Technology vs. The Family: The Effects of The Popularization of Technology On
Residential Floor Plans Of The Twentieth Century [North America]

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Abstract
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This thesis proposes to examine the correlation between the ever-evolving technologies of the twentieth century and the shifts in spatial distribution in the residential architecture that may result from their introduction into North American middle-class homes. I will investigate the cause-and-effect relationship between these new forms of technological in-home entertainment, their impact on the lifestyles of the middle-class North American families who consume them, and the resulting demands reflected in the residential architecture that develops over the course of the century.

I seek to explore how the use and distribution of square footage for private spaces, and housing in general, is determined at the time the units are designed and built. Furthermore, how have our needs and demands evolved over the course of the twentieth century? I will argue that the introduction of technological devices into the domestic sphere is a definite progenitor for shifts in the way that spaces were being used over the course of the twentieth century.

Our journey will begin at the turn of the century, examining the layouts of homes and the lifestyles of the families that occupied them. The main device that we see enter the home that sets off the first domino in terms of changing the way families are entertained in the domestic sphere is the radio set.

The mid-century period shows us an enormous transition. Technology continued to boom, and the television set was introduced and became integrated into daily home life within the space of a decade. Unlike the radio, the television has the added

dimension of the visual component. The formal parlour room of the turn of the century gives way to the more casual living room, a space where comfortable furniture can be found strategically placed in viewing distance of the television. We observe here an architectural shift in terms of how space is used and arranged in direct consequence to a new technology introduced to the domestic sphere.

Finally, the end of the century gives way to households running multiple technological devices on a daily basis. The most notable addition to daily life is the personal computer. What distinguishes this device even more from the radio and the television, is that this technology is used in a one-person-at-a-time manner. This device also coincides with the growth of bedroom sizes, indicating even further that emphasis is placed in the period on privacy, isolation and time spent alone in the home rather than together or engaged as a family unit.

Ultimately the adoption of new technologies into daily life is something that can be neither undone nor avoided. However, if changing lifestyles can create a new demand to reshape the spaces we live in, we must question whether the same can be done in reverse. Would it be possible to design a space that can counter-influence the isolating trends of these technologies and stimulate social interaction while still hosting and engaging in them?

Acknowledgements

The writing of this thesis has taken place over the course of several years, and is the result of the support and encouragement of to faculty of the Department of Art History at Concordia University.

I had the fortune of working with Dr. Jean Belisle for the first leg of my journey. Dr. Belisle's tireless enthusiasm for all investigations into the world of architecture helped to propel my curiosity on the subject ahead into a full-fledged research project. His vast knowledge of architectural history, references and modern period design helped to steer me through the volumes of information to find the best places to begin to look for answers to my questions.

Dr. Elaine Cheasley Paterson has joined me on the second part of my journey, helping me to complete this project after Dr. Belisle's retirement. Her equally sharp and concise feedback and questions have been infinitely helpful and appreciated, and have contributed to sharpening my thoughts and narrowing my arguments.

Dr. Anne Whitelaw also contributed invaluable feedback and recommendations as reader, and her time in this role is greatly appreciated.

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INTRODUCTION.

The prompt for this research was a queen-sized bed. As the owner of one, I learned that apartment hunting in Montreal can be an art in itself. A young professional finishing college in the early twenty-first century, I found myself scouring through the limited options available in the trendy Plateau district, and came to a difficult conclusion: the layouts of these apartments do not correspond to the lifestyle and comforts that my generation, young adults, has adopted. While the neighborhood is desirable for its proximity to strips of nightclubs, restaurants and shops, the rows of housing were built mostly at the turn of the century. The first quarter of the twentieth century found the district host to groups of newly immigrated Canadians. Bill Brownstein describes the nature of this area of Montreal at the turn of the twentieth century as an area where "Jewish, Portuguese, Greek, Italian and Eastern European immigrants flocked".[1] This held true for many decades to come, and landmarks of these rich cultures remain preserved amidst the modern comforts that attract visitors and residents to the neighborhood a century later. A good example of this is Schwartz's deli on St. Laurent Blvd. Established in 1928 by Ruben Schwartz,[2] it is famous the world over for its home-cured smoked meat sandwiches, deli side dishes and deli attitude. Walking into the eatery is a veritable blast from the past: my grandparents ate there when they lived in the Plateau, just a few blocks over on

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[1] Brownstein, Bill. "Schwartz's Hebrew Delicatessen: The Story". Vehicule Press, Montreal QC, 2006. (33)
[2] Brownstein, Bill. "Schwartz's Hebrew Delicatessen: The Story". Vehicule Press, Montreal QC, 2006. (22)
[4] Heinz, Thomas. "Frank Lloyd Wright: Furniture". Gibbs Smith, Layton UT, 1993. (3)

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St. Urbain, my mother went there as a teenager with her friends, and I find myself having a late-night order of fries there on occasion as well.

As I went from apartment to apartment, with the measurements of my bed and other furniture, it became clear that very few of the older buildings had bedrooms that would accommodate the furniture that I had acquired while living in a house built at the end of the twentieth century. The square footage of the rooms was so small that in many, the bed itself would occupy the entire width of the bedroom. This task of apartment hunting in the different boroughs of Montreal in search of a suitable apartment served as an interesting window into the shifts in the floor plans of housing built across the twentieth century. It is a city that has been in constant development over the centuries since it was founded and, like many other North American cities, has an urban layout with a downtown core structure and peripheral suburban areas. Countless differences can be found between the just-built apartment that I shared in downtown San Francisco in 2001, a similar building in the Atwater area of Montreal built for Expo '67 and the rows and rows of Montreal Plateau offerings built mostly at the turn of the twentieth century. It led me to consider the lifestyles, needs and way people live at the turn of the twenty-first century.

The challenge I met in this experience led to more questions about middle-class domestic spaces in Montreal, and North America more generally, in the twentieth century. Important questions about current demands in housing continued to develop regarding the parameters that define housing design. What are the needs of young, middle-class families looking for homes in or near large

cities? What are the demands in terms of space, features and amenities? What needs did my mother's generation have? My grandparents'? As such, how did the spaces built in each era reflect their lifestyles? The answers began to circle first around the technologies that I live with on a daily basis. Looking back, this concept begins to unravel back in time as new lifestyle-changing technologies impacted each generation in question. The answer to my questions, focused mainly on shifts in the distribution of space in residential design, unavoidably raises the issue of evolving technologies in the twentieth century. These examples reflect the experiences of a segment of the population in the middle classes and above, who participate as active consumers in the marketplace for the latest innovations. In this thesis, I will suggest the possible correlation between the introduction of new technologies into family life, and how these new commodities may have influenced the distribution of space in the North American home over the twentieth century.

Architecture responds to the needs of its society. Floor plans and interior design result from the demands of the client in terms of spatial needs and end use. Clearly then, a home built for a family at the turn of the century might be a difficult fit for the post-modern family. Looking back at the twentieth century, I have chosen to divide the span into three periods: the turn of the century, the mid-century or Post-War period, and the end of the century. Each of these periods corresponds to events in society and new technology that impact the way that families interact with each other and the design of the architecture that frames them.

One anecdotal example of this interaction once told in a university course on architecture is that of colleagues of the professor who had the good fortune to purchase one of Frank Lloyd Wright's prairie homes in the United States. Built in the 1920's, these homes embody the Prairie style for which Wright remains most famous even today. The couple had at once bought a functional piece of history, as well as a new home to live in. However, upon moving into the home, they found that their own furniture could not fit into the spaces. Typical of contemporary architecture of the early twentieth century, the home was designed with small bedrooms and large common spaces. And so, his colleagues found their bedroom crammed and their living room sparse. This is not surprising given Wright's commitment to the concept of *total architecture*, where the furnishings inside the home were designed to complete the architectural space. In *Frank Lloyd Wright: Furniture*, Thomas Heinz explains "more than anything else, the [furniture] designs were to complement the spaces they were intended to occupy".[4] This example dramatizes the impact of historical context to a housing design, as most people do not have the fortune of living in a home designed by a renowned architect. A more relatable example of a similar nature happened to a set of friends of mine. They sold their newly-built tract-house style townhouse in the outskirts of Toronto in 2011 to move into a century-old plaster construction home closer to the city center. Suffice it to say, the bulk of their furniture stayed in the living room when they moved in. The bedroom pieces would not fit into the room upstairs, and the game-room sofa couldn't make it down the stairs to the

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[4] Heinz, Thomas. "Frank Lloyd Wright: Furniture". Gibbs Smith, Layton UT, 1993. (3)

basement. Likely, the basement was not meant to be a hockey-watching haven back in the early 1900's when the home was first built.

The twentieth century has seen a vast amount of irreversible cultural shifts in the way that individuals as well as families within the home share their time and enjoy entertainment and recreation. At the turn of the century, the family gathered around the radio for entertainment, then in front of the almighty television set by mid century, and finally, by century's end, family members became engaged with their personal computers and the Internet. As we integrate these technologies, we make space for them in our lives by perhaps removing another aspect that has become obsolete with the arrival of the new. Marshall McLuhan revolutionized this concept in 1964 with his argument that *the medium is the message*. This theory suggests that new technologies bring on the development of an extension, a new sense, along with the simultaneous amputation of another which has been since outmoded.[5] After researching material for this thesis, my concern is that as technologies continued to evolve towards the personal computer and personal electronics, the inter-relations of the family unit as we know them could become obsolete. With direct human communications being replaced or moderated by various technological devices, are we encouraging an environment of silence and isolation of individuals within the family home?

In *Growing Up With Technology: Young Children Learning in a Digital World,* the notion of how rapidly children today have come to integrate and adapt

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[5] McLuhan, Marshall. "Understanding Media: The Extensions of Man". McGraw Hill Book Company, New York, Toronto, London, 1964. (7)

to new technologies as a part of daily life is examined. Interactive media historian Lydia Plowman describes the experiences of 4- and 5-year-old children in her case study as "growing up in a world where the internet, mobile phone and various forms of digital interaction are features of daily life".[6] Plowman acknowledges the backlash against these newly integrated technologies, citing a possible threat to positive early childhood development. She admits "successive generations have given prominence to the expression of anxieties about the ways in which childhood is being transformed in undesirable ways, each time focusing on the latest technology".[7] Plowman suggests that there are negative repercussions to the quick and widespread adoption of the abundant new technologies in daily life, especially in the family home where the formative years of children unfold.

I will be the first to admit that I am my own worst critic, and am guilty of most all of the questions that I am asking about my own generation. The difficulties I had in finding a suitable apartment for myself and two roommates to share during college revolved around certain specific criteria: I needed a room large enough to accommodate my queen-sized bed, large mid-century-modern Danish dresser, desk with internet outlet for my laptop (which I was almost surgically attached to) and television set with cable as well. My roommates, a couple, had similar needs: they needed space for a desk and complete internet setup, as well as their own television set, cable and DVD player. We would greet

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[6] Plowman, Lydia; Stephen, Christine; McPake, Joanna. "Growing Up with Technology: Young Children Learning in a Digital World". Routledge, London, New York, 2010. (4)
[7] Plowman, Lydia; Stephen, Christine; McPake, Joanna. "Growing Up with Technology: Young Children Learning in a Digital World". Routledge, London, New York, 2010. (23)

each other on the way in and out, share the occasional beer and conversation, but our daily lives were dominated by our interactions with our technologies rather than interactions with each other. We cohabitated but remained detached and uninvolved, sharing living quarters yet enjoying the predominant company of our technologies rather than each other.

TURN-OF-THE-CENTURY & THE MODERN RADIO.

Our journey begins by examining the homes and lifestyles of North American families at the turn of the twentieth century. Let us begin by putting into context the amenities that were available to dwellers of this period. Amidst the abundance of North American modern comforts that we are accustomed to, it can be difficult to imagine a time when people lived with different standards, resources and amenities. Our homes today are defined and accessorized with numerous technological devices, from kitchen appliances to telephones, televisions and computers, to clocks, radios, alarms, and more. In *The Changing Floor Plan: A Study of the Evolution of House Plans in British Columbia,* Ken Falk gives some insight on the way homes in the northwest were designed during this early century period. Some of these details are such a stretch from contemporary lifestyles that it is difficult to imagine now, a century later. Falk walks us through a typical home built in 1902, and points out some of the features that would define it as a home of its time (see Exhibit A, Appendix A). He explains "the use of the parlour had not

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[A] Shoppell, R.W. "Turn-of-the-Century Houses, Cottages, and Villas: Floor Plans and Line Illustrations of 118 Homes from Shoppell's Catalogs". Dover Publications 1984 (3)

changed much since the 1880's…at this time the tradition of the formal front parlour was still prevalent."[8] He goes on to note that the layout of the main areas was unique to that era, explaining "there was as of yet no hallway downstairs. To go from one room to another, you always had to pass through another room."[9] In thinking of the way that suburban home plans are laid out in present early twenty-first century times, it can be said with certainty that these two design elements have since been outmoded. Very few homes seen today have formal parlour type spaces set up for receiving guests, let alone a marked absence of a central hallway system to access the rooms on each floor. This leads to my next question: what are the shifts that happened in modern home life that caused these layouts to change? What created the obsolescence of formal living spaces? And what is it that came to replace this room in the family home?

From a historical perspective, the turn of the century saw developments in new technologies that were a mere shadow in comparison to the exponential rate that technology would come to develop over the coming century. During this period, while much research and development went on in the field of science, the focus was generally on producing goods that benefitted the household rather than items for individual consumption. In *A Short History of the Twentieth Century*, Trevor Williams explains "most of the appliances used in the home in the first half of the twentieth century were developments of ones already in

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[8] Falk, Ken. The Changing Floor Plan: A Study of the Evolution of House Plans in British Columbia, 1983. (14-15)
[9] Falk, Ken. The Changing Floor Plan: A Study of the Evolution of House Plans in British Columbia, 1983. (15)

use".[10] He goes on to note that many of the devices being developed in the United States at the time were labor-saving devices "simply because labor was scarce and expensive".[11] For example, the First World War brought about the technology to outfit middle class homes with water heaters that provided a supply of hot water to the home, allowing the middle class the luxury of a hot bath at any desired moment, an experience once a luxury reserved for the upper classes.[12] Williams goes on to elaborate on the introduction of other small appliances into the home still used daily today: refrigerators and vacuum cleaners. Refrigeration via iceboxes had been used long before, and by the middle of the 19th century, large-scale refrigeration machines used for commercial purposes had become commonplace. However, not until the second quarter of the twentieth century did domestic-sized refrigeration come into common use. This early part of the century also saw the introduction of the vacuum cleaner and an early incarnation of the washing machine come to fruition.[13] Other significant technological contributions that define the turn of the century era are the discovery of the Photoelectric Effect by Albert Einstein in 1905, the articulation of the Theory of Relativity by Einstein beginning in 1907, and the invention of the Crystal Radio set in 1910.[14]

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[10] Williams, Trevor I. A Short History of Twentieth-Century Technology c. 1900-c. 1950. Oxford [Oxfordshire]: Clarendon Press; New York: Oxford University Press, 1982, 387.

[11] Williams, 387.

[12] Williams, Trevor I. A Short History of Twentieth-Century Technology c. 1900-c. 1950. Oxford [Oxfordshire]: Clarendon Press; New York: Oxford University Press, 1982. (393)

[13] Williams, Trevor I. A Short History of Twentieth-Century Technology c. 1900-c. 1950. Oxford [Oxfordshire]: Clarendon Press; New York: Oxford University Press, 1982. (393-394)

[14] "Great Events Volume 1". Salem Press: Pasadena, California, 2002. (vi)

It is the introduction of the radio as a household commodity that is central to my investigation of how families in this era used the spaces in their homes, as individuals as well as a group unit, and the impact of this new device on daily domestic life. The Radio Corporation of America released a catalog in 1922 that described the advent of the home radio as "sweeping the country, carrying into the homes of rich and poor alike a modern facility of pleasure and education which is binding people together in a new and democratic brotherhood."[15] In questioning the lifestyles of home dwellers during the periods of the twentieth century, the modern radio is arguably the pioneer device of the century in terms of innovations in in-home entertainment technology.

It would come to change the way that families recreated within the home and interacted with each other during these activities. This shift would ultimately come to influence their relationships with their living spaces and eventually result in the shifts in North American home design. These shifts can be noted between the corridor-less turn of the century home with its dominant front parlour, to the different types of spaces seen in new homes being designed today. In *Family Life in 20th-Century America,* Marilyn Coleman explains the use of the modern radio as a primary source of family entertainment at the turn of the century. She rationalizes "before television, families listened to favorite shows on the radio…Radio probably reached its peak during the Great Depression. Because

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[15] "Radio Enters The Home". Radio Corporation of America via Vestal Press Ltd., Vestal NY, 1922. (5)

many families could no longer afford to go to movies, listening to the radio became a major source of family entertainment".[16]

The beginnings of the radio kick off in 1901, when H.H. Dunwoody and Greenleaf W. Pickard invented the crystal set. These were the first radio receivers to enable the transmission of radio signals, broadcasting music and other forms of entertainment and information across the airwaves. It would be approximately two decades before miniaturized versions became a common household commodity, around the period of World War I. In *Great Events,* Sanford S. Singer cites that the "miniaturization of radios…set the stage for both televisions and computers…one would find that few Americans more than ten years old own fewer than two radios."[17] This tells us that this technology had been widely adopted, integrated into daily routines and was used regularly enough that individuals owned multiple units to be used in various locations and settings.

The stage was set for the changes bound to come from future technologies in other ways as well. Not only did the radio create the technological precedent for the televisions and computers that follow later in the century, its invention also set the stage for a shift in social behavior in the family home. This shift kicks off a trend that would come to dominate the modern family over the course of the century to come: it introduced a new digital form of entertainment. Rather than conversing, walking, reading or doing other activities that do not require any wired devices, the radio introduces a new member to the family unit. It at once

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[16] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America". Westport, CT : Greenwood Press, c2007. (60)

[17] Singer, Sanford S. "Great Events Volume 1". Salem Press: Pasadena, California, 2002. (198)

unifies the household by attracting the members together to gather around the broadcasts and, at the same time, discourages interactivity while engaged. Lynn Spigel depicts this social phenomenon in *Make Room for TV: Television and The Family Ideal in Postwar America*. She recounts an RCA advertisement for the radio dating back to 1922 in Life Magazine, in which this very silence is illustrated. She describes the scene set in the ad of a family taking in a radio broadcast: "the ad shows a middle-class domestic setting in which family members…sit in chairs placed in four corners of the frame and positioned in such a way that no two people appear to acknowledge their mutual presence in the room".[18]

Alternatively, in *Family Life in 20th-Century America*, Marilyn Coleman explains the excitement of the modern radio as a source of entertainment for family members with specific programming throughout the day. "Soap operas were well-liked dramas broadcast during the day for housewives. Evening programs often consisted of dramatic plays, quiz shows, and comedies that the family would enjoy listening to as a group."[19] What we can gather from these accounts of this new device is that while a group of people gathered around a radio might be united physically by the apparatus, they are simultaneously forced into mutual silence as they participate with the new technology. Lynn Spigel acknowledges "by the early decades of the Twentieth Century, the industrial revolution had found its way into the parlors of the American home. New

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[18] Spigel, Lynn. "Make Room for TV: Television and the Family Ideal in Postwar America". University of Chicago Press, Chicago and London, 1992. (28)
[19] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America". Westport, CT : Greenwood Press, c2007 (62)

machines, designed for domestic amusements, were marketed and sold to increasing numbers of middle-class families...(the) radio became part of a set of cultural ideals for domesticity".[20] What Spigel is describing here is a definitive shift in what is in the home, how the dwellers are spending their recreational time, and thus, how the spaces are being used.

I would suggest that the introduction of the radio as a new domestic technology is also an early example of how McLuhan's argument comes into play. Each individual requires the silence of the others in order to hear the broadcast. They might share exchanges with one another in response to the broadcast, but the actual listening is a solitary activity. One limb is amputated – simple person-to-person conversation that one may have experienced, replaced by silence amongst each other to make room to absorb the words of a foreign entity introduced into the home via electronic media. This is a momentous shift in the way that family members interact with each other In their recreational time.

This shift is not yet represented architecturally. A family might have only had a single radio set at the introduction of this new technology in the early twentieth century. These sets would be placed in a common space, likely the kitchen or living room. American historian Paul Humphrey explains the excitement of the advent of the radio as revolutionary in terms of home entertainment. "With the radio, the people in the Midwest could listen to a concert in Boston, a preacher in California or President Coolidge in the White House, all

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[20] Spigel, Lynn. (11)

from the comfort of their own living rooms."[21] This change is not characterized by a redefinition of residential spaces to accommodate the new arrival, as is the case with later inventions. However, its arrival represents a shift in how a family will come to spend their shared free time. A new medium has been introduced, offering immediate, constant and endless entertainment available at the flip of a switch.

A catalog of home designs from this period, *Shoppell's Modern Houses*, provides a selection of elevation drawings as well as floor plans for homes designed in the early Twentieth Century (as seen in Exhibit A). Examining these plans provides a window into the way that families lived during this period. The number of rooms and square footage allotted to each room serves as an indicator of the importance of the space and the function that it plays in the home as a whole. By measuring the combined square footage of the private spaces against the public spaces, I have begun to assess how these spaces were prioritized and used by their occupants.

Public Spaces.

The public rooms that I will take into consideration are the kitchen, dining room and parlor/living room. A sample of three floor plans chosen randomly from

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[21] Humpfrey, Paul (Ed.). "America in the 20th Century, 2nd Ed". Marshall Cavendish, Tarrytown NY. (358)

Shoppell's book provide the following statistics[22] (See Appendix B for details):
The average size of a kitchen at the turn of the century was approximately 173
square feet, or roughly a 10' x 7' room. The average parlour space measured
approximately 202 square feet. Average dining spaces measured in the largest in
the public areas at an approximate average of 213 square feet. The public
spaces in general round out to an average of 196 square feet per area.

Private Spaces.

The private spaces considered here are the bedrooms. Each of the floor
plans sampled had four bedrooms allotted, with a progression of room sizes. The
"chambers" are the master bedrooms, and continue to be quite large, while the
remaining rooms tended to be significantly smaller. It is also important to
consider family size during this period. Statistically, the Canadian population was
almost a quarter of its current size- a Census poll taken in 1911 shows a
population of 7,204,838, while today it is booming at almost 35 million and
counting.[23] However, changes in lifestyle over the century must be considered as
well. Family sizes were considerably larger - most families at the turn of the
century had between 3-6 children per household, rather than the 1-2 exemplified
by Canadians today. This affects an examination of square footage in its

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[22] Shoppell, Robert W. "Turn-of-the-Century Houses, Cottages, and Villas:
Floor Plans and Line Illustrations of 118 Homes From Shoppell's Catalogs". Dover
Publications, 1984. (3, 8 &11).
[23] Fifth Census of Canada 1911. Areas and Population by Provinces, Districts and Subdistrics,
Volume 1. C. H. Parmelee, Printer to the King's Most Excellent Majesty, 1912 (5)

relevance to shared private space; i.e. a house with four bedrooms and six family members indicates that two children are sharing a bedroom.

The Master Bedroom, or Chamber room, leveled out at an average size of 181 square feet. The second bedroom is 30 square feet smaller, at an average size of 163 square feet. The other two upstairs rooms are considerably smaller, at an average square footage of 116 square feet and 107 square feet. Rounded out, the average square footage allotted to private rooms (rooms where individuals would spend time in privacy and solitude) is approximately 142. However, it is important to consider that the master chamber is significantly larger than all of the others. The average square footage of the other bedrooms excluding the master chamber drops to 128, 68 square feet smaller per room on average than the rounded out sizes of the public spaces (Exhibit A, Tables A & B).

This differential is useful to the researcher. When examining the way that people use bedrooms today against the way that they have been used in the early part of the century, huge differences appear. These spaces were primarily designated as sleeping and dressing rooms in the home at the turn of the century. They did not allot space for large beds, extravagantly sized furnishings or other objects. They were designed as a limited amount of space to keep mainly each person's clothes and belongings. At that, it is fair to assume via closet size that even the amount of personal belongings one kept then was far smaller than what we consider to be average by today's standards. Gauging by the size, one can gather that these rooms were likely used most at the beginning

and end of the day- for waking and dressing, preparing for bed and to sleep. In *American Home Life, 1880-1930: A Social History of Spaces and Services,* historian Jessica Foy describes how these rooms may have been furnished and used, as described by a magazine columnist of the time. She explains *"*a turn-of-the-century columnist for *Canadian Magazine*, Ms. Helliwell, described the mythical 'old days' (by which she meant the mid-nineteenth century) when each room in a house had a unambiguous function; she quoted Webster's dictionary to define "bedroom" as "a room…intended for a bed…and that's that…bedrooms were for beds, a place to be only at night".[24]

This era is one filled with changes, most notably the sweep of industrialization throughout the Western world. The fruits of these developments are beginning to have an influence within certain social classes, in families and individual homes. A definite shift is beginning to form in the way that recreation and entertainment within many homes takes place. The architecture of the homes presented here does not yet reflect the influence of these new technologies. However, the stage has been set for a new device whose nature as something to be listened to encourages mutual silence, consequently discouraging intercommunication. The radio enters the home as a novel device for the family to gather around as a group within the home, while the need to discuss, converse and interact are replaced while being consumed by this new technology.

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[24] Foy, Jessica and Schlereth, Thomas J, Eds. "American Home Life, 1880-1930: A Social History of Spaces and Services". Knoxville : University of Tennessee Press, c1992. (130).

MID-CENTURY & THE TELEVISION.

The middle of the twentieth century shows an enormous transition in both North American lifestyles and residential floor plans. In addition, the structure of the family saw substantial new changes as women headed into the workplace while the men headed out to fight in World War II. In the dawn of the post-war era, huge innovations are occurring in the field of technology. Wartimes are typically earmarked by tremendous developments in science and technology as products developed through military research begin to cross over to the civilian commodity market. The mid-century period is one of many large waves of social change. Historian John Sirjamaki discusses the shift from formal and structured relationships within families to a more relaxed and interactive tone at mid-century, particularly between parents and children. He explains that in the post-war era "the patriarchal grip which in earlier times kept (children) subordinated in the home has loosened."[25] Along with this loosening of the rigidity of the interpersonal relationships within the family, other new inventions bring change within the way that chores and free time within the home are accounted for. This period sees the advent of things that we take so much for granted today: prepared foods, and electric washing and drying machines for laundering, for example. Historians W. F. Ogburn and M. F. Nimkoff refer to these new domestic standards during this period, explaining, "a new type of food for which there is no

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[25] Sirjamaki, John. "The American Family in the Twentieth Century". Harvard University Press, Cambridge, 1959. (104)

processing at home is being increasingly consumed…Laundering is made simple by the electric washing machines using the proper cleansing chemicals".[26] These new household luxuries afforded another luxury in themselves: increased leisure time. By doing themselves or eliminating altogether work that was previously done by hand, these advances allowed for more free time to be available within the home.

Politically, there are huge events that shape society as well, most notably World War II. In 1939, the war begins when Germany invades Poland. In 1941, Japan bombed Pearl Harbor in the US state of Hawai'i. In 1945, the Germans are defeated and the war comes to an end. That same year also saw the first Atom bomb detonated in Hiroshima, Japan, marking a new era in nuclear weaponry. In North America, 1955 was marked by the Civil Rights movement in the US when the historic Ms. Rosa Parks refused to sit in the back of a racially segregated city bus. This period saw a vast number of advances in technology as well. In 1940, the first color television signals are broadcast. By 1941, the rotary telephone was updated to touch-tone dialing. In 1944, IBM completed development of the Mark 1 calculator machine, setting the foundation for personal computing.[27]

As early as the 1940's, the earliest computers began to take form. These massive machines were designed to store, organize and manipulate data. These early versions were a far stretch from the personal computers that many have come to depend on today. As early as 1937, Howard Aiken began to theorize a precursor to the modern computer, the Mark 1 machine. A professor of physics at

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[26] Ogburn, W. F and Nimkoff, M. F. "Technology and the Changing Family". Houghton Mifflin Company, Boston, New York, Chicago, Atlanta, Dallas, San Francisco, 1955. (271)
[27] Singer, Sanford S. "Great Events Volume 3". Salem Press: Pasadena, California, 2002. (v-viii)

Harvard, Aiken's research was supported by the university as well as by IBM in its earliest incarnations. In *Technology in America*, historians Marcus and Segal note "technology…did not escape …conceptual confrontation. To some, it was a still a social benison…while to others it had become a villain, a destroyer of communitarianism."[28] However, the book does go on to concede "most post-1950 Americans adopted neither position outright. They saw technology as a force, but not as monolithic…technology was both a social solution and progenitor of social problems."[29]

The mid-century period saw a great many changes as North America marched toward modernity. New technologies continued to abound, and this generation was more prepared to embrace it. As changes continued to wash over the population in waves, so did those occurring in the middle class North American home. Marilyn Coleman describes a transformation occurring in the design of modern homes as showing a major spatial shift in terms of the purposes of the rooms in a typical setup. She explains "the living room replaced the formal Victorian Parlor that had been more for show than family use."[30] This shift can be examined in relation to another big development of the mid-century. This era sees the introduction of one of North America's most beloved commodities: the television. This device quickly became integrated into the North American middle-class lifestyle, and brought along with it a new shift in social interaction among family members. Like the radio, the television became a

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[28] Marcus, Alan I; Segal, Howard P. "Technology in America: A Brief History."
San Diego : Harcourt Brace Jovanovich, 1989. (316)
[29] Marcus, (316)
[30] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America." Westport, CT : Greenwood Press, c2007 (47)

central source of information and entertainment, and had a similar influence in terms of the way that broadcasts were consumed. However, with the introduction of images on a screen, a new need developed. While the radio provided its transmissions through sound alone, the television required viewers to be sitting within adequate viewing distance to see the images on the screen. The modern living room configuration was inevitably influenced by this condition. Geographer Deryck Holdsworth and historian Joan Simon describe mid-century Canadian homes in the same manner in *Housing Form and Use of Domestic Space*. They write "the typical buyer (of new homes on the housing market) was a 38 year old salesman, …a wife, and two children, aged 10 and 6…They owned one car…and a television set."[31] In *Welcome to the Dreamhouse*, Lynn Spigel describes the Home of Tomorrow, a concept during the mid-century era where new home designs were presented and promoted around the new technologies that were increasingly entering the domestic sphere. She discusses this concept as a dominant force in social culture of this period, explaining, "by the 1940s and after World War II, the home of tomorrow was most typically imagined as a technologically enhanced living space". [32]

The advent of the television set produced a change in social behavior even more pronounced than the radio. While the flip of the radio switch succeeded in eliminating direct conversation, replacing it with outside sound waves, the act of watching television sedated the viewer even further into

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[31] Holdsworth, Deyck and Simon, Joan. "Housing Form and Use of Domestic Space " in House, Home and Community: Progress in Housing Canadians, 1945-1986, Ed. Miron, John R. McGill-Queen's University Press, Montreal and Kingston, London, Buffalo, 1993 (11)

[32] Spigel, Lynn. "Welcome to the Dreamhouse: Popular Media and Postwar Suburbs". Duke University Press, Durham and London, 2001 (383)

silence. When a group gathers in front of the television to watch a program, they

will usually pass the time in relative silence. This affect is similar to that of the

radio, and even reading a book or newspaper, but taken to a further extent

because it entertains both the visual and aural senses. W. F. Ogburn and M. F.

Minkoff discuss this effect as the television becomes more prominent in home

recreation and entertainment, particularly on young children. They explain "time

spent looking at television performances will reduce the time spent in other ways

by the family, as it is difficult to talk, read, cook or clean house and look at the TV

screen at the same time".[34] The family remained integrated as a unit, yet the

trend to spend social time as a group continues to veer towards a relatively anti-

social activity. Naturally, conversations could take place about the programming

that was watched, and perhaps during commercials. However, this type of

activity still encourages lesser and more broken conversation periods than the

group would experience without this new piece of technology.

Ogburn and Minkoff go on to discuss the influence that this activity may

have in creating lazier and more listless children, as "the effect of television on

children is to take time away from other activities, especially physical activities

which are important for growth and appetite".[35] Spigel argues a different

perspective on the impact of television on children in this period, stating

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[34] Ogburn, W. F and Nimkoff, M. F. "Technology and the Changing Family". Houghton Mifflin
Company, Boston, New York, Chicago, Atlanta, Dallas, San Francisco, 1955. (279)
[35] Ogburn, W. F and Nimkoff, M. F.(279)

"television was considered a remedy for problem children…audience research showed parents believed television would keep their children off the streets".[36] The question also arose in the period of where to place the new TV sets. During this period television sets were generally kept in the living room, where all members of the household could access it freely and sit comfortably within viewing range. Spigel refers to this conundrum in *Make Room for TV,* referring to a feature article in a 1949 issue of Better Homes and Gardens magazine that tackled this new and intriguing question by advising that the best place for this new device would be "some strategic spot where you can see it from the living room, dining room and kitchen".[37] While the corridor-less homes of the turn of the century were not laid out favorably for this type of scenario, homes built at mid-century reflected layouts that were more open and conducive to both the flow and positioning described here. The architecture of homes comes into play as the use of domestic spaces sees a shift.

We have seen now some of the ways the introduction of the television influences social behaviours and norms within the family; how now can we observe these changes architecturally within the home? These shifts would be represented in the design and layout of homes that favor the public spaces in terms of square footage. Spigel acknowledges "by the early 1950s, floor plans included a space for television in the home's structural layout".[38]

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[36] Spigel, Lynn. "Make Room for TV: Television and the Family Ideal in Postwar America". University of Chicago Press, Chicago and London, 1992. (45)
[37] Spigel, Lynn. (37)
[38] Spigel, Lynn. (39)

A sample of floor plans from a variety of model-home books from this era provide further insight into the evolving American family of the mid-twentieth century (see Appendix B). Many of these plans emphasize smaller homes, generally to accommodate the rapid suburbanization of the cities as the soldiers returned home from the war and started families. Communities were built and populated quickly, and starter homes were in demand. I have chosen 6 plans at random from *The Book of Well Planned Homes: Designs and Floor Plans for 47 Well Planned Homes*[39], *Book of New Homes: Designs and Floor Plans for 43 Practical Homes*[40] and *Modeles de Petites Maisons*[41] to evaluate the relationships between the spaces, as well as the relationship of the family to the spaces provided within these North American homes.

In the plans sampled from this era, the breakdown of spaces is as follows: average kitchen sizes across 6 different sample homes are reduced to 88.5 square feet, a significant reduction in space from the 173 square foot average of the turn of the century. Average square footage of family living rooms is approximately 246 square feet between the 6 sample homes. This is a full 44 square feet larger than the formal parlours turn-of-the-century homes that they have come to replace. The larger space can be reasonably attributed to the new fixture- the television- that would be placed in this room, and any additional seating that would be used to comfortably accommodate the family members in

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[39] Home Plan Book Company. "The Book of Well Planned Homes: Designs and Floor Plans for 47 Well Planned Homes." St. Paul: Home Plan Book Co., 1953 (2, 19, 27)
[40] Home Plan Book Company. "Book of New Homes: Designs and Floor Plans for 43 Practical Homes". St. Paul: Home Plan Book Co., 1954 (5).
[41] Societe Central d'Hypotheque de Logement. "Modeles de Petites Maisons". Quebec, Canada, 1958 (2, 10)

viewing distance of the set. Dining areas are also greatly reduced from the turn of the century – these spaces average a square footage of approximately 86.5, again significantly smaller than the 213 average square feet. It is clear by the way these spaces are designed and how the square footage very much dominates in the living rooms during the era, that the kitchen and dining and formal entertaining areas are becoming secondary, lesser spaces in terms of value per square foot (Exhibit B, Tables A & B).

Among the public spaces, clearly and overwhelmingly it is the living room that dominates the home. This room is allotted the most space of all the public rooms by a significant margin. It is approximately 159 square feet larger than both the kitchen and the dining room, illustrating where the spatial priority lies. The Mid-Century period saw the birth of TV dinners come along with the popularization of the television itself. As such, perhaps some of the eating was done casually in the living room as well. Kitchens of the mid-century are on an average approximately 84 square feet smaller than those of the turn of the century. This could be due in part as well to the development and production of more compact and efficient kitchen fixtures and appliances. Modern developments in heating could also have influenced the more regular use of the other rooms in the home. However, mid-century domestic architecture clearly prioritizes the living room as both a more casual family room, as well as the main space, indicating a shift in where the home dwellers spend their time and how they live in their homes.

This can be explained by Lynn Spigel's review of the introduction of the television as well. She recounts that by 1955, 65% of American households had televisions, and that they had become increasingly affordable as they had become popular by that time as well. She explains that in the midst of the post-war spending and consumerism boom "television companies set their sights on the average consumer, hoping to tap into and promote the demand for luxuries that had been denied to the public during wartime shortages…television would become one of the most sought-after products."[42] As the post-war popularity of the television took over, it quickly went from being a status symbol for deep-pocketed early adopters to a ubiquitous household must-have over the course of the early to mid 1950's.

Spigel goes on to describe the prevalence of the tract homes that I will describe below, citing the "(American) Housing Act of 1949, which gave contractors financial incentives to build single-family homes in suburban areas."[43] Canadians saw a similar effect as populations surged and housing demand subsequently raised during this period. In *House, Home and Community: Progress in Housing Canadians, 1945-1986*, Professor of City Studies, Geography, and Planning at the University of Toronto John R. Miron explains that after 1945, rises in immigration, the birth rate and employment and consequent wealth all contributed to an increase in demand for new housing. He states "these demographic and economic changes boosted the demand for

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[42] Spigel, Lynn. "Make Room for TV: Television and the Family Ideal in Postwar America". University of Chicago Press, Chicago and London, 1992. (32)
[43] Spigel, Lynn. "Make Room for TV: Television and the Family Ideal in Postwar America". University of Chicago Press, Chicago and London, 1992. (32)

housing in three important ways. First…a growing population requires more housing. Second…those young singles and families, the divorced, and the widowed all contributed to rapid household formation. Third, a growing affluence that lasted until the late 1970s combined with modest increases in the cost of housing."[44]

These two new additions to daily life – the television set, and the tract house – create the perfect storm for the domestic experience of the post-war era. This was a time of massive social change for North American families: the War was over, the economy was booming, housing was changing and the way that society engages and communicates information was changing as well. How then, will these two impact each other? How will the television be received in the home, and how will the layout of the home respond to this new member of the North American family?

The answer is that the parlor rooms, once formal spaces for receiving guests and entertaining, are replaced by the "Family Room", a more informal space where the family can gather. Spigel describes this shift by explaining "as the television set moved into the center of family life, other household fixtures traditionally associated with domestic bliss had to make room for it. Typically, the magazines presented the television set as the family hearth."[45] This description is a clear representation of the value and emphasis of time spent by the family around this new and revolutionary technology.

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[44] Miron, John R. (Ed). "House, Home and Community: Progress in Housing Canadians, 1945-1986". McGill-Queen's University Press, Montreal and Kingston, London, Buffalo, 1993 (11)
[45] Spigel, Lynn. "Make Room for TV: Television and the Family Ideal in Postwar America". University of Chicago Press, Chicago and London, 1992. (38)

Private Space.

The average mid-century middle-class home had only two bedrooms instead of the four in the turn-of-the-century plans. However, since these homes did house the baby boom, it is fair to estimate that while perhaps these plans were all for starter homes, it is also likely that children shared bedrooms as well. Interestingly, not one of the floor plan samples, taken from several different sources, provided more than two bedrooms per home during this era. This is perhaps due to the starter-home concept exemplified by 1950's post-war suburban development. In *America Transformed: Sixty Years of Revolutionary Change 1941-2001,* Richard Abrams describes how housing developments in the 1950's had doubled since the previous era. He explains "annual housing starts by 1950 reached nearly 2 million units, compared to an all-time pre-war high of about 1 million units in the mid-twenties…Within fifteen years of the end of the war, more Americans lived in the suburbs than in the cities."[46]

Compared to the sample of turn of the century homes, the bedrooms average out to be significantly smaller. The master bedrooms of the early-century homes rounded out to approximately 181 square feet, while those of the mid-century homes were about 134.5 square feet, showing a 46.5-square-foot reduction. The homes of the post-war family provide less space in the private domain, indicating that these rooms were providing space for necessities: bed,

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[46] Abrams, Richard M. "America Transformed: Sixty Years of Revolutionary Change 1941-2001". Cambridge University Press, 2006. (38).

dresser drawers and other small furnishings perhaps. However, the luxury of

space is not privileged in this area of the home. In many cases, the second

bedroom would have been shared by two children, since the post-war generation

is famous for birthing the baby-boom generation. In Canada alone, the census

reports show that by 1951, the population totaled 14,009,429 – that's an increase

of 6,804,291, almost double the population poll taken in 1911.[47] By the close of

the baby boom in 1966, the Canadian population had increased to 20,014,880 –

a full 12,808,237 increase from 1911, almost tripling the population in fifty

years.[48] Marilyn Coleman describes this shift in private space as a shift in the

way these rooms were used by home dwellers during the mid century:

"bedrooms were now used primarily for sleeping and were not thought to need

much space. Built in closets replaced the large and cumbersome wardrobes and

armoires that had been used in earlier times for clothing storage."[49]

　　　This era shows a significant shift in the types of homes that are on the

rise, and the needs of the population that they house. Homes had become

significantly smaller, with less bedrooms and smaller general room size despite a

clear boom in population and family size. North American families were evolving

into the baby-boom generation, the post-war era brought about a bounty of new

innovations, and the home itself transformed as well. Despite the overall

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[47] Statistics Canada. "Ninth Census of Canada, 1951. Volume 1, Population: General Characteristics". Published by Authority of The RT. Hon. C. D. Howe, Minister of Trade & Commerce, 1953 (1-1)

[48] Statistics Canada. "1971 Census of Canada: Population, Age Groups. Catalogue 92-715, Volume 1 – Part 2 (Bulletin 1.2-3)", Ottawa, ON April 1973 (1)

[49] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America." Westport, CT : Greenwood Press, c2007. (48)

shrinking size of the family home, it is impossible to ignore that the living room

had become the dominant space, tied to the television set as the most prominent

of the new technologies introduced into the home during this era.

LATE TWENTIETH CENTURY & THE PERSONAL COMPUTER.

By the late twentieth century, the urban landscape and residential areas

had evolved and developed immensely from the turn and middle of the century.

Population increases resulted in densely populated cities, followed by a surround

of sprawling suburbs. Much of this trend in urban development came in response

to the baby boom, immigration and the overall economic growth in North

America. It is now the Information Age, where people are immersed daily in more

technologies than ever before. A quick glance around my own bedroom

documents a mass of luxury technologies on which I am so dependent but which

my grandmother's generation lived without: cable color television set, electric

heater, electric fan, digital alarm clock, and laptop computer equipped with high

speed wireless internet connection, mobile telephone that is essentially a

portable computer in itself, and an iPad. In my own professional life, computer

aided design programs have made a simple pencil and paper obsolete tools of

architectural design, and emails have all but eradicated the telephone and direct

conversation as means of transmitting tasks and information.

The world that exists at the end of the century is the product of a

tremendous amount of continuous development and invention. Politically and

technologically, the last thirty years or so of the twentieth century present an enormous amount of change in a short period of time. The seventies saw the development of events that would change our social fabric forever: the development of DNA technology in 1973, and the Vietnam War. This decade also brought us the early seeds of the personal computers that we use today; in 1976, Seymour Cray created the first Supercomputer; and, one year later, the Apple empire was born with the introduction of the preassembled Apple II computer in 1977.[50] In terms of technological invention, this period is one of vast innovations: in 1981, IBM introduced the DOS-based Personal Computer (PC); in 1982, Compact Disc players are introduced; in 1983, IBM follows up the initial PC by introducing computers with hard drives.[51] The Eighties also brought about significant social changes: the AIDS virus is recognized by the Centers for Disease Control in 1981; in 1982, the Canadian Charter of Rights and Freedoms is enacted; 1987 sees the United States and Russia sign the Nuclear Forces agreement; in 1988 the United States and Canada sign the Free Trade Agreement; in 1989, the Berlin Wall falls; and, finally, in 1986, the Space shuttle Challenger explodes on launch.[52]

This was a momentous and tremendous era in world history. Society has to adapt to the changing context in which it exists: the seventies and eighties are populated by a generation of civilians who have seen the civil rights movement seek and succeed in initiating the abolishment of segregationist practices in the

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[50] Singer, Sanford S. "Great Events Volumes 6". Salem Press: Pasadena, California, 2002. (v-viii), (1842)
[51] Singer, Sanford S. "Great Events Volumes 5". Salem Press: Pasadena, California, 2002. (v-viii)
[52] Singer, Sanford S. "Great Events Volumes 6". Salem Press: Pasadena, California, 2002. (v)

United States. The women's rights movement was in full swing as well, striving to create a gender balance in the workplace and create equal opportunity for women in terms of education, employment and historical representation.

Especially notable in terms of change from the mid-century era, the growth rate of the population had decreased significantly as the baby boom slowed: the Canadian census report for 2001 shows a population of 30,007,090[53], an increase of 9,992,210 since the 1966 census.[54] These figures average out to a population growth of 285,491 annually over the 35-year span. During the baby boom at mid-century, from 1951-1966, the birth rate per year was staggering at approximately 461,444 per year. By the end of the century, the birth rate had dropped to nearly half of what we had seen in the mid-century period.[55]

In terms of the technologies that most affect middle-class North Americans, the computer has been by far the most controversial and influential of the last quarter of the twentieth century. As the baby boomer generation has grown up and taken the driver's seat as the adult generation, adaptations to daily life have been made in suburban North America. Ill-reputed as the generation of 'better, faster, more', especially in the eighties, this period is defined by an accelerated relationship with the development and implementation of new technologies, luxuries and consumer goods enjoyed by the middle class.

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[53] Statistics Canada. "Profile of Census Divisions and Subdivisions in Newfoundland and Labrador: 2001". Minister of Industry, Ottawa ON 2004 (14)

[54] Statistics Canada. "1971 Census of Canada: Population, Age Groups. Catalogue 92-715, Volume 1 – Part 2 (Bulletin 1.2-3)". Ottawa, ON April 1973 (1)

[55] Statistics Canada. "1971 Census of Canada: Population, Age Groups. Catalogue 92-715, Volume 1 – Part 2 (Bulletin 1.2-3)". Ottawa, ON April 1973 (1)

The disk-operating system, (DOS), developed in 1981 at the IBM laboratories in Florida, was the software designed by now-industry giant Microsoft, who had won a bid for the commission. A multitude of computer programs quickly followed, impacting the growth of sales exponentially. In 1983, IBM came out with a version of the personal computer that literally set the framework for the PC that many North Americans use on a daily basis. Alan Shugart, an engineer who first invented the floppy disk, developed this computer in Boca Raton along with a team of IBM executives. The hard drive provided extended long-term memory for the computer. This was a single step in the evolution of the computer from a relatively basic data-processing machine into the complex multifunctional tool that it is today.[56]

The average North American household during this period has at least one computer. Archaeologist Sigfried de Laet claims "in 1989…in the United States, 99 per cent of households owned at least one television set, and every home had an average of 5 radios and a personal computer".[57] Contemporary society at the end of the century has grown dependent on computers: school assignments are now required to be word-processed for submission and professional design projects are developed on sophisticated computer-aided design programs rather than by hand. Nothing could better exemplify the absolute dependence on the computer of a society than the crippling panic that set in as the turn of the millennium approached. Fear that uncontrollable chaos would set in if the

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[56] Singer, Sanford S. "Great Events Volumes 5". Salem Press: Pasadena, California, 2002. (2095, 2095)

[57] de Laet, Sigfried J.. "History of Humanity: The Twentieth Century". London; New York: Routledge ; Paris: Unesco. 1994-2008. (500)

computers of the world crashed due to a mass programming error was infectious and helped to set the apocalyptic tone of New Year's Eve 2000. On a quieter note, the internet had developed a generation that is computer savvy, where people used the computer for almost everything- the latest news and weather updates, correspondence with others, file-sharing, early incarnations of social networking, shopping, education, commerce. It has infiltrated every sector of modern life.

Many of these changes are represented in domestic architecture and embody the demands of the inhabitants of these spaces. Homes built at the end of the twentieth century exhibit a major shift spatially, in terms of the needs and wants of North American family living. A sample group of 4 floor plans chosen at random from *300 Best-Selling Home Plans*[58]*, North America's Top Selling Home Plans*[59] and *Affordable Home Plans: 433 Home Designs for Modest & Medium Budgets*[60] show shifts in the planning of family homes (see Appendix C) In these homes, the public spaces show clear growth from mid century. The kitchens are an average square footage of 132. Living rooms follow suit with an average square footage of 216. Finally, the dining room is a more modest 127 square feet on average (See Appendix C, Table A).

The private spaces are telling as well. The master bedroom at the end of the century averages 172 square feet in size – comparable to those of the turn of

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[58] Garlinghouse Incorporated. "300 Best-Selling Home Plans". Garlinghouse Company, 1992 (8)
[59] Garlinghouse Incorporated. "North America's Top Selling Home Plans". Garlinghouse Company, 1994 (2)
[60] Home Planners, Inc. "Affordable Home Plans: 433 Home Designs for Modest & Medium Budgets. Tucson, Ariz.: Home Planners, 1989 (16).

the century. Unlike the mid-century homes, this era shows an average of two additional bedrooms both of which are still generous in size, between 143 and 117 square feet (See Appendix C, Table B). In comparison to mid-century homes, these numbers create reasonable room for interpretation. The kitchen and dining areas are significantly larger, by approximately 39 square feet each. A comparison of the living room averages from both periods shows that living rooms of the mid-century were also about 39 square feet larger than in late-century homes.

The greatest shift is seen in the size and use of bedrooms. Mid-century floor plans combined with the data we have seen in the census population reports discussed above tell us that many of the homes built in that era often only had two bedrooms, indicating that children would have likely been required to share bedrooms that were relatively small in size. This means that the concept of solitude or personal space in the home was almost non-existent. Each room in the home was essentially used as a common space, amongst siblings in the bedrooms and amongst all family members in the public spaces of the kitchen, living and dining areas. Many of the homes designed at the end of the twentieth century tell a different story. These plans indicate an average of three bedrooms, each room significantly larger than its mid-century counterpart. The master bedrooms of this period are a whopping 40.5 square feet larger than those examined from the mid-century period. The second-largest bedroom from the contemporary plans showed an average of 143 square feet, 34 square feet larger than the second bedrooms at mid-century (Appendix C, Tables A & B). Marilyn

Coleman describes this shift in private spaces at the end of the century as a direct indicator of changing lifestyles. She explains that by the end of the century "Americans sought houses large enough to hold all of their consumer goods. Over-scaled furniture such as king-sized beds, restaurant-quality appliances, large-screen televisions and home entertainment…and other possessions characteristic of 'the good life' required display and storage space."[61] She goes on to explain the shift in lifestyle brought on by the introduction of the television into the home by describing a more domestically-oriented social environment, where most time was spent glued to the TV rather than other activities. She declares "television watching began to take up an enormous amount of family time. Families no longer saw the need to leave their home to socialize – they stayed home and watched TV instead."[62]

This information, combined with the Canadian census information showing a substantial drop of nearly 50% in the population rate from 1966 until 2001, indicates that the size of families was decreasing as well.[63] In short, families were likely to be moving into homes with an equal or greater amount of bedrooms to people. Most children have their own bedrooms, affording them a space that is completely their own. This introduces a completely new and novel notion to the family home: privacy. Some of these rooms may have also been equipped with access to a computer and/or television set. The concept of

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[61] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America." Westport, CT : Greenwood Press, c2007. (50)
[62] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America." Westport, CT : Greenwood Press, c2007. (59)
[63] Statistics Canada. "Profile of Census Divisions and Subdivisions in Newfoundland and Labrador: 2001". Minister of Industry, Ottawa ON 2004 (14)

solitude and privacy has been introduced, alongside new technologies such as the personal computer.

In reviewing these changes as an indication of shifts in the lifestyles and needs of late-century home dwellers, how do these floor plans reflect the evolving lifestyles of the modern family? Can the larger personal spaces included in late-century layouts be read as an architectural response or adaptation to the changing needs of the home dweller? These changes, addressed in this thesis, indicate that family members are spending increased amounts of time self-occupied while sharing the same living space. Marilyn Coleman explains "fewer children in families and larger houses meant that children were more likely to have their own rooms, and as families became more affluent it was not unusual for children to have televisions in their rooms, and in the 1990s, personal computers…they spent more time playing video games, surfing the internet and watching TV alone".[64] Gone are the days when bedrooms were meant only for sleeping and dressing, and were often shared by siblings. Now, these rooms have shifted functions, and seem to become private capsules for each member of the family. The modern bedroom has become an individual's space within the home. Gone as well are the times the family would gather together around the "house" radio or TV; by late century we see that each individual is likely to be equipped with their own personal devices with which they occupy their time.

It is an era where people orbit within individual universes, consuming media through the ever-evolving channels of technological devices purchased per

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[64] Coleman, Marilyn; Ganong, Lawrence H. and Warzinik, Kelly. "Family life in 20th-Century America." Westport, CT : Greenwood Press, c2007. (233-234)

household, as de Laet described earlier. The middle-class youth of this generation have been raised with their own individual stereos, telephones, televisions and computers. It is possible to define oneself through representation in these media: through the choice of music, television programs, websites surfed and the beginnings of online social networking, the same way that radio broadcasts created a common experience amongst people cities apart by allowing them to experience a baseball game, sermon or concert together in real time. While we are participating in the new resources available to us, we must ask whether we maintain McLuhan's tradition of thus also creating a void. The hours spent absorbed in these technologies are hours not spent interacting with families. As each member of a household now has free access to their own radios, televisions and even personal computers, the interaction that arises from at least sharing these devices within the home is also removed. There is no longer a need to discuss and select a television program to watch with multiple sets available for use in various rooms of the home. Television may even seem a bore with access to the world at a keystroke when using a personal computer to surf the internet. As such, the experience of these media has transformed into an act of solitude, something that each member of a family can engage in on their own, in separate rooms and behind closed doors.

Siblings may be developing along parallel but separate courses- they grow up in the same home, and attend the same school, yet they share fewer experiences together in the hours spent at home. Parents may also be further alienated by the gap between generations, if they are not adapting to the

advances in technology as quickly as their children. Not only are they faced with the challenge of not being quite up to date on the latest craze in fashion or music, they are also required to stay up to date with new forms of media used to perpetuate these trends to their children.

A TWENTY-FIRST CENTURY PROPOSAL .

Technology has certainly developed at an exponential rate over the course of the twentieth century. In the twenty-first century, North Americans have begun to recognize how completely integrated these devices are in middle-class daily life. They are no longer frivolous accessories or the futile wants of the privileged and wealthy few, produced by lifestyles of modern consumption. These devices have been incorporated quickly into routines to become a standard, a "need". Time management in terms of daily domestic and professional lives is structured around the productivity of these machines. Running a home depends on the speed and efficiency of the washer/dryer units, microwave oven, and other devices to get the day's chores done on time. A twenty-first century office would be an unlikely sight without the computers and the myriad of computer programs that keep its workers in communication with each other, produce documents that organize information efficiently and store vital data. While life certainly went on quite well without these devices, it would be difficult to revert back to those habits in this era. We have become quickly dependent on alarm clocks to wake us up,

emails to transmit and file communications, drafting software to engineer buildings and voicemail to collect missed calls.

It is also difficult to deny that the dependence on some of these technologies has created a new social environment within the domestic space. My own experiences and those of my peers as teenagers living at home in the late twentieth century had us very much occupied with these devices. From video games, to television to the computer, the majority of free time spent at home was in front of a screen of some kind. The advent of the internet by the end of the century also marks a large shift in terms of personal use. The computer, for example, begins to replace the library as a research tool for school assignments. Homework is typed up, word-processed and saved onto a PC rather than written out by hand with pencil and paper. The internet also introduced social networking, allowing users to play games, share files, emails, and chat in real-time with new friends found online, as well as existing friends as close as next door or even the next room. These sources of entertainment are hardly variables. To try to remove these elements from the daily routine of the modern middle class family would be a near-impossible task.

While we may not be passively receiving the messages that are transmitted through these devices, we may very well have become that much more passive as participants in our own homes as a result of our preoccupation with them. Certainly, in agreement with McLuhan's theory that a new extension is born when a sense is amputated, we have become increasingly interactive individuals around our technological consumption. While we may not be

conversing with our parents or siblings, we may well be participating in online chats with friends or fan boards after watching the latest episode of a favorite television show or reviewing a new album of music downloaded on the internet. The question I ask in trying to resolve this would be whether, as a society, we could manage to embrace these technologies while still embracing the seemingly dated notion of spending time together as a family with those we live side by side with in our homes.

I propose, with Appendix D, a revision of the current use and distribution of space as a pro-active experiment in re-positioning the manner in which family members associate with each other. I believe that the current use of space reflects the desire for, and encourages, isolation of individuals within the home. Taking an approach toward designing domestic spaces could result in redirecting the way that we share space and time with each other in multiple-person / family dwellings. Let us first define the problematic conventions that we have come to adopt and accept in our demands for contemporary spatial distribution. The demand for large personal bedrooms may be the product of the convention of having a television set and/or personal computer in each bedroom, and thus spending much of our time sequestered to these quarters. Looking back to the turn of the century, we can observe that the bedrooms then were built to provide a significantly smaller amount of space per person to the bedroom because its use was defined as a space where limited amounts of waking time would be spent. However, it would also be futile to remove the television and computer from the now-daily routine. The next question, then, would be how we can re-

arrange and re-assign the domestic spaces in which these units are placed in order to encourage more social behavior as these devices are being used?

I believe that developing a case-study home with a floor plan designed to re-condition the interaction 1) amongst family members, 2) between the home-dwellers and the space itself, could encourage rebuilding the lines of communication between family members. Different elements of the plan would theoretically discourage negative behavioral habits and encourage the development of positive ones.

Designing a space that affords a smaller square footage to all bedrooms, but particularly to the children's bedrooms, would discourage spending too much time in the rooms, alone behind a closed door. In this area, it is useful to revert back to the way homes were laid out at the turn of the century: bedrooms designated mainly as areas to sleep and dress, with adequate storage and closet space to accommodate the volume of personal goods accumulated by the standards of this period. To counterbalance this reduction in square footage in personal spaces, new spaces that allow the members of the household to continue to engage in their current activities while creating a sense of community could be developed. This type of spatial allowance could encourage an increase in communication and awareness between members.

I propose this case-study floor plan that has the following features: smaller bedrooms all around, without *any* computers or televisions in the rooms. In the public spaces, we have a common computer room with a work station set up for each member, arranged in such a way that the individuals have screen privacy

while still encouraging interaction and communication by being placed in each others' eye-line while using the room. In addition, we have two separate screening areas for film and television purposes. One is in the den area adjacent to the open concept kitchen, where families could be in proximity to each other while watching the television and preparing and eating meals. The second is a separate more private television screening room, allowing another option of where to watch television or a movie, while still being out in the main areas of the home rather than sequestered away behind the dauntingly closed door of a bedroom. These two screening areas would allow a choice of programming, creating an environment where group screenings are there for the members to choose from, thus encouraging dialogue.

It is difficult to know whether creating different conditions within the spatial distribution of a home might encourage a cause-and-effect relationship between home dwellers. However, I propose that a proactive approach to challenging passive submission to new technologies through innovative shifts in design is both possible and valuable. Based on the research presented in this thesis on historical domestic floor plans and architecture, it is reasonable to predict the outcome of the families of the next 20 years based on the pattern set thus far. An examination of these new developments and their effects is necessary and urgent: it is important that we continue to evolve with our sciences, rather than be threatened by them. Intervening architecturally to create a subtle shift towards a sense of community within the family unit while we enjoy continue our televisions, X-Boxes, iPads, iPhones and whatever is next on the way. A new shift in design

could help us to maximize both our participation in the home as individuals, as well as a group.

We have seen the influences that new technologies have had on the way that residential spaces are laid out and how residents function within them. The challenge now is to allow our domestic spaces to influence our domestic lives through the power of good design. By creating spaces that are conducive to interactivity, connectivity and sharing amongst the members of a family unit, we can at once continue to evolve in terms of lifestyles with the latest that technology has to offer, while at the same time maintain the close ties, interactions and familiarity that make up the family bond.

APPENDIX   A: **TURN OF THE CENTURY.**

<u>Exhibit A:</u> Shoppell, R.W. "Turn-of-the-Century Houses, Cottages, and Villas: Floor Plans and Line Illustrations of 118 Homes from Shoppell's Catalogs". Dover Publications 1984 (3)
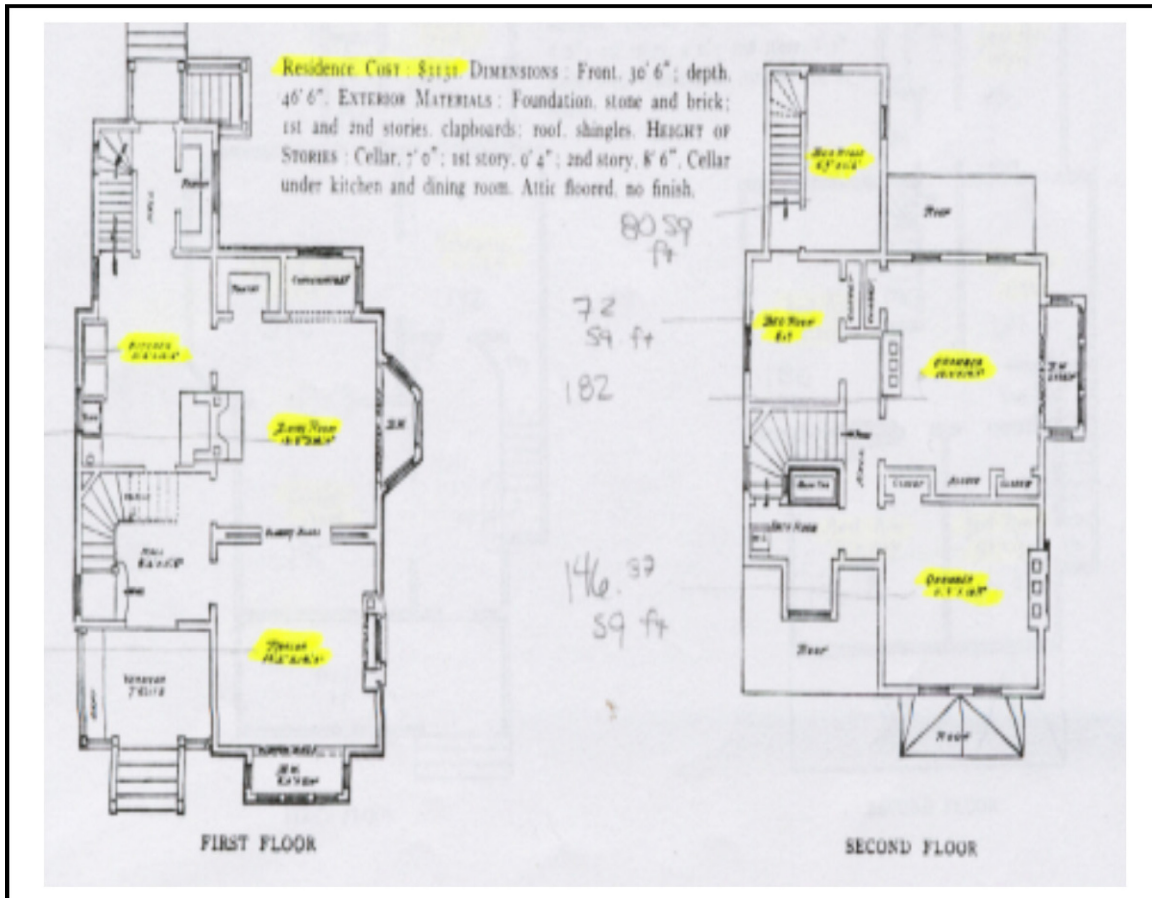
Exhibit B: Shoppell, R.W. "Turn-of-the-Century Houses, Cottages, and Villas: Floor Plans and Line Illustrations of 118 Homes from Shoppell's Catalogs". Dover Publications 1984 (11)

Residence. Cost: $2875. Dimensions: Front, 25'6"; depth, 55'0". Exterior Materials: Foundation, brick; 1st and 2nd stories, clapboards; roof, shingles. Height of Stories: Cellar, 6'6"; 1st story, 10'0"; 2nd story, 9'0". Cellar under whole house. Attic floored, no finish.

FIRST FLOOR

SECOND FLOOR
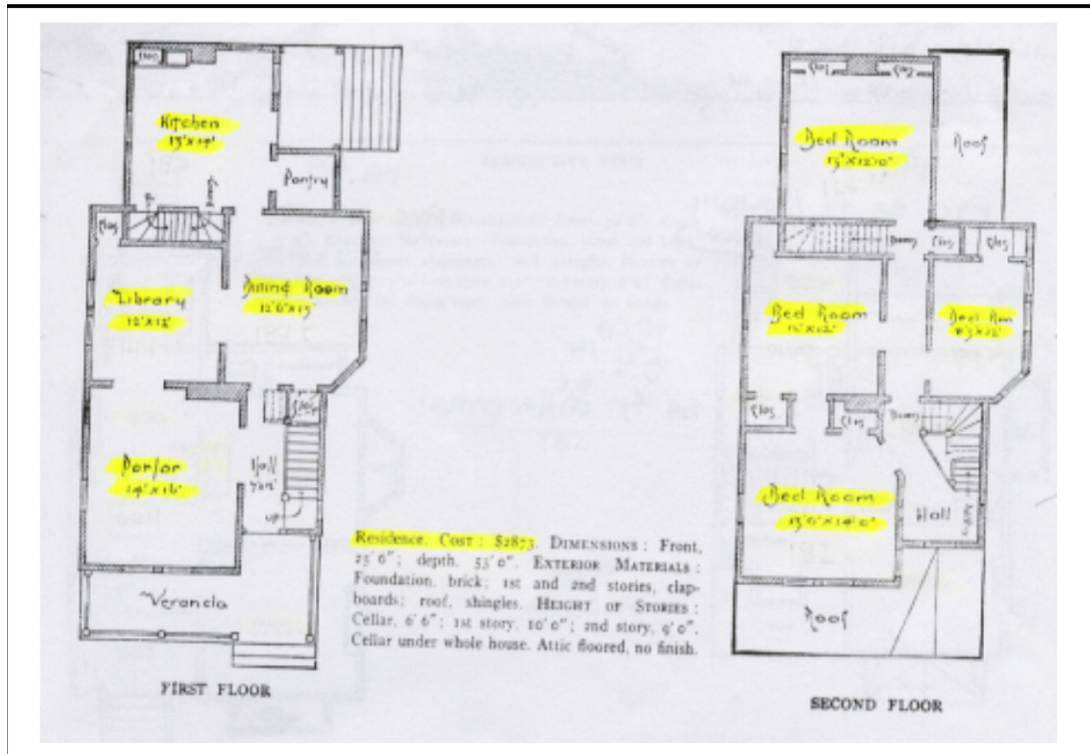
Exhibit C: Shoppell, R.W. "Turn-of-the-Century Houses, Cottages, and Villas: Floor Plans and Line Illustrations of 118 Homes from Shoppell's Catalogs". Dover Publications 1984 (8)
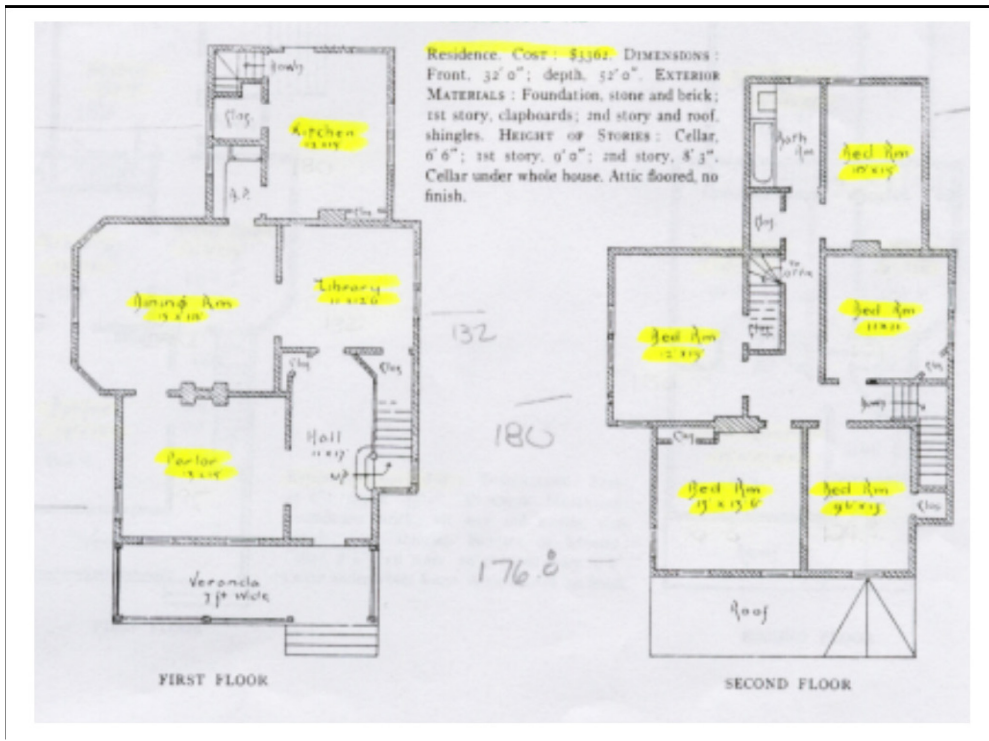
 Table A:

TURN OF THE CENTURY			
	PUBLIC SPACE		
	Kitchen	**Parlour**	**Dining**
Exhibit A	158	187	182
Exhibit B	180	195	270
Exhibit C	182	224	166
Average Sq Footage:	**173**	**202**	**206**

Table B:

	TURN OF THE CENTURY			
	PRIVATE SPACE			
	Chamber	Bedroom 2	Bedroom 3	Bedroom 4
Exhibit A	182	146	80	72
Exhibit B	180	177	125	150
Exhibit C	182	166	144	100
Average Sq Footage:	**181**	**163**	**116**	**107**

APPENDIX B: **MID CENTURY.**

Exhibit A: Societe Central d'Hypotheque de Logement. "Modeles de Petites Maisons". Quebec, Canada, 1958 (2).
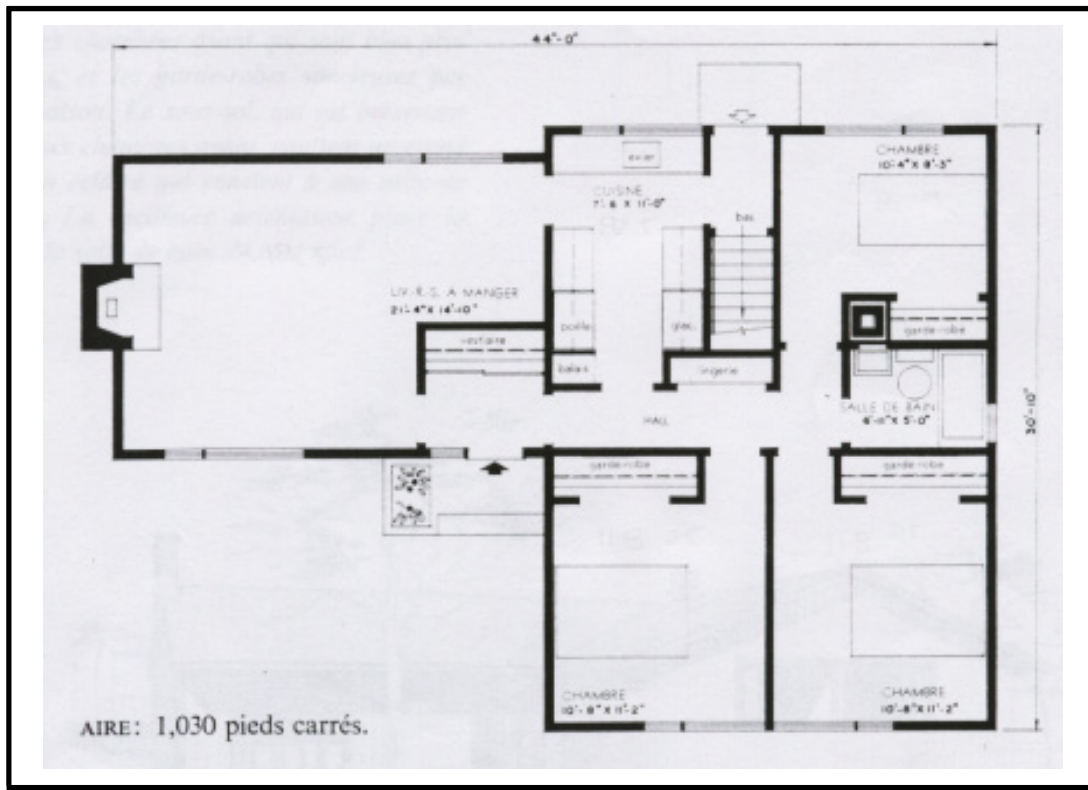
Exhibit B: Societe Central d'Hypotheque de Logement. "Modeles de Petites Maisons". Quebec, Canada, 1958 (10).
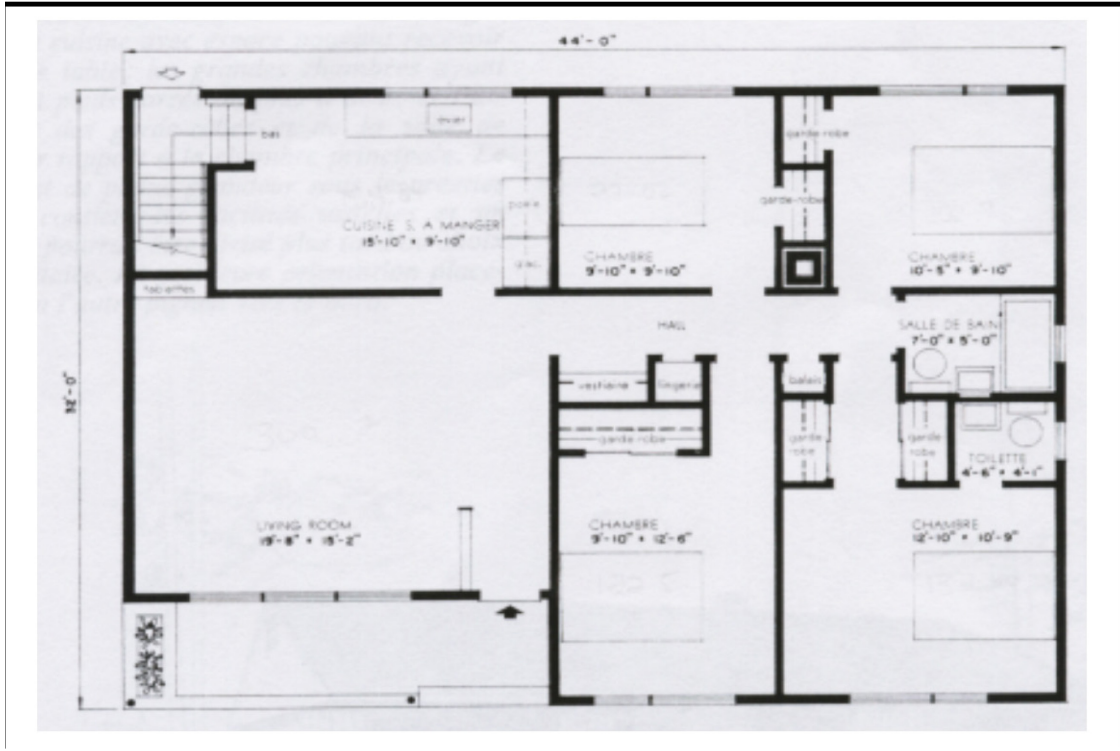
Exhibit C: Home Plan Book Company. "The Book of Well Planned Homes: Designs and Floor Plans for 47 Well Planned Homes." St. Paul: Home Plan Book Co., 1953 (2)
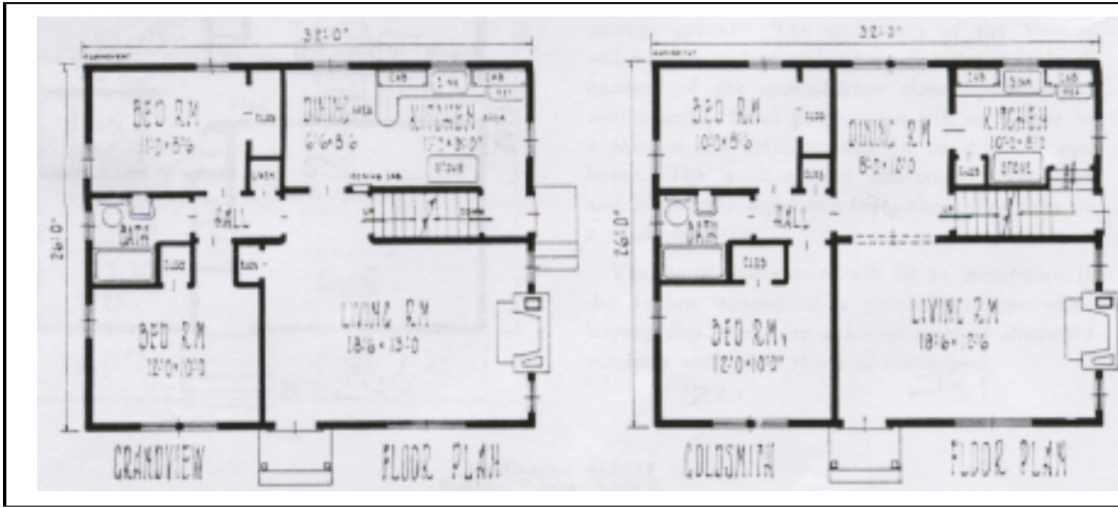
Exhibit D: Home Plan Book Company. "The Book of Well Planned Homes: Designs and Floor Plans for 47 Well Planned Homes." St. Paul: Home Plan Book Co., 1953 (19)
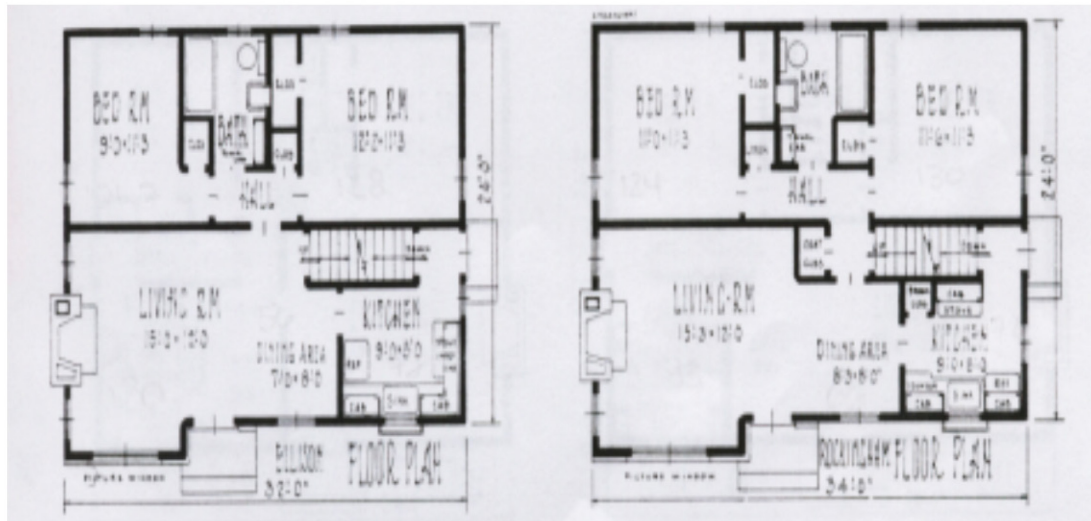
Exhibit E: Home Plan Book Company. "The Book of Well Planned Homes: Designs and Floor Plans for 47 Well Planned Homes." St. Paul: Home Plan Book Co., 1953 (27)
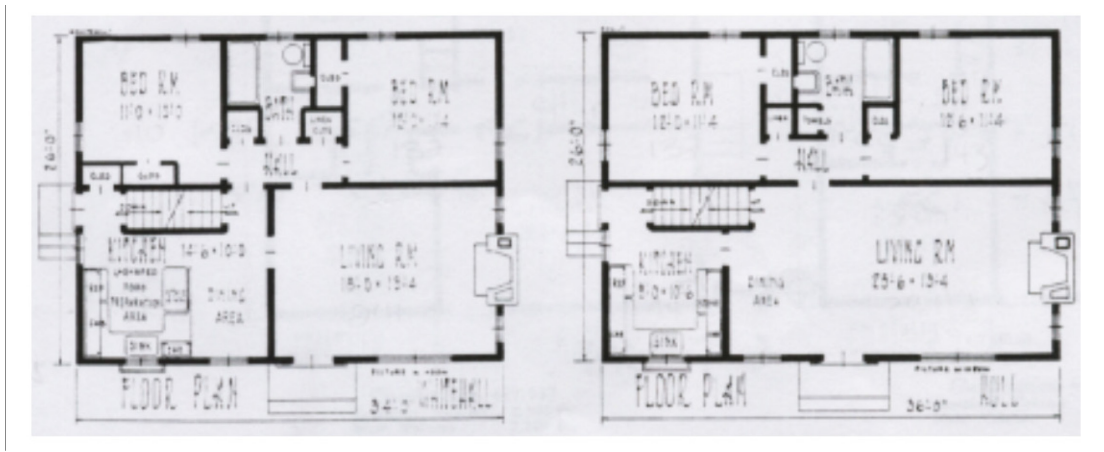
Exhibit F: Home Plan Book Company. "Book of New Homes: Designs and Floor Plans for 43 Practical Homes". St. Paul: Home Plan Book Co., 1954 (
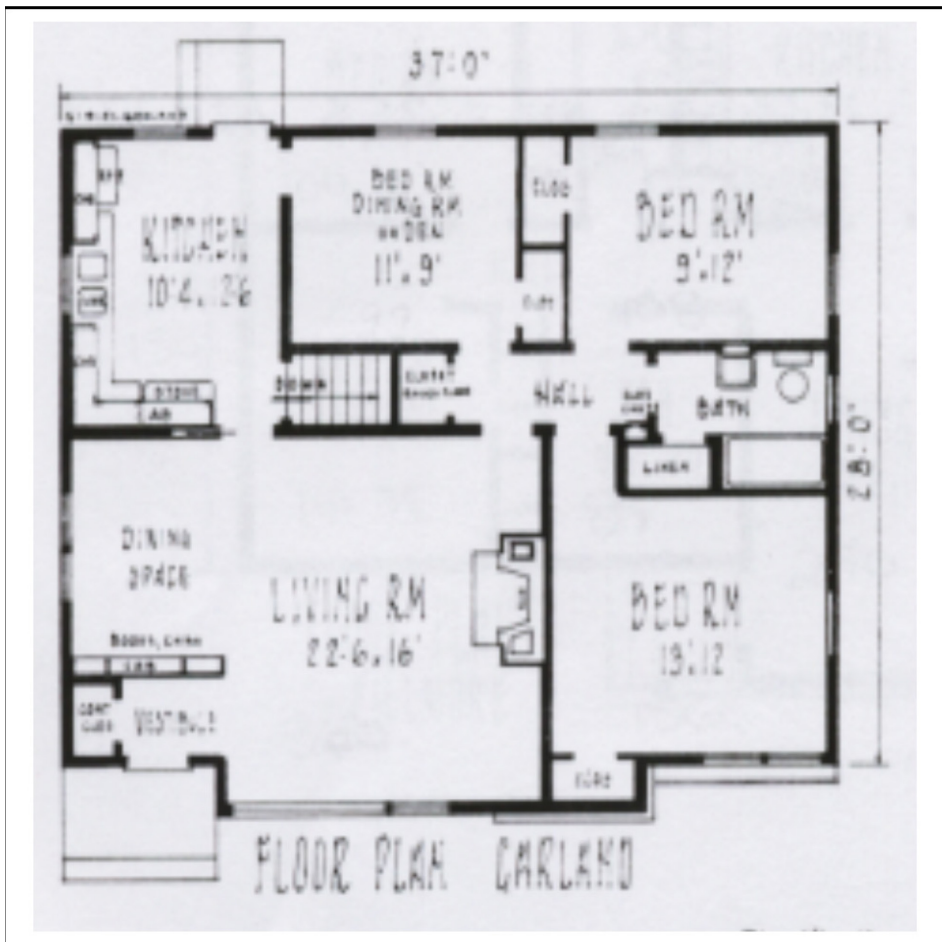
Table A:

	MID CENTURY		
	PUBLIC SPACE		
	Kitchen	**Living Room**	**5)Dining**
Exhibit A	99	240	55
Exhibit B	72	180	56
Exhibit C	72	241	72
Exhibit D	130	360	99
Average Sq Footage:	**93**	**255**	**71**

Table B:

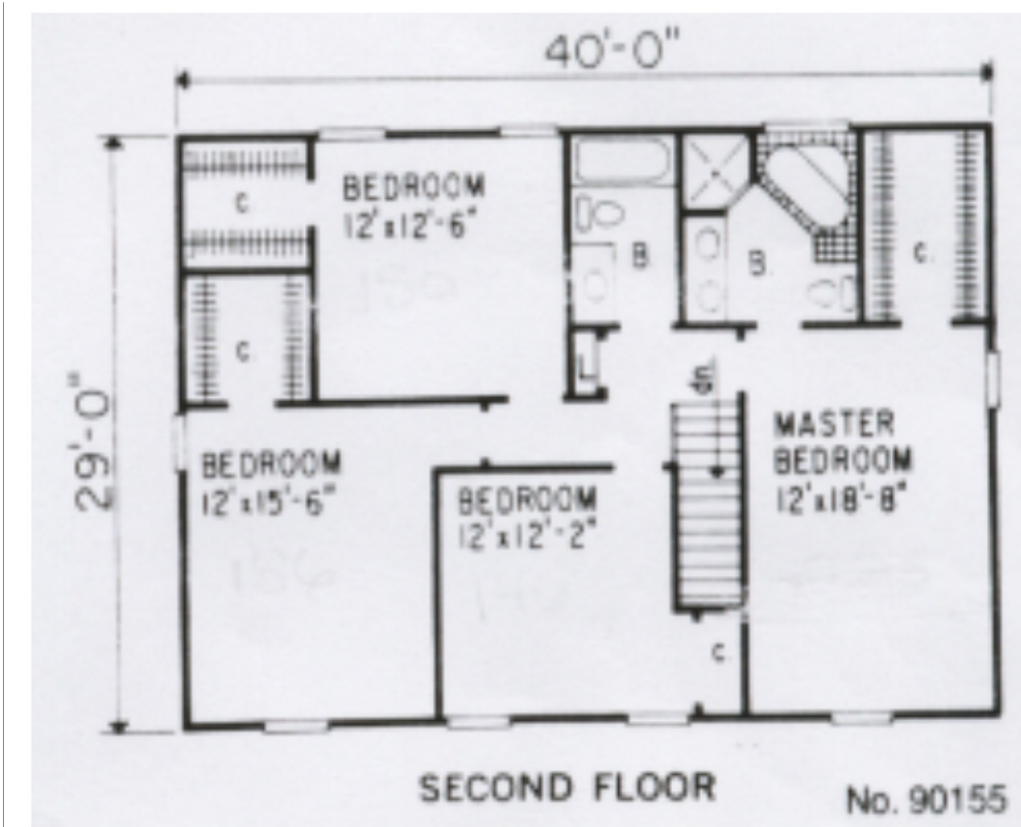|	MID CENTURY			
	PRIVATE SPACE			
	Master BR	**Bedroom 2**	**Bedroom 3**	**Bedroom 4**
Exhibit A	120	94	-	-
Exhibit B	138	102	-	-
Exhibit C	137	110	-	-
Exhibit D	118	118	-	-
Exhibit E	138	123	-	-
Exhibit F	156	108	-	-
Average Sq Footage:	**135**	**109**	**-**	**-**

APPENDIX C: LATE TWENTIETH **CENTURY.**
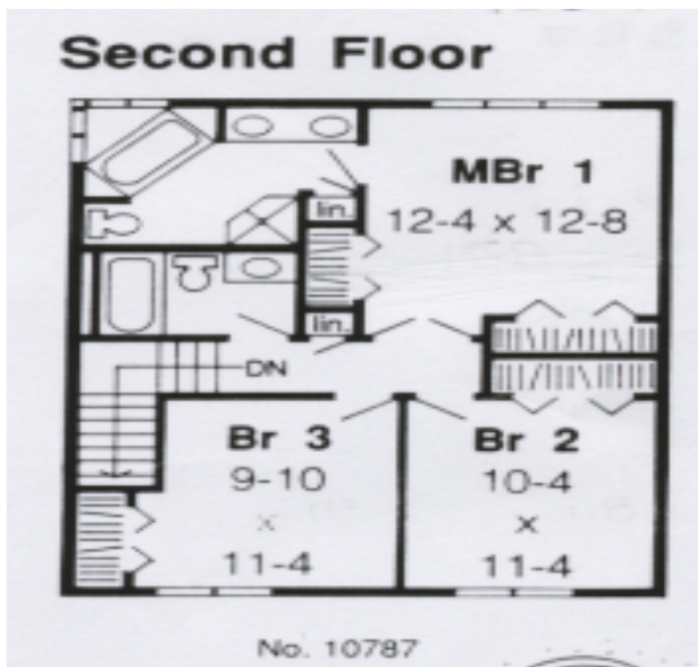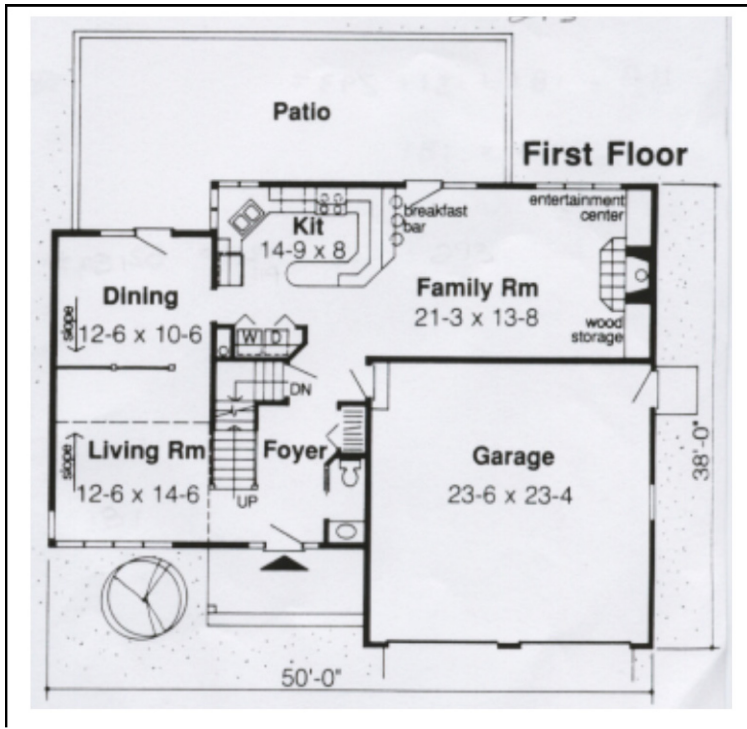
Exhibit C: Garlinghouse Incorporated. "North America's Top Selling Home Plans".
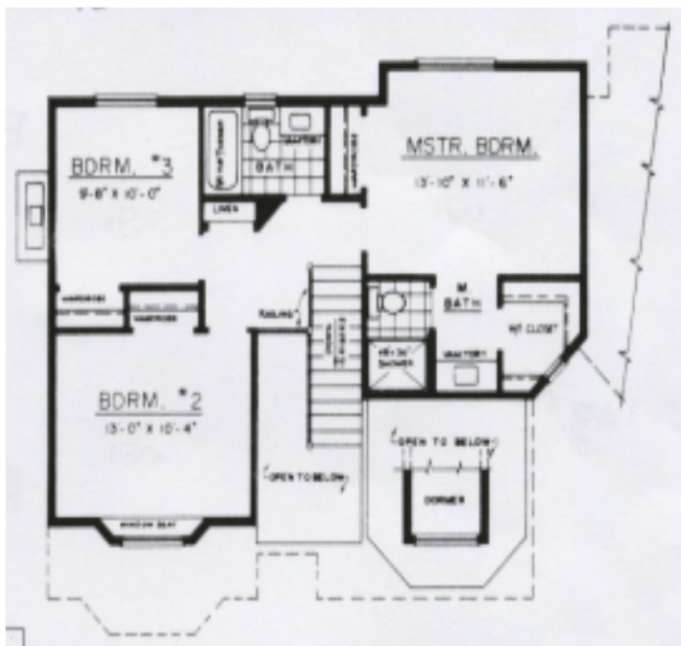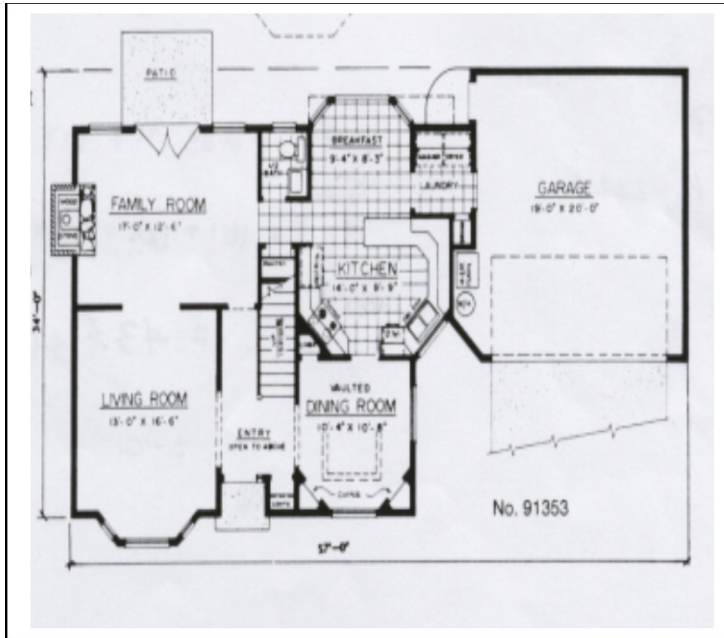Garlinghouse Company, 1994 (14)

Exhibit D: Home Planners, Inc. "Affordable Home Plans: 433 Home Designs for Modest & Medium Budgets. Tucson, Ariz.: Home Planners, 1989 (16)
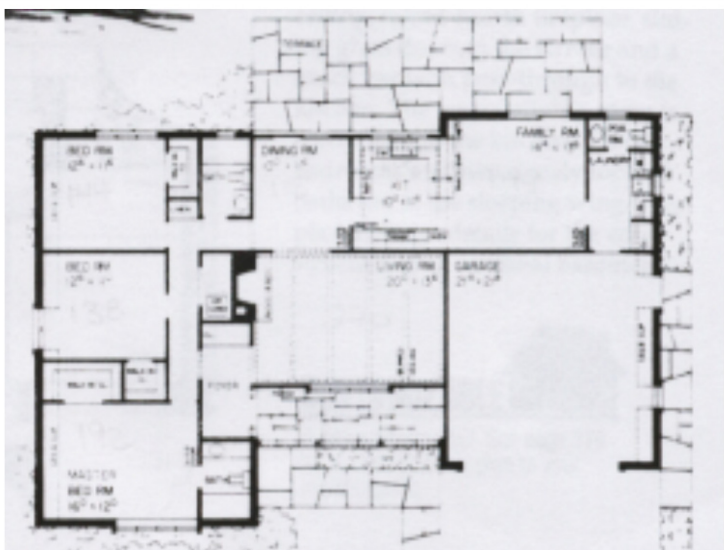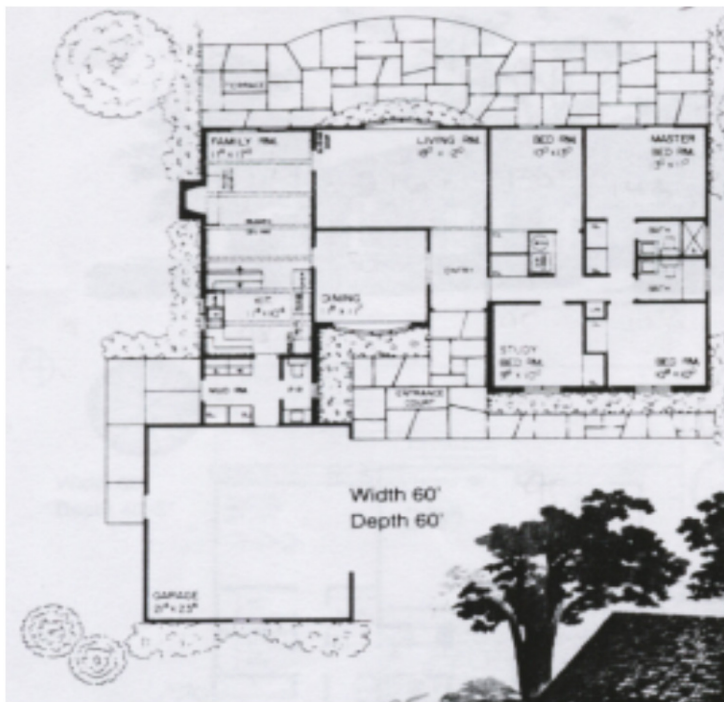
Table A:

	END OF CENTURY		
	PUBLIC SPACE		
	Kitchen	**Living Room**	**Dining**
Exhibit A	119	181	131
Exhibit B	112	253	135
Exhibit C	137	214	112
Exhibit E	160	216	130
Average Sq Footage:	**132**	**216**	**127**

Table B:

	END OF CENTURY			
	PRIVATE SPACE			
	Master BR	**Bedroom 2**	**Bedroom 3**	**Bedroom 4**
Exhibit A	158	118	111	-
Exhibit B	225	186	150	-
Exhibit C	160	136	98	-
Exhibit E	143	130	108	-
Average Sq Footage:	**172**	**143**	**117**	**-**

APPENDIX D: Proposal
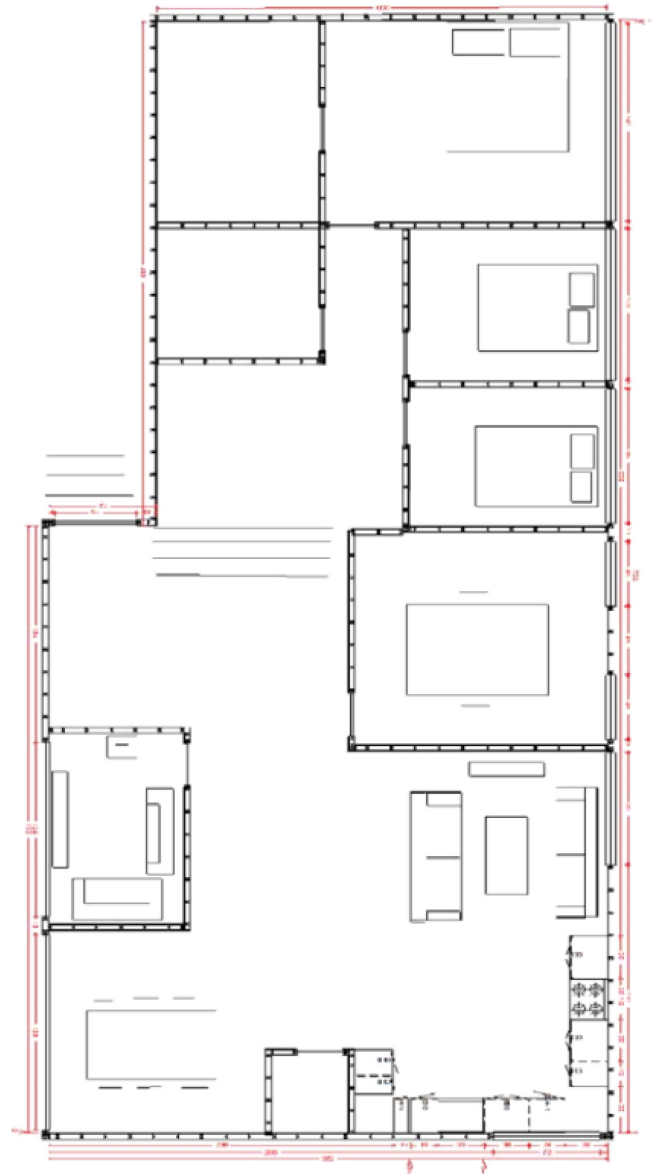
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