

A socio-anthropological approach to energy-related behaviours and innovations at the household level

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Abstract

This paper aims at examining the relationships between individuals and society in the sector of domestic energy consumption with a socio-anthropological perspective: the focus is on how interactions between household members are socially shaped. Based on empirical material gathered in Belgian households of at least two persons, the paper has two aims: depicting current social representations on domestic roles and showing to which conditions and with which potential paradoxes new energy-related practices may be introduced in the domestic area: negotiations between household members versus valorisation of each person's autonomy, redefinition of domestic tasks with potential redistribution of domestic power, identity management – both for the individual self and for the couple unit –, reflexivity as opposed to routines (which are an often-cited characteristic of domestic tasks' efficiency).

Introduction

Climate change is now recognised as one of the most important environmental challenges. According to the Intergovernmental Panel on Climate Change (IPCC), the projected changes in climate will result in significant, often adverse, impacts on many ecological systems and socio-economic sectors. The international community has designed a Framework Convention on Climate Change (FCCC), now reinforced by the Kyoto Protocol, in order to safeguard cli-

mate for present and future generations while recognising the principle of "common but differentiated responsibilities" in historic emissions (FCCC, art. 3), which implies that developed countries must take the lead in reducing their impact on climate.

According to its commitments under the Kyoto Protocol, Belgium should diminish its greenhouse gas emissions by 7.5% (base=1990) for the period 2008-2012. However, Belgian emissions have increased by 7% between 1990 and 2000 (Belgium, 2002). To reverse that trend, effective policies will be needed. "Energy-efficiency policies are an aspect of the battle against CO₂ emissions (...). This raises the question of how to make such policies as effective as possible." (Varone & Aebischer, 2001:615). In the residential sector, this would strongly benefit from a better understanding of the energy-related practices of the households.

This paper examines the relationships between individuals and society in the sector of domestic energy consumption and aims at showing to which conditions and with which paradoxes new energy-related practices may be introduced in the domestic area.

The socio-anthropological perspective adopted for this study is first explained in the theoretical background. This socio-anthropological framework has also guided the data collection procedures and the empirical material gathered for this research is described below. Results are then presented and they tend to show how social factors, such as social representations on gender roles or on comfort, drive energy-related behaviours and potential domestic innovations in this area.

This approach should make it possible to gain some insights on the ‘efficiency gap’¹ and the rebound effects². In the discussion of results that follows, some implications for public-oriented energy policies are suggested.

A Socio-anthropological Theoretical Framework

There are several approaches in the social sciences: the positivist approach intends to describe how “things are or will be, under certain circumstances” (Lutz et al., 2002:11); the normative approach discusses “how things should be” (*Ibidem*). The socio-anthropological theoretical framework that is adopted here is yet another approach by its focus on the paradigm of a *socially constructed reality* (Berger and Luckmann, 1966). This means that most sociologists and anthropologists agree to say that there is not one *reality* to observe but that societies and cultures define their respective *realities*, so that “day life reality appears to me as an intersubjective world, a world that I share with the others” through several social processes (institutionalisation and legitimisation of an objective reality, interiorisation of a subjective reality).

A CONSTRUCTIVIST APPROACH

The social Construction of Reality

The “social construction of reality” paradigm (Berger & Luckmann, 1966) is consistent with the say of cultural anthropologists: M. Douglas already wrote in 1975: “The refusal to privilege one bit of reality as more absolutely real, one kind of truth more true, one intellectual process more valid, allows the original comparative project dear to Durkheim to go forward at last.” (Douglas, 1999: xvii).

Durkheim’s project, as revisited by M. Douglas, is no less than “showing us the social structuring of our minds” (*Ibidem*). This “social structuring” implies that findings are socially and culturally relative as identity definitions are. For example, in many environmental matters, it is very likely that protestant ethics will not sound as evident in Belgium as in European countries sharing that tradition. In that perspective, it is important to stress that gender roles, consumption patterns, lifestyles and to some extent environmental issues need to be considered as socially constructed entities, as explained below.

Gender: a Social Construction

In each human society, the anthropologists say, a gender system is constructed (Héritier, 1996) and it regulates the social relations between men and women: a gender system is made of all socially-constructed expectations about adequate men’s and women’s behaviours, in particular about work and responsibilities. Of course, this includes expectations on domestic tasks and on who should take care of them.

In western societies, among others, gender systems have known deep mutations since the sixties, namely because women were more and more numerous on the labour mar-

kets (Dubar, 2000). As a consequence, male and female identities are also subject to change and gender’s roles are not completely defined anymore, as individuals prefer to “tailor” their roles themselves or to have the impression that they are doing so (Kaufmann, 1992). In this uncertain context, “individuals are forced to negotiate lifestyle choices among a diversity of options” and “self-identity becomes a reflexively organised endeavour” (Giddens, 1991: 5).

In the domestic area, Kaufmann (1997) has shown that housework should not be seen only as a number of chores to be done: housework also participate to self identity construction since domestic tasks may provide self-esteem or the feeling of self fulfilling by action, two characteristics implied in identity dynamics according to Tap (1998). Housework nowadays implies the use of electric appliances and there are gender differences in their associated meanings: men are attributing an instrumental value to these objects, which represent their social achievement whereas women more often insist on the objects’ symbolic value that represent affective ties (Dittmar, 1989; Livingstone, 1996).

Consumption: a Social Construction

Cultural anthropologists have shown that beside their usefulness, another function of goods is to be meaningful. Consumption is a non-verbal mean of communication. Indeed, goods allow communicating, they create identity and establish relationships. But they also exclude as well as they include since goods are a mean of distinction. Furthermore, the pattern of goods flow corresponds to the form of society (Douglas and Isherwood, 1979 and 1996).

For these authors, western societies are characterised by weak groups and a weak grid (degree of communication or isolation between individuals and between groups), which leads individuals to accumulate and save for their own interest and to measure their success by their consumption practices. Some of these may be associated with higher status as they have a distinction potential (Bourdieu, 1979). In this context, consumers continuously develop new needs, namely in the areas of comfort and convenience, that are socially and culturally constructed (Wilhite et al., 1996; Lutzenhiser, 1997; Shove et al., 1998; Gram-Hanssen, 2002). This last author notes that researchers on this topic draw on different theoretical traditions, including science studies, consumption sociology and cultural anthropology, to explore the driving forces behind the growth in energy consumption. According to Hinchliffe (1995: 94), “Energy use has been associated with a whole set of cultural goods, and these in turn have embodied various meanings associated, among others, with cleanliness, individualism, status, accessibility and gendered roles, and these are all subject to varying amounts of change and resistance to change.” The same author acknowledges the “impressive social histories of energy use” that are realised in this line of research on ‘the social construction of technological systems’ (Bijker et al., 1989) although he deplores the fewer number of contemporary studies.

1. The ‘efficiency gap’ is the name given to the following paradox: more and more energy-efficient appliances are technically ready but are seldom bought by consumers, even if their use is economically advantageous.

2. An example of rebound effect is given by Gram-Hanssen (2002): a family has bought a new dryer, which is much more energy-efficient than their old one, but it is used much more often.

Lifestyles and Identity

According to Gram-Hanssen (2002), the first researches on energy consumption mainly focused on technological solutions for reducing household consumption. During the 1970s, however, a Swedish study by Lundström and Lindström showed that the energy consumption of technically similar houses could differ by a factor of three or four (Palmborg, 1986). These findings encouraged some energy researchers to focus attention on human behaviour as a factor in energy consumption (Gaunt, 1985). During the 1980s and 1990s, this area of research became known as "lifestyle studies". The concept of "lifestyle" was introduced by Max Weber and denotes a pattern of behaviours and a set of values that are common to a social group. Research in this area focused on how social groups and groups with various lifestyles differ, and how these groups have different levels of energy consumption. One finding of lifestyle studies was that energy consumption depends on income, education, and life-cycle stage (Gladhart et al., 1986; Shipper et al., 1989).

The last IPCC report reads: "There are two reasons why lifestyles are an issue of climate policy. First, consumption patterns are an important factor in climate change since they have become an essential element of lifestyles in developed countries. (...). Second, many promising domains for substantial environmental improvements through technological change also require changes in lifestyle. (...). Yet lifestyles have been subjected to far less systematic investigation than technology (Duchin, 1998, p. 51). In SAR they were not discussed at all."³ (IPCC, 2001: 637-638).

Meanwhile, sociological researches based on the concept of identity have flourished these last years, namely in the French-speaking literature (Kaufmann, 1993, 1997; Gaulejac, 1996; Tap, 1998; Singly, 1996 et 2000; Lahire, 1998; Dubar, 2000, ...). Identity denotes the whole-life process of (re-) constructing his/her self (personal identity) thanks to the support of a few significant persons in a world of diversified values that no more form a consistent system. The few persons who become significant (partner, close friend, ...) for ego in his/her identity management are sharing a (rather) stable relationship with ego. P. Tap (1998:65-66) has found six characteristics that are implied in identity dynamics: continuity (the feeling of staying identical), consistency (an idea of unity), unicity (the feeling of being original, different, unique), diversity (each person has several roles to manage), the feeling of self-fulfilling by action and self-esteem (the necessary positive vision of the self).

Daily "micro-decisions" and "micro-gestures" (Kaufmann, 1997) do participate to that process of identity management. F. Bartiaux (2002a) has shown how fruitful this concept of identity may be when identifying social processes driving environmentally more benign practice (domestic-waste sorting in Belgium).

As well observed in the last IPCC report, identity management is a social process related to lifestyles: lifestyles and consumption practices in particular, also express how nowadays "people basically [are] buying personality, the hardware commodities being part of that" (IPCC, 2001). This

should deserve an important consideration for policy making, namely in the field of energy consumption, although it is not (yet?) the case: "... lifestyles are not just a matter of behaving this or that way, but are basically an expression of people's self-esteem (...). Lifestyles, therefore, are based on ideas with respect to the individual's identity. To this extent the issue is not only that individuals need to change their behaviour, but that they need to change themselves. This tends to be underestimated in policy considerations, but must be accounted for when such changes become relevant with respect to climate change. Otherwise discrepancies between people's environmental consciousness and behaviour are deplored but not understood." (IPCC, 2001: 638).

Following recent researches in environmental studies (IPCC, 2001: 637-638) it is hypothesized here that the rationality of the individuals is limited (Corcuff, 2001) and variable according to social context and that consumption practices should also be related to personal identity management (Gram-Hanssen, 2002, Bartiaux, 2002a and b). Indeed, recent studies made in Denmark (Gram-Hanssen, 2002) and Belgium (Bartiaux, 2002b) have shown that consumers whose behaviour lowers the negative impacts on the environment do not often justify their practices by environmental concerns. Therefore, this research should contribute to clarifying whether environmentally more benign behaviours are driven by adding a new "ecological dimension" to individuals' identity or by reshaping the already existing dimensions (being a professional, a parent, a migrant, a citizen, a person concerned with his/her upward social mobility, ...) in a environmentally more benign manner.

Environmental issues

Hannigan (1995: 30-31) among others has shown how environmental knowledge, risks and problems are socially assembled "in arenas that are populated by communities of specialists: scientists, engineers, lawyers, medical doctors, government officials (...)" . However, he argues that it is important to note "that environmental risks and problems as socially constructed entities need not undercut legitimate claims about the condition of the environment, thereby denying them an objective reality". Recognising the (part of) social manufacturing of environmental issues and the political nature of agenda-setting is thus an option that is compatible with a sociological approach of behavioural changes that may be necessary to mitigate the foreseen adverse consequences of for example climate change.

As said by A. Giddens (1991: 222), "Grappling with the threats raised by the damaging of the earth's eco-systems is bound to demand coordinated global responses on levels far removed from individual action. On the other hand, these threats will not effectively countered unless there is reaction and adaptation on the part of every individual. Widespread changes in lifestyles, coupled with a de-emphasis on continual economic accumulation, will almost be necessary if the ecological risks we now face are to be minimised."

Furthermore, each human society has faced and is facing the issue of domestic energy, though with a variety of answers (Houtart and Lemercinier, 1990). Studying social rep-

3. SAR: Second Assessment Report of the IPCC, published in 1996.

resentations and practices on this topic, seen as a “total social phenomenon” in Mauss’ sense, may be a sociological contribution to the understanding of “society in the making” (Callon, 1987).

RESEARCH QUESTIONS

As said in the introduction, the objective of this research is twofold: to contribute to examine the relationships between individuals and society in the sector of domestic energy consumption and to show to which conditions and with which potential paradoxes new energy-related practices may be introduced in the domestic area. These topics were investigated with two sets of questions: social representations about domestic roles on one hand and some energy-related practices on the other hand.

Data

Two types of data were collected for this research: quantitative data by means of a classical questionnaire and qualitative data by in-depth, open-ended interviews. Both data sets are further described below.

Although different in nature, the two data sets have several features in common. They both seek to answer the above research questions by focusing on a precise aspect – the electric appliances in the domestic area – that offers a double interest: by itself, as it is sufficiently connected with the research interest, and by offering a larger perspective enabling the participants to an in-depth interview to explain his/her practices just as s/he understands them, which may be quite different from what was hypothesised by the researchers. This openness should be guaranteed both during the qualitative data-collection phase and later on, during the analysis phase of both data sets. In other words, in our view – and this is contrary to Hinchliffe’s wish (1995) –, practices that may have an impact on the environment should not be framed by the interview within a unique environmental perspective as they may not be led by environmental concern, as previous researches have shown (Bartiaux, 2002b; Gram-Hanssen, 2002)⁴. In addition, both quantitative and qualitative data have a gender dimension.

QUANTITATIVE DATA

A four-pages questionnaire with closed question was tested and designed to apprehend two topics: electric appliances’ use and importance and social representations on domestic roles. In addition, the questionnaire begins and ends by asking a few social characteristics (such as education).

Sample size is small ($n=72$) – it is hoped to increase it in a further round –, which implies that results are suggestive rather than conclusive. However, several precautions were taken to increase results’ reliability. During the data analysis phase, measures of association (such as χ^2) are used (and reported here) in order to have reliable estimations that are not confused by small numbers. In addition, comparison with results found in the literature or with our qualitative data is made whenever possible, to check for results plausibility

and consistency. (This method is referred to as the triangulation method.) Although sample size is small, quotas that appear to be significant in the literature stratify the sample: sex, age group (to proxy the family life cycle stage) and income. For this variable, each respondent is asked to situate his/her household monthly total income into one of four categories that correspond to the four quartiles of household income observed in Belgium. This method turned out to be quite simple and much better accepted than expected (only 6 refusals, which makes 8%, for this question).

The fieldwork was performed during December 2002 in various settings of French-speaking Belgium, either urban or rural, most often in a public area (a shopping center for example). The duration of the interview was constant, 10 to 15 minutes.

QUALITATIVE DATA

Twelve couples were surveyed, each spouse separately, by using a qualitative method, the comprehensive interview (Kaufmann, 1995), which is close to the ethnographic interview, and characterised by follow-up questions. The objectives are to allow the respondent to go further in his/her explanations and to search for “implicit meanings” (Douglas, 1999).

The questions’ grid was focused on electric appliances (ownership, importance, usage and non-usage). Fieldwork was also performed in December 2002 in various parts of French-speaking Belgium. Interviews’ duration is variable as interviewers shown different aptitudes for deepening the interview. Nevertheless, as the questions’ grid was detailed, all interviews turned to be useful. All were tape-recorded and transcribed.

Results

SOCIAL REPRESENTATIONS ON DOMESTIC TASKS

The difference between social representations and practices should be underlined as the former may change more rapidly than the latter.

On the whole sample

It is well known that nowadays, there is no more one single social model of domestic roles repartition; indeed, the more prevalent model may be an equal repartition between spouses or partners even if in practice, things change slower (Kaufmann, 1992). Our small-scale survey in French-speaking Belgium does show that too by a rather important dispersion in the answers. For seven tasks, the modal answer collects less than half of the answers. Indeed, respondents were asked the following question for a list of 22 domestic tasks: “According to you, in a household (in general, not necessary yours), who should take care of the following tasks: Mister, Mrs, either among them, both together”. The proposed tasks were inspired by the distinction made by Glaude and de Singly (1986) between execution tasks, or

4. Just an example quoted from Bartiaux (2002b) to illustrate this point: a mother buys each week half a dozen of glass-bottles of water to a shopman that lives near by, not for protecting the environment (by minimising distance and waste) as it could appear at first glance, but “just” (she stressed it) for maintaining good neighbourhood relationships. Another example is given in footnote 2.

Table 1. Who should care of this task in any household? (%), Total).

Task	Mr	Mrs	Either	Both
Set the table	6.9	9.7	65.3	18.1
Iron	2.8	73.6	20.8	2.8
Decide to buy a drill	81.9	1.4	4.2	12.5
Vacuum-clean	2.8	36.1	58.3	2.8
Take the initiative to clear out the cellar	39.4	8.5	31.0	21.1
Decide to buy an iron	0	75.0	15.3	9.7
(Have someone) repair the washing-machine when it does not work	44.4	19.4	30.6	5.6
Stow the shopping away	8.3	27.8	30.6	33.3
Decide to buy a TV set	26.4	0	9.7	63.9
Clear the table	11.1	9.7	37.5	41.7
Buy a light bulb	25.0	6.9	65.3	2.8
Remember to maintain the boiler	66.7	1.4	29.2	2.8
Re-paint or –paper a bedroom	23.9	8.5	21.1	46.5
Buy a refrigerator	14.1	2.8	12.7	70.4
Choose a washing-machine	5.6	38.9	8.3	47.2
Mow the lawn	66.2	4.2	28.2	1.4
Cut up the roast	26.4	29.2	44.4	0
Cook for guests	5.6	53.5	23.9	16.9
Run the errands	5.6	20.8	40.3	33.3
Decide to buy a dryer	8.3	27.8	8.3	55.6
Manage the household budget	12.5	15.3	8.3	63.9
Decide to re-paint or –paper the living room	8.3	6.9	12.5	72.2

SOURCE: Survey on social representations and practices on domestic appliances. (French-speaking Belgium, N=72)

ganisational tasks with a heavy mental load (repulsive for men as they show it) and decision tasks (attractive for men).

The complete results are shown in table 1 and they namely show that the modal answer is more often “both” or “either” than the more traditional “Mr” or “Mrs” as summarized below.

1. The modal answer is “both” for 9 tasks:

- 4 tasks are decision tasks about buying a main electric appliance (TV set, refrigerator, washing-machine, dryer).
- 1 task is a decision about heavy work to be done (decide to re-paint or –paper the living room).
- 2 tasks are regular execution tasks: clear the table and stow the shopping away.
- 1 task is a heavy and infrequent execution task: re-paint or –paper a bedroom.
- 1 task is an organisational activity: manage the household budget.

2. The modal answer is ‘Either’ for 5 tasks: all of them are regular execution tasks and most of them were traditionally feminine tasks, as this last answer comes in second order: to dress the table, to vacuum, to cut up the roast, to run the errands; one is a male-oriented task: to buy a light bulb.

3. 5 other tasks are male-oriented for they concern a male territory that is defined either in space (garden, cellar) or by the activity (of doing-it-yourself):

- 1 tasks are regular execution tasks: mow the lawn.

- 3 task are rather an organisational activity: (have someone) repair the washing-machine when it does not work, remember to maintain the central heating boiler, to take the initiative to clear out the cellar.
- 1 task is a decision task: decide to buy a drill.
- 4. Finally, only 3 tasks of the list are devoted to the lady: to iron, to decide to buy a new iron and to cook when they are guests. This last item may be seen as ‘a social representation about social representations’: if the surveyed persons appear to have somewhat flexible representations on gender domestic roles, they seem to have more traditional representations on the issue when an explicit aspect of social control is added (the reference to guests). The respondents then want to be more ‘socially correct’!

Males and females representations

In the answers given to the above questions, gender differences that are statistically significant do appear⁵ while other are not statistically significant (probably partly due to the sample small size) but consistent with the former. Detailed results are reported in Table 2. Women’s representations on domestic tasks are different from men’s representations on the following aspects:

- For execution tasks that are traditionally cared for by women, such as to set the table or to iron⁶, women are more likely than men to answer “either”: so, women appear to want to withdraw themselves of their traditionally assigned domestic role for regular household chores. However, it should be pointed out that is no more the case when the social representation of the domestic

5. As shown by the significance of χ^2 .

6. χ^2 is significant at .105 for ironing and at .124 for setting the table.

Table 2a. Who should care of this task in any household (% Males).

Task	Mr	Mrs	Either	Both
Set the table	13.9	8.3	58.3	19.4
Iron	0	80.6	13.9	5.6
Decide to buy a drill	77.8	2.8	5.6	13.9
Vacuum-clean	2.8	38.9	58.3	0
Take the initiative to clear out the cellar	41.7	11.1	27.8	19.4
Decide to buy an iron	0	77.8	11.1	11.1
(Have someone) repair the washing-machine when it does not work	38.9	22.2	33.3	5.6
Stow the shopping away	13.9	19.4	30.6	36.1
Decide to buy a TV set	30.6	0	13.9	55.6
Clear the table	22.2	5.6	38.9	33.3
Buy a light bulb	30.6	8.3	58.3	2.8
Remember to maintain the boiler	66.7	0	27.8	5.6
Re-paint or –paper a bedroom	34.3	8.6	17.1	40.0
Buy a refrigerator	14.3	2.9	17.1	65.7
Choose a washing-machine	11.1	36.1	8.3	44.4
Mow the lawn	71.4	5.7	20.0	2.9
Cut up the roast	36.1	33.3	30.6	0
Cook for guests	8.3	47.2	25.0	19.4
Run the errands	5.6	13.9	38.9	41.7
Decide to buy a dryer	8.3	30.6	8.3	52.8
Manage the household budget	16.7	16.7	8.3	58.3
Decide to re-paint or –paper the living room	13.9	8.3	11.1	66.7

Source: Survey on social representations and practices on domestic appliances. (French-speaking Belgium, N=72)

Table 2b. Who should care of this task in any household (% Females).

Task	Mr	Mrs	Either	Both
Set the table	0	11.1	72.2	16.7
Iron	5.6	66.7	27.8	0
Decide to buy a drill	86.1	0	2.8	11.1
Vacuum-clean	2.8	33.3	58.3	5.6
Take the initiative to clear out the cellar	37.1	5.7	34.3	22.9
Decide to buy an iron	0	72.2	19.4	8.3
(Have someone) repair the washing-machine when it does not work	50.0	16.7	27.8	5.6
Stow the shopping away	2.8	36.1	30.6	30.6
Decide to buy a TV set	22.2	0	5.6	72.2
Clear the table	0	13.9	36.1	50.0
Buy a light bulb	19.4	5.6	72.2	2.8
Remember to maintain the boiler	66.7	2.8	30.6	0
Re-paint or –paper a bedroom	13.9	8.3	25.0	52.8
Buy a refrigerator	13.9	2.8	8.3	75.0
Choose a washing-machine	0	41.7	8.3	50.0
Mow the lawn	61.1	2.8	36.1	0
Cut up the roast	16.7	25.0	58.3	0
Cook for guests	2.9	60.0	22.9	14.3
Run the errands	5.6	27.8	41.7	25.0
Decide to buy a dryer	8.3	25.0	8.3	58.3
Manage the household budget	8.3	13.9	8.3	69.4
Decide to re-paint or –paper the living room	2.8	5.6	13.9	77.8

Source: Survey on social representations and practices on domestic appliances. (French-speaking Belgium, N=72)

group is concerned: women then want to care themselves for this image, as proxied by the task cooking for guests (58.3%) whereas men are less numerous to assign that task to the female partner (47.2%) though this is not a statistically significant difference.

- Still for other execution tasks that are traditionally cared for by women, women are willing to require man's partic-

ipation for clearing the table by answering "Both, together" more often than men do (50% vs 33.3%); this answer "both" also seems to include a female control of the task as not a single woman answered "Mr" whereas 22.2% of the surveyed men answered so⁷.

- For all the decision tasks that are proposed, women consistently ask for participating to the decision process for

7. χ^2 is highly significant at .015 for this table (who should take care of clearing the table * sex of the respondent).

they are more numerous to answer "Both, together" than men are. I shall return to this point later when domestic innovations are discussed.

Social representations by socio-economical groups

In general, respondents whose household income is lower than the median appear to have more traditional representations on the topic: that means that they assign more often a task to one gender-specific person and that they rarely answer "Either". According to Schwartz (1992), this roles' division enables each gender to master specific tasks and spaces – for men, the work outside the house, usually in a factory, for women, the domestic work inside the house. This distinction is rather functional to avoid conflicts between spouses, as either knows what is expected from him/her. It further provides self-esteem and identity legitimacy, which is a protection against the weakness of other identity markers (such as socio-economic status).

Indeed, our results show a statistically significant distinction between the 2 groups of household income (below versus above the median for Belgium) for five variables listed below. Some caution is necessary in interpreting these results for income group is rather strongly associated with age (the lower income group counts more younger and older respondents, while middle-aged persons are more often found in the upper income group). The sample small size unfortunately unables to disentangle these two effects.

- Cook for guests is a feminine task, especially so in the upper group (57.6% vs 45.5%).
- Clear the table is widely recognised as an undetermined task or as a common task in both groups, but there is a minority (15%) in the lower-income group to assign this task to "Mrs" while nobody gives the answer (or dares to give it) in the upper group.
- (Have someone) repair the washing-machine when it does not work is much more frequently assigned to "Mr" in the lower-income group (60.6%) than it is in the higher income group (27.3%) where the modal answer is "Either".
- Choose a washing machine is generally seen as a female task (51.5%) in the lower-income group and as a common task (60.6%) in the other group. This holds true for deciding to buy a dryer.

These lasts results show that the decision person is the person who is doing the associated execution tasks (taking care of the laundry) in the lower income group, which is not the case in the upper group. This is a somewhat unexpected finding and it should be confirmed with a larger sample. However, some quotes of the in depth interviews do offer a consistent picture while introducing light and shade. (In these and following quotes, I is the interviewer, F is the female and M is the male. Words in brackets are implicit.) In the lower-income group, a first excerpt refers to a couple where the husband is a blue-collar and his wife is at home and takes care of their two daughters; it shows that the "decision" is a process including at least three steps – wish (wife), feasibility, namely on financial aspects (apparently both), choice of the appliance (husband):

- (I) So when you [both] decide to buy electric appliances, (...) who does decide to buy them?
- (M) Well we decide together ... together and if *she* wants a new coffee machine, I am going to buy it. A dishwasher, I would like to go. Next year, I will buy one. A vacuum, I know well that *she* would like a new one too ... (Jef, 38 years, my underlining).

The second quote is drawn from the interview of a Moroccan immigrant who is taxi man in Brussels and whose spouse is watching over the pupils of a primary school; they have two small children:

- (I) Who has bought the washing machine for example? You?
- (M) Between my wife and me, there is no difference, it's a couple... living in harmony. She is the one [who decides], I don't decide... I may have proposed it because I think she was a little... how to say? She had a lot to do...
- (I) So she is not the one who...
- (M) No, she was not demanding but that's me when seeing her, washing the dishes... [You do] not need wait [until] she tells it, you see what is going on around you... You must somewhat open your eyes...
- (I) OK. So you have chosen together to buy it. At least, you have proposed it and the choice was done together...
- (M) The choice... the choice of the brand and so on, she takes care of that because...
- (I) Why?
- (M) ... the women often use that kind [of appliances], so they know... with the neighbours, kin and so on. We the men, we do not know a lot on brands of washing machines, dishwashers or vacuums. (Abdel, 38 years).

These results on social representations of domestic roles are summarised in a factorial correspondence analysis (results are not shown here). The four quadrants have a distinct content as they assemble the same answer for various items: "Either" and superior household income are found in the upright quadrant, "Both", youngest and female respondents are located in the low right quadrant, while "Mrs", lowest income quartile and oldest respondents are in the next quadrant; finally, "Mr", male respondents and intermediate household income are grouped in the up left quadrant.

The horizontal axis may thus be interpreted as going from traditional and fixed roles toward changing roles, either by not being gender-specific anymore or by requiring the participation of both partners. On the other hand, the vertical axis may be seen as representing a declining female domestic power: in the above part are located traditionally male-connoted tasks or interchangeable tasks, where spouses have both withdrawn from their traditional domestic roles. Below (along the negative part of the axis), the wife's domestic power is increased either by her doing domestic tasks herself or by a redefinition of most tasks as performed in a domestic team, which means her inclusion in (traditionally

male-oriented) decision tasks and male participation in (traditionally female-oriented) execution tasks.

ENERGY-RELATED BEHAVIOURS IN THE RESIDENTIAL SECTOR

Ownership of electric appliances

The question here is not to know the proportion among the surveyed households that owns this or that appliance as there are detailed consumption studies on the topic. The questions are rather to know if the ownership of electric appliances is a social-identity marker and what are the requirements for a comfortable housing.

Our survey indicates that ownership of appliances is not quite correlated with household income except for three of them: washing machine, dishwasher and dryer⁸ whose usage requires a lot of energy. However, neither the washing machine nor the dryer appear as ‘signs of distinction’ (Bourdieu, 1979) in the in-depth interviews. The dishwasher is sometimes described as “a plus” (Alain, engineer, 30 years) because “it’s not fun [otherwise]” (Pierre, retired craftsman, 65 years). The espresso-machine may be such a sign of distinction (to be not confused with the coffee-machine, which appears in the survey to be more widespread among households with a smaller income).

Another social dimension of the ownership of domestic appliances would be worth of studying it in depth: the appliances received (and given) as presents for this usually involves a social network which is larger than the household members: “kin, in general, offer presents that are useful (...) often we are asked ‘What would you pleased to receive?’ (...) Otherwise, it’s even a surprise from the [extended] family” (Lucie, student, 23 years). A social definition of comfort and status is thus involved. Sometimes, the respondent appears to disagree with that imposition, as here “But the microwave oven did not correspond to a need, so we did not buy it. Finally, we have received it from the in-laws and it is useless!” (Luc, agronomist, 53 years.) V. Caradec (1999) shows that the electric appliances offered to elderly parents by their children are intended to occupy them, to reassure them, or to facilitate the donators’ contacts (children who offer an answering machine to their old parents for example).

Usage of electric appliances

Among the households owning the following appliances, our survey indicates that:

- “Mrs” is the person who most often uses the washing machine (84.6%), the cooking appliance (58.3%) and the vacuum (48.6%).
- “Mrs” (46.0%) or “Both” (48.0%) are the most frequent answers for the users of the dishwasher.
- “Both” (63.6%) is the modal answer for the microwave oven.

- “Mr” is most often in charge of the lawn mower (80.8%) and the hammer (76.4%).

Answers slightly differ according to a gender dimension: men more often answer ‘Both’ than women do for femininely connoted appliances (cooking appliance, microwave oven and vacuum). Conversely, women seem to overestimate their usage of male-oriented tools (hammer⁹ and lawn mower). These gender-biased overestimations are well known in the time-use surveys.

There is also a life-cycle effect in the usage of vacuum and the dishwasher¹⁰, two appliances that are less and less used by “Both” (and by “Mr” for the vacuum), but more and more by “Mrs” as the duration of co-residence rises. Income does have an influence too, in the opposite direction though, for the usage of vacuum¹¹: the richer the household, the higher frequency of the answer “Both” (or ‘another person’, usually a housewife) and the lower frequency for the answer “Mrs” and “Mr”. This holds true for the usage of the dishwasher (no statistical significance here). The situation is inverted for the usage of the cooking appliance (although the effect is smaller), leaving “Both” for “Mrs” as household income grows.

Importance and Values

During the in-depth interviews, when asked to cite the electric appliances they have in their household, most men begin with appliances that are related to food preparation or conservation. Several don’t go further and do not mention any other appliance. Two men think to the washing machine after a series of kitchen appliances (including the juicer!). Very few mention the vacuum. Women on the other hand never forget to mention these three kinds of appliances. The quantitative survey offers a consistent picture. It can be noted that this pattern also holds true in a Gays’ couple, where the partner who defines himself as “Mr” (Patrick) did not know that the dryer was not functioning anymore since months.

The reasons given to justify the importance of the appliances that the respondents have selected are often related to practical reasons (it is useful, time is spared, it is easier). Only three men (out of 12) give other reasons: Ricardo (Ph. D. student, 3 children) “thinks in terms of family life” and Patrick in terms of “domestic life”. Baptiste (engineer, 32 years) first hesitates and then says “because they [the appliances] facilitate the housework of my spouse.” Is it a coincidence that he is the only man to give this reason and that his union is clearly hypergamic (largest age gap, 6 years, and largest difference in education levels, both differences to his advantage)? The quantitative survey confirms this hypothesis by showing that men in a hypergamic union find less surprising than their male counterparts in a homogamic union that “in a couple, it is always the wife who washes the dishes”¹².

8. χ^2 are highly significant at .001.

9. χ^2 is significant at .058 for this table (usage of the hammer * sex of the respondent).

10. χ^2 are highly significant (.013 and .024 respectively).

11. χ^2 is highly significant (.010).

12. Scores of ‘normality of the situation’ are 2.88 against 2.55 (not statistically significant).

ENERGY-RELATED INNOVATIONS IN THE RESIDENTIAL SECTOR

Which innovations?

Our data give some insights on two types of domestic innovations: the purchase of different electric appliances and various works¹³ for remodelling the housing that are not directly related to energy consumption but that may serve as proxies of insulation works.

Conditions

The interviews suggest three steps for implementing an innovation: expressing a wish or a need, evaluating the possibilities, doing the adequate innovative behaviour. It would be also worth investigating the processes that come before the wish expression: how are our wishes socially constructed? All these steps are connected with social life and its demands, among which identity management and social affiliation through lifestyle seem more urgent than environmental concerns, as shown below. Although this may sound very crude, it already turns the attention to the difficulty of elaborating needs or wishes to save energy in the residential sector for it is not a commonly shared concern now in Belgium.

Going through these three steps often requires conversations or negotiations between partners, especially as the mental dimension of their respective 'territories' in domestic matters appear to be less gender-specific than the practices. This finding already appears during the fieldwork as respondents were somewhat hesitant with questions mixing male and female domains, such as "Who should decide (some were ready to answer "Mr") on buying a washing machine" (and they turned their mind as this is "Mrs" territory). This paradox is further described in the following section.

Potential paradoxes

Negotiations and gender-specific territories

Indeed, our survey gives two results that may appear contradictory at a first glance: it is largely admitted on one hand that the man should take care of the do-it-yourself for the house and on the other hand, it is largely admitted that the wife tells her partner which works he should do in the housing (these are the two least surprising situations in a list of nine; mean scores are ranging from 1 (very surprising) to 5 (not surprising at all) and are respectively 3.83 and 3.99). This should be further investigated as it can lead to several interpretations: do women have a higher sense of what is needed for the family (Peristiany, 1976), which could imply that their husband domestic activities are under their supervision? Do men have a weaker sense of injunction and do they implicitly prefer to be told what they should do in the housing?

It is no surprise that the wife tells her husband what works he should do is especially true (although not statistically significant) for respondents with a lower household income

than the median and for respondents in hypogamic unions¹⁴. Furthermore, this female supervision keeps being seen as normal (or even more so) for the persons who tend to associate masculinity and decision power. This is proxied in our survey by the following answers: the respondents who think that "Mr" should take the initiative of clearing the cellar or should decide to re-paint or -paper the living room, and those who think that "Mr and Mrs" or "Mr (alone)" should be the person(s) in charge of deciding to buy a TV set, a refrigerator or a dryer.

Furthermore, in all these circumstances and for all mentioned types of respondents, the most surprising situation is "that a husband tells his wife to be otherwise organised for the washing". The contrast is strong between a largely admitted wife's say on husband works for the home and a largely admitted husband's non interference on his wife's organisation. ("If I were doing so, I would look like a macho" said a male respondent during the survey!). However, gender and the type of union qualify this opposition: each gender seems to find the interference more tolerable when it is interfering about the other's domain (do-it-yourself or washing) except for men and women in hypogamic unions. This should be further investigated with a higher sample size.

In these different situations, domestic power is clearly at stake. It may be useful though to consider it in the larger framework of identity management and self-esteem protection.

Identity management and self-esteem protection

Indeed, identity management – both for the individual self and for the couple unit –, appear to be important keys to understand domestic innovations (or their absence), as illustrated by the following examples drawn from the in-depth interviews.

Christiane recognises that she had to adjust herself when she lost a negotiation with her husband (Luc, who was angry with the microwave oven, see above): "A long time ago, I wanted a food processor for making my bread and so on. I have spoken about it for a long time and finally, I have not had it and well... I made it do for me. I have not bought it because there was no enthusiasm from my spouse." (Christiane, 49 years, speech therapist).

Among the interviewed couples, two husbands particularly insist on their decision and purchasing powers: "I have seen it, I wanted it, I have taken it" says Marcel (25 years, computer man, partner of Lucie, student) above 'his' espresso-machine echoing "The head of the family [takes the decision to buy any appliance]!" of Xavier (28 years, sales representative, partner of Julie, teacher). Both are in a hypogamic¹⁵ union and seem particularly concerned with the affirmation of their decision roles in domestic matters.

Self-esteem must also be protected in difficult times. Jef (38 years, blue collar, sole provider of his household) often repeats – probably mainly for himself – "a little at a time" when thinking to another appliance (dishwasher, vacuum, deep freeze) that his wife would like to have. Laura and

13. This should be further investigated with interviews for example.

14. Hypogamic unions are defined here as unions where the wife holds a final diploma that is higher in degree than the one of her husband/partner (for example, she graduates from the university and he has a diploma from the secondary school).

15. See note 14. These two couples are the only hypogamic couples that we have met during the fieldwork.

Raymond, both in their fifties, are still in the process of reorganising their family life and the domestic tasks repartition, as Raymond and their son are both at home the whole day, unable to work because of a severe depression. In this context ("Sometimes, I understand that couples are divorcing; you would like to leave, to escape"), Laura has realized that she desperately needs isolation periods: "What I most love is my sewing machine (...) it is a relaxing time. I am quiet and often, Raymond is in the garage doing odd jobs for the house. You see, I am in the attic and he is in the cellar!" She dreams to another electric appliance to mentally escape from the cooking tasks that she does not like: a TV set in the kitchen. Pierre and Jacqueline on their side had to face Pierre's retirement (which happened to be earlier than expected) after a very active life dedicated to work. They appear to need to continue to have a busy schedule, filled with physical training (several hours per day), trips and grandchildren. Microwave oven, deep freezer, dishwasher and dryer are thus 'a necessity' for them.

Domestic appliances thus appear to be quite connected to lifestyle and identity management, more so than with environmental concerns, as discussed below.

The place of environmental concerns

As explained earlier, there was no explicit question from the interviewer on environmental matters during the in-depths interviews. However, participants had the opportunity to show their interest on these matters when justifying their domestic practices (especially so when explaining if and why they were reluctant to use an electric appliance they have or to buy another one). Our findings show that environmental preoccupations are largely absent in our sample, for among the 24 partners interviewed, only three did relate one of their domestic practices to an environmental concern: both partners of the gay-couple (Patrick and Patrice), on different topics though, and a South-American mother, student in Belgium (Rica). Both Rica and Patrice (who defines himself as 'Mrs' in his couple) reported to avoid using the dryer for saving energy and protecting the environment. And Patrick said that his partner and himself were not decided yet on buying an espresso-machine namely because of the waste generated by such an appliance (packaging materials for each coffee dose).

In addition, Raymond said that he bought a new energy-efficient refrigerator to save money. The reason is thus an economical one, not an environmental one. His wife secretly does not use the dryer, "not by economy" but because she prefers to do as she was used to, in the attic (her territory as seen above). Again, there is no environmental concern.

Discussion and conclusion

Domestic practices may be related to energy consumption ... but very few participants to our qualitative survey are thinking that way. Obviously they associate electric appliances' use with domestic roles, time saving and increased comfort. It has been argued here that implicitly and unconsciously, domestic practices may also be related to identity management and self-esteem protection. Environmental concerns are found to be rather absent, except for a small minority.

Current practices related to energy consumption in the residential area, as well as potential innovations, thus appear to be quite connected with social life, whose driving characteristics are to be related to gender roles, ideas on comfort, value given to time saving, affiliation through lifestyle. Distinction and status affirmation are found to be not quite relevant here, probably because of the private character of domestic practices. Furthermore, as environmental concern is not currently a crucial characteristic of Belgium society, no strong connection with domestic practices is suggested by our results.

For the majority of the survey participants, this absence of environmental preoccupation gives some insights on the 'efficiency gap' and on the rebound effects for environmentally more benign behaviours are not necessarily driven by environmental consideration.

These results can be extrapolated to foresee potential effects of information campaigns on rational energy use or on climate change. In our societies, a proportion of persons live in difficult situations and they just seem to have enough problems to manage without adding new concerns on environment. It can be thus hypothesised that information campaigns on climate change or on rational energy use could eventually increase these consumers' awareness for environmental matters but develop at the same time their sense of helplessness. For the environmentally conscious minority, on the other side, such campaigns could to the contrary enhance their self-esteem for they already try to lower their negative impacts on the environment. And for the majority, it may be estimated that information campaigns on environmental matters would have no effect while they would not be connected to matters that are seen as crucial.

Finally, the constructivist approach that was adopted in this research, including during the data collection procedures, appears to be useful by showing that domestic practices and energy consumption are deeply rooted in social life. Our culture has driven most Europeans and North-Americans citizens (including most social scientists) to think that western civilisation is largely independent of its natural environment, which makes more acceptable our mode of world socialisation, based on predation (Descola, 1999: 128). There is no surprise then that domestic practices which require energy consumption are not seen by our survey participants as having an influence on environmental problems nor as being motivated by an environmental concern.

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