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Rüdiger, Mogens

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**AUTHOR**
**Mogens Rüdiger**
Aalborg University, Denmark
Rudiger@dps.aau.dk
Twitter @MogensRudiger

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# The breakthrough of the 21 degrees culture in Denmark. Undoing and doing gender in Danish home making after 1945

## Abstract
The energizing of Danish homes after World War II introduced a new heating culture, which paved the way for new lifestyles. Modernist architects tried to implement the dwelling as an 'objective' or non-gendered space – in contrast to the Victorian home - or at least they pursued the possibility of freeing the housewife from her hard work of maintaining the home and thereby encouraging a more individual lifestyle. However, as I will show, the process of energizing Danish homes after WWII did not comply with this vision. Everyday life changed and so did gender roles, but the home did not turn into an 'objective' space.

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## INTRODUCTION

1 After World War II, in Denmark, the most pressing social problem was a substantial lack of modern dwellings. Consequently, the state launched a program supporting the construction of single-family houses and social housing stock. This gave rise to considerations of how to design the future home. Architectural competitions, newspapers, magazines, professionals, and energy companies all communicated their view on the home of the future to be built in the emerging suburban areas. They all agreed upon the need for energizing the modern home with central heating as one of the most important innovations and it paved the way for the establishing of a 21 degrees culture in most Danish homes.

2 Central heating based on fossil fuels (and from the 1960s, district heating) replaced the traditional hearth, and radiant heat was replaced with a constant and equable heat in all rooms. Central heating paved the way for a different way of designing the home and its separate rooms, i.e., it initiated a new lifestyle. Cold zones disappeared, furniture could be placed without considering the location of the source of heating, light textiles such as cotton became popular, etc. Gender-specific conditions, roles, wants, demands, wishes, and perceptions of the 'good life' influenced the framing of those radical changes of everyday life. Modernity and being modern – i.e., the continuous quest for improving the 'good life' - constituted the core of the discourses related to these changes and, mostly, these discourses were strongly gendered.

3 In this article, I will discuss the 21 degrees culture, the new lifestyle, the main actors, and the gendering of the energizing of Danish homes. Modernist architects, who in many ways framed the new and energized home after WWII, tried to implement the dwelling as an 'objective' or non-gendered space – in contrast to the Victorian home - or at least they pursued the possibility of freeing the housewife from her hard work of maintaining the home.[1] However, as I will show, the process of energizing Danish homes after WWII did not comply with this vision. Everyday life changed and so did gender roles, but the home did not turn into an 'objective' space.

## THE CULTURAL TURN

4 In 1945, Europe was torn apart, but hope soon prevailed. Parts of Europe were in chaos, while countries like Denmark had come through a period of considerable adversity with fewer costs. The reconstruction of the West European countries, however, paved the way for a spectacular change in living conditions for ordinary people and in particular for the middle classes. Fossil fuels are indispensable to the narrative about this enormous and complex change.[2] A historical account of the triumph of fossil fuel cultures and a new heating culture must reflect the complexity of everyday life but also the transformation of the presence of energy from a visible materiality involving strenuous work – for instance coal – to something invisible, immaterial and without the need for the end user to perform any kind of work to get the right temperature. The transformation of domestic life produced new opportunities particularly beneficial to women.

5 In order to address this challenge, it is illuminating to have the cultural turn as a point of departure. Only recently, this turn has found its way into energy history by looking for systems of representation and different rhetorical strategies or voices in the source material. Those readings (see below) are of relevance not only when, for instance, digging into energy companies' efforts to sell their products and to convince potential customers to sign up to a modernization of their lifestyle and consequently of their way of heating,

1 Lynne Walker, "Home Making: An Architectural Perspective", *Signs*, vol. 27, n°3, 2002, 827; Claus Bech-Danielsen Claus, *Moderne arkitektur – hva' er meningen?* (Aarhus: Systime, 2004).

2 Bo Poulsen, Mogens Rüdiger, "The 1950s syndrome and Danish energy consumption and production", *in* Finn Arler et al (eds.), *Ethics in Danish Energy Policy* (London: Routledge, 2020).

but also when reading spatial plans, architectural layouts, advertisements, etc. The modern way of life is unthinkable without a sizeable and continuous consumption of energy because it reduces the impact of natural conditions of existence like heat, cold and darkness. Energy use has mitigated these menaces. Buildings maintain, for instance, a comfortable temperature of 21 degrees Celsius by use of either air-conditioning or heating, and light is turned on whenever needed.[3]

6 In particular, the cultural turn in energy history is an emerging field in the USA, France and Germany. David E. Nye's seminal authorship offers a broad social and cultural history of how electricity transformed American culture. Technology is the main driver in creating modern lifestyles and all the opportunities and conflicts related to modernity.[4] Two more recent books are less interested in technology. In *Routes of Power*, Christopher F. Jones convincingly argues that energy infrastructures, not the fuel in itself, facilitates the abundancy of cheap energy with a fossil fuel-based, energy-intensive culture as a consequence.[5] In *Carbon Nation*, Bob Johnson demonstrates how fossil fuels "remade the material and cultural conditions of life."[6] By looking at fiction and films as well as works by big energy's progressive critics and the energy industry's own efforts to vaunt the use of fossil fuels, Johnson explores how the nation became dependent on fossil fuels. Both Barrett and Worden and Wilson, Carlson and Szeman present a number of historical narratives about how oil has shaped modern life, economy and culture using films, fiction, and other cultural products.[7] In contrast to this article, the two volumes focus more on revealing how cultural products represent the fossil fuel cultures rather than shedding light on the creation of them.

7 For many, politics, technology and culture are closely connected. For good reason. Möllers and Zachmann provide a number of innovative studies of how energy has materialized in technical systems, in culture and in consumer practice.[8] Likewise, Oldenziel and Zachmann illuminate the role of the kitchen in shaping contemporary Western society as a space where the Cold War is embodied in the domestication of new technology, in gender issues, and cooking, etc.[9]

8 In this context, however, the contributions of Loehlin and Gerber are of special interest, where they discuss modernity and gender as the *Wirtschaftswunder* or the welfare state as materialized in the home.[10] My main source of inspiration, however, stems from Ackermann, who gives a compelling account of air-conditioning and the American dream.[11] To her, in spite of the climatic diversity in the country, air-conditioning provided a certain degree of uniformity to the modern American home, a "weatherlessness" which – in my view – is a precondition to the ongoing individualization of everyday life after World War II: in the new home, flexibility is based on standardisation. Subscribing to more

3 Mogens Rüdiger (ed.), *The Culture of Energy* (Cambridge: Cambridge Scholars Publishing, 2008), Introduction.

4 David Nye, *Electrifying America. Social Meanings of a New Technology* (Cambridge, Mass., London, England: The MIT Press, 1990/1997); David Nye, *Consuming Power. A Social History of American Energies* (Cambridge, Mass., London, England: Harvard UP, 1998/2001); David Nye, *When the Lights Went Out. A History of Blackouts in America* (Cambridge, Mass., London, England: The MIT Press, 2010).

5 Christopher F. Jones, *Routes of Power. Energy and Modern America* (Cambridge, Mass., London, England: Harvard UP, 2014).

6 Bob Johnson, *Carbon Nation. Fossil Fuels in the Making of American Culture* (Kansas: University Press of Kansas, 2014), xviii.

7 Ross Barrett, Daniel Wooden (eds.), *Oil Culture* (Minneapolis, London: University of Minnesota Press, 2014); Wilson Sheena, Adam Carlson, Imre Szeman (eds.), *Petrocultures. Oil, Politics, Culture* (Montreal & Kingston, London, Chicago: McGill-Queen's UP, 2017).

8 Nina Möllers, Karin Zachmann (eds.), *Past and Present Energy Societies. How Energy Connects Politics, Technologies and Culture* (Bielefeld: Transcript Verlag, 2008).

9 Ruth Oldenziel, Karin Zachmann (eds.), *Cold War Kitchen. Americanization, Technology, and European Users* (Cambridge, Mass., London, England: The MIT Press, 2009).

10 Jennifer Loehlin, *From Rugs to Riches: Housework, Consumption and Modernity in Germany* (Oxford, New York: Berg, 1999); Sophie Gerber, *Küche, Kühlschrank, Kilowatt Zur Geschichte des privaten Energiekonsums in Deutschland, 1945-1990* (Bielefeld: Transcript Verlag, 2014).

11 Marsha Ackermann, *Cool Comfort. America's Romance with Air-conditioning* (Washington and London: Smithsonian Institution Press, 2002).

or less the same narrative, Taylor and Chappells present a number of short articles discussing how energy has transformed spatial, material and social dimensions of life.[12]

9 The ethnologist Orvar Löfgren discusses everyday life by using three concepts: throwntogetherness, assemblage and entanglement. The approach signals a non-hierarchical interdependence between humans, things, habits and routines or "co-dependencies, often naturalised into invisibility."[13] It is useful because it indicates a way into the black box of everyday life - not in a pre-defined schematic way, but rather an open matrix or frame for analysing the important mundane trivialities.

10 A second turn - the practice turn - also addresses everyday life. Part of this sociological research understands practice in opposition to, or a least different from, the cultural approach,[14] while others see mundane practices and routines as sub-categori to the cultural perspective.[15] In this research, the social and the cultural are entangled in everyday life. Shove, for instance, delves into the dramatic changes of everyday life with a focus on the expectations of comfort, cleanliness and convenience, which in turn initiated a new normality.[16] In his huge study of consumption and material culture from the Renaissance to today, Trentmann is partly inspired by Shove's sociology of everyday life and gives a thorough and comprehensive historical account of cultures of consumption, including how energy is used in everyday life.[17] Gram-Hanssen discusses the role of technology in relation to changes in everyday life practices using transition theories and domestication theories applied to the move to single-family houses in the suburbs.[18] Mechlenborg and Gram-Hanssen focus on the relationship between gender and energy consumption as a core element in practice theory.[19]

## WELL-BEING AND ENERGY

11 Inspired by cultural history, the methodological focus in this paper is on the interplay between material and immaterial well-being and comfort, and on the role of energy in the transformation of lifestyle. The narrative therefore revolves around three concepts - modernisation, 21 degrees culture and comfort or well-being.

12 Modernisation and modernity have been subject to many definitions. With regard to everyday life, energy use, the home and suburbs, I find that the core of these concepts relates to industrialization, rationalization and standardization not only of industrial production but also of domestic life, technology, (sub)urbanization and a high degree of social and geographical mobility.[20] In connection with energy, I understand modernisation as the outcome of the continuous quest for the 'good life' or at least a better life which, after 1945, unfolded in two specific developments, electrification and a new heating culture. However, experiences of modernity and domesticity were gendered as well as dependent on

12 Vanessa Taylor, Heather Chappells, "What Consumers in the Past Tell Us about Future Energyscapes", *RCC Perspectives*, nº 2, 2019, 11-21.

13 Orvar Löfgren, "The Black Box of Everyday Life. Entanglements of Stuff, Affects, and Activities", *Cultural Analysis*, 13, 2014, 77.

14 Theodore Schatzki, "Introduction: Practice Theory", *in* Theodore Schatzki, Karin Knorr Cetina, Eike von Savigny (eds.), *The Practice Turn in Contemporary Theory* (London/New York: Routledge, 2001).

15 See Daniel Welch, Bente Halkier, Margit Keller (eds.), "Introduction to the Special Issue: Renewing Theories of Practice and Reappraising the Cultural", *Cultural Sociology*, vol. 14, nº 4, 2020; Marlyne Sahakian, Henrike Rau, Grégoire Wallenborn, "Making Sustainable Consumption Matter: The Indoor Microclimate as Contested Cultural Artifact", *Cultural Sociology*, vol 14, nº 4, 2020, 417-434.

16 Elizabeth Shove, *Comfort, Cleanliness + Convenience. The Social Organization of Normality* (Oxford, New York: Berg, 2003).

17 Frank Trentmann, *Empire of Things. How we became a World of Consumers from the 15th Century to the 21st* (London: Penguin, 2016).

18 Gram-Hanssen Kirsten, "Understanding change and continuity in residental energy consumption", *Journal of Consumer Culture*, vol. 11, nº 1, 2011, 61-78.

19 Mette Mechlenborg, Kirsten Gram-Hanssen, "Gendered homes in theories of practice: A framework for research in residential energy consumption", *Energy Research & Social Sciences*, vol. 67, 2020.

20 Jennifer A.Loehlin, *From Rugs to Riches: Housework, Consumption and Modernity in Germany* (Oxford, New York: Berg, 1999), 21; Judy Giles, *The Parlour and the Suburb. Domestic Identities, Class, Feminity and Modernity* (New York: Sage 2004), 5.

social class. The change toward these new cultural tendencies took place against the backdrop of the Victorian home with its clearly defined gender roles, but also in the wake of the modernist clash with 'the good old days.' This clash as it materialized in the energizing of dwellings and the establishment of an 21 degrees culture forms the starting point for this article.

13 The breakthrough of modernism was entwined with increased use of fossil fuels. The concept of 21 degrees culture pinpoints this connection as it signals the transition from radiant heat from the stove to the elimination of cold zones, to an equable and constant heat in all rooms from the coal- or oil-fired central heating or district heating.[21] The architectural historian Reyner Banham coined it "the well-tempered home".[22]

14 Equally, electrification occupied a key role in the modernisation of the home. It took place as an entry of electric appliances, first into the kitchen, then into the rest of the home. It was not an accidental process: domestication signals that an innovation "will only gain permanent footing in the home if its role is made meaningful (...) to the household economy of values."[23] In which case, an important question to ask is to whom it was meaningful? When answering, it is worth stressing, that energy is not the only factor; rather, changes are the outcome of social, technological and cultural - including gendered and affective - processes, which make some things possible while other things are deemed unthinkable.

15 Comfort is a difficult concept to define as it is always relative to individual feelings: it is "a human invention rather than a measurable and invariable physiological response."[24] However, in a lengthy discussion of the concept, Shove states that "the achievement of comfort is here understood as a creative process of trading, juggling and manipulation whether of clothes, activity, and daily routine, or of building technologies like windows and heating systems."[25] I prefer the term well-being as an entwinement of mental and physical comfortability, wellness and being prosperous or, in other words, succeeding in turning a good life into a better life.

16 The roads to a resilient and dominant heating culture differ depending on a number of factors like climate, the previous (organic) energy system, access to resources or dependence on imported fuels, the way of life, infrastructure, (sub)urbanisation, industrialisation, etc. Thus, there were very different contexts as regards to climate, energy system, heating culture, energy infrastructure, fuel preferences, etc. However, in the late 1940s, most West European countries shared the characteristic of having a substantial lack of modern dwellings, which gave rise to considerations of how to design a better life in the future home communicated by the authorities, magazines, architectural competitions, doctors, etc.

## THE INTERWAR PERIOD

17 The transformation of the heating culture began in the interwar period, but because of the economic crisis from 1929, it only affected a small part of the housing stock. A proportion of the new houses, especially bungalows in emerging suburban areas, were equipped with central heating and radiators. In 1939-1940, almost a third of the apartments in Copenhagen had central heating while the number for provincial towns was around 10% and less than 4% in the countryside. A third of the apartments in the capital was equipped with a bath (shower or bathtub), as only a fifth of the apartments in provincial towns and none of the dwellings in the countryside had a bath. In the cities, almost

21 Mogens Rüdiger, *Oliekrisen* (Aarhus: Aarhus Universitetsforlag, 2019); Ning de Coninck-Smith, Mogens Rüdiger, "Typehus, energi og familieliv i Danmark i 1950'erne og 1960'erne", *in* Niels Finn Christiansen, Kurt Jacobsen og Mogens Rüdiger, *Ole Lange – fra kætter til koryfæ* (Copenhagen: Gyldendal 2007).

22 Reyner Banham, *The architecture of the well-tempered environment* (London: The Architectural Press 1969).

23 Graeme Gooday, *Domesticating Electricity: Technology, Uncertainty and Gender, 1880-1914* (London: Pickering & Chatto, 2008), 3.

24 Ackermann, *Cool Comfort*, 4.

25 Shove, *Comfort, Cleanliness, Convenience*, 36.

everybody had gas, but nobody in the countryside.[26] All in all, modern heating based on fossil fuels was on its way, but when the World War II broke out, it was only in its beginnings.

18 The interwar period signalled a breakaway from the so-called Victorian home and the 'traditional' understanding of domesticity. This included the gendered design of the dwelling and the strict definition of some rooms as male and some rooms as female. Following Walker, "the Victorian home was feminized and endlessly depicted as "woman's place," [but] it was nevertheless heavily patriarchal in terms of territory, control, and meaning."[27] The modernist architects rejected not only the Victorian design to the advantage of a functional layout focussing on "space as the structuring principle," they also turned their back on the concept of home or domesticity.[28] Instead, they pleaded for an 'objective' dwelling, a non-gendered and non-hierarchical place to live a rational life framed by an opening up of the space and the deployment of technical resources to achieve maximum comfort and minimum drudgery.[29] To use Butler's terminology of gender performativity, their vision was to undo the gendered home by emancipating the housewife from the household chores by replacing the overcrowded Victorian home with functional rooms, and by introducing modern technology.[30] Hence the kitchen came into focus as a gendered room where the housewife spent a substantial part of her day taking care of the family.[31] However, although the modernist architects depicted the home as a rational and non-gendered house, the reality of the energized post-war home did not comply with the vision and continued – as I will show – to reproduce the gendered family life.

## THE POST-WAR SCENE

19 The lack of dwellings was not only a result of the shortages amid the war and the occupation, but also a reflection of structural changes in the Danish society (as in all the West European countries). The mechanization of agricultural production combined with industrialization literally relocated job opportunities for the common woman and man. After the crisis of the 1930s and the war, economic growth was at the top of the agenda. The reduction of unemployment, of creating new jobs and thereby improving capabilities for creating a better life for the majority, were the goals of economic policy. Although economic growth encountered some limitations before 1958, the situation improved in Denmark, and from the late 1950s, growth surged during the so-called golden sixties, unemployment almost disappeared, and the size of the public sector relative to GDP expanded from one of the smallest in Western Europe to one of the biggest.[32] Women especially gained from this development. The percentage of women active in the labour market did not change during the first fifteen years after WWII, but from 1960 to 1973, women's employment rate rose from 40% to 54%. Double income families became the new norm in the 1960s and, for the majority, two incomes were necessary for the family to achieve the new standard of living.[33]

20 Against this background, the demand for energy increased. Consumption more than tripled from 1948 to 1973, and in the same period, coal was replaced by oil as the preferred fuel. In 1973, more than 90% of gross fuel consumption was oil. One reason for this strong dependence on oil was that the oil burner replaced the use of coal in central heating as well as in district heating, whose popularity increased from the early 1960s.[34]

26 Statistics Denmark, *Statistical Yearbook* (Copenhagen: Statistics Denmark, 1945).

27 Walker, "Home Making", 826.

28 Ibid, 827-828.

29 Banham, *The architecture of the well-tempered environment*.

30 Mechlenborg, Gram-Hanssen, "Gendered Homes", 5; Tine Damsholt, Dorthe G. Simonsen, "Materialiseringer. Processer, relationer og performativitet", *in* Tine Damsholt, Dorthe G. Simonsen, Camilla Mordhorst (eds.), *Materialiseringer. Nye perspektiver på materialitet og kulturanalyse* (Aarhus: Aarhus Universitetsforlag, 2009), 26-29.

31 Claus Bech-Danielsen, Mette Mechlenborg, Marie Stender, *Velkommen hjem. Tendenser i dansk boligarkitektur* (København: Politikens Forlag, 2018), 120.

32 Statistics Denmark, *60 år i tal. Danmark siden 2.verdenskrig* (Copenhagen: Statistics Denmark, 2008), 20-22.

33 Statistical ten-year review.

34 Statistical ten-year review.

21 As the 1950s and 1960s was a period with booming economies and soaring energy consumption establishing affluent societies and an unprecedented impact on the climate, the two decades witnessed what often is called 'the great acceleration.'[35] Modernity became energized, and oil replaced coal as the preferred fuel and electricity almost outstripped coal gas. The oil crises in the 1970s painfully ended the great acceleration and marked the beginning of the green transition and the end of the oil age.[36]

## THE SUBURB

22 Amid the changes in the economic structure, people moved away from the countryside. Every year, 16.000 people moved from the countryside to provincial towns and 1.000 to Copenhagen and the surrounding suburbs (Greater Copenhagen). Greater Copenhagen also received 10.000 from the provincial towns, while 5.000 moved out of Copenhagen, where most industry was located.[37]

23 The two opposing movements met in the suburbs. A suburb is characterized by separation and distance. Historically, the town was a conglomerate of dwellings and buildings with all kinds of production, i.e., trade and small industry with environmental annoyances as a consequence. In contrast to this, the suburb separated work from home and leisure and made transportation unavoidable. The suburb offered much-coveted amenities like light, fresh air, and quiet and child-friendly surroundings. Those values were important in the ongoing debate on hygiene, but they were definitely not present in the bigger cities' tenement houses. Tenants - mostly workers - pushed for better dwellings and whenever possible they moved to the suburbs.

24 First, the escape from the dark and unhealthy apartments to the suburbs took place on bicycles or – in Greater Copenhagen - with the S-train (metropolitan and suburban electric train) until the private car took over most of the transportation during the 1960s.

25 The nuclear family in their new home in the newly established suburb changed consumption habits. In 1948, it spent almost 40% of income on food and only 5% on the home (rent, etc.). In 1970, the numbers were 28% and 12% respectively, while today they are 15% and 22%.[38] What did the family members get in return for the expenditure? Typically, in the morning, men left for the workplace outside the suburb, while women stayed in the home doing cleaning, shopping, childcare, food preparation, and maybe some gardening. The suburban single-family house probably improved the family's quality of life, but to the housewife it could be perceived as a gilded (more or less) cage. Her contact with the outside world amounted to the daily shopping trip or small talk over the privet hedge with the neighbouring housewife while hanging the laundry out to dry on the clothesline.

## THE SINGLE-FAMILY HOUSE

26 As mentioned, in 1945, there was a substantial lack of dwellings. To address this, the Parliament decided to support the construction of social housing stock and small private single-family houses with government loans, which prompted several architectural competitions. Architects and other professionals had several opportunities to reflect on what a modern single-family house should look like and how to design the interior. Most architects were men, but a small number of women played a significant role. One was a kitchen designer, Ulla Tafdrup, who in the leading architectural journal, Arkitekten, discussed her experiences of building industrial kitchens as well as kitchens in dwellings. Among other things, she pinpointed the fact that a new kitchen did not eliminate the need for frequent cleaning. Furthermore, a couple of important co-operatives had women as leading architects.

35 Christian Pfister, "The "1950s Syndrome" and the Transition from a Slow-Going to a Rapid Loss of Global Sustainability", *in* Frank Uekoetter (ed.), *The Turning points of Environmental History* (Pittsburgh: University of Pittsburgh Press, 2010); John R. McNeill, Peter Engelke, *The Great Acceleration. An Environmental History of the Anthropocene since 1945* (Cambridge, Mass., London, England: The Belknap Press of Harvard UP, 2014).

36 Rüdiger, *Oliekrisen*, 45-55.

37 Ibid., 26-27.

38 Statistical ten-year review.

27 It is striking that architects were hesitant about the installation of, especially, central heating and bathrooms until the government loan act terminated in 1958, whereafter central heating, bath, refrigerator and washing machine became indispensable in new houses. The reason was probably that the act stated that only houses within a relatively narrow cost limit would qualify for a state loan, but it also signalled that in the early 1950s, modern amenities like a bath, central heating and hot water were looked upon as optional.

28 The state-loan houses were small in size. The first ones were 50-60 $m^2$, and at the end of the decade the typical house had expanded only to 80 $m^2$. Thereafter, i.e., after the state-loan act terminated in 1958, Denmark saw a steady increase in home size - up to more than 200 $m^2$ today, an increase only interrupted by the oil and financial crises.

29 Many things changed inside the dwellings, be it a single-family house or an apartment. In this context, it is relevant to note that all members of the family (maybe except the pet) were to have her/his own room and that a number of rooms with a special functionality were added like a bathroom, a second toilet, a scullery, a guestroom, etc. When they were asked, the Danes made personal hygiene a priority over central heating, but it was no longer an either-or, and – like electricity – heating is invisible and mostly of interest when absent.[39]

30 The suburb, the single-family-house, and the new social housing signalled a new way of living. Everyday life was modernized. It was a quest for light and fresh air, but also a wish for home ownership. It was - to a certain degree – an individualization based on standardization of the single-family house in order to support flexibility when designing the home. The modernist architects wanted to construct the dwelling as an 'objective' space, including un-gendering the home. Realistically, a first step would be to reduce or to remove women's daily grind in the form of washing, cleaning, cooking, etc.

39 Rüdiger, *Oliekrisen*, 34.

## THE 21 DEGREES CULTURE

31 The new way of living was closely connected to the energizing of everyday life. Homes were filled with appliances and installations, all of them consuming energy. Dependence on energy increased. Electricity was progress and modernity, and the housewife could count on more and more electrical kitchen aids. Refrigerator, freezer, washing machine, hand mixer, coffee machines, dishwasher, etc. became a part of modern life. And for leisure time, the family could enjoy the radio and the record player, or watch television while enjoying TV-dinners prepared by the housewife, or take a ride in the car, or - from the late fifties - go by plane on a package tour to one of the popular warm countries.

32 The amount of energy used for heating increased considerably and became a substantial part of energy expenditure in the dwellings. This was primarily because of the increase in dwelling size, but also because of a tendency towards there being fewer members of a household, which meant that, on average, each Dane had more space at her disposal. The architect's vision of undoing the gendered home resulted in a new distribution of the square meterage: the home was divided into an adult section and a children's section, a bathroom was constructed in all new dwellings in addition to a guest toilet, the living room became more spacious, and, more commonly, it was combined with the dining room in a L-shaped configuration. The kitchen was very small and similar to the German Frankfurt-kitchen.[40] In Denmark, it was nick-named "the laboratory kitchen" - which also indicated that the housewife should be rational and work like a scientist. However, the open kitchen – called "the American kitchen" – grew more and more popular and became a must in new houses.[41]

40 Hessler Martina, "The Frankfurt Kitchen: The Model of Modernity and the "Madness" of Traditional Users, 1926 to 1933", *in* Oldenziel, Zachmann (eds.), *Cold War Kitchen*; Bech-Danielsen et al., *Velkommen hjem*.

41 Ibid.; Vyff Iben, "Hvilke amerikanske drømmekøkkener? Forhandlinger af USA i dansk køkkenkultur 1950'erne og 1960'erne", *in* Dorthe G. Simonsen, Iben Vyff (eds.), *Amerika og det gode liv* (Odense: Syddansk Universitetsforlag, 2011).

33 The welfare state also used more energy on social housing, new public institutions, kindergartens, schools, hospitals, etc. This caused a 75% growth in the number of heated square meters from 1959 to the first oil crisis.[42] In addition, neither the old nor the new dwellings were well-insulated. With the low oil prices of the sixties it was more convenient and cost effective to turn up the heat than to insulate the building.

34 One of the important breakthroughs for a convenient indoor climate came with central heating. It was attractive for several reasons. First, it replaced the traditional stove based on firewood, coal or coke, kerosene or coal gas. The stove was characterized by radiant heat, which almost made an even room temperature impossible and, additionally, they were unpleasant smelling when used and could be a safety hazard. Typically, the stove was placed in the living room as the principal room in which the family gathered. From the late fifties, new houses were no longer built with a stove.

35 Central heating was preferable to the old stove, even though a coal or coke fired furnace implied some work. In spite of this, central heating was perceived as a step forward, because it provided an even heat in the rooms, and it allowed for a more flexible floor plan. It also contributed to removing the cold room and zones, for instance the entrance, the corridors, and the parlour, used only for Sunday dinners or when having guests. An even and constant temperature became standard in all rooms. The 21 degrees culture was born. Twenty-one degrees must be understood as a minimum temperature as the temperature in many homes was probably even higher.[43]

36 Central heating changed "the notion of space and [...] enabled the spread of people and of energy-demanding practices around the home."[44] One of the limitations on everyday life disappeared and opened up to changed family patterns, including an increased individualization.

37 No doubt, the coal or coke based central heating improved everyday life. But it had a flip side. Coal or coke must be shovelled into the furnace once a day. It was hard work, undertaken by women as well as men. It was dusty, the coke was smelly and took up space. In the late 1950s and during the 1960s, the popularity of the coal/coke-based furnace decreased and the oil burner and district heating took over. Irrespective of whether the homeowners chose the collective solution - district heating - or the individual option - central heating - there was a double spin-off: the cumbersome work of getting heat in the dwelling disappeared and the dependence on oil rose steadily. The smell, however, vanished only with district heating. In 1970, 56.6% of all homes were heated by oil based central heating and 27% by district heating.[45] The rest used coke, kerosene or gas.

38 To sum up the benefits of the oil burner: it was more hygienic than the coal furnace because it did not emit dust and as it was cleaner and more convenient, it not only improved the well-being of all the residents, but it also removed some of the daily discomforts of the housewife, like shovelling coal and the resulting need for cleaning the space around the stove. The oil furnace was costly, but, when installed, it was cheaper and labour-saving and provided the family with more space. It signalled comfort, modernity and a casual lifestyle. It was – you could say - the welfare state transformed to the micro-level.

**42** Rüdiger, *Oliekrisen*, 38.

**43** 'The 21 degrees culture' should not be understood as technical notion, but as signaling a heating culture with a constant and even temperature in dwellings (see Elizabeth Shove, *Comfort, Cleanliness and Convenience*, 21-42, for a discussion of the concept of comfort). In Denmark, the energy saving campaigns in the 1970s and 1980s urged the population to lower the temperature to 21 degrees. See Bo Poulsen, "Campaign Country Going Green? Danish Government Campaigns for Saving Energy and the Rise of Environmental Concern, c. 1973-1995", in Martin Dackling, Poul Duedahl, Bo Poulsen (eds.), *Reformer og ressourcer / Reforms and Resources : Rapporter til det 29. Nordiske Historikermøde / Proceedings of the 29th Congress of Nordic Historians* (Aalborg: Aalborg Universitetsforlag, 2017).

**44** Olivier Coutard, Elizabeth Shove, "Infrastructures, practices and the Dynamics of Demand", *in* Elizabeth Shove, Frank Trentmann (eds.), *Infrastructures in Practice. The Dynamics of Demand in Networked Societies* (London and New York: Routledge, 2018), 19.

**45** Statistical ten-year review.

39 The 21 degrees culture also contributed to the popularity of the use of lightweight textiles like cotton and synthetic fabrics, in preference to wool. With James Dean and Marlon Brando, blue jeans and t-shirts made of cotton became a spectacular part of the masculine youth culture, a fashion that was soon adopted by women. Cotton more than the other fabrics was casual and improved wellbeing.[46]

## THE GENDERED HOME

40 As indicated, many actors took part in the shaping of the modern home and in the modernization of everyday life. First, the modernist architects translated their interwar interest in confronting the design of the feminized Victorian apartment into a more plain and non-gendered design for the postwar single family home, which reflected the needs of everyday life. In 1948, one of the strongest proponents of this transformation, the architect Ole Buhl, said:

> "... we must get rid of the fear of the rational. You cannot improve enough the kitchens, the living room, the closets, and the balconies. We cannot diversify enough the apartments, and the best way to do it is by standardization and a rational organization of the building process [...] The technology has rendered possible and further developed the idea of a collective lifestyle, which again improves the possibility of an individual and a more many-sided and well-balanced individual lifestyle."[47]

41 This was a manifesto for the modernization of everyday life, but it also became a guideline for the production of the single-family house after 1945. The 21 degrees culture fitted into this program, providing an even temperature in the entire home. The furniture was no longer 'locked' by the radiant heat, but rather was opened for a rational and flexible layout. Hand in hand with the electrification of the kitchen, the 21 degrees culture sent everyday life into a new epoch of wellbeing.

42 The modernist architect was not the only actor pledging a new balance between collective and individual lifestyle, but they sketched a new frame for home life. However, the question is if they successfully contributed to transforming the gendered 'design' of the family into a collective with gender equality?

43 If we look at women's employment activity, it was actually lower in 1960 compared to 1950. However, in this context it is striking that married women's activity rose from 16% to 21%. This trend continued in the 1960s. By 1965, 32% of married women were employed outside the home and five years later half of them were active on the labour market.[48]

44 This change, of course, was determined by a number of factors: it mirrored the economic boom in the 1960s, the focus on individualization and the incipient emancipation of women. The new home and the reduced load of the housewife's work assisted this process. But it was also related to the need for double incomes to finance the new home and the wish for more consumer goods like a TV-set, a car, etc. As emphasized innumerable times in the literature, the housewife did not end up with less housework, but rather with different work tasks.[49]

45 However, these structural changes were barely reflected in the commercial promotion of central heating and different types of burners: the breadwinner in the family was typically male while women still governed the home. The patterns of family life only changed slowly. Central heating contributed to this change.

Central heating reduced the housewife's dusty tasks of hauling coal or wood into the kitchen and other rooms equipped with a heating stove, and removing the ashes. As long as the burner in the central heating system was coal- or coke-based, it was still dusty to feed the burner, but now it was located in a separate room in the

46 Rüdiger, *Oliekrisen*, 40.

47 Ole Buhl, "Status over etagehuset", *Arkitekten U*, 1948, 5.

48 Henrik Nissen, "Kvindens kald", lex.dk.

49 For instance, Ruth Cowan, *More work for mothers: the ironies for household technologies from the open hearth to the microwave* (New York: Basic Books, 1983).

basement or in the outbuilding. Therefore, an oil burner constituted a fundamental shift of tasks as it reduced the work of achieving a comfortably heated home to simply ordering the fuel and paying for it, a typically male duty.

46 The flip side of central heating was that the installation of the burner, pipes and radiators was expensive. Therefore, it took time before the 21 degrees culture gained ground in all homes. In 1965, central heating was installed in 67% of all homes, half of them with oil burners, probably due to all new dwellings having central heating as standard since the middle of the 1950s. District heating made up less than 20%.[50]

## THE FAMILY'S BEST FRIEND

47 In this section, I use advertisements to illustrate how lifestyles changed without phasing out gendered energy consumption. Commercials do not prove gender practices, but as the companies intend to sell their products, they aim to talk to actual ways of life as well as to the family's hopes and wishes for the future. By doing so they illustrate and articulate the perception of what it is to be modern and how the 'good life' could evolve into a better life.

48 Central heating was introduced in Denmark in the 1930s, but due to the economic crisis and WWII, it did not become common before the middle of the 1950s. The first-generation heaters were coal-based, but soon the oil burner took over as the preferred heating system. Both technologies were available before the war, but as Denmark at that time was a 'coal-country' and primarily imported coal, this fuel was closely connected to central heating.

49 Because central heating of single-family houses was an emergent market in the 1950s, several companies advertised the bliss of central heating and oil burners. In contrast to the modernist architects, they were more focussed on gender roles related to housework, but it is also striking that most of the commercials neglected genders and just praised technicalities and the overall improvement in quality of life when installing central heating and oil burners. From its very introduction to the market in the 1930s, the oil burner was promoted in opposition to coal, and it was marketed as a means to establish a comfortable life, from which the housewife especially would benefit. In contrast to unpleasant filthy coal, the oil burner was pleasant, clean, and inexpensive. The oil furnace signalled that the consumer was "modern" but also that the modern home gave room to a gendered life. For instance, a six-page leaflet published in 1932 named *Is Your Villa Modern -?* shows a young, dressed-up housewife managing the central heating with one finger stressing only that oil burners *Do the thinking for You.* The leaflet also promised that the man of the house no longer had to do the recurrent unpleasant task of cleaning the coal burner. Additionally, the couple could sleep one hour more in the morning, and that shaving would be comfortable due to the presence of hot water. The basement where coal had previously occupied the space would the perfect spot for the kids to play, the housewife could dry laundry because the rooms were no longer dusty, or the man of the house could enjoy his workbench. Or even better, he could make a party room, where his wife could serve drinks to close friends.[51]

50 In some of the commercials from the 1950s, male engineers highlighted that an oil burner "took care of itself," that you could be sure of having the right temperature in all rooms, and instead of storing coal, you could use the coal storage room for more interesting purposes. One brand, the Amanda stoker, repeatedly stressed that the oil burner was a friend of the entire family.[52]

51 Advertisements reflected the gendered work-home balance, especially when the oil burner became the "new norm" in the early 1950s. The commercials addressed to the man of the house either informed about technical functionalities or stressed the financial aspect and continued to

50 Statistical ten-year review, 1967 & 1974.

51 Royal Library, Småtryksafdelingen, file: Central heating.
52 Ibid.

**Figure 1**: Mom at work while dad and the kids are having fun in the new work room. The replacement of the old coal-based heater with the oil burner added a new room to the home – according to the commercial for the Salamander oil burner, 1955.

**Figure 2**: Party in the basement where the old coal burner is replaced by a Salamander oil burner (commercial 1955).

do so regardless of the changing gender roles in the 1960s. Two examples from 1970: "Mr. Hansen is so happy when he thinks of his nice house with all its well-heated rooms, the hot bath and all the comfort following from a modern heating installation for a reasonable amount of money." And: "Wow, the baker is having a shower once again (...) with a lot of hot water pouring down on him - and when he is done, there is plenty of hot water for his wife and kids.[53] The man was the breadwinner and as such predestined to be the first one to have the daily shower.

52 Commercials directed to the housewife highlighted that the oil furnace was not dusty like the coke burning furnace and consequently it was hygienic and clean. The 21 degrees culture was also healthy, improved the well-being of the family, and it was mild and gentle because it was possible to avoid cold zones in the home. And to top it all, the radiators provided the rooms a harmonious impression. The most expressive commercials were published in 1962 and showed a nicely dressed woman in a two-piece and high-heels embracing an oil furnace, with one hand on the shunt regulator: the best friend of the housewife! All in all, the housewife could not avoid loving the oil furnace and the 21 degrees culture.

53 The focus on gender was of no surprise. Until the late 1960s, the home was perceived as women's domain and workplace. Housewife was a job description, and not only in advertisements. In a popular exhibition in Copenhagen in 1950, the single-family house on display strongly signalled the architects' wish to rationalize the home. It would result in a more rational and flexible home, based on a confidence that a home like this would allot more status to housework and thereby contribute to a feeling of greater equality between the spouses.[54] The housework was perceived as a job in its own right, and consequently, the kitchen would be located to receive sun from the west rather than the old, small and dark kitchens facing north.[55]

Furthermore, the 21 degrees culture contributed to a changed understanding of hygiene. Although the bathroom continued to be small, very often it was equipped with both a shower and a bathtub. Surveys showed that a modern bathroom was on the top of most Danes' wish list. No doubt, the standards of personal hygiene increased, and it was the responsibility of the housewife to ensure that the family matched the new standards.[56] 54

## CONCLUDING REMARKS

During the 1950s and 1960s, significant changes to everyday life took place. The breakthrough of the 21 degrees culture was closely connected to the success of the new single-family house located in one of many new suburbs. Why did this drastic change occur over such a short time span? 55

The abovementioned migration from the countryside to the suburbs entailed a shift in technology from the old heating stove to either central or - from the early 1960s - district heating. The shift, you could say, was simply an opportunity following from the building of new houses. However, at least in the first part of the 1950s, one could purchase a house without central heating, but it never became a hit with families in need of a new dwelling. Why not? Why did young couples and families living in condemnable and insanitary apartments in the cities insist on modern amenities? 56

An overall but also rather fluffy answer could be that they wanted a substantial improvement in quality of life and thus an everyday life freed from as much hassle as possible, with as much spare time as possible, and with as few boundaries as possible. The backdrop was an improved economy and the prospect of an even more prosperous economy. Suddenly, the 'American way of life' became meaningful to ordinary people. 57

**53** Ibid.

**54** Otto Norn, "Ny rækkehustype", *Arkitekten U*, 1950, 215.

**55** Ole Buhl, "Det lille Køkken i den lille Lejlighed", *Boligen*, 6, 1942, 76-80; Poul Erik Skriver, "Kvinde og Hjem" Danske kvinders udstilling for rationel husførelse 1950", *Arkitekten U,* 1950, 213-214.

**56** De Coninck-Smith, Rüdiger, "Typehus", 211; Rüdiger, *Oliekrisen*, 35.

58 Who carried these innovations for everyday life into the dwellings? A lot of people did - city planners, politicians, designers, physicians, engineers, etc., mostly men. In this context, I have focused on architects and especially on the housewife, who in the 1950s and 1960s gradually managed to leave behind her traditional role as housewife and become a more independent woman with a yielding interest in sheltering in the suburbs. The man remained breadwinner even if the woman worked outside the home, and in double-income families this typically meant that the housewife had a second job to take care of. Most of the professionals' visions and messages were addressed to the housewife as she was the one responsible for the home. The patriarchal Victorian home was replaced by a 'modern' home, but the vision of undoing gender roles and turning the home into an 'objective' space did not materialize in Danish homes in the 1950s and 1960s. Gender roles changed, but they did not evaporate with the modern dwelling as the modernist architects anticipated. The breakthrough of the 21 degrees culture was one of the most conspicuous elements in this restructuring of domestic space, and in combination with electrification, it provided the foundation of the making of modern homes.

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