

Design Proposal for a Housing Development Scheme on Duke St. in Kitchener, Waterloo

(Four Churches Competition Entry by E Cheung, J Farkas, M MacLeod)

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Contents

0.0 Competition Panels

1.0 Building Type – Introduction

1.1 References

1.2 Kitchener, Waterloo

1.3 Strategy for Urban Densification

1.4 The Role of Mobility in the City

1.5 The Need for Individuality with in the System

2.0 Materials

3.0 Conclusion

4.0 Bibliography

1.0 Building Type:

“Type is a constant and manifests itself with a character of necessity but...it reacts dialectically with technique, function, and style, as well as with both the collective character and the individual moment of the architectural artifact.”

- Aldo Rossi, Architecture of the

City

In his book “The Architecture of the City” Aldo Rossi outlines the significant place housing, as a building typology, has had on the fabrication of the modern city. Thus any analysis of the major typologic developments in housing presupposes an understanding of the social, economic and political conditions that precede changes in the nature of urban dwelling. As a means to contextualize two specific modernist housing projects by Le Corbusier and Alvaro Aalto (prototypes that have significant relevance up until today), I will briefly mention a number of Rossi’s historic examples. The issue of housing typology is still a major concern for contemporary architects and city planners. However, as Rossi explains, housing design is not only a matter of stylistic typology, it is also a display of the social unity of a city, the “lifestyle” concepts of an age; it is a catalyst for urban growth. Thus it becomes clear that despite the fact that housing typologies do not change in any rapid manner; our ideas of dwelling becomes redefined according to specific social, economic and political conditions.

1.1 References

A brief selection of historic housing types illustrates this progression. In ancient Rome, for example, there were two major dwelling types; the *domus* and the *insula* type (diagram 1). The latter is describe by Rossi as a virtual microcosm of the city in the sense that one building accommodated a wide variety of different social classes in quite close quarters. Social differentiation was evident - it was signified by a change in height. Prior to the 19th century most European cities are built of a continuous, unified block structure permeated by internal semi-public courtyards that allow more or less light and air into the blocks’ mass. As building codes progressed the requirements for light and air, and therefore larger courtyards became stricter. Exceptions to this type began to appear in the 19th century. The villa became a popular urban element. By the second half of the 19th century it had transformed the fabric of cities such as Berlin. It marked a significant change in the urban unity both physically and symbolically. Diverse and antagonistic social classes were now differentiated and segregated within the city.

. The *Siedlungen* idea developed after the First World War became a typical housing complex (diagram 2). Its’ form is intrinsically linked to the nature of the city. A detached structure, whose

orientation was governed by its' solar exposure rather than a predefined urban geometry relied on a freer division of land. This move totally altered the 19th century urban planning continuum. It did however, allowed from the introduction of public green spaces around the building. An important aspect of this housing typology was the design of the individual unit or "cell". Based on rationalist housing theory, the concept of *Existenzminimum* sought to find the perfect layout required by different family or singles based on the ideals or values of organization and economy. Its' particularity, however, was its' downfall- as styles of life changed the design became too particular.

In his book 'Modern Housing Prototypes' Roger Sherwood categorizes modernist housing into six general types: detached/semi-detached, row, party-wall, block, slab and towers. Units types are further described according to orientation and access. In the following discussion I will reference Le Corbusier's *Unite d'Habitation* in Marseilles and Aalto's *Neue Vahr Apartments* in Bremen. Both these modernist projects have had great influence on contemporary architects; specifically the work of MVDRV. To begin I will be describing the first two chosen projects according to Sherwoods' categorization. I have chosen two "prototypical" models as a means to describe the question of typology. Thus, the modernist projects will first be compared based strictly on a typological categorization. The work of MVDRV strongly engages the question of typology. It is an interesting foil to the more purist work of Le Corbusier and the organic aspects of Aalto's designs. Their work is in a sense an essay in the use or reconfiguration of the housing typology for the post-industrial harbor or in a developing suburb. The second part of the analysis deals with context. They have taken the standard prototypes as a basis for collage and manipulation in response to the ever-changing contemporary urban condition, firmly rooted within their social, economic and political context. Thus, this paper seeks to illustrate the great influence selected modernist prototypes have had on contemporary housing projects and how our competition proposal relates to this discussion. This analysis will reflect on these issues in relation to the individual, the community and the city and the manner in which architecture seeks to accommodation of the ever-changing relationship between them. Housing by its' very nature is continually searching to find the balance between the standardized whole, the collective and the accommodation of the individual, the private.

Typology: A Discussion

Unite d' Habitation is referred to as a slab building. A double-loaded skip-stop corridor leads to two storey double-orientation, open-ended units. The core services, including the kitchen, stair and bathrooms are concentrated in the interior. This project is set upon the plane of a utopian landscape. Raised up above the ground on concrete pilotis, it stands as a solid and unified form.

The elevation is cellular, with windows set back from the façade plane to provide shading and equal balcony space for each unit. It is long in the east/west directions and shallow in the other to allow for deep penetration of light and breeze. A portion of the 11th and 12th floors are differentiated from the otherwise rigorously repetitive façade by vertical *brise-soleil* behind which are commercial spaces. The uncompromising façade covers a remarkably flexible and varied interior configuration (diagram 3). The famous section shows that the public circulation located only on every third floor allows for units that are two storeys in height and which span the full depth of the building (diagram 4). Characteristically there is a roof “garden”. Fundamental to the project is Corbusier’s theory of typology. His reinterpretation of governing typologies is a means by which to express his ideas about societal norms. The idea of the prototype, as an economic and industrial concept, can be seen as a significant part of his work. In his book ‘Towards A New Architecture’ Corbusier talks about his views on the role industry has on his society; he describes industry as “...overwhelming us like a flood which rolls on towards its destined end, has furnished us with new tools adapted to this new epoch”². Rather than react against the new industrial age, he sees it as a mechanism that is to be applied to his design process. This new method is implemented in projects such as the *Dom-ino* house (diagram 5) where the repeated module, the principles of geometry, proportion govern laws of form, and the idea of flexibility through the recombination of pre-fabricated elements are characteristic. Standardization and mass-production of a fixed number of options becomes a predominant value. Key to this vision, however, is a strong idea about community. The design of Unite incorporates a number of “social condensers”. A gym, kindergarden, hotel and shopping market are meant to embody the vision of a communal life that would occur within the totality of the building. The role of the street as a place of social interaction and chance was meant to be relocated from the ground plane to the specifically designed common spaces. In reality however, there wasn’t enough traffic or density to sustain these programs. Today the 13th floor shopping market is inhabited by architects’ and law offices. Corbusier’s towers epitomize the modernist preoccupation with mobility and movement, isolated from the immediate mass of the city, the continuous ground plane whether paved or “green” was meant to allow for the free and unimpeded movement for people and cars. Buildings were no longer to be obstructions in the desire of speed and fluidity. The roof garden is a further interpretation of the new site planning. A “dislocated” piece of ground it afforded privileged views of the surrounding landscape.

Typologically, the Neue Vahr Apartment by Alvaro Aalto (diagram 6) is a tower building with singly-oriented units opening onto a single-loaded corridor on the north side. The project is governed in some respects by similar ideas as the Unite project. Aalto however, was less interested in a strictly didactic rigour and the paradigms of the industrial age, his references have more to do with biology or nature than with the machine. The apartments, opening off of a single-

loaded corridor, are arranged in a fan shape to take advantage of good sun exposure and a pleasant view of the park. This organic approach is described by Frampton who notes that in contrast to the theoretical approach taken by the modernists, Aalto's architecture responds first and foremost to the conditions of light and the specificity of the site. He goes on to mention that this freedom is evident in much of Aalto's site strategies where "the normative orthogonal grid must fractured...and inflected where the idiosyncrasies of the site and program need". There is, however, another important aspect of Aalto's work, a concern not only with the functional aspects of his projects but also with human well-being, with the place of the individual in the overall order of a system. This is evident, for example, in the overall geometry of the building (diagram 7). While each apartment is one "slice" of the floor plate, by fanning the units out there is some sense of imbalance and precision within the whole. Everyone gets some degree of individuality in terms of view and lighting from their neighbour and a higher degree of privacy on the balcony. The idea of community is of equal concern. As Frampton writes the "primary virtue of Aalto's apartment type is that it provides the attributes of the single-family home within the confines of a small flat." This idea is evident when looking at the residential floor configuration in the tower of the Bremen apartments is an example this effort. The apartments rather than opening onto a long, anonymous corridor are clustered around a well lit common space concentric around the service core that encourages interaction and a sense of community within each floor. The apartment types are arranged such that single studio apartments are positioned between two and three bedroom units at the end of the corridor. Apart from the residential tower, the building sits on a podium that houses a number of large public function rooms as well as a commercial strip that opens onto the outside on the ground floor. The approach Aalto took to design of the ground floor is entirely different than Corbusier's. While Corbusier negates the need for public facilities on the ground floor, Aalto programmatically engages the site in this manner. The podium directly joins the building next door providing a covered arcade that connects it with the neighbouring shopping mall. It is said, however, that although it is located in a suburban location on an open site, the nature of the ground floor configuration would site itself very well in an urban block. Speculatively, extending the single-loaded corridor to create a series of these clusters would establish a surface that could help complete part of an existing urban fabric (diagram 8). It is evident, however, that both Le Corbusier's and Aalto's projects firmly rooted in the social context of their time. Each unit although in theory flexible and accommodating in reality today house a more specific demographic than intended.

MVDRV's *Sanchinarro* in Madrid, Spain is located on a large open plain that is scheduled to become a residential suburb in the future (diagram 9). It is a building that is meant to become a reference point for future development, adding a degree of density and structure to the otherwise

open-ended site. The parti can be described as a series of small yet varied 'buildings' that have been stacked and glued together within the framework of a defined city block.

These 'blocks', stacked and glued together, make up a new towering 'superblock'. Their Housing *Silo* in Amsterdam is another example where housing typologies have been manipulated to accommodate the specific needs of the inhabitants.

In both projects the circulation paths in the buildings act as small vertical streets, snaking through the rectangular volume (diagram 10). "Their transformation along each itinerary agglomerates the compendium of typologies that are structured like small suburbs." ¹ Unlike the homogeneous or identically articulated nature of the circulation corridors seen in the Unite project this building provides communal spaces that are non-uniform and varied. Each "neighborhood" has a somewhat private and individual identity. This is achieved through the use of different materials that are unique to a small "cluster" of units, differentiated construction, varieties in unit depth, nature of the outer spaces, floor heights, accessibility and number and proportion of rooms. The units themselves also vary from single studio apartments to various types of multi-storey apartment units, with two-three-four bedrooms. Public spaces vary in scale from the hallway, the collective balconies, to a large public outdoor "square" in the Sanchinarro project and a large public deck in the Silo project. As in Corbusiers' roof top garden public spaces are arranged such that the great views of the distant landscape or the water can be enjoyed. These elements have characterized this project as a "vertical city".

Thus, the work of MVDRV is not only an exercise in questioning the traditional housing typologies but is also attempt to apply principles traditionally associated with urban planning to a housing typology. This comes out of two contemporary preoccupations: the desire to densify certain areas of the city, in order to make more economic use of the land while accommodating an urban landscape that reflects not only our changing lifestyles but also remains open for individual and collective expression within this lived space. It is evident then that the ever increasing cultural, social and economic diversity that characterizes the modern city must be acknowledged in the dwelling project. The competition proposal seeks a symbiosis between these elements.

1.2 Kitchener, Waterloo

It is evident from the previous discussion that any question of housing typology must begin by addressing the economic, social and cultural site. This project is situated in downtown *Kitchener*, Ontario. a city with a rich history (diagram 11/12). In its' recent past, however, a decline in the industrial economy in the area has resulted in a drastic change in the urban vitality of its' downtown core. Companies that employed much of the city closed or scaled down their factories.

The loss of these industrial jobs from the city center in considerable urban decay as people moved to the ever growing suburbs. When plans for urban renewal in the 1960s', that included the demolition of the neo-classical city hall, failed to achieve the desired goals, things started to decline even further. A decade ago, as arsonists began to destroy abandoned buildings in the city core, the issue of urban renewal was raised during the municipal elections. Since then the process of slow re-inhabitation of the abandoned and underused buildings has occurred. Businesses are starting to open up and new development is occurring. Major new tenants and owners in the downtown core include a number of large insurance firms, a new children's museum, a theatre, numerous banks and law firms as well as the a number of residential conversions of old industrial buildings as well as the rebuilding of a new city hall. The four churches, St. Andrew's Presbyterian, St. Peter's Lutheran Church, Trinity United and Zion United Church are located in the heart of downtown Kitchener, a community that is rapidly trying to redefine and rejuvenate itself. The competition is a small part of a larger urban initiative that seeks to rejuvenate this mid-sized towns' core. Many solutions and initiatives have been put forth in an attempt to densify and reverse the civic decay that that has resulted from a changing urban economy.

A closer look at the urban block where the project is sited highlights the complexities of this initiative (diagram 13). The project site shares a block with two of the four churches as well as with a new 15 storey residential tower, a free standing lawyers' office, a commercial strip and block, a YMCA and St. Mary's charitable residence. The direct neighbors include a large government building, a shopping mall and market, a number of bank and insurance offices and the courthouse. It is also a block away from the main commercial street in Kitchener. It is evident that despite the scale of the site, it houses incredible demographic diversity. From the lawyer, to the priest, the shop keeper to the student hanging out at the nearby mall each group has very different housing requirements. This project recognizes these existing polarities. Our initiative attempts to reconcile these issues within the new design. A typological analysis of the above mentioned housing precedents provided a framework of issues that needed to be addressed in the design process.

As Rossi writes, the basics in housing typology, formalistically does not change rapidly. Since the designs of Le Corbusier and Aalto the importance of light, fresh air, surface area and privacy remain of paramount importance. The same categorizations according to orientation and access have remained. The question of typology today, however, is revolves around the manner by which these basic typologies respond to the changing conditions of the contemporary city. Urban densification, mobility and individuation are primary concerns for the architect of the modern dwelling.

1.3 Strategy for Urban Densification

It is evident that the need for urban densification comes from a real necessity to find a more economic and sustainable use of land. Along with this process, however, come a number of concerns; issues of privacy, urban morphology and increased social diversity need to be addressed.

Both housing projects by MVDRV are located in areas of new development. There is still a great need for an increased level of inhabitation in the downtown core of Kitchener. The aim of this competition proposal is to continue the current trend of urban densification and re-inhabitation that has been set into motion. The north tower is intended as the density carrier. The project is intended as a model for future development in the area. It addresses the idea of density in two parts: the ground plane and residential blocks. The ground plane is organized along a central pedestrian spine running parallel to Duke Street (diagram 14). Off of this corridor are four small public squares that relate to the two church entrances and connect to the street. The two story podium gives the block an urban structure. A commercial strip is accommodated on the street façade while offices, cafes, restaurants, classrooms, a daycare and a banquet hall are accommodated on the inward looking side. Located only a block away from the main commercial street of Kitchener, there is a desire to diversify pedestrian traffic, making a larger area of the downtown core pedestrian friendly. This is achieved not only by the most public face of the project but also by the block structure itself. Although the podium extends to the very edges of the block, there is a level of permeability that is intended to attract public activity into the middle of the site. At the heart of the site, surrounded by towers of animated living, working and shopping places, is a quiet oasis- the chapel. While the first two floors are sensitive to the topography of the fine grain context, the upper residential tower address the context of the city block made up of numerous 10-15 storey towers. This density is required to sustain a level of activity and social intensity for the development of the core area.

At the moment the project sits on a site of incredible diversity. There is a balanced relationship between these different groups. The project aims to relocate and allow for this state to continue, for it is apparent that successful urban areas require a degree of diversity in terms of program, social groups and economic levels. Both buildings contain interspersed small and large units suitable for high and low-income housing, an assemblage of unit typologies in a sense. It accommodates those who have different modes of work, who work at home and need a hybrid house/office space or those who work 18 hour days and only sleep in their apartments as well as families who need lots of free space to move around in. Each of these groups in turn participates in the life of a city in very different ways.

It is in the flexibility of the unit design, however, which makes the individual unit truly sustainable. As Gauza future unit designs should tend towards “greater isotropy and spatial indeterminacy” through the use of larger spans and strategic layout of technical and services within the solid partitions. Within this “shell” sub-spaces, just as sub-types within the overall housing block, can be fitted.

1.4 The Role of Mobility in the City

The notion of mobility is integral to the idea of housing today. In one sense, communities are no longer a stable entity. People move, change “lifestyles” and travel more rapidly and frequently than ever before, a reality our accommodations need to address. Mobility also occurs at all scales. Although the project addresses the overall orthogonal geometry of the street condition it is an initiative that allows for another scale of movement. The large opening in the base of the building podium, the internal public squares and program and the pedestrian spine are all means by which to encourage this. Pedestrian modes of traffic (in-line skating, walking, jogging etc) is encouraged. It is felt that this secondary layer of traffic is what gives the city a character separate from that of the driver, as well as a complexity at the human level. A sense of discovery and depth is meant to animate and encourage discovery.

1.5 The Need for Individuality with in the System

Every housing project must address the balance between individuation and the collective. As is evident in all the precedent projects shown the fostering of individualism and smaller more intimate groups within the larger system is of major concern. In the MVDRV projects the line is drawn along shifts in unit typology. “Lofts units”, live/work, studio apartments are clustered together and given their own identity. The competition proposal allows for different unit typologies to be accommodated. These are randomly distributed on each floor so as to encourage more realistic social interactions. An importance was also placed on the design of meaningful collective moments (diagram 15). The corridors single-loaded corridor of the slab building becomes a north-facing balcony in the summer creating an intimate and open relationship with the church squares they overlook. This space is seen as a pleasant place to interact with those on your floor as well as visually with the surrounding community. The use of “green voids” puncturing through the building at different levels is seen as a semi-public “square”. They not only introducing more free space and greenery for the inhabitants but also allowing light to fall on the site behind. The public

spaces on the ground floor mediate between the immediate community of the towers and the broader neighborhood of Kitchener.

The “collaging” of materials in multi-unit dwellings strongly reflects this desire for an individual attitude in housing design. The works of MVDRV, as mentioned above, use the materiality of the façade to differentiate between individual unit “clusters”. While the overall impression is one of incredible complexity and specialization, there is a degree of economy within the system by the use of prefabricated “parts”. This balance between the economics of the modular system (as described by Le Corbusier) and the desire for a more organic façade arrangement is evident in many double façade systems.

The double skinned façade provides this same complexity but in response to specific environmental conditions. The dweller has a sense of layered filtering between the interior and the exterior, as well as with a degree of personal variability. This idea is evident in the Vienna project of Dieter Hencke and Maria Schreieck’s (diagram 16) for example, where the units are provided with solar shading in the form of sliding panels; units of different orientation are thus differentiated. “A more evanescent and less aggressive image within the landscape”¹ is shown.

2.0 Materials

The specific material choices for the competition project were strongly influenced by the initial competition brief. The outline asked for the use of economical and durable materials. The selection of materials for use and environmental impact considered the following criteria; renewability, transport, design life, recycleability and availability in the area.

The structure of the building consists of in-situ concrete, while the building skin on the north and south sides are shaded curtain walls.

The brief also expressed a desire for the proposals to incorporate green building technologies into the building design wherever possible. The site on Duke Street stretches in the east-west direction giving the slab building good exposure on the north and south sides. This prevalent orientation allows for optimum day lighting conditions for all the apartments while the compact shape allows for natural ventilation. The use of shaded glass as the main façade material takes advantage of the use of solar energy, utilizing the concrete structure for thermal mass (diagram 17). As in Kazuyo Sejima’s Gifu Kitagata Apartment Building (diagram 18), the installation of green atrium “voids” throughout the building and the introduction of water elements in the indoor courtyards are intended not only as social spaces but as means to regulate solar gain and even out temperature differences on each floor.

3.0 Conclusion

In his text, Manuel Gausa discusses the contemporary city in terms of its' "indeterminacy and mutability ... otherwise more receptive to *open structures* with a capacity for evolution and perturbation." This description implies a radical shift within the theme of housing, a sector of architecture that traditionally relies on forms of stability, conventionality, and homogeneity. The new urban plan demands hybrid and complex structures that respond to the energies of the city. Thus, Gausa outlines the housing typologies of the present; open systems, basic-complex units, hybrid entities and incisions. These, however, are meant to be understood more as overlapping malleable categories than strict classification, in synergy with the contemporary city.

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