") becomes the place of public assembly. Accordingly, the tower was dimensioned in order to accommodate a relatively large council room, which emerges as the processional focus of the building. By contrast, the grass covered courtyard is kept aside from the main access route and given a certain representational character.

This playful approach is evident also in the Seinäjoki Civic Centre. The complex consists of two interrelated units: the Church and Parish Centre and bell tower form a group on one side of a street, the tower standing as a vertical counterpoint to the horizontal group formed by an indoor and an outdoor space. On the opposite side of the street, the Administrative Offices serve as a background to the public square formed by the Library, Theatre and Town Hall (also vertically dominant). Here, again, one can consider a further subdivision, with the council chamber (dominant) and office wing providing a frame for the outdoor stairway. Leppänen was indeed very familiar with Aalto's compositional strategies of exaggeration and fragmentation:

> *It is significant that early in the design process the main motif, centred on*

the major space, would appear. In a city hall, this would be the council chamber. Other parts of the building would become the accompaniment to the main theme.[40]

In Valkeakoski, and in contrast with Seinäjoki, the parts of the composition were intended to be physically connected. The Theatre functions as the complex's dominant vertical, while the Library, Vocational School and Administrative Offices provide horizontal extensions on both sides, framing two interrelated outdoor spaces. The inward movement suggested by the placement of the dominant vertical in the centre of the composition is countered by the location of the entrances to the Library and Vocational School on the complex's external side. The dialogue between formal and perceptual systems provokes our expectations and invites us to walk through the public spaces. The joining of complementary and sometimes contradictory parts is accepted as a strategy of composition. We are reminded of Venturi's observation about Aalto's ability *"to create order out of the inconsistencies."*[41]

Building as a process of growth through time

The competition brief for the Cultural and Administrative Centre stated clearly that the new buildings should be physically connected with the existing Town Hall building, designed by Risto-Veikko Luukkonen and Aarne Hytönen (1955-1957).[42]

The need to integrate a pre-existing state into the new composition presents an interesting variation from Aalto's urban projects (this possibility had been considered in the unrealized design for the Kuopio Theatre from 1951). From a functional point of view, Leppänen address this problem with a somehow insipid tunnel that would have connected all the parts of the complex along the inner perimeter of the courtyard. Leppänen's solution is more compelling in visual terms, however. Luukkonen and Hytönen's building is a long volume, partly raised on pilotis, and accentuated at its east end by the pitched roof of the council chamber. The building is three-storeys high at the south end, and four-storeys high at the north end, where it assumes a prominent position next to the canal and rapids. Leppänen proposed that a new three-storey office wing would run parallel to the existing Town Hall, but terminating lower and shorter than it, as if acquiescing to the latter's status. Leppänen even marked this spot with a sculpture – from this location one would have diagonal views across the courtyard, and outwardly, through the suspended wing, over the canal. If this link would have been successively resolved, the composition could have been described as a partly open courtyard, marked at the centre by the Theatre auditorium and punctuated at opposite ends by the Library and the Town Hall, respectively, according to a

B-C-A-C-B scheme.[43]

This attempt to articulate the building in relation to the city involves both a physical and a temporal aspect. The idea of building as a process of growth through time, is something that Leppänen observed in Aalto's architecture:

> *The* [Seinäjoki] *complex is a fine example of how sensitively Aalto always managed to relate to an earlier, produced phase, and of how the buildings fit into a coherent architectural whole.*[44]

As was suggested in *Chapter 2,* for Aalto the idea of building a complex in stages was less influenced by financial considerations than by a wish to counter the "arrogance" of modern town planning practices, which, by coupling their ambition to anticipate reality with increasingly powerful means to transform it, promoted an architecture of instant effect: *"Answering with buildings, however, takes time"*, objected Aalto. Aalto's civic centres present a response to what he considered to be the rapid deterioration of urban space caused by modern planning, by insisting in the creation of positive outdoor spaces constituted by atriums, courtyards and squares.[45]

Aalto observed that in Classical architecture, the first required gesture for designing a square is the transformation of the topography. Typically, this means the creation of a horizontal plane; but in Seinäjoki, Aalto felt that the flatness of the site presented from this point of view a disadvantage and proposed to create an artificial topography which could serve as a starting point. As Charrington has observed, *"the only hills in Seinäjoki are the artificial mounds of the 'Aalto Centre' … but so natural do they seem now that most citizens and visitors have assumed they were always there"*. For Charrington, Aalto's understanding of the significance of the *"rising ground for urban design",* relates to his admiration for Mediterranean architecture and to the impression caused by Andrea Mantegna's Padua frescoes in his 1924 visit to Italy, in particular.[46]

For Modern Movement architects, the idea of monumentality substantiates this ambition to create modern public spaces and buildings worthy of the great architecture of the past. Aalto's own alternative to the theme, the plan as a composition of parts, sought to evoke also the quality of temporality, which in the past resulted from a process of accumulation of various projects within a larger project over a long period of time, by juxtaposing different geometries to suggest a process of building growth through time.

In Finland, the projects for civic centres often coincided with urban renewal plans. Impelled by rapid growth and welfare state politics, many small towns wished to accompany the country's transition from agriculture to industry and service sectors by promoting and concentrating public institutions in a representative centre. But the strategy of concentrating the civic institutions in one centre underestimated, however, the influence of the commercial programmes

Valkeakoski Centre.
The civic centre remained uncompleted after 1973.

which the process of urban and social change had itself set in motion. And as growth slumped and migration to these regional centres shifted to major cities in the transition to the 1970s, the premises of these plans remained partly unfulfilled. These contradictions help to explain why Aalto's civic centres have generally remained uncompleted (the Seinäjoki centre was completed posthumously when the premium of having a complete civic centre designed by Aalto had become obvious for the client). Thus, beyond an expressive and symbolic level, Aalto's design strategy continued dependent of a particular vision made in a particular moment in time.[47]

The same kind of contradictions affected the building process in Valkeakoski. For example, the competition brief for the Cultural and Administrative Centre demanded the preservation of the existing town hall and vegetation, and at the same time, the clearing away of any other existing constructions: *"the building must be capable of being built in stages. The trees of the area should be preserved as much so possible. All old buildings in the area shall be pulled down."*[48] In other words, Leppänen could not overcome the conflict of a brief which proposed a temporal continuum by staggering construction, and at same time the elimination of an existing temporal layer. Indeed, the rapid dilapidation of the existing urban fabric caused by these renewal plans of the post-war years soon harmed the prestige of Modern Movement architecture itself, as attested by the emergence of the conservation movement in the transition to the 1970s.[49] Eventually, and like most of Aalto's projects for town centres, Leppänen's Valkeakoski Centre remained uncompleted, thus crystalizing the promises and limits of the concept of *modern monumentality* as well as those of our own culture.

1 The architects named their competition entry "*La Strada",* possibly after Federico Fellini's film which premiered then in Finland. Kaarlo Leppänen, Niilo Pulkka and Pekka Rajala, "Rovaniemi Bus Station", *Arkkitehti* 4/1962: 66-72. Leppänen had been Pulkka's collaborator earlier in the competitions for the Katajanokka Warehouses (purchased, 1952), Turku Theatre (2nd prize, 1955), and the Finnish Pavilion for the Brussels Exhibition (3rd prize, 1956), among other projects.

2 Harri Hautajärvi, "Lapland-bound Tourism Buildings in Lapland", in Riitta Nikula, ed. *Heroism and the Everyday – Building Finland in the 1950s* (Helsinki: Museum of Finnish Architecture, 1994), 216.

3 Charrington and Nava, eds. *The Mark of the Hand,* 255, 305-307, 323. Leppänen worked on, among other projects, the Wolfsburg Cultural Centre (1958-1962) and the Essen Opera House (1959-1988) in Germany, the Finlandia Hall (1962-1975) in Helsinki, and the competitions for the civic centres in Seinäjoki (1958) and Leverkusen in Germany (unrealized, 1960).

4 "Conversation 15. Heimo Paanajärvi and Tore Tallqvist", 307.

5 Not incidentally, Leppänen was involved in the organization of the posthumous exhibition of Aalto's work (and toured with it internationally, including a visit to Portugal in the early 1980s). Regarding Leppänen's interest in drawing, his travel sketches were exhibited at the Museum of Finnish Architecture in Helsinki in 1986: *"Kaarlo Leppänen: Travel Sketches 9.12–22.1".*

6 For example, Leppänen worked in different competitions with Urs Anner (Swiss, Aalto's collaborator in 1972-1976), Ernst Hüsser (Swiss, Aalto's collaborator in 1971-1987), Kari Hyvärinen, Ilona Lehtinen, Erkki Luoma, Walter Moser, Vezio Nava, Jaakko Suihkonen, and Walter Ziebold (Swiss, Aalto's collaborator in 1959-1961).

7 Consider, for example, the competition entries for Vaasa cemetery (1968, 3rd prize) and Seinäjoki cemetery (1972, purchased). Kaarlo Leppänen, "Planning competition for the Vaasa Evangelical-Lutheran parishes' cemetery, cemetery chapel and maintenance centre", *Arkkitehtuurikilpailuja* 10-11 (1968): 10-12; Kaarlo Leppänen, "Planning competition for Seinäjoki cemetery and chapel", *Arkkitehtuurikilpailuja* 8-7 (1972): 20-21. A list of Leppänen's prizes in the competition entries is included in the *Appendix*. A curious, and possibly related, aspect regarding the reception of Leppänen's work is the fact that only once was one of his buildings published in *Arkkitehti*; namely, the Rovaniemi Bus Station, mentioned above – and indeed precisely the first project of his long career. Furthermore, the Bus Station is literally the last building to be mentioned in J.M. Richard's *Guide to Finnish Architecture*, intended as a presentation of an unbroken tradition of Finnish architecture culminating in the Modern Movement (the order is both chronological and geographical, from Helsinki to Lapland). This choice can be seen as an ironic coincidence, given the impending architectural crisis. J.M. Richards, *A Guide to Finnish Architecture* (London: Hugh Evelyn, 1966), 98.

8 Leppänen and Nava's competition entry for the Kajaani Civic Centre (purchased, 1973) is another example of a design for a civic centre; in this project, the various separate institutions are ordered linearly and project over the lakeshore. Kaarlo Leppänen and Vezio Nava, "Kajaani administrative and cultural centre", *Arkkitehtuurikilpailuja* 5 (1973): 7-8.

9 Aalto, "The Relationship Between Architecture, Painting and Sculpture", 268.

10 Aalto, Op. cit., 268-269.

11 Alvar Aalto, "Form as a Symbol of Artistic Creativity", lecture manuscript, Aalto Archives, 1956. Reproduced in *Alvar Aalto in His Own Words*, ed. Schildt, 181.

12 Leppänen, "The design process", 64.

13 Kaarlo Leppänen, "Characteristics of Alvar Aalto's Architectural Philosophy", *Space Design* 1+2 (1977): 130-131.

14 Aalto, "The Relationship Between Architecture, Painting, and Sculpture", 268. Throughout his career, Aalto found different motives for using wood. For example, during the war years, wood was the only easily available building material and was explored therefore as both a structural and cladding material. Within a few years, wood was limited to cladding but acquired new connotations as a prestigious finishing material. Gareth Griffiths brought to my attention that it is possible to situate another change in the status of wood in the early 1980s by examining the product advertisements published in the magazine *Arkkitehti.* 1980 saw, incidentally, the creation of the architecture magazine *Puu*, sponsored by the Finnish wood construction industry (Puuinformaatio Oy). Included in the very first number of *Puu* is an article by Elissa Aalto, "Alvar Aallon puunkäytön perintö sisustajille [Alvar Aalto's use of wood: legacy for interior designers]", *Puu* 1 (1980): 14-19.

15 "Conversation 18. Kaarlo Leppänen", 338, 340.

16 Kenneth Frampton has observed this phenomenon from another angle: *"While tectonic form, as consistently repetitive articulation, manifests itself rather sporadically in Aalto's architecture … Aalto would exhibit marked tectonic sensibility in smaller utilitarian works".* Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of*

Construction in the Nineteenth and Twentieth Century Architecture (Cambridge: MIT Press, 1995), 356.

17 "Conversation 18. Kaarlo Leppänen", in *The Mark of the Hand,* eds. Charrington and Nava, 335.

18 Leppänen, "The design process", 64.

19 Curiously, when thinking of elements introduced anew in Leppänen's architecture, the glass curtain wall of the Forum commercial centre in Helsinki – which includes an "Aaltoesque" free form motif, comprised not of curves but of random straight lines – comes to mind as a relatively unsuccessful experiment.

20 Ernesto N. Rogers, "El ofício del arquitecto", in *Experiencia de la arquitectura* (Buenos Aires: Nueva Visión, 1965), 31.

21 Pekka Pitkänen, "Stripped-down – Scanty", in *Architecture in the Year Zero. 8th Alvar Aalto Symposium,* Esa Laaksonen and Merja Vainio, eds. (Helsinki: Alvar Aalto Academy: 2001), 82.

22 Alvar Aalto, "Influence of structure and material on contemporary architecture", lecture at the Nordic Building Congress, Oslo 1938. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 98.

23 The structural engineer in Valkeakoski was Aarne Hollmén, who worked with Leppänen as a Studio collaborator on the Finlandia Hall project, among others. For more about Hollmén and Leppänen's work in the Finlandia Hall, see "Conversation 23. Aarne Hollmén", in *The Mark of the Hand,* Charrington and Nava, eds., 406, 409.

24 Aalto, "The Humanizing of Architecture", 107. Note that Leppänen resumed the same principle of articulation between the vestibule and the reading room in his proposals for the Tampere City Library (2nd prize, 1979) and the Helsinki Main Library in Itä Pasila (1986). Kaarlo Leppänen and Ernst Hüsser, "Planning competition for Tampere Library", *Arkkitehtuurikilpailuja* 1 (1979): 7-8.

25 The original textile screens which Leppänen designed to filter the southern light have been replaced by simple metallic louvers. The building's caretaker, Timo Villberg, admitted in a personal conversation (March 7, 2014), that some of the solutions designed by Leppänen were too particularized and therefore caused maintenance problems.

26 Venturi, *Complexity and Contradiction,* 70. As seen in the *Introduction*, Bruno Zevi was the foremost advocate of the concept of flowing space.

27 Op. cit., 82-86.

28 Kaarlo Leppänen interview with Louna Lahti, in *Alvar Aalto – Ex intimo,* 115.

29 Op. cit., 111.

30 Leppänen's design combines the two tendencies described by Adolf Behne discussed in *Chapter 2:* Functionalism as maximum adaptation and Rationalism as maximum flexibility. Behne, *The Modern Functional Building,* 137-138.

31 Giedion, *Space, Time and Architecture, lv-lvi.* Giedion expanded this argument in Sigfried Giedion, *Architecture and the Phenomena of Transition: The Three Space Conceptions in Architecture* (Cambridge: Harvard University Press, 1971).

32 Giedion, *Space, Time and Architecture,* 69; 107-110; 669-670.

33 Porphyrios, *Sources of Modern Eclecticism,* 113.

34 Incidentally, it must be said that Pitkänen and Ruusuvuori were members of the competition jury which selected Leppänen's entry for the Valkeakoski Cultural and Administrative Centre, which amounts to both the credibility of the project and of the jury itself.

35 This understanding can be contrasted with that of the Finnish Constructivist movement, which sought a purely objective, process-based method. The opposition established here has curious parallels with the crisis experienced by Modern Movement architects four decades earlier and captured by Corbusier's famous ultimatum: *"Architecture or revolution".* As it was seen, for Corbusier, this moment of hesitation was followed by a renewed interest in the tradition of architecture. A similar development can be observed in the careers of the most important Constructivist architects: Kirmo Mikkola, Juhani Pallasmaa, and of special importance in the scope of the present study, Kristian Gullichsen.

36 Alvar Aalto, "Town Centre of Rovaniemi", undated letter (circa. 1961) in the Aalto Archives. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 235-236.

37 On Valkeakoski's urban history, see Minnä Kulojärvi, "Valkeakoski – Keskustan kulttuuriympäristön kehittäminen osana kansallista kaupunkipuistoa", Diploma Thesis (Tampere: TUT, 2011), 27-45.

38 Aalto quoted in Schildt, *The Mature Years*, 79-80.

39 Kaarlo Leppänen interview with Louna Lahti, in *Alvar Aalto – Ex intimo,* 116.

40 Leppänen, "The design process", 67.

41 Venturi, *Complexity and Contradiction,* 38.

42 Aarne Hytönen was himself an Aalto collaborator in 1943-1944.

43 Leppänen continued reworking this connection until the mid-1980s, when the project was finally

discontinued.

44 Leppänen, "The design process", 66.

45 Aalto, "The Decline of Public Architecture", 210. That Aalto was among the first Modern Movement architects to observe this seems surprising considering the prevalence of open outdoor spaces in Finland; e.g. from the use of the name *"piha",* which refers indiscriminately to both open and enclosed configurations, to the lack of walls and fences in gardens, to the large market squares which occupy an empty block in the town grid. Gareth Griffiths brought this point to my attention in a personal conversation. For a discussion of Finnish urban space see, Henrik Lilius, *The Finnish Wooden Town* (Rungsted Kyst: Anders Nyborg, 1985).

46 Charrington refers to a personal conversation with the former Seinäjoki city architect, Touko Saari. Charrington, *The Makings of a Surrounding World,* 108. Charrington is referring to Alvar Aalto, "The Hilltop Town", undated article (circa 1924), Aalto Archives. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 49. Curiously, Giedion displays a comparable enthusiasm with the rediscovery of this link with the past in *Space, Time and Architecture*. Giedion identifies in the control of the *"relations between horizontal surfaces"* the symbol of the Renaissance square, insisting that, *"terraced buildings and monumental stairways go back to the beginning of architecture"*. Giedion, *Space, Time and Architecture,* 59-62.

47 An alternative view on the problem of temporality, consists in actually combining old and new buildings in the same composition, as tried in the design of the Rauma City Hall (1980) by Eric Adlercreutz, Hasse Hägerström, Jyrki Iso-Aho and Hannele Storgårds. Eric Adlercreutz et al., "Rauma Town Hall Planning Competition", *Arkkitehtuurikilpailuja* 1 (1982): 9-13.

48 Extract from the minutes of the Jury. Leppänen, "Valkeakosken kaupungin hallinto- ja kulttuurikeskuksen suunnittelukilpailu", 4.

49 Symptomatically, it was in this context that the idea of protecting the old Valkeakoski Theatre (1909) was first discussed, which eventually rendered the construction of a new theatre unnecessary (the proposals discussed with Leppänen in the 1980s included the possibility of using the area originally reserved for the theatre as additional office space).

Eric Adlercreutz and Nils-Hinrik Aschan, two single-family houses, Ekenäs (1966). Photo by Olli-Paavo Koponen.

This pair of detached houses is located outside the old town of Ekenäs. Among other things, the mono-pitched roofs, which distinguish the houses' public and private sides, and the projecting garage volumes, which create an entrance transition, attest to the influence of Aalto's work.

6. Eric Adlercreutz (and Nils-Hinrik Aschan): Jägarbacken Housing, 1968-1973

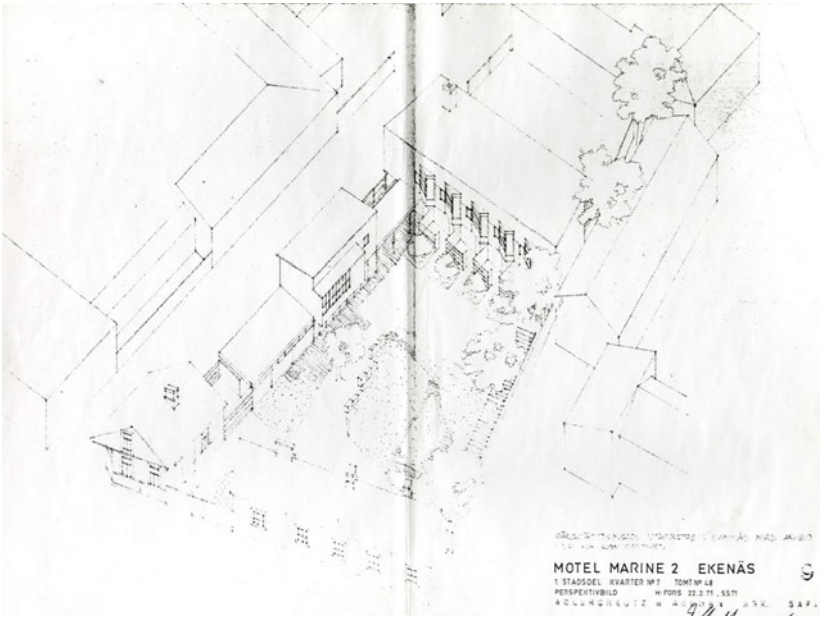
Eric Adlercreutz worked in the Studio Aalto between June 1959 and February 1965. He joined the Studio as a student, after being impressed by a lecture given by Aalto, and his first task on acquiring a position there was assisting a more experienced colleague – Kaarlo Leppänen – with the drawings for the Wolfsburg Cultural Centre in Germany (1958-1962). Later, Adlercreutz worked on the Helsinki University of Technology Main Building in Espoo (1953-1967) and other projects, including the competition entry for the Academic Bookstore (1961) and the Nordic Union Bank (1960-1965), both in Helsinki.[1]

The task in the Academic Bookstore and the Nordic Union Bank projects was to complete an urban block, the former even on a street corner. Like in the earlier Rautatalo building in the same area of the city centre, Aalto's idea in each of these two projects was to introduce an intermediate element between the street and the private office building, i.e. a public atrium and an exterior arcade, respectively. The new buildings are connected with the existing ones in terms of volume, rhythm and texture, and in the Nordic Union Bank, a stepped volume links the higher department stores along Aleksanterinkatu with the lower neoclassic palaces along the Esplanade.

After graduating from the Helsinki University of Technology in 1961, and while still working with Aalto, Adlercreutz started a partnership with Nils-Hinrik Aschan, which was enlarged and renamed A-Konsultit Architects in 1972.[2] Adlercreutz and Aschan's first project, the renovation of an 18th century house in Ekenäs/Tammisaari old town, presented again the problem of completing an existing urban block. The project was prolonged, between 1962 and 1972, with the design of the Motel Marine on two adjacent plots.[3]

Olli-Paavo Koponen has observed in these projects a progression from a visual to a deeper typological relationship with the existing courtyard and street structure that suggests an increasing urban and historical awareness. Adlercreutz and Aschan tried to analyse how the new buildings and new programme (a seasonal motel) would affect the use of the block and, among other strategies, positioned the cafeteria as an intermediate element between the public and semi-public areas, and added individually fenced-off terraces between the shared courtyard and the private bedrooms.[4]

In 1968 Adlercreutz received an Asla-Fulbright grant to study at the University of California, Berkeley in the USA. During his stay, he became acquainted with California's Bay Region architecture, including the work of Aalto's like-minded friends William W. Wurster and Richard Neutra, and of a younger generation of

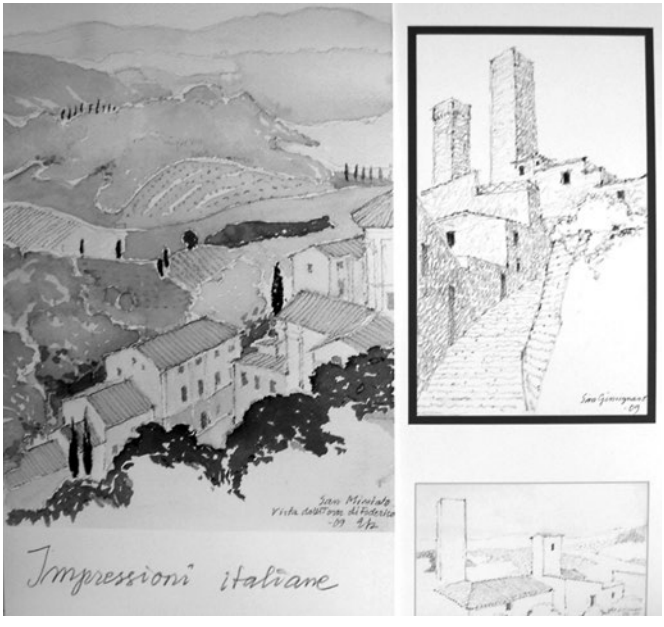


Eric Adlercreutz and Nils-Hinrik Aschan, Motel Marine extension, Ekenäs (1965-1972). EA.

Axonometric drawing showing the new buildings inserted into the existing urban block. The two-storey Motel cafeteria stands parallel to the street, the Motel bedrooms develop at right angles to it.

Motel Marine extension.

A new use was introduced, but the structure and scale of the urban block was preserved. The pergola on the right gives visual and functional depth to the courtyard. The new buildings complete a courtyard with two 18th century buildings (behind and to the left of the observer, respectively).



Eric Adlercreutz, *Impressioni Italiane* exhibition held at the Studio Aalto (2010). EA.

Adlercreutz's drawings and watercolours refer to a choice of architectural themes that can be observed both in the Italian hill towns and in Aalto's architecture. For example, note the preference for building groups in which the elements of the lower levels of scale are partly independent from the higher ones.

A-Konsultit Architects, Lappeenranta Music Institute (1985-1990).

The lower base of the building creates a quiet street frontage, from which the volume of the auditorium raises expressively. The wood-clad concrete building completes a courtyard with an existing wooden villa.

architects represented by Charles Moore, Joseph Esherick and others.[5] At Berkeley, Adlercreutz participated in Christopher Alexander's Pattern Language course, which occasioned another association:

> *In search of wholeness, I try to have in mind the important relations at the level of detail, those which affect people's physical and psychological wellbeing in each different circumstance. Aalto's Paimio Sanatorium is a great example of that, how much he was able to empathize with the patients' world and answer a variety of problems harmoniously. Interest in this aspect of Aalto's architecture led me to Christopher Alexander's work, by which I was greatly influenced.*[6]

Adlercreutz's quote indicates firstly that this is a relationship on the plane of ideas rather than products. But what relation does Adlercreutz exactly see between the two – apparently so distinct – architects?

In order to reconstitute this dialogue, I will articulate a tripartite discussion of the concepts of *method, analysis* and *design,* against which I will refer to a project made by Adlercreutz. Although Adlercreutz has designed a number of public buildings, including the Rauma Town Hall (1980-1991) and the Maistraatintori Parish Centre and School in Helsinki (1981-1985), he has maintained throughout his career a special interest in housing. Hence, it seems appropriate to look at his first project of that kind, the plan of Jägarbacken Housing in Ekenäs.

6.1 Method

There is one timeless way of building. It is thousands of years old, and the same today as it has always been … It has become possible to identify it, only now, by going to a level of analysis which is deep enough to show what is invariant in all the different versions of this way … But though this method is precise, it cannot be used mechanically… Indeed, it turns out, in the end, that what this method does is simply free us from all method.

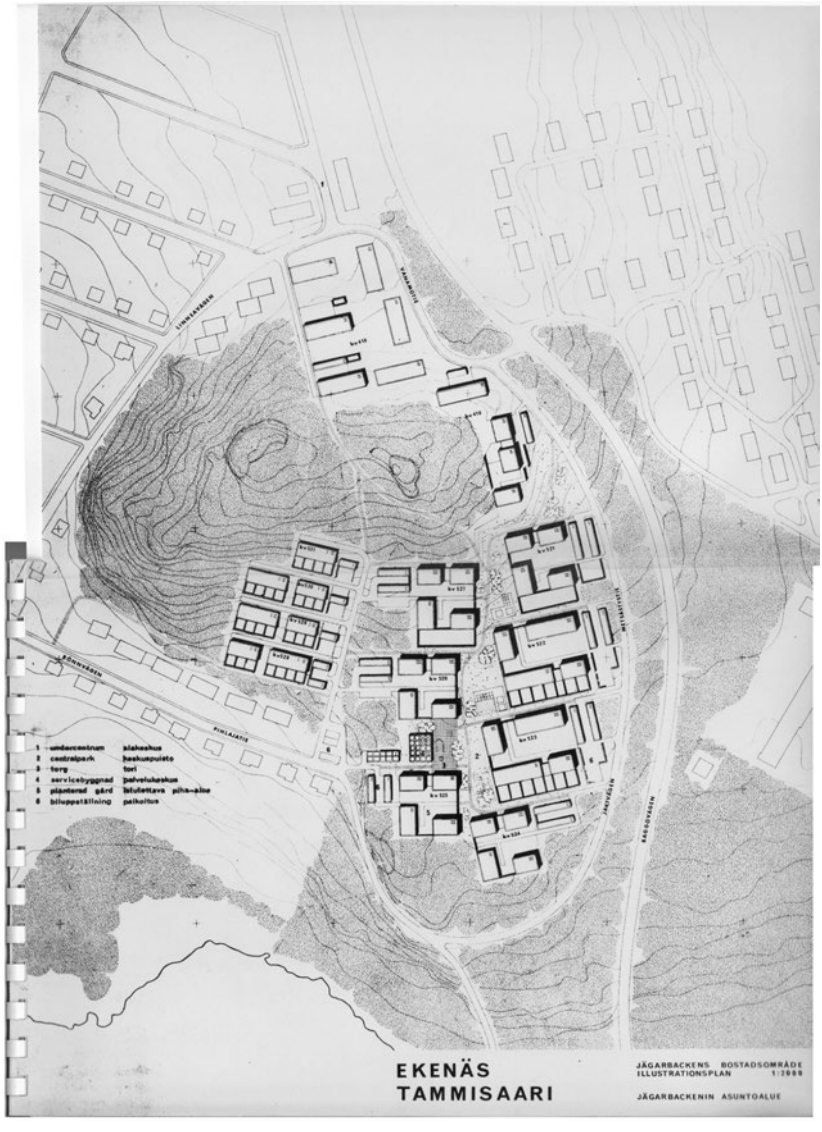
(Christopher Alexander)[7]

Adlercreutz's review of Alexander's Pattern Language

The Jägarbacken housing (1968-1973), located in the coastal town of Ekenäs, less than 100 km west of Helsinki, originated in a relatively large planning and design commission made under the constraints of a public programme of subsidized loans for construction. Adlercreutz and Aschan's proposal follows a dense and low-rise model that is typical of the period, with units of four apartment blocks grouped systematically around central courtyards, suggesting, on first impression, a departure from Aalto's work.

Just at the time when the plan was starting, Adlercreutz travelled to California, where he studied with Christopher Alexander, an experience that made a strong impact on him.

Before going any further, it might be necessary to briefly present and situate the Pattern Language within Alexander's extensive body of theory, the remote origin of which is the biological-inspired Functionalist principle that *"form follows function"*. In their jointly written 1963 book *Community and Privacy: Towards a New Architecture of Humanism,* Serge Chermayeff and Alexander sought a scientific approach to the problems posed by the problem of rapid growth and urbanization. Underlying their study is an idea also close to Aalto: that in order to be consequential, Functionalism needed to develop towards a more inclusive, holistic analysis. Their argument was complemented with an investigation of the contradictory levels of scale at stake in dwelling, including a suggestion about the use of computation as a means to deal with the problem in all its complexity. In *Notes on the Synthesis of Form* (1964), Alexander proposed ways of connecting this complex analysis with the moment of design: based on a distinction between



Eric Adlercreutz and Nils-Hinrik Aschan, Jägarbacken Housing area, Ekenäs (1968-1973). EA. Site plan. The hilltop was preserved, while the courtyard areas were terraced and urbanized.

"Pattern 127. Intimacy Gradient: … Lay out the spaces of a building so that they create a sequence which begins with the entrance and the most public parts of the building, then leads into the slightly more private areas, and finally to the most private domains."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 610-613.

unselfconscious and self-conscious modes of knowing (i.e. experience and method), and drawing from mathematics and computation, Alexander described a diagram consisting of overlapping sets and subsets of problems. Such a diagram, capable of supporting interdisciplinary analyses, offered in his view the basis for a thoroughly scientific design method.[8]

For the sake of comparison, it should be said that Aalto himself would have considered such a reduction between analysis and design impracticable:

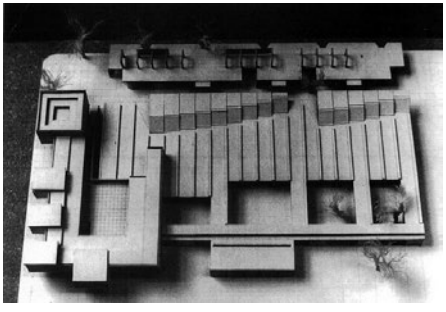
> *Almost every formal assignment involves dozens, often hundreds, sometimes thousands of conflicting elements that can be forced into functional harmony only by an act of will. This harmony cannot be achieved by any other means than art … cannot be achieved with mathematics, statistics, or probability calculus.*[9]

Alexander himself recognized the limitations of his analytical method in a following essay, "A City is Not a Tree" (1965). To explain his new insight, Alexander compared the shallowness of planned towns with the richness of those towns *"unselfconsciously"* consolidated over time.[10] This essay marked a Structuralist turn in Alexander's career and the start of a long-term, multifaceted research on Pattern Language at the Center for Environmental Structure at the University of California, Berkeley, which culminated with the publication of a series of famous books, including, *A Pattern Language. Towns, Buildings, Construction* (1977) and *The Timeless Way of Building* (1979).[11]

The book *A Pattern Language* is a practical manual combining aspects of the descriptive system introduced earlier in *Notes on the Synthesis of Form* with an empirical approach to the analysis of the built environment, while *The Timeless Way of Building* presents its ideological basis. In the latter book, Alexander accuses modern architecture of promoting an increasing individualization and specialization of the building processes, and instead, suggests resuming a pre-modern cosmology in which building ownership, production and dwelling still operated closely.[12]

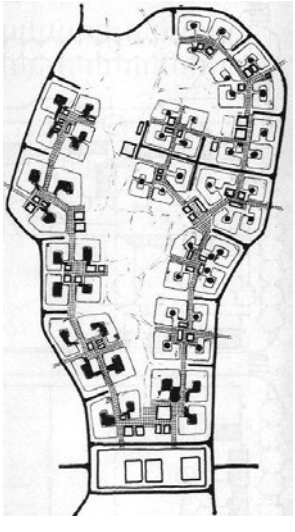
A good introduction to Pattern Language is Adlercreutz's review of the *Pattern Language* series of books, published in *Arkkitehti* in 1979. Adlercreutz's text can at the same time give us an indication of his own ideas about Alexander's work. For instance, Adlercreutz starts by praising how the *Pattern Language* supports an inclusive analysis:

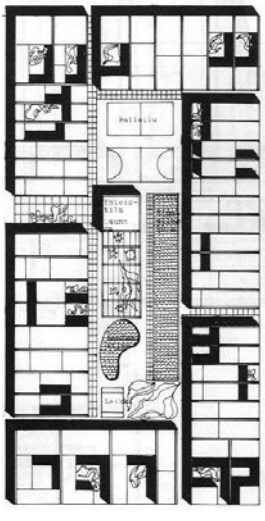
> *The book shows … just how many valuable terms were eliminated from the architectural vocabulary during the Functionalist era. In the reader's mind, the patterns create impressions of an environment characterized by decentralization, a small-scale, functional complexity, integration of work and housing, and children and adults, and grass roots democracy.*[13]



Eric Adlercreutz, A Pattern Language exercise (1968). EA.

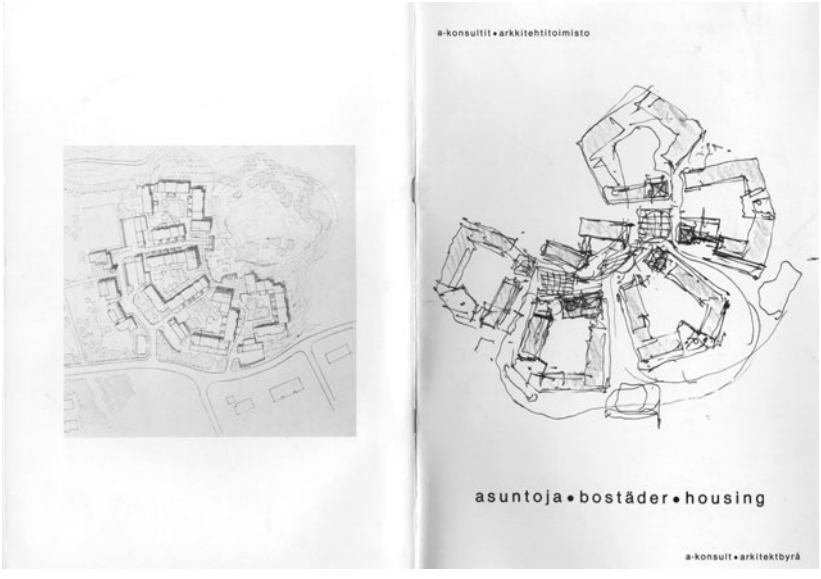
The office and workshops create a dense and low-rise basis crowned by a public hall and square. The composition of this latter group recalls that of Aalto's civic centres. Adlercreutz's proposal was selected and published as an example in the magazine *Architectural Forum* Jan-Feb (1970).





Osuukunta YS-palvelu, Entry for the Housing Reform competition (1972). EA.

Adlercreutz was part of a multidisciplinary team that won several prizes with different entries. Conceivably, the abstract nature of the brief provided a suitable test ground for some of the Pattern Language concepts. For example, in the left diagram, centralized spatial structures recur at three levels of scale (urban block, cluster of blocks, individual block); in the right diagram, row houses are associated with incremental atrium units to form a large urban block around a semi-closed public courtyard.



Cover from *A-Konsultit Architects, Housing: examples of the development and application of certain housing planning principles (1973-1983),* ed. Johannes von Martens (Helsinki: A-Konsultit Architects, 1983).

The project in the book cover is the competition entry for the Myllypuro housing area in Helsinki. In this book, the architects compiled their housing projects and summarized the main problems dealt with:

"1. Housing blocks should be split into smaller units so that they are easier to grasp; 2. Outdoor space should be articulated to achieve variation in spatial character (private/public) and scale, and to conform to the specific needs of different groups of occupants …; 3. To achieve the variation called for in point 2, the various joint facilities should be built as distinctive architectural elements; 4. Opportunities for daily social interaction should be promoted by placing amenities … in close proximity to one another; 5. Joint facilities should be sited so that they are integrated with the daily traffic patterns of the inhabitants."

A-Konsultit Architects, *Housing: examples*, 4.

However, he soon questions Alexander's ambition to reduce the phenomenon of architecture to one description, a doubt that puts him more in line with Aalto, for whom architecture remained always a partly unresolved problem. As Adlercreutz put it: *"though most of the problems dealt with by patterns do seem real … one might wonder whether all the patterns can be rationally combined or whether they hide within them inconsistencies."* Adlercreutz completed the previous thought by observing that Finland's peripheral position makes it relatively easy to challenge some of Alexander's *"universal solutions"*, a thought which is again consistent with Aalto, who saw place as a symbol of the individuality of the architectural products.[14]

Before going on to discuss in what way Alexander's studies provided Adlercreutz with an insight for the reconsideration of Aalto's architecture, it should make it clear that Adlercreutz did not strictly adopt Alexander's principle of Pattern Language as a design method. He certainly did not, at least in the sense of a rupture with the practice intended by Alexander, because *"compiling a viable pattern language for a given task",* as Adlercreutz explained also in his review, *"calls for a lot extra time and resources"*.[15]

For Adlercreutz, as for Aalto – who considered that *"harmony cannot be achieved by any other means than art"* – architecture cannot be simply reduced to science, which is not to say that the former can dispense with the latter.[16] On the contrary, science and theory are necessary to achieve a more reflexive architectural practice. As Adlercreutz concluded: *"the ultimate aim of a pattern language is, in fact, to give users an opportunity for direct influence again … to regain a harmonious balance between form and meaning and to replace the monotony of today's physical environment"*.[17]

Adlercreutz's Pattern Language exercise

Adlercreutz's observations clarify why he did not use a Pattern Language as a design method in the strict sense, but indicate, nevertheless, the convenience of the Pattern Language as an instrument to explore the relationships between the processes and the elements of the built environment.

Indeed, the influence of the Pattern Language can be sensed in Adlercreutz's precise use of language and diagrams – two of the favourite techniques used by Alexander – and which can be contrasted with Aalto's preference for the use of drawings and models. In this regard, it is worth considering briefly the Pattern Language course attended by Adlercreutz in 1968.

The Pattern Language course combined both the practical and ideological aspects of the Pattern Language introduced above with a design exercise to be

solved individually by the students. More precisely, Adlercreutz was presented with both the theory and a selection of 64 patterns – limited to the theme of a multi-service centre – and was also asked to form strings of patterns that could serve as a basis for design.[18]

Patterns are a format to describe *"units of event and space"* through texts, pictures and diagrams; each pattern contains pre- and post-references, which function like a hypertext, promoting the formation of strings of patterns covering a wide range of levels of scale, from the territory to the detail and vice-versa.

An example is the following string of patterns that can be observed in Adlercreutz's project: "4. Community Territory" – "16. Necklace of Community Projects" – "50. Interview Booths". Pattern 4 claims that a public building needs to have an open space as a counterpart. Pattern 16 notes that elements of transition promote spontaneous activity and should therefore be articulated as a kind of minor order.

Pattern 4 and Pattern 16, when associated, evoke a well-known structure of Aalto's architecture – the solution used, for example, in the Säynätsalo Town Hall, with a tower, a courtyard surrounded by a gallery, and a series of shops facing outwards. In addition, it can be said that the Pattern 50, which proposes a solution for the problem of privacy within a common hall, recalls another familiar example in Aalto's architecture: the inner atrium of the National Pensions Institute in Helsinki filled with booths where officials and visitors meet discretely.

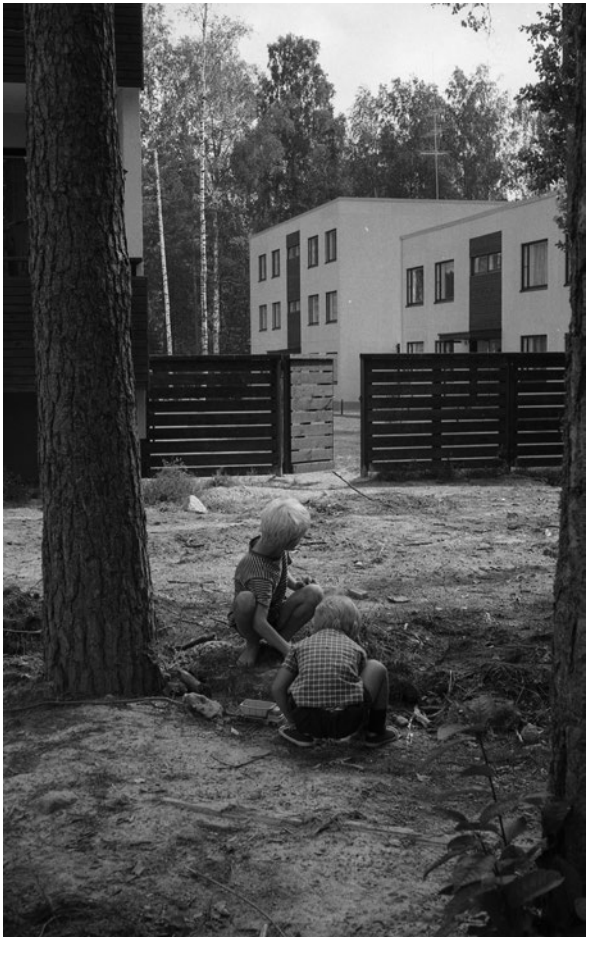
This brief reconstruction of Adlercreutz's exercise suggests how the theory could have granted him a distance from Aalto's work, but at the same time an occasion to reflect about architecture, and in this way, a key to return to it. The conceptual structure presented by the Pattern Language and the conceptual skills demonstrated by Adlercreutz partly explain his confidence in concentrating on a specific group of problems in his housing projects – though they also tell us, perhaps, something about the somewhat incomplete quality of the Jägarbacken design. Finally, the points of contact established between Alexander and Aalto, indicate that Alexander's claim that his theory constituted a break from modern architecture may have been exaggerated.

Adlercreutz's struggle to see beyond Alexander's intentions led him to find a surprising link to Aalto's work. But he was not entirely alone in this venture. There is a curious parallel to Adlercreutz's reflection in the work of Alexander's collaborator, Ingrid F. King and her attempt to connect the Pattern Language with contemporary practice. King traces Alexander's theory to Functionalism and explores its relationship with contemporary Structuralist and Regionalist critiques, concluding that, for her, Aalto's architecture, and the Villa Mairea in particular, represent the closest *"equivalent of a pattern language"* within modern architecture:

> *Aalto is one of the few architects who took the concept of function seriously as a generator of form … It is an architecture that twists and turns, with*

a multitude of archaic references and a child-like simplicity of conviction. That it takes a powerful designer to accomplish this is another matter.[19]

In *Chapter 3,* I referred to Carlos Martí Aris's study on the idea of type to distinguish *analysis* – as the movement from the particular to the general rule – from *design,* as the counterpart movement from the general to the particular thing. The former tries to find the basis for regularities, the latter tries to create meaningful differentiation. Adlercreutz's reflection, as well as King's admission above, corroborate Martí Aris's idea that analysis and design relate bi-directionally rather than sequentially, as the Functionalists were often tempted to assume. Architecture puts forward the objects that make it possible for us to think about and explain them, and the product of this reflection can be used to improve the production of new artifacts in a reciprocal relationship that confirms the special place of architecture between art and science.



Jägarbacken Housing area. EA.

The photos collected in the architects' archive always portray architecture inhabited by people.

"Pattern 15. Neighborhood Boundary: If the boundary is too weak the neighborhood will not be able to maintain its own identifiable character … Encourage the formation of a boundary … by closing down streets and limiting access to the neighborhood … Place gateways at these points where the restricted access paths cross the boundary; and make the boundary zone wide enough to contain meeting places for the common functions shared by several neighborhoods."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 86-90.

Jägarbacken Housing. EA.

Cross-section through the area: groups of four blocks are grouped around community courtyards placed at different levels along the slope.

Jägarbacken Housing. EA.

The children's playground is placed in the centre of the community courtyard.

"Pattern 75. The Family: The nuclear family is not by itself a viable social form … Set up process which encourage … people to come together and establish communal households."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 376-380.

6.2 Analysis

> *We sit, perhaps slightly raised, on the front porch, or on some steps in a park, or on a café terrace, with a more or less protected, sheltered, partly private place behind us, looking out into a more public place, slightly raised above it, watching the world go by … The action and the space are indivisible. The action is supported by this kind of space. The space supports this kind of action. The two form a unit, a pattern of events in space.*
>
> (Christopher Alexander)[20]

Timeless structure

The Pattern Language involves two main components – the *pattern* unit and the *pattern language* – each one of them comprising both openness and closure. For example, the *pattern* makes it possible to isolate and describe a specific problem from reality, but through this it makes this problem also available to a process of correction and refutation. Similarly, the *pattern language* integrates different manifestations into a dynamic, but ordered, structure. *Patterns* must be associated in strings of patterns combining various levels of scale, with the result that even the smallest conceivable problem remains included in a broader totality, as Adlercreutz has explained:

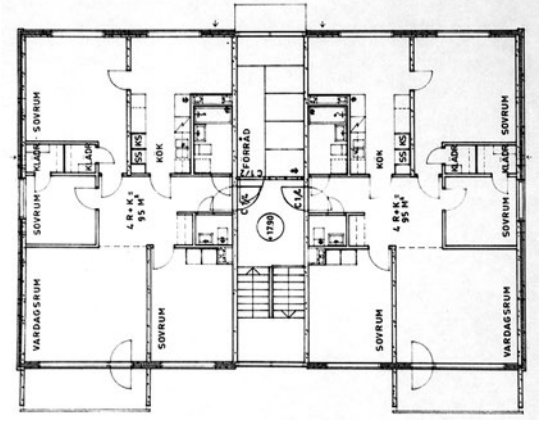
> *Though using a pattern language means – as usual – starting the work 'from the top' with patterns for the whole, and moving down towards the detail, there is always in the background an awareness of the patterns at lower levels which work 'from the bottom up'. The primary, most comprehensive rules are not necessarily more important than the rules on detail.*[21]

As it was explained, a *pattern language* promotes openness in the sense that it allows the breaking down of a problem but also, and at the same time, a counterpart process of closure in the sense that it directs, through a process of superimposition of patterns, to a limited range of configurations. This tendency towards universal or *"timeless"* structure, which helps to explain the recurrence of centralized spaces in *A Pattern Language*, is a quality that should not be confused, however, with the structures' potential for morphological differentiation.

This tension between repetition – and variation – in the Pattern Language

Jägarbacken Housing.

A view from the forest park, with a storage house positioned between two apartment blocks and a fence delimiting the semi-open community area. Note the architects' effort to introduce variation in the window openings, i.e. by painting decorative window frames.

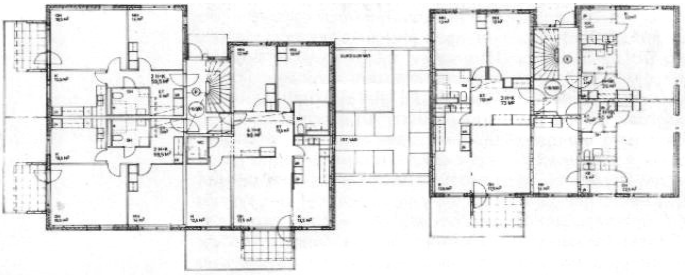


Jägarbacken Housing. EA.

Apartment plan: a central atrium connects the kitchen, living room and balcony diagonally.

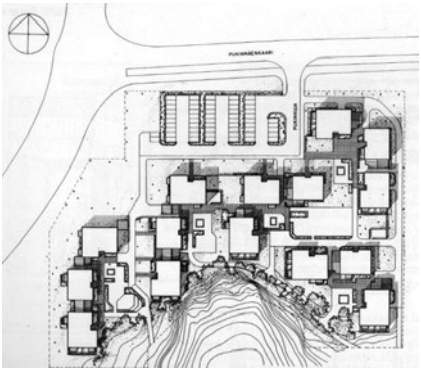
"Pattern 136. Couple's Realm: Make a special part of the house distinct from the common areas and all the children's rooms."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 648-650.



A-Konsultit, Pukinkuja Housing, Helsinki (1975). EA.

Block plan. The living room is in this case positioned between the kitchen and bedroom. As in Jägarbacken, the constructive system forced the adoption of projecting balconies.



Pukinkuja Housing. EA.

Similar apartment blocks are clustered into community courtyards: the north side of the complex is reserved for cars, whereas the south links directly to a park.

"Pattern 37. House Cluster: People will not feel comfortable in their houses unless a group of house forms a cluster … Arrange house to form very rough, but identifiable clusters of 8 to 12 households around some common land and paths."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 197-203.

establishes a point of contact with other Structuralist approaches. As King noted, there is parallel with contemporary theories that *"are derived from the beauty of culturally determined form"*. King mentions, for example, the typological approach to the study of the city developed at that time by the Italian Tendenza. Nevertheless, according to King, the Pattern Language differs from the former in that it *"is tied to an identifiable functional complex"*, and thus aims to *"produce the same kind of form as one finds in traditional cultures, but from scratch and on our present cultural premises"*. On the contrary, typology, according to King, *"denies the validity of function as the origin of form"*.[22]

The idea of type or timeless structure has a suggestive corollary in the possibility of drawing analogies between the form of the city and the house. In *Chapter 3*, Alan Colquhoun was quoted making a comparable observation in respect to the recurrence of centralized spaces in Aalto's architecture; this was exemplified with the case of the Hansaviertel atrium-apartment block in Berlin.

The previous considerations on the principles of wholeness and layering order, of repetition and variation, and on the recurrence of centralized spaces at different scales, suggest some approximations between Alexander and Aalto, and help us in distinguishing their approach from the problem-solving one endorsed by the Modern Movement architects.

Neither Aalto's nor Alexander's views can be entirely dissociated from the influence of the latter, however. For example, the garden city planners recommended decentralization through the creation of entirely new administrative, geographic and constructive entities. Later, Functionalist and Rationalist designers concentrated on researching questions of efficacy and economy, respectively. Aalto's designs reveal the influence of these reflections, even if Aalto avoided reducing the complexity of the problem, for instance, by allowing the solutions for the conflict between social and cultural factors to be solved case by case, as a matter of proportion. As explained in the *Chapter 3,* this required a flexible understanding of the architectural type, as evidenced in Aalto's concept of *"elastic standardization"*.

In Kauttua (1937-1939), the ideal of a detached house with a direct relationship with nature is combined into a compact stepped block in which the roof of the lower dwelling offers a terrace for the one above, successively. The design was carefully particularized on the forest hillside site, including modern technology and vernacular detailing. I mention this example first because of its extraordinary resemblance with Alexander's pattern "39. Housing Hill",[23] but this formulation contains the solution in effect for most of Aalto's housing projects, including the Hansaviertel project.[24]

Also in the *Chapter 3,* I suggested that Aalto's housing projects tend to remain closer to the Functionalist principles in terms of their urban scale; this was exemplified with a comparison between the Hansaviertel and the Harjuviita blocks in Espoo. Both blocks are formed by atrium-apartments; however, while

in Hansaviertel Aalto indicated also a possiblity for relating the levels of the community and the city, by uniting two point-blocks into a single entrance hall that functions as a meeting space for the residents, in Harjuviita, the apartment blocks are placed directly on the forest side, without a corresponding spatial complexity at the level of the urban scale.

Atriums and courtyards

The atriums, courtyards and other centralized spaces that are essential to Aalto's architecture establish a line of convergence with Alexander's architecture. Consider in Alexander's case, for instance, the selection of patterns "75. The Family" and "129. Common Areas at the Heart" as the starting points for a housing project. Without entering in depth into the content of each pattern, it can be noted how they both encourage the formation of strings which support the creation of such centralized spatial structures at different levels of scale. Pattern 129 states:

> *No social group – whether a family, a work group, or a school group – can survive without constant informal contact among its members … Create a single common area for every social group. Locate it at the centre of gravity of all the spaces the group occupies, and in such a way that the paths which go in and out of the building lie tangent to it.*[25]

Patterns 75 and 129 contain hyperlinks for patterns of *larger* and *smaller* levels of scale. The patterns in the first (larger) group relate the house with the community and the city, thus describing rules which support the creation of courtyard spaces, i.e. "127. Intimacy Gradient", "37. House Cluster" and "15. Neighbourhood Boundary"; the patterns in the second (smaller) group relate the house with the levels of the family and the individual, thus describing rules which support the creation of atrium spaces, i.e. "136. Couple's Realm", "137. Children's Realm", and "167. Six Foot Balcony".

Centralized spaces are also essential to Adlercreutz and Aschan's Jägarbacken housing plan. As already mentioned, the latter consists of a relatively compact plan combining an area of terraced houses with a larger one consisting of 2-3 storeys-high apartment blocks. The cubic apartment blocks, arranged in groups of four around rectangular open courtyards, present only minor plan variations regarding each other. Each apartment has, moreover, a central distributive hall, which functions as a space of transition between both outside and inside, and between family and individual realms. The organization of the plan around a central space avoids the need for contiguous bedrooms and links the common areas diagonally, culminating in a projected balcony. This arrangement maximizes also

the apartment's depth, thus solving at once the conflict between ideal orientations for the kitchen (north) and living room (south).

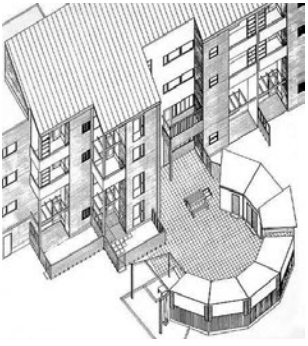
In spite of its good qualities, the centralized space designed by Adlercreutz and Aschan can hardly be considered an atrium, however. As a comparison with the Hansaviertel apartment units shows, the dimension and the position of the living room make the latter's central space become both the physical and symbolic fulcrum of the apartment. The use of recessed balconies appears also to be of particular importance in this case, suggesting a further parallel with the pattern "167. Six-foot Balcony". On the contrary, in the case of Jägarbacken, the living room and balcony are simply juxtaposed. Notably, the architects tried to correct this solution, and in subsequent designs the two elements appear reconfigured and/or spatially interlocked, i.e. in the Pukinkuja (1975-1979), Kartanonkaari (1978-1982) and Allotrianpuisto (1999-2007) housing blocks in Helsinki.[26]

It is at the level of the urban scale that the plan of Jägarbacken presents its most surprising contribution, by exploring a community-courtyard solution not yet tried by Aalto, but which can be seen as a logical development of the atrium-apartment type to the scale of the urban block.[27] The success of this public space lies in finding the correct scale between built and unbuilt spaces. In each cluster unit, one of the southern blocks is rotated at a right angle in order to increase sun exposure. Given a certain density, if blocks are too low, the built surface spreads, and if they are too high, the distance between the flats and the ground grows – in either case, inhibiting the use of the courtyard as a meeting point between families and neighbours.

Moreover, the community-courtyards formed by the clusters of four blocks are complemented with secondary elements, e.g. playgrounds, storage rooms, entrance halls. A source of inspiration for Adlercreutz and Aschan in respect to the design of these community courtyards was possibly Danish housing: Jørn Utzon combined for the first time a structure of shared and private courtyards, with a modular principle prefiguring the units' growth through time in the famous Kingo Houses (1956-1958) in Helsingør.[28] This stirred a series of notable projects over the next decade, and Adlercreutz's awareness of this trend is attested, among other things, by the fact that he was chosen to present the work of the Tegnestuen Vandkunsten when the latter were awarded the Aalto Medal in 2009.[29]

Functionalism promoted the separation of functions, including pedestrian and traffic channels and eliminated the bond between the blocks and the street – a conception of the city which culminated in the publication of *The Athens Charter* in 1943.[30] The plan for Jägarbacken – and A-Konsultit's housing projects, more broadly – can be seen in this sense as part of a counteraction to the Functionalist planning model. Jägarbacken still preserves the Functionalist principle partly: when arriving at the area by car, the neighbourhood presents first a unified image, then, the crisp massing of the blocks dissolves as one drives into the smaller roads, cul-de-sacs and parking lots, with only bicycle and pedestrian paths reaching

the interior of the courtyards; the latter, however, configured already as positive outdoor spaces. In subsequent housing projects by A-Konsultit, e.g. Vuohikuja (1977-1980), Kartanonkaari, and Kamppi (1983-1989), this block structure becomes increasingly defined and connected with the street and other features of the site. However, because the planning of the urban blocks can no longer be attained without taking into account the benefits introduced by the Functionalist analysis – i.e. generous outdoor space, adequate exposure, community services, etc. – these projects represent less the return to a previous model than a continuing process of transformation.[31]



A-Konsultit/Eric Adlercreutz and Mikko Heikkinen, Kartanonkaari Housing, Helsinki (1978-1982). EA.

Each storey is characterized accordingly with fences (ground floor), trellises (1-2 floor.), double-height balcony (3-4 floor) and mono-pitched roof (4 floor). The service sheds create a space of transition between public and semi-private areas.

Kartanonkaari Housing. EA/Photo by Simo Rista.

The living room is split diagonally in two areas by a recessed balcony.

Kartanonkaari Housing.

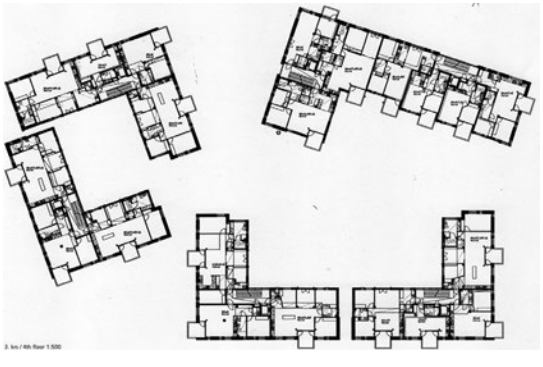
View of the inner courtyard. A porch and a raised street create an intermediate space between the public and private realms. Note the varying 1-3 window frames reminiscent of Aalto's architecture.

"Pattern 137. Children's Realm: If children do not have space to release a tremendous amount of energy when they need to, they will drive themselves and everybody else in the family up the wall… Start by placing the small area which will belong entirely to the children … in a separate position … and in a such a way that a continuous playspace can be made from this cluster to the street."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 651-655.

A-Konsultit/Eric Adlercreutz, Jyrki Iso-Aho and Anders Adlercreutz, Allotrianpuisto Housing, Helsinki (1999-2007).

A view of the inner courtyards, positioned in a skewed position in relation to each other so as to maximize depth.



Allotrianpuisto Housing. MFA.

The atrium-apartment units (note the recessed position of the balcony in relation to the living room) have been grouped to form two distinct inner courtyards, which, furthermore, can be experienced as a large urban courtyard.

"Pattern 167. Six Foot Balcony: Balconies and porches which are less than six feet deep are hardly ever used … If possible recess at least a part of it into the building so that it is not cantilevered out and separated from the building by a simple line, and enclose it partly."

Alexander, Ishikawa and Silverstein, *A Pattern Language,* 197-203.

6.3 Design

> *'The character of nature' is no mere poetic metaphor. It is a specific morphological character, a geometric character … To make this character of nature clear, let me contrast it with the character of the buildings being built today … They are full of identical concrete blocks, identical houses, identical apartments in identical apartment buildings … Nature is never modular. Nature is full of almost similar units (waves, raindrops, blades of grass) – but though the units of one kind are all alike in their broad structure, no two are ever alike in detail.*
>
> (Christopher Alexander)[32]

Place and permanence

For Aalto, architecture should acknowledge that the earth's surface is finite and made of difference; furthermore, that building is a historical process substantiated through use in time.

Place and permanence themselves legitimize the Studio's architecture. Compare the designs for the Korkalorinne housing area in Rovaniemi (1956-1960) and the National Pensions Institute housing in Helsinki (1952-1954). Both were carried out under a similar public housing programme and share a similar block and apartment plan; but whereas the former exploits its suburban location by turning towards the sun and connecting its ground floor units out into the terrain, the latter expresses its urban condition by integrating existing gardens and paths with a new arcade, a shop, and square (a kindergarten planned for this location was not built).

In the above quote, Alexander refers to nature as a process of repetition and differentiation so as to claim that design involves a similar quality of flexibility and adaptation in relation to space – including the natural and built environment – and time – including cultural and production contingencies.

There are parallels in Alexander's and Aalto's way of thinking. Aalto's housing designs mentioned above are both generic and precisely located in space and time. Aalto's understanding of the implications of permanence contrasts with the view of Modern Movement architects, who tended to consider technology as a process through which new materials and techniques successively replace existing ones. For Aalto, the new materials and products simply altered the existing

technological order, i.e. for him, wood was never entirely surpassed by masonry, iron, steel, concrete, etc.

A good example of Aalto's sensibility to the physical and cultural value preserved by wood, in spite of the competition brought by new materials, is the detailing of the the apartments in the National Pensions Institute housing, in which the economy of the prefabricated concrete balconies is expressively combined with wood (and brick) craftsmanship.

This principle of design as a process combining order and (spatial and temporal) differentiation is manifested in Adlercreutz and Aschan's Jägarbacken housing. If only insinuated, this relationship to place and history distinguishes their project from other apparently similar contemporary housing schemes built with prefabricated concrete element technology.

The plan, located on a forested hill suburb east from Ekenäs's wooden town centre, is formed by the repetition of clusters of four apartment blocks positioned at right angles to each other. In spite of this systematic structure, the first aspect to capture our attention is the plan's asymmetrical insertion on the topography. The architects made sure to leave the hill's crest unbuilt, and to arrange the block units as fingers opening towards the sun and the sea. Both natural and built factors influenced this process of differentiation: garages and fences on the east side delimit a protective wall against the main feeder street; on the west, lower terraced houses provide a point of contact with a group of existing detached houses. On this point, the plan links with the street network through an existing artery that extends well into the core: a community building was suggested for this location, which would have strengthened the link between new and old, but it was not built.

The second aspect to be highlighted refers to the quality of permanence. Adlercreutz and Aschan terraced and urbanized the community courtyards between the blocks but left intact the sloping areas of forest between the clustered units. This juxtaposition of natural and built spaces creates a memory of the transformation, reminding us of Aalto's strategy of using time as a motive for differentiation. An awareness of the physical ageing of materials and buildings can be used to express both durability and transitoriness. In Jägarbacken, the prefabricated elements are complemented by a minor order of wooden constructions – including storage and bicycle sheds, benches and playgrounds, flowerbed planters, fences, gates and porches – which introduce, more than any visual contrast, a quality of temporality and expectancy in the plan.[33]

Collective process

The roughness of the Jägarbacken blocks can only be partly attributed to external constraints; the elementary expression obtained through the prefabricated

Jägarbacken. EA.

In these photographs of a scale model, the choice of viewpoints suggests that the images were used to study the visual relationship between new and existing buildings and the topography. The service centre, which would have terminated the street (below), was not built.

Eric Adlercreutz and Nils-Hinrik Aschan, Jägarbacken Housing area. EA.

This perspective shows the Siporex system that was first proposed by the architects, and which had been used by Lundsten and Kahri in the Kortepohja housing area. Note how the Siporex system allowed for varying horizontal and vertical ratio openings, as well as for the use of recessed balconies.

Eric Adlercreutz, Finnish Embassy in Warsaw, Poland (1972-1975). EA.

A courtyard view: the Ambassador's residence stands slightly above and thus more protected from the street than the Embassy Office proper (behind the observer in this picture). The two wings are connected by a central outdoor amphitheatre. The architectural expression is restrained: the modular grid is wider in the residential wing – which includes recessed balconies – and narrower in the public block – which includes an entrance porch.

Eric Adlercreutz and Nils-Hinrik Aschan, Jägarbacken Housing area.

The four-part window frame signifies the special, semi-private use of the staircase halls.

concrete element technology reflects also the architects' own aesthetic intentions, as it can be confirmed by looking at Adlercreutz's project for the Finnish Embassy in Warsaw (1972-1975), where, though not faced with any special constraints, Adlercreutz strove likewise for a systematic quality using a more conventional pillar and slab construction.

Adlercreutz and Aschan's choice should be considered in connection with the Finnish Constructivist movement introduced earlier in *Chapter 3.* As was already mentioned, the Constructivist concentration on systems led to an obsession with building prefabrication and the design of modular buildings – or, at the other extreme, to an obsession with the macro level of planning – with little regard for particularization.[34] To use a distinction then introduced by Structuralist linguists between primary and secondary elements, *"langue"* and *"parole",* the Constructivist architects concentrated their efforts on the systems or primary elements – an emphasis on the universal which would soon be countered by a reverse postmodernist emphasis on the secondary, contingent features.

Adlercreutz and Aschan's proximity to the Finnish Constructivist architects on this point suggests by contrast a connection between Aalto and Alexander. For the Constructivists, an emphasis on the primary level resulted (above all) in a visual representation of openness. Alexander's idea of a building language denotes instead a conceptual understanding of the Structuralist division between primary and secondary elements: a *pattern* cannot be given a concrete spatial expression, let alone in the form of a rigid building block. Moreover, for Alexander the micro and macro levels must be always considered in relationship to each other.Consequently, Alexander insisted that specialized building techniques should be avoided in favour of accessible ones, so as to keep the building process effectively open, thus expressing a principle of morphological differentiation. Although Aalto would not go as far as Alexander in regard to his anti-technological attitude, his concept of *"elastic standardization"* does have more in common with Alexander's view than with the materialistic principle subjacent to the Constructivist movement.

The course of the planning of Jägarbacken exposes some of the shortcomings of the socio-technological idealism promoted by the Constructivist architects. The difficulties in working with only a few element-types meant that the design suffers from rigidity. Adlercreutz and Aschan took pains to scale down the masses and adapt them to the site; it should be noted that they had originally considered employing a more elastic prefabricated system. A comparison of the two alternatives considered in Jägarbacken shows, for example, that the original system allowed for the use of recessed balconies integrated with the living room – as defended by both Alexander and Aalto – rather than forcing the use of projecting balconies. Following the clients' insistence, however, they later adopted the state-of-the-art Open BES system.[35]

Among other things, the latter system depended on load-bearing walls, which limited the horizontal stratification of the block. Moreover, by imposing

A-Konsultit, Pukinkuja Housing, Helsinki (1975).

The lighter building elements (i.e. fences, balcony railings, storage houses, etc.) were entirely renovated 30 years after the completion of the building in 2008.

A-Konsultit/Eric Adlercreutz, Vuohikuja Housing, Helsinki (1977-1980).

The prefabricated concrete blocks are complemented with a series of lighter elements, including service sheds, porches and fences.

basically two kinds of elements – closed or with a central window opening – the system had also limited expressive possibilities. For example, the squared ratio adopted for both element (an approximately 3-metre module) and bay, and the limited range of material finishes resulted in monotonous building façades. Adlercreutz and Aschan tried to counter this by designing a special window for the staircase halls and painted decorative window frames, with which they attempted to introduce a rhythm in the façades.[36]

Alexander considered that modern practice was leading to an excessive formalization and specialization of building culture. With his alternative, consisting of an ordered set of rules that can be spontaneously combined and personalized, he aimed for a simultaneously collective and open process. Yet, as King pointed out, the idea of a self-organizing process of diffusion of the Pattern Language, *"tended to result in rather rambling, additive buildings"*. Indeed, the feeling that in many of the buildings designed in this way, *"the geometry was not right"*, as King put it, led Alexander to launch another long-term research project, *The Nature of Order*, directed at problems of building form.[37]

The paradox is that these successive revisions made the theory more complete, but also less elegant. This course of development suggests how elusive the search for a science of design can be. Thus, in the name of an anonymous, collective building process, Alexander eventually imposed a complete worldview presented in several volumes of books. Curiously, King has distanced herself from this intransigent position by stressing that design requires, ultimately, compromise and intuition:

> *One problem is determining what it is in essence; but another is that one has to approach these matters with intelligence and sensibility. This actually is the case in the Center of Environmental Structure's work, but is rarely emphasized in the published accounts, since from Alexander's point of view it is uninteresting.*[38]

Theory grants architecture freedom and radicalness. Alexander could keep his ideas pure as he was mostly teaching and writing. But Aalto was aware that the architect remains less free than the philosopher, and although he may have at one point considered the possibility of a collective building process – i.e. in connection with his research for postwar reconstruction – he felt that the artistic dimension of the architect's work represented possibly the last opportunity to aspire to a common building culture.

1 Before joining the Studio, Adlercreutz trained with one of the leading Swedish-speaking architects in Finland, Kurt Simberg. Incidentally, Simberg's most famous project, the Hanken Swedish School of Economics in Helsinki (1951-1953), was renewed by A-Konsultit/Eric Adlercreutz and Johannes von Martens in 1996. It is worth noting that Adlercreutz's mother tongue is Swedish, and that he lived in Stockholm as a child during the war years. As mentioned in the *Introduction* of the current study, Aalto promoted a polyglot working culture: in addition to hiring Finnish and Swedish-speaking Finnish architects, the Studio received also numerous international collaborators. Aalto and Adlercreutz spoke together preferably in Swedish, though both were equally fluent in Finnish. Adlercreutz, interview by Borges de Araújo, 2010.

2 The choice of an anonymous name for the office can be related with a broader trend towards decentralized organization in Finland at that time. The partners of A-Konsultit share a core of working principles but carry on their projects independently, which has made it possible for them to take on a wide range of commissions, from urban planning projects to single-family houses. See on this respect, Maula, "Architects and urban development", 183.

3 On A-Konsultit's interventions in historical sites, see their plan for the fortress island of Suomenlinna, Helsinki, a UNESCO World Heritage Site since 1991. A-Konsultit Architects, *Complementary building plan for Suomenlinna* (Helsinki: Suomenlinnan Hoitokunta, 1983). As mentioned in the *Introduction,* Adlercreutz was the Chairman of the Finnish Committee for the Restoration of Aalto's Viipuri (Vyborg) Library. A-Konsultit have also been involved in several other Aalto-related projects, including the renovation of the Studio Aalto and the Mellin Hall extension to the Helsinki University of Technology in 2002. Eric Adlercreutz and Hasse Hägerström, "Alvar Aalto's Studio restoration", *Arkkitehti* 2 (2005), 36-41. Eric Adlercreutz and Jyrki Iso-Aho, "Adding to Aalto. Mellin Hall, Helsinki University of Technology", *Arkkitehti* 1 (2003), 64-65.

4 Olli-Paavo Koponen, "A Building Analysis Exercise: Motel Marine in the old town of Tammisaari", (paper presented at Professor Thomas A. Markus seminar for post-graduate studies in Finland, August 14, 1996), 13-14.

5 The content-based, everyday quality shared by Aalto's and Wurster's architecture, for example, led Marc Treib to establish the following parallel: *"For Wurster [as for Aalto], architecture did not grow from abstract theories but instead from specific living patterns and specific places."* Marc Treib, "Regional Modernism in Northern California", in *Universal versus Individual. The Architecture of the 1960s,* ed. Pekka Korvenmaa and Esa Laaksonen (Helsinki: Alvar Aalto Academy, 2002), 114-117. Note that Aalto visited extensively California during his lifetime; as a further remark on the exchanges between various generations of Finnish and Californian architects, Marc Treib, himself a Californian architect and university professor, also visited Finland on a Fulbright grant in 1982.

6 Eric Adlercreutz, "Questions and answers. Eric Aldercreutz", interview by Jouko Seppänen et al., *Kätketyt Portaat 3* (1990): 10-11.

7 Alexander, *The Timeless Way of Building*, 7-13.

8 Christopher Alexander and Serge Chermayeff, *Community and Privacy: Towards a new architecture of humanism* (New York: Anchor Books, 1965); Christopher Alexander, *Notes on the Synthesis of Form* (Cambridge: Harvard University Press, 1965).

9 Alvar Aalto, "Art and Technology", Speech at the Academy of Finland. October 3, 1955. Reproduced in *Alvar Aalto in His Own Words*, ed. Schildt, 174. Aalto may even had had Alexander's work in mind when, after a visit to Berkeley, he blamed the obsession with a *"recipe for the problem of how to make good 'building art'. This is increasingly leading to systems, computations, formulas … The architect does not even have to be talented."* Aalto, "Speech at the Helsinki University of Technology Centennial Celebration, December 5, 1972". Reproduced in *Alvar Aalto in His Own Words*, ed. Schildt, 283.

10 Christopher Alexander, "A City is Not a Tree", *Architectural Form,* April/ May 1965. Reproduced in *Architecture Culture 1943-1968. A Documentary Anthology,* ed. Joan Ockman (New York: Rizzoli, 1993), 397-388.

11 On the Pattern Language research, see also Christopher Alexander, Sara Ishikawa and Murray Silverstein, *A Pattern Language which Generates Multi-Service Centers* (Berkeley, Cal.: CES, 1968). Alexander started yet another major research project at the Centre for Environmental Structure, *The Nature of Order,* which, however, points at problems of form and geometry that fall outside the scope of the current study; on the latter, see Christopher Alexander, *The Nature of Order: An Essay on the Art of Building and the Nature of the Universe. Book One – The Phenomenon of Life; Book Two – The Process of Creating Life; Book Three – A Vision of a Living World; Book Four – The Luminous Ground* (Berkeley: The Center for Environmental Structure, 2002).

12 See, for example, Chapter 13, "The Breakdown of a Language", in Christopher Alexander, *The Timeless Way of Building*, 225-242.

13 Adlercreutz, "Alexander's Pattern Language", 75.

14 Op. cit., 75.

15 Op. cit., 75. Adlercreutz combined the influence of the Pattern Language with others. Only occasionally does he make direct mention to the use of the Pattern Language in the design process. This is the case, for example, of the Kirkkonummi Church Square project (1970): *"To counterbalance the impact of the surrounding banks and shops, the library was placed close to the church" – explains Adlercreutz – "The periphery of the 'festival square' is composed of three 'pockets' of different character, allowing people to linger and watch the goings on. The 'market square' was given small dimensions so that it wouldn't seem desolate with only a few people on it. These solutions were inspired by some of Christopher Alexander's patterns."* Adlercreutz, "The fall and rise of public space", 34.

16 In Alexander's defence, it may serve as an extenuation to remind ourselves that he himself believed that, as he put it in the opening quote above, *"what this [Pattern Language] method does is simply free us from all method"*. Pekka Passinmäki brought this point to my attention.

17 Adlercreutz, "Alexander's Pattern Language", 75.

18 The exercise concentrated on the moment of connecting analysis and design, without entering the actual process of construction. Adlercreutz's exercise was used as an example in a review of the Pattern Language course. See Roger Montgomery, "Pattern Language", *Architectural Forum* Jan-Feb, 1970: 54-55.

19 Ingrid F. King, "Christopher Alexander and Contemporary Architecture", *Architecture and Urbanism,* August 1993, Special Issue, 112-114.

20 Alexander, *The Timeless Way of Building,* 70.

21 Adlercreutz, "Alexander's Pattern Language", 75.

22 Typology, insisted King, *"points to the spatial configurations evolved in such cultural forms as being archetypal and relatively few in number, and essentially the only ones available."* King, "Christopher Alexander and Contemporary Architecture", 106-108. See also, Rossi, *The Architecture of the City*, 1982.

23 Alexander, Ishikawa and Silverstein, *A Pattern Language,* 209-214.

24 Schildt has connected Aalto's ability to sustain architectural problems (analysis) with the extension of the experimentation within the Studio Aalto (design). Among other examples, he referred to Aalto's continuous research on the theme of the private outdoor space within collective housing, as attested in the stepped terraces in Kauttua and in the atrium-balconies in Hansaviertel, etc. Schildt, *The Mature Years*, 263-264.

25 Alexander, Ishikawa and Silverstein, *A Pattern Language*, 618-621.

26 Eric Adlercreutz, "Pukinkuja Housing Company", *Arkkitehti* 8 (1979): 22-23; Eric Adlercreutz and Mikko Heikkinen, "Kartanonkaari Housing Company", *Arkkitehti* 8 (1982): 46-53; Eric Adlercreutz, Jyrki Iso-Aho and Anders Adlercreutz, "Allotrianpuisto, Plazanpuisto and Plazankuja Housing Companies", *Arkkitehti* 2 (2008): 68-71.

27 Still with this hypothesis in mind, it is curious how Adlercreutz finds an inspiration in Aalto's National Pension Institute housing blocks: *"Throughout his life, Aalto was attracted by the public place 'the piazza', so much so that it could almost be called an obsession … The housing scheme for the National Pensions Institute is an example of how Aalto, even in a modest task, wanted to create a 'piazetta', an entrance court to the larger block and a focal point for the whole composition."* Adlercreutz, "The fall and rise of public space", 31-32.

28 For an analysis of Utzon's project, see for example, Michael Asgaard Andersen, "Jørn Utzon's Kingo Houses in Elsinore", *Nordic Journal of Architecture* 1 (2012): 12-13.

29 Tegnestuen Vandkunsten is a Danish architecture office which has had a focus on dense and low-rise housing, as well as industrial production and user participation. Eric Adlercreutz, "Tegnestuen Vandkunsten: Community Builders", *Arkkitehti* 2 (2009): 15-20.

30 For example, Le Corbusier claimed in this text that *"housing districts should occupy the best sites, and a minimum amount of solar exposure should be required in all dwellings. For hygienic reasons, buildings should not be built along transportation routes, and modern techniques should be used to construct high apartment building spaces widely apart, to free the soil for large green parks."* Eric Mumford, *The CIAM Discourse on Urbanism, 1928-1960* (Cambridge, Mass.: MIT Press, 2000), 85.

31 Different configurations of open courtyard structures reappear in A-Konsultit's later housing projects; for example, in the Pukinkuja, Kartanonkaari and Allotrianpuisto blocks mentioned above. A-Konsultit Architects, *Housing: Examples of the development and application of certain housing planning principles (1973-1983),* ed. Johannes von Martens (Helsinki: A-Konsultit Architects, 1983). See also A-Konsultit/Eric Adlercreutz: housing block in Merikasarminkatu 4-6 in Katajanokka, Helsinki (1977-1979) and housing block in Luutnanttipolku 7 in Malminkartano, Helsinki (1978-1982); Adlercreutz and Heikkinen, "Kartanonkaari Housing", *Arkkitehti* 8 (1982): 46-53.

32 Alexander, *The Timeless Way of Building,* 143-144.

33 Adlercreutz and Aschan become possibly aware of this problem while they worked on another project in Ekenäs's old town, the Motel Marine complex. This connection with local conditions and customs adds a cultural

dimension to the concepts of place and time. Eric Adlercreutz and Nils-Hinrik Aschan, "Huvila Tammisaaressa", *Arkkitehti* 11-12 (1963): 280-288; Eric Adlercreutz and Nils-Hinrik Aschan, "Motel Marine", *Arkkitehti* 4 (1968): 50-51; Eric Adlercreutz and Nils-Hinrik Aschan, "Motel Marine. Extension", *Arkkitehti* 4 (1972): 40-41.

34 Compare the design of the Moduli 225 system by Gullichsen and Pallasmaa with, for example, the Plan for Tapiola Town centre, Espoo (1969) by Juutilainen-Kairamo-Mikkola-Pallasmaa. Both projects are published in Jorma Maunula, ed., *Suomi Rakentaa 4. 1965-1970* (Helsinki: Finnish Association of Architects, 1970). Note that Kristian Gullichsen founded a partnership with Erkki Kairamo and Timo Vormala in 1969.

35 The Open BES system was a joint initiative commissioned by the Finnish concrete industry. *BES. Tutkimus avoimen elementtijärjestelmän kehittämiseksi,* Teuvo Koivu and Matti Seppänen, eds. (Helsinki: Suomen Betoniteollisuuden Keskusjärjestö, 1970).

36 The need for particularization and personalization soon led to a reaction, i.e. the "Inhabitant BES system" research project (1979) and the KEKO experimental housing project in Malminkartano in Helsinki, in which Adlercreutz himself participated. For more about the KEKO experimental housing project in Malminkartano see, for example, Markku Komonen, "Malminkartano experimental building competition", *Arkkitehti* 8 (1978): 22-31, 46.

37 King "Christopher Alexander and Contemporary Architecture", 28-32. See also *The Nature of Order* series of books.

38 Op. cit., 60. See also the chapter "The Issue of Individual Design", op. cit., 94-96. The results obtained by the Center for Environmental Structure – a relatively limited number of experimental designs – strengthen the feeling that there is no overall solution for the problem of design: the topic of collective language and user participation remains just as acute today.

Alvar Aalto, Studio Aalto.
View from the courtyard.

Conclusion

> *When historicising the works of architecture from the recent past, each generation should carry out an active and critical revision and capture the essence of the lesson obtained, which is, first of all, a lesson of freedom. We're better disciples when we're able to be the least condescending about the preceding ways of thinking and works, to the extent that we're able to see in perspective what has been done before us and affirm, therefore, the autonomy of our view and our right to create for the contemporary.*
>
> (Ernesto N. Rogers)[1]

In the *Introduction* to the present study I made a reference to a 1956 article appropriately titled "Modern architecture since the generation of the masters". In this article, Ernesto N. Rogers pointed at Aalto's double critique of tradition and modernity as a principle for the revision of the Modern Movement: *"something has been accomplished"* and must not be cast off, *"but much more is what is still to be realized"*, he stated.[2]

Content, genius and circumstance converged in Aalto's work, perhaps unsurpassably, but this is not a reason to regard it as fruitless. Expanding on previous studies, which stress the universality of the Studio's work, I have taken an oblique look at Aalto and focused instead on a lesser known group of architects and projects. More than just compensating for an existing omission in the historiography of the Modern Movement in Finland, by studying the work of the Studio Aalto collaborators I have tried to establish a continuity between two generations; notably, a continuity claimed through a series of comparisons between the work and experience shared in the Studio and the individual experiences and works of some of the former members of the Studio to what were, anyway, partly new problems.

To discuss the convergences and divergences between Aalto and Kontio, Leppänen and Adlercreutz – to distinguish the enduring and the transitory aspects of their architecture – for me meant making the past present, identifying their architecture as mine or, as Rogers put it, *"a lesson of freedom"*.

In this study I have considered the continuity of architecture along three simultaneously held points of view: *practice, craft* and *theory*. The method was at turns positive and particularized: the first questions were directed towards a series of site visits and meetings with the architects. After, by collecting and selecting the primary sources, it was possible to refine the original queries and concentrate

on the three case studies.

Furthermore, the choice of the case study method obliged me to limit the scope of the study, first to a group of architects who stood out equally as Aalto's collaborators and as heads of their own offices in Finland, and then to three projects only, all of them designed in the late 1960s, but each of them considered from a predetermined angle.

This research overlooked the works of the short-term collaborators at the Studio, as well as the works of the architects who continued their careers as employees in other architectural offices, in town planning departments and in the universities. Finally, to this list could be added the work produced by the large group of foreign architects from, among other countries, Switzerland, Italy, and Denmark, who returned to their countries after working in the Studio. Thus, and as much as the choice of each study was valued against other alternatives, both through written and visual comparisons, these assessments themselves encouraged, ultimately, other possible readings.

But having accepted this incompleteness, the question arises of what continuities have been established between the works of Aalto and those of Kontio, Leppänen and Adlercreutz?

Academy and practice

> *Here we have the* [war reconstruction] *plan of Rovaniemi, where the periphery is forest, and areas are left apart so that they will be there for future traffic and other things we do not know about yet. The houses are arranged so that they follow the curve of the topography … The land is not flat, and we have tried to make beauty for everybody who lives there … While the Army was fighting, we used the people we did not need in the forests and the snow as builders … It was all systematized, and we made much use of handicrafts. With war-time rationing and the seriousness of war, what does the architect do with his time? … I just cut up wood and played with it like a child.*
>
> (Alvar Aalto)[3]

Chapter 1 focused on the expansion of the Studio in response to the design opportunities that emerged in Finland with the implementation of a welfare state. The expansion of the Studio, substantiated by Aalto's decision to move to a new office building in 1954, obliges us to reconsider the contribution of the collaborators as being integral to the Studio's accomplishments at that time. However, and contrary to the teamwork organizations which became popular at that time, the Studio Aalto maintained a centralized organization in which Aalto occupied the central position and worked in direct dialogue with the specific architect in charge of each project.

For Aalto, this interpersonal dimension implied both freedom and responsibility. As suggested in the above quote, Aalto considered that these qualities constituted essential values of the profession. For Aalto, the architect acts as a mediator between the different wills involved in a project. For that reason, the products of the Studio deserve to be examined in terms of the relationship established with their political, economic and social circumstances. It should be noted, however, that – and referring again to the above passage – Aalto considered that even amidst serious adversity, the architect is both influenced by and the influencer of reality.

Aalto's ability to interpret the post-war conditions is attested in the plan of the Helsinki University of Technology. This plan, characterized by a mixture of informality and determination, inaugurated a period of university expansion in Finland which peaked with the launching of a second university planning programme in 1967. Among the projects from this period, Kontio and Räike's

Lappeenranta University of Technology presents the most direct links to Aalto's plan: it was a direct commission made on the basis of the experience acquired by the architects in Otaniemi, where Kontio had worked, first as a collaborator of the Studio, and later with Räike as a designer of three buildings in the campus.

Chapter 4 discussed Kontio's loyalty to the Studio Aalto in terms of a professional community, and concentrated on an examination of the Lappeenranta project based on the Kontio and Räike's interaction with the *clients, builders* and *users*. I referred to Kontio's memoirs, in which he highlights the rapidly changing conditions which coincided with the beginning of his independent career. Accordingly, I observed that although some of the individuals with whom Kontio and Räike had worked with in Otaniemi also moved work places to work on the Lappeenranta project, the character and disposition of the client were considerably altered. The architects now faced a complete administration, more efficient, but also less incisive, as attested in the contradictory choice of concept and location for the Skinnarila campus. Perhaps a distinction could be drawn here between the social and the artistic merits of the client's strategy of building several campuses simultaneously in a short period of time.

The relationship between the architects and builders seemed likewise to be tied to their circumstance. Kontio and Räike adopted the constructive technology used in Otaniemi: i.e. a cast in-situ concrete frame clad with masonry walls. With brick manufacturing increasingly automated and rising bricklaying costs limiting the solution's competitiveness, the architects opted for familiar dimensions and simple details. Their option should not be considered exclusively in terms of a circumstantial response, however; perhaps it reveals also Kontio's own preference for the technical, a tendency eventually connected with the tasks he assumed as Aalto's collaborator (and prior to that, when one is reminded of his engineering degree). These conjectures support the view that the collaboration in the Studio was based on both identification and complementariness to Aalto. In any case, the use of cast in-situ concrete, a technology which offers a margin of negotiation between industry and craftsmanship, was revealed to be more flexible and adaptable than the prefabricated concrete alternative, and stands out today as one the project's best qualities.

In the 1960s, the expectation that architecture could contribute to, indeed promote, the transformation of the university into a more democratic institution, led to a criticism of Aalto's conception of the users and inspired the emergence of an open form alternative. Kontio and Räike followed the new trend to some extent, without being entirely aware of its implications. For example, by inverting the hierarchy between special and standard elements characteristic of Otaniemi so as to achieve compactness, they also traded the latter's distinctive relationship to the landscape for a more indefinite one.

In general, architects reacted to the students' and teachers' demand for the power to influence their circumstances by addressing their concrete, but also

short-term, expectations, i.e. by designing neutral spaces with a direct, popular expression. In many cases, this populism has revealed, paradoxically, the need for a broader understanding of the user, i.e. the disinterested way by which Aalto reordered natural and built existences in Otaniemi, thus assimilating history and territory.

Academy and craft

> *How did the capital of the Ionic columns come into being? It originated in the pliable forms of wood and the way its fibres unravel and curve under a load. But the marble product is not a naturalistic copy of the initial process. Its polished and stabilized forms embody human qualities that the original constructive form did not have.*
>
> (Alvar Aalto)[4]

Chapter 2 evoked the idea of architecture as a practical art combining purpose and play so as to reject interpretations of the Studio's work in terms of Aalto's individual genius. By connecting the Studio's architecture to past architectures, it was suggested that the latter served as both an example and challenge for the Studio's own projects. Similarly, it was suggested that the Studio's projects themselves formed a body of work that facilitated the collaboration by offering a reference for new designs. Aalto's quote above supports precisely this dynamic understanding of the *craft*, of which a case in point is the Seinäjoki Civic Centre, designed piecemeal over a period of four decades and completed posthumously by Alvar Aalto & Co. under the overall direction of Elissa Aalto.

Aalto's mature understanding of tradition has influenced both the internal and the external attitudes regarding the Studio's products. For example, the identification between the Studio's projects and those by the Studio collaborators was criticized by various critics, especially during the 1960s and until Aalto's death in 1976, when the problem of following Aalto's manner seems to have been suddenly overcome. I've objected that many of the designs made by the Studio collaborators that can be easily identified with the Studio's work in terms of spatial composition and visual expression, remain coherent and pleasant, even when not especially innovative. However, as Aalto himself suggests in the above quote, the adherence to a given material implies also a transformation. For this reason, particularizing Aalto's architecture – particularizing any architecture – requires at once an admiration for its motifs and a sensitiveness to its underlying motives.

I elaborated on the previous point in *Chapter 5* by looking at a project that resumes Aalto's favourite theme of the civic centre, Leppänen's Valkeakoski Cultural and Administrative Centre. To this purpose, I distinguished three levels of scale: *wall, room* and *city.* Leppänen's choice of materials appears justified on the material side regarding its durability, and on the cultural side for its sensorial and symbolic qualities. But like in Aalto's architecture, the two poles are

interconnected: contingency is crystalized into form, whereas permanence refers to processes of both construction and deterioration through time. Compared to Aalto's civic centres, Leppänen's contribution may represent just a process of diffusion, but this course was legitimate and partly inevitable, as I went on to argue by recalling that Aalto's solutions and techniques, too, belong to a larger whole. Leppänen could have avoided such direct competition, but he did not have to, and his option avoided other kinds of contest, namely, an empty search for novelty.

Reinforced concrete promoted the separation between the building skeleton and skin, as well as the separation between space and structure. For the Modern Movement architects, this posed the problem of whether to adapt a room to its purpose or to find the most flexible configuration. In Valkeakoski, these premises are set in tension, following a spatial design conception which underscores Leppänen's skill in drawing plans and sections, and which does not seem incompatible with those of his contemporaries frequently identified as representing an opposition to Aalto's school of thought; i.e. Ruusuvuori and Pitkänen. The articulated interior of the Valkeakoski Library is contained within a simple volume that stresses its symbolic importance. In contrast, the inner-courtyard is divided into parts such that they adapt to the site's physical and cultural particularities. One is reminded of the remarks made by Leppänen's former colleagues, who often singled out his contribution to the projects of the Studio, thus, strengthening the hypothesis of a reciprocal exchange between Aalto and his collaborators.

Aalto believed that civic buildings should claim their superior status in regard to modern industrial and commercial buildings by establishing deeper spatial and temporal associations. Leppänen resumed Aalto's view on monumentality in Valkeakoski: an urban composition, to be built in stages, which, if completed, would stand out from the urban fabric to form a positive outdoor space and a distinct building profile, thus evoking the classical image of the city with its quintessential tower, square and residences. But like most of Aalto's civic centre projects, the Valkeakoski Centre has remained uncompleted, which suggests not only the limitations of the concept of modern monumentality as it emerged in the post-war years, in terms of being capable of participating effectively in the urban development, but also of our own culture, seemingly incapable of sustaining lasting efforts.

Academy and theory

> *The modernists make paintings which are travesties of the real art of construction or machines. The traditionalists try to insert tradition even where it does not belong, forgetting the most important aspect of the cultural tradition, namely that it always bequeaths thousands of incompletely solved problems to the later generations.*
>
> (Alvar Aalto)[5]

In his last years, Aalto was renowned for his silence regarding theory. In *Chapter 3* I attempted to show that this was misleading, and that the Studio's activities were in fact sustained by his theoretical reflection. I started by discussing Aalto's involvement in the Functionalism-Rationalism debate and proceeded to explain how Aalto developed during the war years an *"elastic"* alternative to the process of industrial standardization. Finally, I argued that this principle informed the (informal) typological, or *"architechnological",* method of the Studio, which made it possible to connect experience and experimentation, and art and science.

A process of scientific development through the criticism of tradition is expressed in Aalto's above quote. The Studio used the idea of type as a means to promote the treatment of a problem from one project to the next, as attested in a series of housing designs which culminates in the Hansaviertel atrium-apartment block. This typological approach can be compared with the Structuralist theories that emerged in the 1960s. For example, I contrasted it with the Constructivist movement directed towards industrial production. Moreover, I asked whether the collaborators themselves were able to conceptualize and connect their experience to new theories, thus revitalizing the former. I noted that Aalto's seeming indifference to words at that time, may have contributed to a neglect of theory even among the Studio collaborators. In fact, Aalto's silence demanded a more reflective attitude, and Adlercreutz's interest in Alexander's Pattern Language theory was considered exemplary of it.

Adlercreutz and Aschan's Jägarbacken Housing was examined in *Chapter 6* in connection with a discussion of the concepts of *method, analysis* and *design*. It was seen that the Pattern Language granted Adlercreutz a means to reconsider his experience with Aalto. I observed both convergences and differences between Aalto and Alexander. For example, the former would have vehemently objected to the latter's aim of reducing architecture to science. But it can be added that Alexander's radicalism provided Adlercreutz with the confidence to concentrate

on a group of problems. Ultimately, however, Adlercreutz's position is closer to that of Aalto by combining logic, ethics and artistic dimensions.

Analysis, as the activity of generalizing and conceptualizing, was distinguished from *design,* as the counterpart activity of concretizing in place and circumstance. Accordingly, the Pattern Language presents a means to isolate and describe conceptual *"units of event and space",* as well as to articulate the former into a system, which in turn offers a structure to particularize the design in unlimited ways. As Adlercreutz has observed, the Pattern Language principles of inclusiveness and wholeness open a view over Aalto's design method; for example, shedding new light on the recurrence of centralized spaces in his architecture. In his own Jägarbacken project, central halls and courtyards articulate the individual and the community realms at different levels of scale. If the typical apartment plan is not without its faults (partly deriving from limitations imposed by the choice of building technology), the grouping of the blocks around the open courtyard presents an original expansion to the urban scale of the atrium-apartment concept proposed by Aalto in the Hansaviertel housing block.

For Aalto, Alexander and Adlercreutz, design is a process of particularization: it is this quality that distinguishes the plan of Jägarbacken from other apparently similar, dense and low-rise housing projects from that time. The Pattern Language's principle of design as a collective process contains nevertheless a critique of the architect's work as Aalto understood it. This point may help to explain Adlercreutz and Aschan's determination to find an anonymous, everyday expression, for instance, by introducing a minor order of wood construction with an impermanent character. On the contrary, their choice of prefabricated concrete elements as the main building technology seems at odds with Alexander's preference for a bottom-up design process. To understand Adlercreutz and Aschan's option, therefore, still another influence must be considered, that of the Finnish Constructivist movement.

In the *Introduction* to the current study it was hinted that the conceptualization of our experience required a certain distancing from it. Theory based on science is characterized by a development through successive, overlapping descriptions of an object. More than a simple rupture, however, and in the sense that this distancing is accompanied by a reconsideration of an object that evolves comparatively slowly, this process involves also a continuity.

My academy

Aalto's suggestion that the Studio at Tiilimäki 20 in Helsinki should serve as an *"academy in miniature"* was not to be taken literally, and yet this idea had a strong influence on those directly and indirectly involved in it, continuing up to today. The idea of an *"academy"* evokes different aspects of this influence: a professional community, an example and a memory, and a laboratory for new developments.

Each of the previous aspects suggests different modes of continuity. However, the focus on a period of societal changes and disciplinary crisis, made it clear that the continuities of the *practice, craft,* and *theory,* are not easily compatible with each other. Thus, a transcendent view of the profession should be rejected, continuity cannot be simply taken for granted.

The study allowed for a reappraisal of a period when volatility has strongly conditioned the careers of a generation of architects. In the case of the Studio Aalto collaborators, the problems presented in the 1960s in Finland can be grouped into two categories: firstly, there are problems – such as the pace of modernization, the maturity of the Modern Movement, and the emergence of Structuralist theory – affecting the profession transversally, and therefore integrating the collaborators' work within their own generation; secondly, there are other problems that specifically affected the collaborators, and therefore separate their work from their contemporaries, e.g. Aalto's central position in the office, a biased opposition to the Studio, and an internal passivity regarding Aalto's *"silence"*.

At the start of this study, I asked the reader to accept conditionally the tripartite division between the viewpoints of *practice, craft* and *theory*; throughout the study it was confirmed that these dimensions inevitably overlap. Thus, I cannot draw this work to a close before suggesting some comparisons between the case studies.

Kontio and Räike in Lappeenranta, and Leppänen in Valkeakoski, avoided the use of the prefabricated concrete element systems which were then becoming widespread. Instead, they used a solution widely explored already by Aalto, that is, cast in-situ concrete clad internally and externally with different layers of materials. Both Kontio and Räike's and Leppänen's buildings confirm this solution's spatial and plastic flexibility and adaptability, by combining standard and special configurations and finishes.

Whereas Kontio and Räike committed themselves to Aalto's example in general, Leppänen adhered closely to it. Curiously, neither of them was entirely

able to concretize its potential: in Valkeakoski, the theatre and the administrative office were not built, while in Lappeenranta it was the main auditorium designed by Kontio and Räike that remained unbuilt. But if in Valkeakoski, the fate of the (uncompleted) project seems to expose Leppänen's idealism, in Lappeenranta, on the contrary, a certain rawness attests to Kontio and Räike's effort to meet the clients' requirements with limited resources and a tight building schedule.

The successive amendments to the Skinnarila campus in Lappeenranta denote a quality of openness, and yet, the plan's conformation to life indicates also a limit to the practice considered as the product of the different wills involved in the project. Kontio and Räike's attempt to achieve a compromise between a well-known example and a new compact model may have prevented both the distinctive relationship with the landscape as achieved in Otaniemi and the spatial interconnectedness promised by the open form plans. By remaining closer to the example of the classical city, Leppänen could be showing a way to overcome the insecurity caused by rapid changes.

The projects for the Valkeakoski Centre and Jägarbacken Housing contrast in many respects. The former expresses spatial and visual articulation, while the latter is based on a modular system. Leppänen used materials based on their sensorial and symbolic connotations, while Adlercreutz and Aschan considered foremost the social and economic aspects associated with them. However, both buildings share important features which can be traced to Aalto's architecture, namely, a centralized organization and a concern with topography. Then again, the relationship of each architect to Aalto can also be contrasted: Adlercreutz has conceptualized the rules that underlie the use of atriums and courtyards in Aalto's projects, while Leppänen has particularized the examples of Aalto's squares and courtyards – and which can in fact be traced back further to other examples of the tradition.

Leppänen found no reason to break from Aalto, and he arrived to many of Adlercreutz's findings and possibly some additional ones, because imitation contains embedded knowledge about questions of proportion and decoration, for example, that can hardly be grasped by logic alone. Leppänen was probably more intent than Adlercreutz and Aschan on creating an original work. But to belong to a culture is to actualize it, and in keeping so close to Aalto's example, Leppänen eroded its meaning. Paradoxically, it may have been Adlercreutz and Aschan – who worked with anonymity in mind – who have succeeded in terms of opening new possibilities.

The plans of Jägarbacken and Skinnarila are both typical plans of the period in terms of their dimensions, compactness and direct expression. The motives of

Adlercreutz and Aschan, versus those of Kontio and Räike should be contrasted, however. The Jägarbacken Housing can be seen as the result of a self-conscious effort to address the expectations of a certain time. The Lappeenranta University seems to be more the result of Kontio and Räike having to handle a commission with internal contradictions. Kontio and Räike departed from the experience acquired in Otaniemi and reached a compromise that is effective, but not reflexive.

Further comparison between the two projects suggests other curiosities: Adlercreutz and Aschan tried to anticipate a logical move by using prefabricated building technology but, during the project, they met with unexpected developments. An example of this was when the element system they had recommended was replaced by a more rigid one. Thus, while the Jägarbacken project allowed them to introduce solutions that became more consistent in later projects, it can be said that the design fell short of their intentions. In contrast to this, in Skinnarila the concretization went beyond the architects' initial vision. Kontio and Räike's decision to flatten the ordering between monumental and everyday spaces that characterized the Otaniemi campus, together with their insistence on cast in-situ concrete technology, ultimately potentiated the flexibility of the plan.

These unpredictable developments tell us something about the limits of the theory. If theory provides a logical system and the basis for a critique of practice, then the latter provides conversely a measure of reality, reminding us that design cannot entirely control its opportunities.

To conclude, for a moment in this study Aalto's figure was dimmed, so that the Studio Aalto could be reconsidered in relation to its social, artistic and scientific contexts. This allowed me to examine how the Studio's experience and body of work were prolonged by the actions, products and ideas of its collaborators when they started working on their own. In the works of Kontio, Leppänen, and Adlercreutz, I found, for instance, similarities with Aalto's solutions for placing, ordering and decorating buildings. But above all, and as conjectured from the start, I confirmed that their experience was in different ways tensioned, interrupted and transformed. Paradoxically, these architects' efforts to come to terms with the experiences they had acquired in the Studio under particularly adverse conditions in the late 1960s, only reinforced the primary claim: that is, the continuity of the *"academy"*, and indeed of architecture itself. From this point onwards, I was unable to proceed further with the comparisons, and had to accept the idea of architecture as a partly unsolvable problem.

The Italian architect, architectural historian and critic Manfredo Tafuri considered the tasks of *architectural design* and the *history of architecture* as being incompatible. Tafuri understood that his obligation as a historian was to expose the perils and paradoxes of the architect's work, and saw Aalto's projects, accordingly,

as having *"meaning only as masterful distractions, not subject to reproduction outside the remote reality in which they have their roots."*[6] As an architect myself, and in spite of Tafuri's warning, I could not help entering into this dialogue. As Alan Colquhoun, himself also a revered theorist and practitioner, stated:

> *History provides both the ideas that are in need of criticism and the material out of which this criticism is forged. An architecture that is constantly aware of its own history, but constantly critical of the seductions of history, is what we should aim for today.*[7]

1 Rogers, "La arquitectura moderna después de la generación de los Maestros", 219. Translation by the author. This number of the magazine *Casabella Continuità* addressed specifically Finnish architecture, including articles on Eliel Saarinen, Yrjö Lindegren, and recent works by the younger generation of Finnish architects.

2 Op. cit., 230.

3 Alvar Aalto, "Finland Wonderland", lecture at the Architectural Association June 20, 1950. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 186-187.

4 Aalto, "The Trout and the Stream", 109

5 Alvar Aalto, "The Latest Trends in Architecture", *Uusi Aura,* January 1, 1928. Reproduced in *Alvar Aalto in His Own Words,* ed. Schildt, 62.

6 Tafuri and Dal Co, *Modern Architecture / 2*, 338.

7 Alan Colquhoun, "Three Kinds of Historicism", in *Modernity and Classical Tradition: Architectural Essays 1980-1987* (Cambridge: MIT Press, 1991), 18.

Kaarlo Leppänen, sketch from my hometown of Porto (1983). KL

Appendix

The following reference lists have been compiled freely from various sources, including the architects' own archives, the magazine Arkkitehti, and different websites, and reflect an emphasis on the visits that I made, the different themes and the period I have studied.

Jaakko Kontio and Kalle Räike (1957-1979)

Vuoksenniska High School, Imatra (1957–1960)
Prinssitie Apartment Block, Helsinki (1958–1959)
School in Kimonkylä, Lapinjärvi (1958–1961)
Roihuvuori High School, Helsinki (1959–1961)
Kontio House, Helsinki (1959–1961)
Porvoo Technical Institute, Askola (1959–1965)
Tainionkoski Funerary Chapel, Imatra (1960–1962)
Apartment and Office Block Evälahti, Imatra (1961–1963)
Sääksmäki Town Hall, Parish Centre and Retirement Home (1961–1973)
Maaherrankatu Apartment Block, Lappeenranta (1962)
Björknäsgatan Apartment Block, Ekenäs (1962)
Mechanical Engineering Laboratory for Helsinki University of Technology (1962–1965)
Flow Laboratory for Helsinki University of Technology (1963–1967)
Mechanical Engineering Department for Helsinki University of Technology (1963–1967)
Helsinki Ice Hall (1963–1970)
Herttoniemi Parish Centre and Retirement Home, Helsinki (1963–1970)
Apartment Blocks Jyräänkallio, Putaankari and Kassakari, Valkeakoski (1964–1971)
Offices for the Parish Centre, Imatra (1965–1968)
Heinola Technical Institute (1965–1970)
Kontio House II, Helsinki (1965–1967)
Marjankatu and Kutojankatu Apartment Blocks, Lappeenranta (1967–1968)
Parish Centre, Kemi (1968–1969)
Korso School, Vantaa (1968–1971)
Sörnainen Metro Station, Helsinki (1969–1980)
Lappeenranta University of Technology (1969–1988)
Apartment Block, Porvoo (1970–1973)
Herttoniemi Youth Home, Helsinki (1970–1972)
Youth Home, Kirkkonummi (1970–1974)
Hietalahdenranta Apartment Blocks, Helsinki (1971–1972)
Tiirasaarentie Terraced Houses, Helsinki (1971–1976)
Sörnäinen Rantatie Office Block, Helsinki (1973–1976)
Hotel Presidentti, Helsinki (1973–1980)
Renovation and extension of the Separaattoritehdas Factory, Helsinki (1979–1981)
Research Department for VTT – Finnish National Research Centre, Espoo (1981–1986)

Kaarlo Leppänen

Rovaniemi Bus Station (with Niilo Pulkka and Pekka Rajala) (1956–1959)
Leppänen House, Espoo (1961)
Sodankylä Bus Station (with Pulkka and Rajala) (1962)
Kemijärvi Bus Station (with Pulkka and Rajala) (1962)
Nurmijärvi Bus Station (with Pulkka and Rajala) (1962)
Puotila Retirement Home, Helsinki (1965)
Kulosaari Retirement Home, Helsinki (1965)
Valkeakoski Cultural and Administrative Centre (1966–1973)
Forum Shopping Centre, Helsinki
(with Kari Hyvärinen, Ilona Lehtinen and Jaakko Suihkonen) (1978–1986)
Joutseno Library, Lappenranta (1980)
Konala Elementary School, Helsinki (1981)
Pukinmäki High School and Library, Helsinki (1985)
Helsinki Main Library in Itä Pasila (1986)
Fashion House Store, Espoo (1987)
Court House and Police Station, Tikkurila, Vantaa (1988)
Court House and Police Station, Pieksämäki (1991)
Meri-Rastila Parish Centre, Helsinki (1993)
Renovation of the Finlandia Hall, Helsinki (1991–2001)

Selected competition prizes:

Katajanokka Warehouses (with Pulkka, Rajala and Heikki Castrén) (purchased, 1952)
Turku Theatre (with Pulkka and Castrén) (2nd prize, 1955)
Finnish Pavilion for World Exhibition in Brussels (with Pulkka) (3rd prize, 1956)
School of Economics, Tampere
(with Erkki Luoma, Walter Moser and Walter Ziebold) (3rd prize, 1960)
Cemetery in Vaasa (3rd prize, 1968)
Cemetery in Seinäjoki (purchased, 1972)
Kajaani Civic Centre (with Vezio Nava) (purchased, 1973)
Housing and Commercial Block, Karjaa (with Nava) (2nd prize, 1973)
Seinäjoki Swimming Pool and Sports Hall (with Nava) (purchased, 1973)
Lahti Theatre (with Nava, Urs Anner and Ernst Hüsser) (purchased, 1974)
Olari Church, Espoo (with Anner and Hüsser) (2nd prize, 1977)
Tampere Main Library (with E. Hüsser) (2nd prize, 1979)

Eric Adlercreutz and Nils-Hinrik Aschan/ A-Konsultit Architects (after 1972)

Villa Karme, Motel Marine and Marine extension, Ekenäs (1962–1972)
Two Single-family Houses, Ekenäs (1966)
Jägarbacken Housing, Ekenäs (1967–1979)
Orphanage Hyvönen, Helsinki (1969)
Kirkkonummi Church Square (1970)
Finnish Embassy in Warsaw, Poland (1972–1975)
Retirement Home, Kokkola (1974)
Puroniitynpolku Housing, Helsinki (1974–1979)
Savela Retirement Home, Helsinki (1975–1978)
Complementary Building Plan for Suomenlinna, Helsinki (1975–1983)
Pukinkuja Housing, Helsinki (1975–1979)
Merikasarminkatu Apartment Block, Helsinki (1976–1979)
Vuohikuja Housing, Helsinki (1977–1980)
Kartanonkaari Housing, Helsinki (1978–1982)
Markkinatie Housing, Helsinki (1979–1983)
Kurjenkellonkuja Housing, Helsinki (1979)
Ratavallintie Housing, Helsinki (1980)
Nyyrikinrivi Row Houses. Espoo (1980–1984)
Aarteenetsijäntie Housing, Helsinki (1980)
Rauma Town Hall (1980–1991)
Maistraatintori School Parish Centre in Länsi-Pasila, Helsinki (1981)
Kivenlahti Day Care Centre, Espoo (1981)
Nordic Investment Bank restoration and extension, Helsinki (1981)
Kastelholm Castle restoration, Åland Islands (1982–1989)
Espoo Parish Centre (1982–1995)
Länsi-Pasila Apartment Block, Helsinki (1983)
Housing plan, Kristiinankaupunki (1986)
Single-family House, Riskutie 13, Helsinki (1983–1987)
Kamppi "Triangle" Housing, Helsinki (1983–1989)
Lappeenranta Music Institute (1985–1990)
Mannerheim Square, Kokkola (1988)
Swedish School of Economics restoration, Helsinki (1993–1996)
Studio Aalto in Tiilimäki 20 restoration, Helsinki (2002)
Mellin Auditorium for the Helsinki University of Technology Main Building (2003)
Allotrianpuisto Housing, Helsinki (2007)
Villa Adlers, Espoo (2010)

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>
Jaakko Kontio and Kalle Räike
Lappeenranta University of Technology, I stage
1969-1975

>
Kaarlo Leppänen
Valkeakoski Cultural and Administrative Centre
1966-1973

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Eric Adlercreutz and Nils-Hinrik Aschan
Jägarbacken Housing, Ekenäs/Tammisaari
1968-1973

Alvar Aalto (1898-1976) worked half of his career in partnership with his first wife, architect Aino Aalto (1894-1949), from 1924 to her premature death in 1949, and an almost equal period of time in partnership with his second wife, architect Elissa Aalto (1922-1994), until his death in 1976, after which Elissa Aalto directed the office Alvar Aalto & Co until her death in 1994. Over its seventy years of existence, the Studio Aalto employed altogether more than 300 architects from various countries around the world. Many of the Finnish architects who worked in the Studio later started their own independent architecture offices. As such, the Studio had a manifold direct and indirect influence on their work. But contrary to the work undertaken in the Studio, the work made independently by the Studio collaborators has remained relatively unknown. In this study I set out to describe and connect the work of the Studio with the work made by some of its individual members, architects who started their own offices at a crucial moment in Finland in the 1960s: Jaakko Kontio, Kaarlo Leppänen and Eric Adlercreutz. The work of each of these three architects is analysed in accordance with different premises: practice, craft and theory, respectively.

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