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Eco-Homes for all: Why the socio-cultural matters in encouraging self-build eco-housing

Jenny Pickerill

Introduction

Self-build homes come in all shapes and sizes and are driven by a variety of intentions. Different budgets, environments and regulations shape them. I am particularly interested in those who collectively self-build homes based on ecological principles and within a small budget - self-build eco-homes often in eco-communities¹. These homes are especially interesting because eco-housing is often inaccurately assumed to cost more to build than conventional homes, and although cheaply-assembled eco-homes have long existed they are little understood and too often marginalized as ‘quirky’ and idiosyncratic outliers² (for example, Figure 1). In fact the intellectual and political marginalization of these houses exemplifies exactly why the socio-cultural is so important in understanding self-build homes and their potential.

Figure 1: Hybrid self-built eco-home at Lama Foundation, New Mexico, USA³



Encouraging more eco-homes remains a difficult task hindered by risk adversity, lack of knowledge and skills, reliance on technological fixes, infrastructure issues and certain expectations of comfort and convenience. While Roaf *et al.* argue that “architects who cannot incorporate energy and water conservation, reuse and renewable energy into their buildings will become dinosaurs, as will their white elephant buildings”⁴, environmentally damaging practices are continuing and waste is still rife in the house construction industries. We need to do better. In part the lack of progress is a result of many government policy agendas that prioritise technological approaches to eco-housing, a highly competitive land market economy and conservative construction industries. For example, in Britain eco-housing is being reduced to a checklist of objects that is being resisted by developers and builders⁵, and is unlikely to be as effective as hoped⁶. Indeed the construction of eco-houses has been slow and they remain a marginal component of housing markets in countries such as England, USA and Australia⁷. If the technology and knowledge are already available and yet there is still resistance to eco-housing then it would seem appropriate to suggest that other issues are at play in hindering their growth.

While there are clear economic, political and land barriers to the growth of self-build eco-homes in Britain, many of which are well known, here I focus on the understudied socio-cultural processes. This requires examining not just what socio-cultural factors are implicated in self-build, but in particular how these socio-cultural processes are of relevance to understanding self-build eco-homes. Self-build eco-homes, particularly those built by groups and as eco-communities, are a small subset of the self-build sector. They are distinguished by their ecological intent that determines their choice of design, materials and build method. An eco-community refers to a concern for social, economic and environmental needs and to examples of places of collaborative, collective and communal housing and living. Key aspirations of an eco-community include (but are not always present): a culture of self-

reliance; minimal environmental impact and minimal resource use; low cost affordable approaches; extended relations of care for others (beyond the nuclear family); progressive values (for example, towards gender equality); and an emphasis on collectivist and communal sharing. The term self-build is used here to include a range of levels of participation in the build process – from physically constructing every part of a house to involvement in shaping the design but employing builders to complete the majority of the construction work. Self-builders are not necessarily amateurs or novices and therefore the category might include those with previous building experience or professional qualifications. Self-build eco-homes are also a subset of eco-housing more broadly. By examining these homes, and their associated social practices and processes, it is possible to identify what enabled them to be built and therefore how the construction of more eco-homes (of all varieties) could be further encouraged.

The empirical material on which this work is based has been collected since 2006, with most material collected during a six-month period in 2010, and the most recent data collection being undertaken over 3 months in 2016. In all, 18 eco-homes and eco-communities were visited across England, Scotland and Wales. The criteria for case study selection was that; (a) eco-homes were ecological; (b) the houses were self-built; and (c) houses were affordable, and did not cost more than 35% of household income. The majority of cases were new build construction rather than renovations. New build was focused upon because it tended to offer more affordable housing (in that eco-retrofitting is unfortunately quite costly) and it was easier for new builds to reach a high ecological standard, whereas retrofits were often limited in the eco-features that they could install. This chapter focuses on England, Scotland and Wales in part because self-build eco-housing is still quite unusual, in England less than 10% of new housing is self-built⁸. Comparatively in European countries self-build is the norm; in France and Belgium it accounts for about 50% of all new building and in Sweden about a

third of new house building is self-built⁹. Participation in the case studies was sought, though the extent of involvement varied significantly between case studies. When possible I joined activities on site such as building, gardening, scything, cooking and eating communally, engaging in group meetings, socialising and staying on site for several days and up to two weeks. At each case study in-depth face-to-face interviews were conducted, photographs taken, field diary observations made, and sketches of the site were recorded. At several sites it was also possible to access archival material. A total of 38 interviews were conducted, with most interviews lasting at an hour, and several lasting over 2 hours. All interviewees gave written consent and were able to withdraw at any time. If requested, anonymity was given to interviewees and case study locations.

Defining eco-homes

Eco-homes are a product of the social, economic, geographical and political environments in which they are built. While the intended functions of an eco-house are often quite simple, they are only achieved through complex interactions of different forms, approaches, technologies and occupants. Ecological architecture calls for an understanding of the peculiarities of place, materials, cultural context, climate, solar and wind patterns, people's lifestyles and needs, and existing biodiversity. This can then all be used to design a house that requires far less energy to both build and run. Most importantly it is the interconnectedness of these features that requires attention and understanding¹⁰, "buildings are part of a complex interaction between people, the buildings themselves, the climate and the environment"¹¹. In response to this plethora of factors that need to be taken into consideration, there are a multitude of types and forms of eco-houses. The term can include zero or low carbon houses, low impact developments, sustainable housing, green building, passive houses (passivhaus), zero-net energy housing and energy-plus houses¹². They can be self-built, custom built or

built by a non-profit or commercial developer. This diversity has complicated attempts at defining what an eco-building is and what it does.

Eco-housing is best understood by distinguishing between the *function* and the *form* of a building. The function refers to the intended outcome of a design choice, whereas the form refers to the process by which that function is to be achieved. Thus the forms of eco-housing vary enormously and include using highly-technological systems or low-tech vernacular natural-build approaches, to achieve the same function of low carbon housing. Although highly entwined, the function of eco-housing does not always determine its form. Instead there is a continuous evolution of architectural and building practices aiming to improve the ability of different forms of houses to achieve these functions resulting, for example, in a broad range of forms of eco-houses.

As the form of eco-housing is different from its function, then it is possible to identify certain commonalities as to what makes a house an eco-house, without predisposing how that might be achieved. This openness to diversity is important because there is no agreement on the perfect way to build an eco-house. Indeed “sustainable construction strikes a balance between the potentially conflicting demands of the use of energy, other resources and ecology”¹³, and these demands result in diverse building approaches. The *common functions of an eco-house* are for a building across its whole life-cycle¹⁴ to: (a) minimise resource use (in materials, in embodied energy, energy requirements, water use); (b) minimise waste (in materials, space, energy, leakage); (c) maximise use of renewable energy (such as solar, wind, water); and (d) maximise use of renewable materials (such as straw, sheep’s wool, wood, earth)

This separation between function and form also helps explain some of the problems encountered by ecological architecture; a focus on function can limit eco-houses “to checklists of moral responsibility and remedial action”¹⁵, rather than a broader focus on the aesthetics or a concern with developing new ways of connecting eco-housing to its cultural

and natural context¹⁶. However, a focus on materials and aesthetics can preclude adequate consideration of required building performance in terms of durability, comfort, and energy supply.

As such, there is no single perfectly efficient functioning eco-house; instead eco-houses are a relative progression towards reducing waste. Different houses deal with waste issues differently and this leads to a broad variety of eco-houses. As a result eco-houses are more heterogeneous than they are similar and this hybridity in form can complicate their advocacy¹⁷. Understanding eco-houses as an interrelation between function and form enables a clearer understanding of this diversity, *and* how form can override function, or function override form. As Rob Cartwright explains of the Newark retrofit project,

To be honest, we didn't give too much thought to aesthetics. It was more function over form. It was really this is what we need to do to make it perform ... we weren't really striving for aesthetics; we were striving for performance. (male, eco-house developer)

Eco-houses are being built to deal with the issues of waste through a range of approaches, including: structural innovations; by altering size; harnessing renewable technologies; retrofitting existing housing stock and changing occupant behaviour and practices. Each approach has benefits, limitations and financial costs. Ultimately, eco-building is the negotiation of a set of dilemmas where different logics influence the final outcome of an eco-house¹⁸.

A socio-cultural analysis of self-build eco-homes

Although the policy, economic and land-availability issues that have tended to hinder self-build eco-housing have received attention by scholars and policy-makers in efforts to encourage more eco-building, little attention has been paid to socio-cultural influences. This

is a mistake; for example, much of the resistance to self-build eco-housing can be understood, and therefore tackled, through analysis of the social issues that it raises. There already exists the knowledge, capacity and technology to build eco-houses. Yet relatively few eco-homes are being built and often expensive technology, rather than simple design, is relied upon to make a house more ecologically friendly: “one of the major problems facing environmental architecture, aside from the absence of a strong societal endorsement, is a professional choice to over-emphasize the technological advantages and undervalue the social and aesthetic aspects”¹⁹.

This emphasis on technology as the best way to achieve environmental measures in new housing is problematic. Technology alone cannot create eco-houses, in large part because their performance is reliant upon residents’ compliance. Perhaps the best example of this is the use of manual heat exchange systems that are misused by residents opening too many windows. But occupants of eco-buildings also need to be able to ‘forgive’ less-than-ideal conditions at certain times, in other words they need to work with a building rather than expect uniform functionality²⁰. This is not to suggest that eco-housing does not benefit from technologies; many, like micro-generation renewable energy systems are central to reducing reliance on fossil fuels. Rather it is the total reliance upon technologies and the technology-first approach that ignores the influence of the socio-cultural factors that is limiting eco-housing construction.

A socio-cultural approach is able to reveal the complex meanings of conventional homes and thus the potentially radical challenges to residents’ values and practices that self-build eco-housing proposes²¹. For example, houses made of straw bales limit what can be easily hung on internal walls; eco-houses might require more manual effort to manage heating and ventilation (not necessarily offering automated internal temperatures), and might limit excessive use of water such as using hose pipes for washing cars or drives. These examples

suggest just a few ways in which self-build eco-housing might require social changes in how people live, and thus why people might resist them. At the same time the changes required are often exaggerated through myths and assumptions furthering anxiety about eco-housing. In all, it is not technology, or even politics, which is holding society back in adopting eco-housing, it is deep rooted cultural and social understandings of how we live and what we expect houses to do for us.

This social perspective to self-build eco-housing is indebted to, and builds upon, critical architecture approaches and architectural geographies. In recent years geographers such as Lees²², Kraftl²³, Jacobs and Merriman²⁴ have called for architecture to be understood as spaces of “ongoing social practices through which space is continually shaped and inhabited”²⁵. Architecture is more than a representation; it is a lived, evolving space that is shaped (and made meaningful) through the everyday practices of those using it. Similarly Guy²⁶, argues for the need to take a social and cultural approach to sustainable architecture in order to understand its hybrid, fluid diversity and to open up the possibilities of both what sustainable architecture is and what it could be.

This socio-cultural approach requires analysis of the social practices and processes that inform house design and use, the chosen aesthetics and how they fit or contrast with their surrounds, peoples’ perceptions of homes, how people use or misuse their homes, and the psychological desires people attach to a home. During the research it became clear that several developers, builders and architects focused on the technological functionality of eco-houses to the detriment of considering the aesthetics, usability and desirability of homes. Four socio-cultural elements, therefore, need to be taken into greater consideration when understanding self-build eco-homes and when encouraging further eco-building: (1) aligning eco-home designs with the socio-cultural desires for a home - a space of social relations filled with emotions, traditions and politics; (2) accepting that human agency is central in the

functioning of an eco-home and eco-homes' functioning is reliant upon compliant occupants;

(3) embedding eco-homes into places, paying attention to what already exists in place; and

(4) reconfiguring some elements of comfort to be more ecologically benign. Each of these will now be explored in turn.

Align with the socio-cultural desires of a home

Eco-homes will only be adopted if they offer what people demand from a home and that they can live how they want to within it²⁷. While acknowledging a huge diversity in what people demand and desire of a home, there were some common features, see Table 1. Despite this table being dominated by quantifiable features such as location, size, affordability and green space, many desires of a home are qualitative and subjective. Emotions, such as feelings about the aesthetics, light, and comfort of a house are often crucial in house choice, indeed “emotional considerations can overrule practical considerations when people are choosing their new home”²⁸. Owning a house and home is linked to improved well-being and health, where residents enjoy the practical and emotional benefits of home owning²⁹. These emotional gains can outweigh the benefits of the potential financial investments of home owning, and such financial benefits are often of secondary importance. It is this mixture of social meaning and material attributes of house choices that it is vital to understand³⁰. The importance of these different criteria of home, and the number of socio-cultural factors included in Table 1 needs to be taken more into account in eco-home designs.

Table 1: Common features and criteria that people demand and desire of a home

Feature	Explanation
Adaptable	Flexible in function and in response to future changing needs, especially a large main space for eating, relaxing and entertaining
Affordable	That they can attain a mortgage to buy the house or can afford it outright
Beautiful	Aesthetically pleasing looks, period features, how a place looks and feels
Comfortable	Comfortable, stable thermal temperature and to offer convenient facilities (water, bathrooms, heat, refrigeration)
Convenient	Ease of use of, for example, built in technologies, windows, layout
Durable	A home that is long-lasting, high quality of construction and finish
Green space	Close to parks and green open spaces and/ or its own garden

Investment	The likelihood that a financial gain will be made
Light	Natural light through large windows
Location	Close to family and friends, good access to schools, healthcare, transport links, and shops
Maintainable	Easy to maintain, does not require regular or expensive maintenance
Private	Privacy is important both from external others and that there are private spaces within a home for residents to be alone
Quiet	Low noise pollution
Secure	Secure physically and financially, low crime area
Spacious	Enough room for all occupants and their different functions, good room sizes

Demands and desires of a home are of course contingent on the variables of people, place and politics. Different people will attach different meanings to homes and houses and have diverse requirements of them. As Heathcote³¹ notes, despite radical changes in societies, gender relations, employment, technology and quality of life factors, houses in Britain, USA and Australia have changed relatively little. Many of the feelings about home and desires of a house are a quest for continuity. This quest for continuity is represented in the nostalgia for certain forms of house architecture that are recreated onto contemporary dwellings. As an English building constructor argued, “the punters want what they have always done ... they want a nice looking house, at the right price, in a decent area and I can’t see that changing anytime soon”³². While some social practices can be altered over time, as discussed further in exploring comfort, other desires are harder to change and need to be accommodated. The needs of a house and home do, however, change as people age³³ and as circumstances change. As Imrie notes, bodily form changes with age, and many of us are likely to suffer a form of bodily impairment that will impact our understanding and needs of a home³⁴.

The tension around a desire for privacy is a good example here. Privacy is for many a key purpose of a house, albeit culturally contingent. In Britain there is a desire and need for privacy, both from external others and internally from others in the household. Externally this privacy is created through high garden fences, window screens (once net curtains, increasingly permanent opaque windows), and individual front doors. Internally, however,

the shift towards more open plan living since the 1950s (in response to demands for more space and light when high land costs meant building plots were smaller) has created greater shared and communal space for family-living. Privacy then becomes negotiated between partners, children and household tasks, where women in particular crave privacy but struggle to find it³⁵; “private space within the home made an important contribution to participants’ wellbeing and was important to participants of all ages”³⁶. This British need for individual privacy is less prominent in Japan, for example, where family-centred privacy is sought rather than individual space³⁷.

The need to share space and therefore have less private space is perhaps the best example of how homes are being redesigned to be more ecological. In terms of housing there is a need “to find ways to meet people’s privacy needs while keeping our home sites compact and not sprawled all over the landscape”³⁸. The tendency to seek to hide from others to create privacy by building scattered apart, increases environmental destruction and infrastructure costs³⁹. Not only have very small eco-houses been built, but many self-build eco-house approaches advocate sharing homes with those beyond family⁴⁰. Sharing home space takes multiple forms – co-housing⁴¹ provides shared communal areas and private individual dwellings, or some eco-communities share a whole house. Co-housing “combines the autonomy of private dwellings with the advantages of community living”⁴², or as Sullivan-Catlin argues co-housing could also be conceived of as “a cooperative neighbourhood”⁴³. The co-housing model is proving popular because it enables a balance between privacy and sharing⁴⁴. Ideally interaction is encouraged by ensuring front doors face each other while creating privacy for living rooms and careful window placement⁴⁵ (Figure 2). Sharing enables fewer resources to be used while a good quality of life is maintained. It can involve sharing food production, sharing garden and DiY equipment, and car clubs⁴⁶. Many self-build eco-communities deliberately reduce privacy and instead encourage more communal and collective activities,

such as eating together; “there is a loose, inverse relationship between the degree of communalism and privacy”⁴⁷.

Figure 2: Street design at LILAC (Leeds) and Lancaster Co-Housing (Halton)



Whatever the approach, however, sharing home space requires rewriting domestic norms and creating new rules of intimacy⁴⁸. Litfin⁴⁹ uses the term ‘ratcheting’ to describe the numerous spontaneous interactions of living in close proximity. As people move around and through the eco-community they have many random encounters with others. People often need a balance between contact and solitude. Sharing space and time creates and tests new forms of

sociality and engagement with others⁵⁰. In many eco-communities, like LILAC, Lancaster Co-housing and the Threshold Centre, residents have navigated this tension between privacy and communality by adopting props (wearing a hat or hanging a scarf on a door is used to signal a need for privacy) and adjusting how they walk through a community depending on whether they feel socialable or not:

People understand and respect if you want to just do a hello or good morning and then walk on. Otherwise it can take half an hour to get to the laundry and back, depending on your character ... as a group of members we've got better at that, but still some people dive in straightaway with a big question. ... I think we're quite respectful of each other's time. There's a whole spectrum of how sociable, convivial people generally ought to be ... if you put your head down and just walk somewhere then people will respect that and read the body language. (Alan, LILAC, male, charity co-ordinator)

However, the design of some of the self-build eco-homes – with large windows and doors facing a central community space or walkway – have led some residents to adjust the internal layout of their property to reduce being overlooked. For example, in Lancaster Co-Housing some residents have inverted the order of their internal space to position their kitchen and living space away from view. For some these processes might be easy to adopt, but for others the shift from the individualised family-centred culture of home to a more open, fluid and shared home space requires negotiation, learning new practices or some redesign.

Human agency is central

Human agency is central in the functioning of a self-build eco-home and eco-homes functioning are reliant upon compliant occupants. Occupants' practices can undermine the

efficiency of a self-build eco-home and eco-homes are as much a social as technological challenge⁵¹. However, human agency is not fully understood⁵². There are a couple of salient examples worth exploring here. First, recent research has identified increased overall use of electricity in eco-homes because residents perceived the energy to come from ecological sources⁵³. However, such additional use of energy, whatever its source, is problematic because it still uses resources (which could be used elsewhere) and the feeling of abundance could easily influence residents' practices elsewhere. Minimising waste in housing might have a positive influence on daily practices in other parts of residents' lives and in those organisations or stakeholders involved in the construction. Fry and Sharma⁵⁴ refer to this as the 'generativity' of eco-building that can lead to a greater capacity for environmental responsibility *per se*.

Second, residents have the ability to undo the effectiveness of technologies and design in their home. In the case of the Newark retrofit project, the house functions were reliant upon householders not opening the windows in winter. As Rob Cartwright explains, the mechanical heat ventilation system and the gains from passive solar heating could easily be undone;

the resident needs to understand the design principles and that in winter you don't open these [windows] ... because this house might lose lots of energy ... if someone's opening windows all the time, then it's going to get a lot colder. The Council have said to us some of their tenants they're at home all day sitting on the sofa watching telly, smoking with the windows open ... It's about not opening windows (interview, male, eco-house developer).

Similar problems were found by Rohracher and Ornetzeder who discovered a key inefficiency in ecological apartment buildings in Austria were residents opening windows⁵⁵.

In eco-houses that employ technologies there is also a need for user-friendly control interfaces. Poor and confusing design and lack of occupant understanding of the systems installed has led to inefficiencies in the functionality of eco-houses⁵⁶. It is not just that some user control interfaces are difficult to understand, but that if eco-houses and their technologies were better designed they could act as forms of feedback to the residents that could begin to help train new behaviours and practices. For example, in a USA prototype, a light display in the kitchen backsplash brightens and dims according to resource use – a potentially simple feedback to household use that is likely to have more impact than the more common data monitors.

This emphasis on understanding the two-way dynamic interaction between residents and buildings (that individuals shape buildings, and buildings shape individuals) is a productive way to acknowledge the centrality of people to eco-house functionality. As Cole *et al.*, argue “buildings do not consume energy; inhabitants do through the medium of architecture”⁵⁷. This is not to say, however, that changes in human practices alone can necessarily dramatically alter environmental impact; “it is incredible to note that in many parts of the world including Britain, the challenges of trying to reduce the catastrophic impacts of buildings on the environment are still left to individuals”⁵⁸. Rather it is in the interrelationships between broader social and economic processes and the household that self-build eco-homes are likely to be most effective⁵⁹.

To achieve the effective functioning of eco-homes requires attendance to human behaviour, practices, habits and needs⁶⁰. To some extent houses have to be designed and built to suit occupants needs; “the eco-house becomes a working machine in which lifestyles have to be considered carefully and matched with the supply systems built into the house”⁶¹. However, reducing waste is as much about changing daily practices as it is about using new technologies⁶². In conventional houses residents are locked in to practices by habit and

infrastructures. Self-build eco-homes are an opportunity to change daily energy use by, for example, preventing high water use in baths (by only having showering facilities) or encouraging water conservation (by installing a water meter)⁶³. In this way eco-house building is a balance between residents' needs and lifestyles that are more environmentally sustainable. Crucially, self-build eco-homes need to be designed in ways that humans can easily work and not easily disrupt.

A good example of this are off-grid homes, where residents have to live according to the available electricity and water that they can generate and collect. At Green Hills⁶⁴ in Scotland, living off-grid has required them to build their entire power, water and waste infrastructure themselves (Figure 3). As a result they have had to make choices about what systems are feasible and which are not and then adjust their daily practices accordingly. While they generate enough electricity through photovoltaic panels and a small wind turbine to support internal lighting and sockets to charge electronic devices, there is not enough electricity to power a fridge. They have piped rainwater to their sinks, but drinking water has to be manually collected from a stream. Their toilets are compost toilets located a short walk from their house. These small but notable differences to conventional houses are difficult to disrupt and therefore the residents adjust – by conserving drinking water, buying fewer perishable foods and relying on home grown produce, and being alert to the amount (or lack) of energy available for charging devices. While not advocating that everyone lives in an off-grid home, they do illustrate what is possible when residents understand how their home functions and the limitations of its infrastructures.

Figure 3: Almost complete straw bale and turf-roofed house at Green Hills



Embed into place

Place matters. It matters because of its locale and how it is currently valued and understood⁶⁵. It matters how a new self-build eco-home connects (or not) to other places through the use of common infrastructure, or through social links to others near and far. It matters because home can be conceived of as a particularly significant type of place⁶⁶. Place matters precisely because it is more than just the locality of a piece of land. Place is how humans experience the world.

Place as containing meaning, memories, perceptions and identities, and as dynamic, unfinished and constantly evolving, was rarely acknowledged by the ecological self-builders. Recognising the dynamism and importance of place requires self-build eco-builders to understand existing social relations, meanings and emotional attachments to that place. Understanding place is particularly important in eco-building because “buildings can be a point of articulation for complex contestations over the meaning of and access to certain places”⁶⁷. Without greater attendance to the particularities of place there is a danger that eco-homes become “presented as the universal solution to an essentially contextual experienced

and created issue”⁶⁸. It is therefore important to critique processes of placemaking to ensure that existing place is understood and incorporated into on-going transformations of place.

Place is a process whereby builders can “invest meaning into the landscape”⁶⁹, create diversity between and within places⁷⁰, and construct progressive forms of place which encourage sharing, compassion, tolerance and an acknowledgement of interdependence with others. In the case studies there was a tendency to fail to incorporate existing residents’ views of place and to consider place as locally bounded. In other words, it is vital that self-build eco-homes are embedded into places as they already exist, and are designed to ‘fit-in’ with existing architecture and socio-cultural norms.

An example of this tension is Lammas eco-village, Pembrokeshire, West Wales. Lammas is a low impact development of nine small-holdings which operates off-grid with its own electricity and water supply. Residents have been onsite since 2009. They have also built a ‘community hub’, which acts as an education centre, shop, and as a space available for local people to use. Residents of Lammas sought to radically alter the place in which they are building. Previously sheep grazing farmland, the residents have a vision of ecologically rejuvenating the land to increase biodiversity, productivity, and the variety of wildlife species and crops⁷¹ (Figures 4 and 5). It is a vision of abundance of nature that is rooted in a deep green and permaculture philosophy that advocates the necessity of healthy complex ecosystems for environmental and human survival.

Figure 4: Tao and Hoppi's house at Lammas eco-village, Glandwr, Wales



Figure 5: Cassi and Nigel's house at Tir y Gafel, Glandwr, Wales



Pont y Gafel farm was identified by Lammas as a place empty of social meaning and with a damaged natural environment. It was considered a blank canvas of physical features open to being (re)made. Repopulating farmland with humans and indigenous flora and fauna is, in part, an attempt to recreate a past when smallholders worked and cared for rural land in labour-intensive ways, and in part, a construction of a new green anti-capitalist rurality⁷². In

this case Lammas is imbued with a sense of place as territory, a moral placemaking and as a frontier project. Lammas has always been very explicit in their quest to reclaim farmland and remake it as abundant productive land with ecological benefits. The place that was before was delegitimised as poor quality grazing land devoid of environmental and social value.

This radical rurality challenged many people's conception of a rural space, and in particular their attachment to the rural position of Pont y Gafel farm. Lammas faced significant resistance to its proposals from local councillors, residents of Glandwr, and neighbouring farmers. Although Lammas sought to appease some local concerns – developing a Welsh language policy, improving the traffic reduction strategy and ensuring that they supported and complemented the fragile local economy – they also sought to bypass them by generating international support and taking the case to the national Welsh Assembly Planning Inspectorate.

What was missing in the early stages of Lammas was an acknowledgement of local residents' attachment to the place of Glandwr⁷³. Lammas failed to adequately communicate the relationship between their abstract green ideals and the particular place of Pont y Gafel farm. While Lammas articulated how their project was fulfilling the national needs of a society (for affordable housing, renewable energy and livelihoods), they did little to communicate how and why those needs related to the particular place of Glandwr, or how Glandwr contributed to the problems which needed solving through this new place. Residents' understanding of a place was being threatened by newcomers who wanted to remake a place they cherished, and the more it was justified with abstract ideology the less existing residents felt that Lammas understood the meaning of the specific place of Pont y Gafel.

Lammas quickly learnt that “even in the middle of nowhere there is a rural community that you do need to engage and you do need to interact with” (Tao Wimbush, Lammas, male, carpenter and co-founder of Lammas). Their biggest mistake was to initially fail to

understand the complex ways in which place was viewed and valued by existing residents. Seven years on, however, relations with the local community have improved significantly. Lammas has attracted an influx of new residents to Glandwr and enlivened the local economy. Compounding this opposition was that Lammas appears to be a place of exodus; a retreat from the unsustainable practices of mainstream society and the creation of an isolated community on a remote Welsh hillside. It reflects attempts to reconnect with nature, or create a place more of nature. As such it was a place of post-capitalist practices, what Carlsson and Manning refer to as ‘nowtopians’⁷⁴, which along with the eco-village aesthetics excluded those who were unfamiliar with the style and facilities (such as compost toilets). This sense of place as exclusion is also present in the ways in which Lammas was trying to disrupt their connection to the mainstream through autonomous housing.

Finally, place for Lammas was relational; they related the impact of their practices to climate change, international environmental education projects, and engaging with the state and distant others. Its goals required reaching far beyond a particular place. Even before they were able to start building Lammas had needed to get national support from the Welsh Assembly and in so doing became symbolic of Welsh support for sustainability innovation, thereby cementing the importance of national state support for environmental policy⁷⁵. Lammas also only ever conceived of Tir y Gafel as the first of many similar projects and have used the Glandwr farmland as a demonstration place, and their internet presence as a way to share their methods to all. Yet place, for Lammas, was also constructed as local in a bounded and static way. This included the quest to only use local building materials, generate their income from the land, eat locally produced food, and support the bio-regional economy. This form of localism was about minimising environmental impact by reducing travel miles. Ultimately Lammas employed a scaled notion of place as local. Lammas began by understanding place predominantly as a physical landscape. Their encounters with opposition

from the existing residents of Glandwr and their efforts to put their vision of sustainability into practice, led them to develop a more complex understanding of place as a dynamic cultural and physical entity that interconnected with other places.

Reconfigure comfort

Eco-living is often associated with forgoing many elements of contemporary life⁷⁶. There is an enduring perception that to be environmentally sustainable requires forgoing elements of comfort, convenience and, to a lesser extent, cleanliness⁷⁷. This perception of forgoing is problematic. Comfort is a particularly interesting concept because it is both hard to define and simultaneously perceived as being a crucial element of a home⁷⁸. Comfort is neither an attribute of a material nor a universally agreed specific and measurable moment (such as a temperature). Instead it is an on-going process, a negotiation between different elements (such as climate, materials and bodies) in a particular place⁷⁹. While it is important to better communicate that self-build eco-homes do not necessarily require a loss of comfort, it is also necessary that eco-homes reconfigure some elements of comfort to be more ecologically benign.

Self-builders approaches to, and understandings of, comfort varied significantly across countries. British ecological self-builders were most likely to equate comfort with excess and sought to reject comfort as a way of signalling their environmental commitment. This was represented most obviously in the de-prioritisation of building bathrooms, which in many British self-build eco-homes were absent⁸⁰. Thermal comfort was also reconfigured. Although many self-build eco-homes, such as the ‘tiny home’ at Trelay Community, Cornwall (Figure 6), were deliberately designed to be thermally efficient (with thick floor, wall and roof insulation, well-glazed windows and air-tightness), the residents also adjusted their expectations of internal temperatures. Unlike many conventional homes, thermal comfort in this tiny home requires manual activity – to source and chop the food, light and

maintain the log stove, and to shut down and clear out the stove after use. The effort required to heat the dwelling and that such effort is hard to maintain continuously, encourages residents to adopt other comfort practices, such as wearing additional layers of clothing, cooking and moving about. There is also an acceptance within such homes that thermal comfort will be uneven – both spatially in the dwelling (there are no radiators in this home) and temporally (that unless ‘banked-up’ the fire will go out over night). Thermal comfort in such a home is therefore variable and changeable, and for some residents would require adjusting to.

Figure 6: A ‘tiny home’ at Trelay community, Cornwall



The outcome of such an example is to accept that comfort is a process not an attribute, and thus we need to build houses that enable people to negotiate comfort through adjustment and adaptation⁸¹. This opens the possibility of ecological architecture producing comfortable homes; not homes with a guaranteed narrow comfort zone, but homes that are flexible to occupy⁸². This understanding of comfort, however, does require challenging people’s expectations (now normalised) of what thermal comfort is. In part this includes encouraging people to enjoy the contrasts and changes in temperature around a house, what Roaf calls

‘thermal delight’; ‘comfort can be seen simply as the absence of discomfort but thermal delight makes people happier’⁸³. For example, the joy of a fresh breeze through an open window, or the sun heating our toes. This has been developed into the RayMan model that calculates thermal comfort taking account of people’s thermal sensations⁸⁴, but it also extends to individual behaviour, such as the need to wear a jumper inside during winter⁸⁵ (Fordham, 2000).

The debate as to whether self-build eco-houses can be as comfortable is, of course, also bound up in the on-going debates as to what is comfort and comfortable; a standardised homogenous temperature or the thermal delight of change (for example, the growth of air conditioning is a reflection of the preference for homogeneity, see Miller *et al.*⁸⁶). Our senses and experiences of bodily functions are important when evaluating new forms of living that might extend our interactions with new sensations. The implication of these different approaches to comfort is to illustrate that comfort is not pre-determined or fixed; instead it is a process that can be renegotiated. The creative and resourceful measures by which residents of these self-build eco-homes established a sense of comfort suggests the possibility that other forms of comfort (particularly those which are resource greedy) could also be reconfigured. Thus eco-homes need to navigate the tension between being perceived as comfortable ‘enough’, while also reconfiguring comfort to reduce environmental impact of daily household practices.

Conclusions

Self-build eco-building remains a niche, marginalised as a design and approach in all but a few countries. Too many myths persist about eco-homes being more expensive, uncomfortable, inappropriate or too quirky. The commercial construction industries remain too conservative and are resisting new techniques and new practices. The default approach to house building is to ignore environmental concerns, or if the environment is considered, to

only apply technological solutions. Self-build eco-homes clearly have a long way to go before they are considered the norm.

The socio-cultural expectations associated with homes complicate the adoption of more self-build eco-homes. It is not just a matter of building homes to align with the existing norms and desires of residents, for to do so would undermine much of what such eco-homes offer. This is why an analysis of these cheaply-assembled self-build eco-homes too often marginalized as ‘quirky’ outliers is so important. If we simply build homes which accommodate existing resource demands, albeit with some small reduction in environmental impact, then we fail to fundamentally alter daily practices enough to respond adequately to climate change. Instead, these self-build eco-homes and their attempts to dramatically shift practices and consumption help us identify the limits and possibilities of eco-homes.

Through this analysis four socio-cultural elements have been identified that are crucial to understanding what these homes are trying to do and how they challenge existing norms. For each of these elements a balance is sought between acquiescing existing norms and challenging them by proposing new daily practices and landscapes. This balance remains a tension in case studies explored, and therefore they are less things to be resolved and more tensions that require ongoing negotiation. First, while there is a need to align self-build eco-home designs with the socio-cultural desires for a home - a space of social relations filled with emotions, traditions and politics, there are also attempts to shift these expectations in, for example, notions of privacy and sharing. Second, accepting that human agency is central in the functioning of an eco-home and eco-homes’ functioning is reliant upon compliant occupants encourages the use of simple design features and feedback loops. But it also reminds designers of the need to build systems which cannot easily be disrupted, in other words to build robust processes that enforce ecological practices. Third, the need to embed self-build eco-homes into places and pay attention to what already exists in place is vital not

just for local acceptance but in order to appeal to diverse future potential residents. Finally, it is possible to reconfigure some elements of comfort to be more ecologically benign without creating discomfort. The flexibility of comfort can be utilized more.

Central to all of these elements is the tension between the social (people, societal norms and structures) and the material (and technological features - the walls, technological systems, windows etc) of eco-homes. In order to fully understand self-build eco-homes neither of these elements can be examined in isolation. They interact, shape, influence and have agency. As has hopefully been illustrated here, we therefore need to know far more about self-build eco-homes than just technological questions about construction or political questions about land availability. Instead we must embrace qualitative investigations of the why, how and with what consequences people choose to build and live in these homes. Only through such analysis can we begin to understand how to encourage and enable more self-build eco-homes.

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