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# Cold Comfort? Reconceiving the Practices of Bathing in British Self-Build Eco-Homes

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Living sustainably involves a broad spectrum of practices, from relying on a technological fix to a deep green vision. The latter is often articulated by advocates and critics alike as involving shifting to a simpler lifestyle that dispenses with some of the (perceived) frivolous or environmentally damaging attachments to luxury or convenience. This article explores practices of reconceiving comfort in the context of the social and material architectures of eco-housing. Comfort is defined as an ongoing process, a negotiation between different elements (e.g., climate, materials and bodies) in a particular place. This article uses three case studies of self-built eco-communities in Britain (Green Hills, Landmatters, and Tinkers Bubble) and analyzes their bathrooms and bathing practices. In the eco-communities' bathing practices, comfort was reconceived as not being reliant on particular facilities, furniture, or temperature, as not private but as collective and shared, and as an embodied relation. This article demonstrates the relationality of comfort, how it is therefore possible to reconceive comfort, and how comfort can be understood as a practice. This focus on practices also challenges social practice theories to more purposefully engage with those already living a highly ecological lifestyle to understand how radical change is navigated. *Key Words: bathrooms, comfort, eco-housing, ecological architecture, sustainability.*

可持续地生活，涉及从倚赖技术修补到深绿愿景等广泛范围的实践。倡议者和相关评论者，经常将后者与转向更简单的生活方式相互连结，该生活方式省略部分（被认为的）关乎奢华或便捷的琐碎浪费、或对环境造成伤害的行为。本文探索在生态住宅的社会和物质建筑脉络中再思考舒适之实践。舒适定义为一个持续进行的过程；一种在特定地点中、在不同元素（例如气候、物质与身体）之间的协商。本文运用英国三个自建生态住宅的案例研究（分别名为 Green Hills, Landmatters, 以及 Tinkers Bubble），并分析它们的浴室及沐浴行为。在生态社区的沐浴行为中，舒适被再思考为不依赖特定器设施、傢俱或气温，亦非私人的，而是集体分享的，且为一种身体化的关系。本文显示舒适的相关性、舒适因而如何可能被再思考、以及舒适如何可被理解作为一种实践。此般聚焦实践，亦挑战了社会实践理论，以更坚定地涉入这些已经过着高度生态生活方式的人们，从而理解如何通过激进的变革。 *关键词：浴室，舒适，生态住宅，生态建筑，可持续性。*

Vivir de manera sustentable involucra un amplio espectro de prácticas, desde depender de un esquema tecnológico hasta una visión de profundo verdor. Lo segundo a menudo es articulado tanto por defensores como críticos como si implicase el tornar hacia un estilo de vida más simple que deje de lado algunos de los accesorios frívolos (percibidos) o ambientalmente dañinos, de lujo o conveniencia. Este artículo explora las prácticas de volver a concebir la comodidad en el contexto de las arquitecturas sociales y materiales de la eco-vivienda. La comodidad se define como un proceso en desarrollo, una negociación entre diferentes elementos (e.g., clima, materiales y cuerpos) de un lugar en particular. En el artículo se utilizan tres estudios de caso de eco-comunidades autoconstruidas en Gran Bretaña (Green Hills, Landmatters y Tinker Bubble) y se analizan sus cuartos de baño y prácticas de baño. En las prácticas de baño de las eco-comunidades, la comodidad fue replanteada como si no estuviese supeditada a instalaciones, mobiliario o temperatura particulares, no como privadas sino colectivas y compartidas, y como una relación personificada. Este artículo demuestra la relacionalidad de la comodidad, por consiguiente cómo es posible reformular la comodidad y cómo la comodidad puede ser entendida como una práctica. Este enfoque sobre prácticas también reta las teorías de prácticas sociales a un compromiso más orientado hacia propósitos con quienes ya viven un estilo de vida altamente ecológico, para entender cómo se navega por el cambio radical. *Palabras clave: baños, comodidad, eco-vivienda, arquitectura ecológica, sostenibilidad.*

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Deep green sustainable living is often associated with foregoing many elements of contemporary life (Dobson 2007). There is an enduring perception that to be environmentally sustainable requires foregoing elements of comfort, convenience, and to a lesser extent cleanliness (Shove 2003). This perception of foregoing is problematic for mobilizing broader environmental practices. Comfort is a particularly interesting concept because it is both hard to define and simultaneously perceived as being a crucial element of places such as a home (Rybczynski 1988). Comfort is neither an attribute of a material nor a universally agreed specific and measurable moment (e.g., a temperature). Instead it is an ongoing process, a negotiation between different elements (e.g., climate, materials, and bodies) in a particular place.

This article explores the tensions between comfort and sustainable living. Using self-built eco-homes in Britain, particularly the design of bathrooms and practices of bathing, it critically analyzes how self-builders are redefining and reconceiving comfort. By examining how self-builders have designed and constructed their homes, it is possible to examine what practices they believe constitute a sustainable lifestyle. This article starts with a puzzle: self-built eco-homes in Britain often lack a bathroom and conventional bathing facilities, yet self-built eco-homes visited in the United States, Spain, Thailand, and Argentina often prioritized building bathrooms and frequently housed luxuriously decorated facilities. Rather than conducting a cross-cultural analysis between these countries (and their diverse histories of bathing), this article uses this fieldwork observation as a starting point from which to critically explore the bathing practices of three British case studies (the eco-communities of Green Hills, Landmatters, and Tinkers Bubble).

This article builds on the long-standing concern with sustainability practices but in so doing incorporates the “already green” and more politically radical examples in a bid to push the field to look further for innovation and inspiration (Pickerill and Maxey 2009). It uses a specifically distinct group of those already living a highly ecological lifestyle to critically analyze how comfort is practiced and experienced. Much work has been done on how comfort is conceived conventionally by society (especially by Shove [2003] and Shove, Chappells, and Lutzenhiser [2009]), but unless we explore how it could be reconceived we miss a vital part of the story.

This search for hopeful practices is necessary for two overlapping reasons. First, there is a need to understand what the alternative possibilities actually are, and many of these alternatives are rooted in grassroots innovations in eco-communities (Seyfang and Smith 2007). These pockets of alternative ways of being often connect and have influence far beyond their apparent remit, however small-scale or marginal they might appear. It can be in the off-grid alternative spaces of eco-communities that these alternatives get tested and the full ramifications of, in the case of Vanini and Taggart’s (forthcoming) work, the collection, conservation, and disposal of water and consequent practices of “onerous consumption” (p. 1) become clear. They are test beds for innovative ideas. Second, these innovations and new practices are rarely unproblematic, engaging in processes of experimentation, learning, and making mistakes: processes from which we in turn can learn valuable lessons (Gibson-Graham 2006). The challenges that residents encounter in developing these practices and how they overcome these problems are likely representative of many of the issues that others would also face in implementing more sustainable practices. Some of the institutional and structural barriers to sustainable practices in, for example, eco-housing, are already understood (Lovell 2008; Rogers 2010; Falconbridge 2013), but there is far less work on how to overcome, challenge, and negotiate these challenges.

Eco-housing is used as an object in this article, through which different practices and processes can be explored. By focusing on practices in the home and practices of building a home, the interplay and dynamic relation between people and the structure of a house can be explored and understood. The analysis of eco-housing has been largely ignored by geographers, leaving it to architects and engineers to design, test, and evaluate their potential. A geographical perspective adds a grounded concern not just with occupant behavior (already central to many architectural approaches) but with practices; it enables a political reading of the processes of eco-housing; creates space for analysis of feelings, emotions, and attachments; and thus enables a more holistic (and multiscalar) understanding of the interplay among people, society, and structures (Krafft 2010; Jacobs and Merriman 2011; Vasudevan 2011; Chatterton 2013). Few places offer geographers such opportunity to interrogate a space so laden and imbued with so many meanings, while also offering individuals possibilities for self-

expression and the ability to change the physical as well as the social structure.

As this article builds on the extensive geographies of home, architecture, and sustainability literatures, it seeks to make contributions to two dimensions of these fields: environmentally sustainable practices and concepts of comfort. First, in recent years, a large body of work has emerged that has examined the potential, possibility, and existence of environmentally sustainable practices. Much of this work has examined the utility and effectiveness of government strategies in encouraging environmentally sustainable behavior change in mainstream society (see Barr and Gilg 2006; Cupples and Ridley 2008; Barr, Gilg, and Shaw 2011, as some examples of such work). This rather unidirectional approach has been challenged, however, by social practice theory (Shove, Pantzar, and Watson 2012). Building on the work of Shove (2003), Reckwitz (2002), and Warde (2005), social practice theory investigates how a diverse set of influences (social norms, commercial intent, and government structures) shapes practices. Although Hobson (2006) also explored the productivity of advocating eco-efficient technologies encouraged by a government program, she illustrated how their use shifted users' relations toward a broader environmental ethic. In other words, the adoption of these technologies had caused users to ask questions of their other practices.

Although social practice approaches have tended to focus on those in mainstream society, there is increasing interest in those living an already environmentally sustainable lifestyle. The works of Black and Cherrier (2010), Vannini and Taggart (2013), and Lane and Gorman-Murray (2011) signals a shift toward understanding the motivations and desires of those who are already "green." This article extends this work by explicitly extending social practice theory into the realm of deep green sustainable practices.

Second, geographers have sought to reconceive the notion of comfort. Bissell (2008) proposed that we need a more corporeal sensibility of comfort, in his case exploring the comfort of the sedentary body. Others, such as Brickell (2012), have challenged the assumed associations between comfort and domesticity and between home and comfort. As such, this article disassociates comfort from femininity, care, or home as being implicit and instead explores how comfort is itself created (or not). As discussed in detail later, comfort is a complex and relational concept but has rarely been considered in relation to environmentally sustainable practices.

Bathrooms enable us to explore the complex relationships among personal habits, use of resources, and comfort. The function and form of a bathroom have changed considerably over the centuries. The contemporary British bathroom is now conceived of as a space of privacy where multiple activities take place (cleaning, washing, relaxing), and the privacy increases the emphasis on comfort rather than convenience or cleanliness. Moreover, bathrooms are an ideal microcosm of social practice where the prefigurative actions of those advocating an ecotopia clash with the increasingly environmentally damaging practices of society at large.

The three case studies used in this article (Green Hills, Landmatters, and Tinkers Bubble) were chosen because they are all communities (with multiple houses and land-based income projects on collectively owned sites), they are deeply ecological (all aim to radically minimize their environmental impact, with Tinkers Bubble rejecting use of all fossil fuels), they self-built their housing from a variety of locally sourced materials (e.g., straw bale, reclaimed tires, earth, wood, and thatch), and they had different bathroom facilities.

These case studies, and the examples drawn on from Thailand, Spain, the United States, and Argentina, are part of a larger research project conducted by the author into thirty affordable eco-housing communities since 2010 (Pickerill 2011). A participatory action research approach was taken and was driven by requests from eco-builders to garner greater political and social support for, and understanding of, their projects. These requests emerged during an earlier research project into actual existing alternatives to capitalism where the author worked with the new eco-village of Tir y Gafel in west Wales. Tir y Gafel faced significant local and political opposition to their plans and struggled to communicate their intent in ways that their neighbors could understand. These experiences led to eco-village residents asking for help in navigating this gulf of understanding about the purpose of eco-housing and sustainable practices. The extent of participation varied significantly between case studies. When possible, the author joined in activities on-site such as building, gardening, scything, cooking, and eating communally; engaging in group meetings; socializing; and staying on site for several days or more. Such engaged participation was possible at Tinkers Bubble (Somerset) and Green Hills (Scotland). Green Hills is a pseudonym and its location has been moved to protect residents' privacy. My visit to Landmatters (Devon) was limited to a day, an interview, and a tour of the site. Nine face-to-face, in-depth interviews

were conducted with members of the three case studies. At each case study, photographs, field diary observations, and sketches of the site were recorded.

## Comfort

Comfort is a vital component of what we expect a home to provide and is core to the success, or perception, of a house as home (Rybczynski 1988; Blunt and Dowling 2006). As McCloud (2010) argued, “Comfort is the most civilizing aspect of design or architecture” (119), and for Rybczynski (1988), “We must rediscover for ourselves the mystery of comfort, for without it, our dwellings will indeed be machines instead of homes” (232). Defining what this comfort entails, and how it is to be achieved, though, is fraught with difficulty (Bissell 2008).

It is only in recent years that comfort shifted from being a relation (about, e.g., consoling someone through bereavement) to being about things (in that materials can give comfort), of which the sense of physical comfort began to predominate (Crowley 1999). As Crowley (1999) noted, “‘Comfort’ increasingly applied to a middle ground between necessity and luxury” (760) and over time has become normalized as an entitlement. As this shift defined comfort as “to do with things, conditions and circumstances” (Shove 2003, 24), it became a state that was considered an attribute of such materiality, rather than something to be achieved, which Shove argued is a more accurate understanding of its form. This is further complicated by the reality that “people seem to respond more to their *ideas* about comfort than to their actual physical experience of it” (Cranz 1998, 113).

If comfort is considered an attribute, an entitlement, and separated from what is medically healthy, then this enables the notion of comfort to be shaped by all sorts of people with different vested interests. Thus, scientists, industry, and government all played a part in shaping the idea that thermal comfort in a building was optimal only in a narrow technologically controlled temperature range, or “comfort zone” (Shove 2003). In summary, comfort became an attribute defined by those who benefited from selling the things necessary to ensure it: it became a commodity, which in turn further shaped people’s expectations of comfort need. These expectations then traveled globally. The result is a burgeoning worldwide industry in heating and cooling technologies, and comfort standards for houses that are hard to achieve without such technology.

There is a counter story to the preceding one, and it is led by advocates of ecological architecture. Humphreys (1978) developed an alternative model that persuasively showed that what people deem as a comfortable temperature can vary dramatically with the external climate: people adapt to their local temperature range, and thus comfort is determined through a relationship among climate, bodies, and culture. Simply put, the comfort of a building can be determined by its comfort temperature ( $T_c$ ), calculated as the balance between mean outdoor temperature and mean indoor temperature (Humphreys 1978; Roaf, Fuentes, and Thomas 2007). Thus,

The fundamental function of buildings is to provide safe and healthy shelter. For the fortunate they also provide comfort and delight. In the twentieth century comfort became a “product” produced by machines and run on cheap energy. In a world where fossil fuels are becoming ever scarcer and more expensive, and the climate more extreme, the challenge of designing comfortable buildings today requires a new approach. (Nicol, Humphreys, and Roaf 2012, xiv)

The outcome of such an approach 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 adaptation (Cole et al. 2008). This opens the possibility of ecological architecture producing comfortable homes; not homes with a guaranteed narrow comfort zone but homes that are flexible to occupy (Brown and Cole 2009). This understanding of comfort, however, does require challenging people’s expectations (now normalized) of what thermal comfort is. In part this includes encouraging people to enjoy the contrasts and changes in temperature around a house, what Roaf, Fuentes, and Thomas (2007) called “thermal delight”; “comfort can be seen simply as the absence of discomfort but thermal delight makes people happier” (319); 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 sensations (Matzarakis, Rutz, and Mayer 2010). It also extends to individual behavior, such as the need to wear a sweater inside during winter (Fordham 2000). In addition, comfort has increasingly been dominated by a concern with thermal comfort (and the related issues of air flow and ventilation), precluding understanding of its broader meaning and implications (Cooper 1982; Healy and Clinch 2002; Wong et al. 2002; Peeters et al. 2009).

In this context, the corporeal experience of comfort remains important. A social practice approach rejects the physiological method of measuring comfort through scientific analysis of human biology alone. Yet the body (and embodiment) remains an important determinant of comfort, not just in terms of temperature but in washing, our bodily functions, our health, and our senses (Longhurst 2001). The embodied relation of comfort, how a body “gets comfortable,” but also the sensibility of comfort through the body can be understood as how “corporeal comfort is an embodied contingency forged between the body and the proximate environment” (Bissell 2008, 1703).

Pink (2004) detailed the sensory embodied joy of the smell of a clean house, as one of her interviewees argued, “You’re much more comfortable in a clean and tidy house” (Ana, quoted by Pink 2004, 91). Day (2002) also asserted the importance of the senses in how we feel about a house: “The senses tell us about what is important in our surroundings; mostly, we experience things through the outer senses; sight, smell, taste, sound, warmth, touch. Architecture in the sense of environmental design is the art of nourishing these senses” (49). Our senses thus inform our feeling of comfort. Rybczynski (1988) extended this further to include “feelings” of ease and relaxation. Comfort is closely related to feelings of “homeyness” that are shaped by people’s sense of flow in a house; thus, “flow was both a visual and whole-of-body experience that gave rise to feelings of homeyness through a sense of freedom, mobility and comfort” (Dowling and Power 2011, 83). Thus, homeyness is comforting and is created through embodied relations with materialities of the house. These practices of homeyness underpin possibilities of sustainability.

Thus, the concept of comfort needs to be extended to include bodily comfort, without resorting to the discredited physiological approach, to enable a better examination of the relationship among our bodies, comfort, and our environmental practices. In this way, comfort is defined in this article as an ongoing process of negotiation using materials, habits, and practices but also includes how one feels, senses, and delights.

In this definition, the importance of practices to how comfort is understood is central. It is through social practices that the different influences—materials, social norms, government structures, and commercial aims—are navigated. Practices are considered as routine and habitual and a way of understanding the implicit choices people make every day. Although

implicit, rather than explicit and conspicuous forms of consumption (e.g., flying), the environmental consequences of these repeated practices can have significant environmental impacts. Yet precisely because they are habitual and inconspicuous, such as the everyday seeking of comfort, they can be hard to challenge and change. Understanding how eco-community residents have changed their environmental practices around comfort offers the possibility of encouraging others to change their practices, too.

## Bathrooms as Spaces of Comfort

Like many other aspects of our homes, bathrooms are complicated and specialized spaces. As Hardyment (1992) detailed, their function, form, and place in a home has evolved dramatically over the centuries (see also Bushman and Bushman 1988; Adams 1992). It is not a linear progression but, rather, discourses have emerged as a result of a myriad of influences (social norms, commercial interest, government regulation) to produce habits that we now consider normal (Shove 2003). These habits continue to evolve. We use bathrooms to satisfy multiple demands—cleanliness, health, comfort, and convenience (Shove 2009).

At one stage, bathrooms were considered as an index of civilization and were a crucial part of the process of social acceptance. At other times, immersing oneself in water was considered highly dangerous and led to the “dirty centuries” in Britain between 1500 and 1750 (Worsley 2011). It only returned through a mixture of religious and medical encouragement, but even then cold water washing was perceived as safest. Plumbed-in baths only appeared in the wealthiest of British houses in the 1860s, but many remained without bathrooms into the mid-twentieth century. This was not due to a lack of technology: systems of piping water (through aqueducts, cisterns, and reservoirs) and rainwater harvesting had existed in Britain since the medieval era (Hardyment 1992).

Bathrooms have been shaped far more by cultural practices than technological innovation; for example, the British bathhouses of the 1160s grew in response to returning Crusaders’ stories of enjoyable Turkish public baths (Worsley 2011). Bathing used to be a social affair and baths were communal, public, and mixed gender (Busch 1999). In Britain they only became privatized and formed their own room in the house in the twentieth century and are now increasingly considered “a place for solitude and thought” (Busch 1999, 142). In other countries (e.g., Finland

and Japan), bathing remains a communal practice. The bathroom is becoming more complex partly because people are demanding more of it: "Our bathrooms are not primarily used for cleaning the body, but instead take the place of morning exercises, and are used for dressing, styling hair and applying make-up" (Salomon 2006, 28). Shove (2003, 108) categorized these different discourses of bathing into moments of positioning in relation to self and society, body and nature, and pleasure and duty. For each of these positions Shove identifies three dimensions of bathing: hydrotherapy and gentility; sanitation and social order; and comfort, convenience, and commodification. Thus, for self and society bathing signals high social status (hydrotherapy and gentility), "membership of civilised society" (108; sanitation and social order), and is used to reflect a concern with image and appearance (comfort, convenience, and commodification).

Although bathrooms remain spaces of multiple activities and satisfy multiple demands, they are increasingly conceived of as spaces of comfort. For a home space to provide this comfort, a bathroom needs to become more than a container for cleaning facilities. Recently, "the modern bathroom is depicted as a site of leisure and pleasure as well as efficiency and convenience" (Shove 2003, 105). With this leisure comes increased resource use as people use showers as a form of relaxation (from stress), and it is only relatively recently that we have begun to wash so frequently or have expectations that showering daily is normal. This change in use has resulted in large increases in use of water and energy, and the trend for power showers in particular is environmentally worrying (Hand, Shove, and Southerton 2005; Shove 2009; Shove, Chappells, and Lutzenhiser 2009), although as Berker and Josok Gansmo (2010) showed, increased attention to the aesthetics of bathrooms need not necessarily result in increased consumption of resources, because with careful design, aesthetic fixes enable people to follow fashions while reducing consumption.

In contemporary British bathrooms, renewed attention is being paid to aesthetics, private access (ensuite), bigger spaces, individualized sinks, and larger multijet showers (Hobson 2006). Simultaneously, the commercial market for soaps, shampoos, shower gels, and in-shower products continues to grow. As a result, bathrooms are increasingly being associated with comfort, although as examined next, these relations vary between places and practices.

## The Diverse Forms and Common Functions of Eco-Housing

Advocates of ecological architecture, a design and build process that has only recently started to receive mainstream recognition, have long argued for a closer consideration of the inherent relationships among people, buildings, environment, and climate (Borer and Harris 1998; Ward 2011). Modern conventional architecture, evident across the world, often displays a dissociation from its context and, as a result, has to rely on energy-intensive technologies to operate (e.g., heating, cooling, waste disposal, and water delivery systems), with residents often being oblivious to how it functions. Instead, 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 be used to design a house that requires far less energy to both build and run. Most important, it is the interconnectedness of these features that requires attention and understanding (Wines 2000); thus,

A building is very different [to a machine] because, although it is true that it can be controlled by its occupants, the driving force that acts upon the building to create comfort and shelter is the climate and its weather, neither of which can be controlled, predicted or turned on and off. . . . Buildings are part of a complex interaction between people, the buildings themselves, the climate and the environment. (Roaf, Fuentes, and Thomas 2007, 24)

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, zero-net energy housing, and energy-plus houses (Borer and Harris 1998; Roaf, Fuentes, and Thomas 2007; Broome 2008; Pickerill and Maxey 2009; Pelsmakers 2012; Williams 2012). Here it is important to distinguish between the function and the form of eco-housing, as each of the preceding terms implies a slightly different emphasis of function and form. 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 in a broad range of forms of eco-houses.

As the form of eco-housing is different from its function, 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” (Broome 2008, 18), and these conflicts result in diverse building approaches. Thus, the common functions of an eco-house are for a building across its whole life cycle to minimize resource use (in materials, embodied energy, energy requirements, water use), minimize waste (in materials, space, energy, leakage), and maximize use of renewable energy (e.g., solar, wind, water) and renewable materials (e.g., straw, sheep’s wool, wood, earth; see Bird 2010; Pickerill 2012; Williams 2012). An eco-house minimizes resource use (in construction and life cycle) while also providing a comfortable environment in which to live.

For example, a zero-carbon house will achieve these functions through the form of mainly technological fixes, including decarbonizing the energy supply, increasing the energy efficiency and performance of the building, and attempting to change household behavior (Williams 2012). Borer and Harris (1998) argued that “sustainable housing for the future must be *durable* so that the energy invested . . . represents a prudent use of resources. It must also be *flexible* so that different patterns of living can be accommodated” (6). Wines (2000) also argued for the importance of low maintenance and “cost-effective upkeep” (66).

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” (Wines 2000, 68), rather than a broader focus on the aesthetics, a theoretical context, or a concern with developing new ways of connecting eco-housing to its cultural and natural context. A focus on materials and aesthetics, however, can preclude adequate consideration of required building performance in terms of durability, comfort, and energy

supply. Thus, there is a well-worn and unresolved tension between those build approaches that employ highly technological systems and those approaches that use low-tech materials that participants perceived as being “natural.”

## Comfortable Eco-Homes

The debate as to whether eco-houses can be as comfortable, or might be more comfortable, than conventional buildings is complicated by the sheer diversity of eco-house forms. It is, of course, also bound up in the ongoing debates as to what is comfort and comfortable: a standardized homogenous temperature or the thermal delight of change (e.g., the growth of air conditioning is a reflection of the preference for homogeneity; see Miller, Buys, and Bell 2012). Given the centrality of comfort to people’s conception of a home, however, it is unlikely that eco-house builders would deliberately seek to create discomfort, which in itself would undermine one of the principal purposes of a home. Rather, eco-house builders reconceive comfort and seek to adjust its meaning.

Herein lies the dilemma: Many eco-builders believe their houses provide more comfort, and yet according to the expectations of society as identified by Shove (2003), many would actually be considered less comfortable than conventional buildings. Eco-builders might well believe that “sustainable homes will provide greater comfort . . . provide healthy living environments” (Broome 2008, 18) or that they are “safe, comfortable, healthy and functional buildings” (Association for Environmentally Conscious Builders 2009). Eco-houses might well have more even internal temperatures through well-balanced passive heating or careful choice of wall materials or plentiful hot water through solar thermal panels, but this does not mean that others equate this with more comfort. For many, eco-housing continues to be viewed as involving a loss of comfort (Sibley, Hes, and Martin 2003). Williams (2012) defined this comfort as requiring “a constant, ambient indoor temperature, hot water, fully functioning appliances and lighting . . . critical to the success of eco-housing” (305). She went on to illustrate how “the low carbon technical systems themselves may have a negative impact on household comfort” (305) using, as examples, the intermittent energy supply of renewable energy and problems of internal condensation, dampness, and mold in



highly airtight houses. Indeed, solar thermal panels store heat during the day, making the most plentiful time for hot water in the evenings, not the mornings when many people choose to shower. Moreover, eco-houses often require more maintenance and manual operation (e.g., wood stove heating or manual ventilation systems, rather than automated air-conditioning or heating), to the extent that low occupancy can result in houses becoming too cold (Williams 2012). The manual effort required, especially in the more self-built natural eco-houses, can be quite extensive, with even the most ardent supporter finding the daily chores of collecting water and wood difficult (Laughton 2008). Comfort has also become blurred with convenience; for example, it is not enough that a house has an average internal temperature of 21°C but that this should be available instantly and without manual effort. This conflation means that convenient facilities (e.g., water, bathrooms, heat, refrigeration) become bound up with comfort in new ways.

As Kraftl (2007) argued, ecotopias are already deeply unsettling for much of mainstream society. Despite often containing a desire and vision of comfort, safety, and homeliness, utopias (and the eco-houses envisioned within them) often nonetheless challenge the societal order. Kraftl urged us to further consider that some utopias might actively seek discomfort in the process of achieving their vision, thus “the *mechanism* to achieve many political utopias is commonly unsettling, yet the end goal—although it might cause political discomfort—is essentially a compensatory, comforting, stable version of the ‘good life’” (122). Thus, what might appeal to environmentalists (or what Kraftl termed “those inside”) as a homely, comforting, and earthy way of life might to the rest of society be deeply unsettling.

Interpreted in a rather simple way, although the eco-housing as built by British eco-communities might appeal as comforting and homely to residents, it does not to “those ‘*outside*’ such communities” (Kraftl 2007, 123). This was perhaps best summarized by Kraftl (2007) when he argued that “often this involves a comforting return to the materiality and imagery of nature, housed in ‘green buildings’ which phenomenologically connect with the earth and the memory in a form of homely, perhaps ‘originary’ dwelling” (123).

This conflicting relationship between eco-homes and comfort is indicative of the broader tension between comfort and sustainable living. The extent to which sustainable alternatives (e.g., eco-housing)

should challenge conventional ways of living or instead seek to make conventional ways simply more efficient lies at the center of the environmental dilemma. Conventional expectations of comfort need, to some extent, to be assuaged to appeal to mainstream society. Advocating environmentally sustainable practices, however, is in large part about reconceptualizing what needs it is desirable to meet and what needs are too environmentally costly. This involves challenging the social conventions and expectations of comfort. Thus understandings of comfort are central to exploring eco-housing. How eco-builders negotiate the balance of conforming to existing expectations while challenging the same perception of comfort provides an insight into this dilemma.

## Bathrooms and Bathing Practices

Answering the question of what a bathroom is, what bathing practices constitute, and what facilities are required to undertake the practices is the first step toward understanding how the eco-community residents reconceived the practices of bathing. The arrangement at each of the case studies differs and suggests different solutions to the issues of water supply and energy to heat water. As explored in the following section, this article uses an examination of practices as a way to understand how comfort was reconceived, rather than the verbalization of what residents considered as comfort. Indeed, it was the *absence* of consideration of comfort in Britain compared to overseas examples that was the starting point of this research.

## Green Hills

Green Hills is a small eco-community in Scotland (its actual location has been protected at the request of the residents) that makes its living from running a community-supported agriculture scheme whereby they sell weekly vegetable boxes of home-grown organic food. They have built an oak-framed straw-bale home in the woods and have recently started building an earth-sheltered house with earth-filled tires as its back insulating wall. There are also a few other structures on the land such as a yurt and a canvas-covered tunnel. Green Hills is completely off-grid, generating all of its electricity from photovoltaic panels and a small wind turbine.

At Green Hills there is no separate bathroom on-site, and over time different systems and spaces have

been used to accommodate the functionality of the room. A separate compost toilet is positioned away from the main house, at one time located in a straw bale hut and at a later stage moved into a tarpaulin-covered bender. There is no main water supply to the site. Residents initially used river water boiled on gas for washing up and bathing and tap water brought on-site in 25-L containers for drinking and cooking. They now have a well on site supplying them with clean, drinkable water and rainwater collection systems that residents use for washing up and bathing.

In our ten years of being here we have never had a bathroom, bath, or shower system. One day maybe. Instead our primary means to wash is simply the bucket wash. . . . This involves using a trug placed on a towel typically in our bedroom. There is an order to which bits you wash! Face first, arse last! . . . We also dip in the river on a hot day. (Will, Green Hills)

There are no bath or shower facilities on site, so their primary means to wash is simply the bucket wash. Rainwater is heated in kettles either on the gas-fed cooker or the wood-burning aga (depending on the time of the year; see Figure 1).

### Landmatters

Landmatters is a 42-acre eco-community in Devon (near Totnes). The land was bought collectively by the Landmatters cooperative, and when the residents came together over the purchase of the land it became

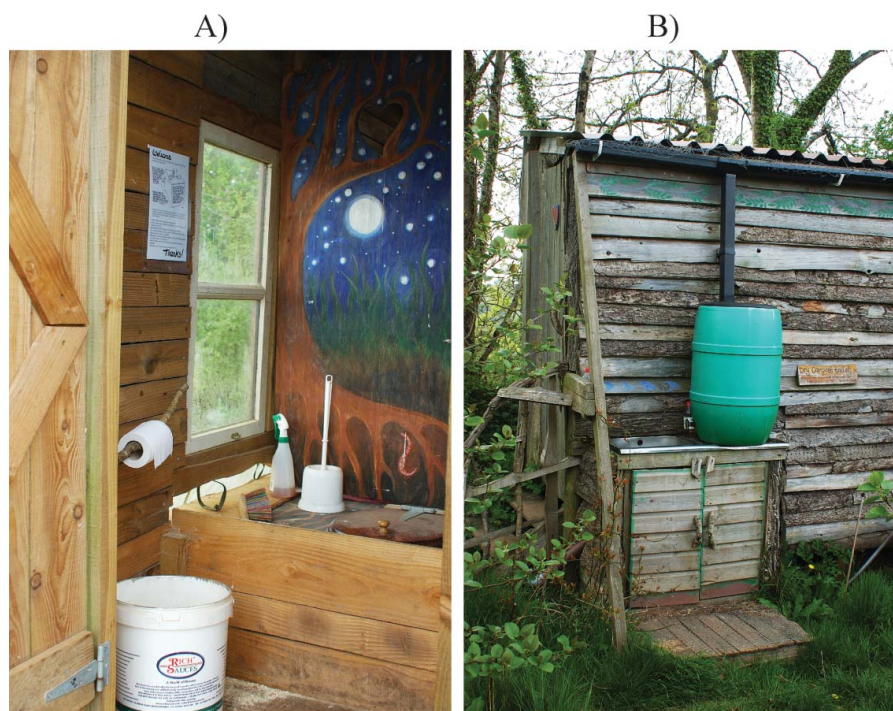
clear that the common factor and core principle was permaculture. Thus, they have used permaculture to structure how they have built their houses around the edge of a purposefully designed village green and how they grow their food. Part of their remit is in experimenting in, and proving, what could be done with minimal impact.

In terms of housing, all buildings are temporary because that was a condition of the planning permission. The homes are situated at the top of the hill on the site, which means that they are able to benefit from passive solar gain, photovoltaic panels, and wind turbines. There are currently twelve adults and five children living on-site.

Landmatters residents have spread the functionality of their bathrooms across the site. Unlike conventional homes, the toilet is across a field and the water supply point is in the other direction: "All that you need for our house is not in one place, the compost toilet is down behind us in that field, and our water is over the other side of the field in the other direction" (Josh, Landmatters). Water comes from a 300-foot borehole that provides all of the drinking water and is extracted using a donated deep-bore hand pump. Water for everything else comes from rainwater harvesting. There are two compost toilet blocks onsite (Figure 2). Outside each there is a sink with a tap running from a rainwater tank, soap, and a storage cupboard. Sewage is collected in big plastic drums that are then winched out and rotated.



Figure 1. Kitchen at Green Hills. (Color figure available online.)



**Figure 2.** Compost toilets at Landmatters, Devon: (A) Inside the compost toilet and (B) the outside and hand basin. (Color figure available online.)

On the other side of the residential area, a bathhouse has been under construction since 2009. A robust construction of new wooden planks and lined with ply, it has a see-through plastic corrugated roof to help light penetrate. Inside there are several different rooms—a clothes washing space, and separate shower rooms (Figure 3). The bathhouse has been a journey of experimentation for those at Landmatters and they have run into reliability issues with the solar

water heater, which has variously worked and then failed. A particularly cold winter burst the pipes; these problems have persisted and the bathhouse remains incomplete.

### Tinkers Bubble

Finally, Tinkers Bubble in Somerset is a long-standing eco-community. Established in 1994 near Little



**Figure 3.** The bathhouse at Landmatters, Devon. (Color figure available online.)

Norton, the residents manage forty acres without the use of fossil fuels or internal combustion engines; “the aim of the community’s 16 residents is to derive their livelihoods from the sustainable management of the land and its resources” (Laughton 2008, 145) and goods are moved around site using a horse and cart. They had a long battle for planning permission but are now a legal and established site (although with restrictions as to what they can build).

The houses at Tinkers Bubble are at the top of a steep hill, deep in a Douglas fir woodland. They have several photovoltaic panels and a wind generator to provide for all their electricity needs. There is an abundance of wood on site, and this is used as fuel for space and water heating and all cooking.

All water is sourced from a local spring and is fed into the communal building where it is used in the bathhouse and kitchen. The only water points on-site are in the communal kitchen area, so residents have to carry what they need to their individual dwellings. Toilets are all compost and their waste is collected below the toilet seats; water is not required for their functioning. The community has one of the more advanced communal bathhouses (see Figure 4). A separate wooden building, it has a bath and a wood-fired stove. Members of the community book in to use the bath (one allowed a day among the whole community) using the blackboard by the door. They then light the stove, wait for the water tank above it to heat up, and have a bath.

### More Than a Resource Issue

The facilities and practices of these three case studies are summarized in Table 1. It is illustrative at this point to briefly compare these bathroom facilities with those provided by some of the international examples. Eco-communities visited in Spain, Thailand, Argentina, and the United States had prioritized the importance of building functioning bathrooms with hot water—using solar power or propane gas. Often the bathroom was the first building to be finished, and many had large (albeit shared) shower areas, basins, baths, and drying space. For example, as shown in Figure 5, Panya Project (Thailand) had a large shower block (divided by gender) with two showers in each section, a sink, mirror, storage unit, and bench. Although open to the elements, it was decorated with mosaics (a time-consuming method) and water was supplied through rainwater collection. Earthships at Taos all had private bathrooms with showers fed hot water via solar panels, and at El Valle de Sensaciones (Spain) there was a Gaudi inspired-shower and toilet block, tall and slender hemp concrete blocks with curved roofs, and entire external walls of mosaics. The bath at the Lama Foundation was a large mosaic communal space with a ceiling of hanging plants.

Key infrastructural components of bathrooms are water supply and a source of energy (mainly for water heating but also electricity for lights and other electrical appliances). In the overseas examples, a great



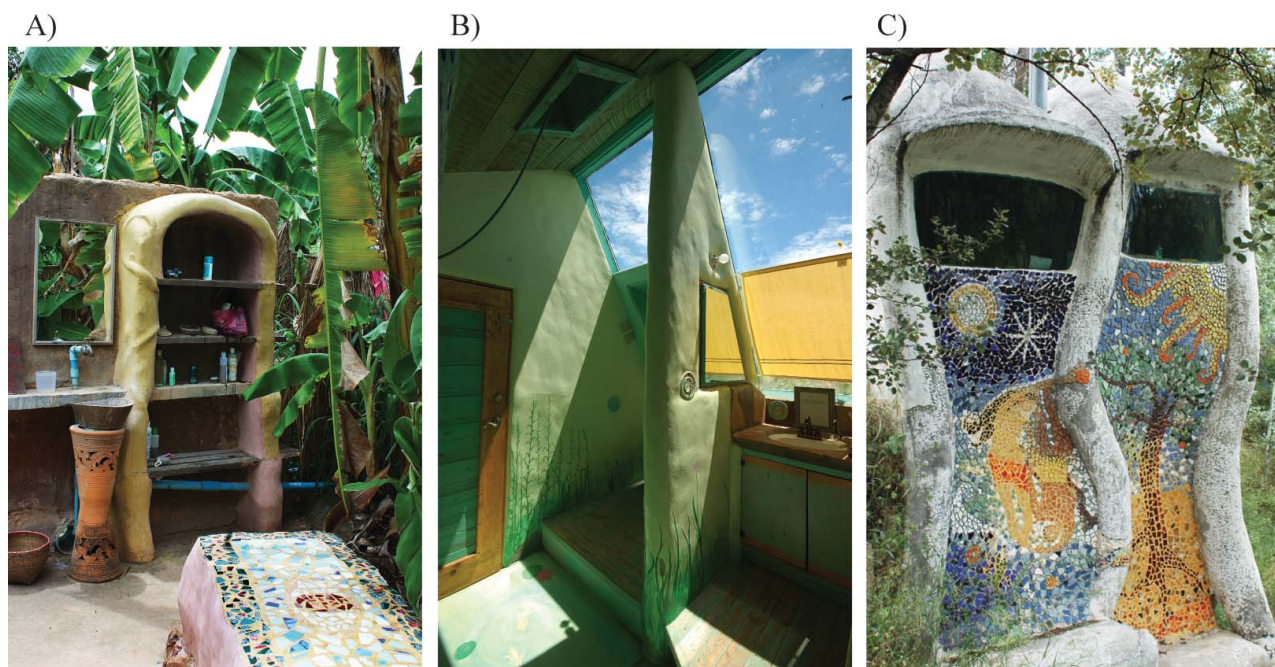
Figure 4. Bathhouse at Tinkers Bubble, Somerset. (Color figure available online.)

**Table 1.** Communal bathroom facilities and practices at Green Hills, Landmatters, and Tinkers Bubble

Bathroom facilities and practices	Green Hills	Landmatters	Tinkers Bubble
Water			
Mains running water			
Local water supply (spring, well, or borehole)	*	*	*
Rainwater collection	*	*	*
Heat (energy)			
Solar water heater		*	
Wood-fired water heater	*	*	*
Propane or gas water heater			
Fixtures			
Separate bathroom		*	*
Separate toilet room	*	*	*
Bath			*
Shower		*	
Bucket wash	*	*	*
Flushing toilet			
Compost toilet	*	*	*

deal of effort had gone into actively overcoming the limited availability of water and energy. Some brief examples include the development of complex triple reuse water systems in Earthships (United States) and buying water as truck shipments at Panya Project (Thailand). The reliance on spring water systems at Lama Foundation (United States) and La Ecoaldea Del Minchal (Spain) meant that rainwater was not harvested, but it still required connecting miles of

black water pipe to the nearest spring. Energy supply tended to be solar or propane. In Spain, in the eco-communities, solar panels were the primary source. Most places did not have many panels and although some struggled to get a reliable supply (because they could not afford good batteries), most had power all year. At the Lama Foundation, because solar capacity was limited, residents used propane gas to heat water for their showers.



**Figure 5.** Bathrooms at Panya Project (Thailand), Earthship Biotechture (United States), and El Valle de Sensaciones (Spain). (Color figure available online.)

These examples illustrate that eco-communities identified creative ways to ensure that they had water and energy supply to their bathrooms. Even those with plentiful water encountered other issues, such as poor solar capacity or the ability to afford the necessary technological infrastructure, and others encountered barriers in building regulations.

Understanding how other eco-communities built their infrastructure for water and energy enables us to explore potential resource reasons for its absence in British eco-communities. Given the similarity in resource problems among these nations and the similar availability of water and energy resources, however, the resource perspective does not in itself explain why British eco-communities actively deprioritized bathrooms. In other words, a lack of plumbing skills, the high cost of heating water, and a lack of reliable water supply are all issues that other eco-communities put effort into resolving. They are not insurmountable problems.

### Challenging Bathroom Norms

In the case studies in Britain, bathrooms were often the last to be built and were often unfinished. Few eco-houses had ready access to hot water or even running water. Bathing at Green Hills and Landmatters was limited to bucket washes in kitchen or bedroom spaces. In Britain, the functionality of a bathroom was also spatially dispersed, with the toilets often being located far from washing facilities.

This challenge to bathroom norms is rooted in a known British historical resistance to bathing facilities and to-be-expected environmental objections. As discussed earlier, the British have never been renowned for their bathrooms; indeed, even the wealthy did not overly embrace their installation. In the 1890s, U.S. visitors were purportedly horrified at the primitive bathing facilities in Britain. It took the British several years to adopt the U.S.-invented shower and more than sixty years to follow the U.S. trend for en suite bathrooms (Ierley 1999; Worsley 2011).

In terms of the environmental impact of bathing and bathrooms, the rejection of the need for high-flow showers, chemical hair and skin care lotions, and the need to wash daily also fits expected environmental practices. In each case study, electricity was generated through solar and wind renewable systems, but it was not used for bathrooms; instead, it was directed to kitchens and living spaces. In other words, the ready adoption of photovoltaic panels undermines any suggestion

that a rejection of bathrooms was indicative of a broader rejection of technology. Rather, that technology was put to different, seemingly more important, uses.

For some, bathrooms were deliberately rejected in favor of discomfort. As Kraftl (2007) suggested, some in eco-communities actively seek discomfort in the process of achieving their end goal of an ecotopia: the very mechanism required to achieve an ecotopia has to be discomforting for both society at large and those inside such communities. It is both about sacrifice for the environment and a way of showing themselves as being sufficiently dedicated to their cause. There were elements of this sacrificial approach at Tinkers Bubble and Landmatters.

For the majority of interviewees in the case studies, however, their approach to bathrooms was not a rejection of comfort (and consequent embracement of discomfort) but, rather, an attempt to reconfigure what a bathroom and comfort were. Returning to the question "What is a bathroom?" there is a clear disjuncture between what those in the case studies understood a bathroom to be and do and conventional demands on a bathroom. This reconceiving of comfort sought to reject the association between comfort and privacy, bathrooms, and homogenous temperatures and instead reconfigure comfort as being about cleanliness, sharing, bodies, and thermal delight. This does not reject all understandings of comfort but instead seeks to reconceive some of them into more environmentally sustainable practices.

#### Comfort Is Cleanliness

For eco-communities, a bathroom was primarily a space (not even a room) where one could wash his or her body. Hence, it was not necessary to have a separate dedicated space as long as the ability to wash existed. This approach challenges the normalized relationship between bathrooms and cleanliness. It is perfectly possible to remain clean by using a bowl of water and thus a lack of a bathroom does not imply a lack of cleanliness. That said, these eco-communities did challenge the notion that daily full-body washes were necessary by washing on average weekly rather than daily. This in itself serves to reconceive bodily comfort as not requiring daily washing.

#### Comfort Is Collective

In the case studies, the bathing facilities were communal, not private; even when conducted in the

private home, bathing was often practiced in the kitchen rather than the bedroom. Bathrooms were thus rarely private spaces; rather, they were shared, communal spaces that, although they could be used privately, were also used collectively. In other words, one bucket of water would be used for several family members and baths were shared. Bathrooms are used for relatively short periods of time and these case studies illustrate that it is not necessary to have a private bathroom (especially the current trend for en suite). Developing a commons for bathrooms, an ethics of sharing, not only critiques the quest for privacy but also criticizes the concept that comfort involves privacy and harks back to the days of communal bathhouses (Jarvis 2011). It is also a political act to accept that sharing bathroom space across a whole community (and thus well beyond the family) is sustainable and comfortable.

### Comfort Is Embodied and Sensual

This more collective approach to bathing also enables a more sensual approach to comfort. Comfort becomes less about an individual bathing and more about the comfort of washing with others' bodies and in washing others. Comfort becomes about not just how one's body feels but each body in relation to another's. Bathing also becomes about connecting with nature. The simplicity of these bathing arrangements, the implications in terms of collecting, conserving, heating, and disposing of water, and the need to go outside as part of the process (to collect materials or access facilities) connects residents with nature in a way that conventional bathrooms do not. This process both reminds residents of where they are and the resources they are using and satisfies their connection to that place.

### Comfort Is Thermal Delight

The lack of en suite bathrooms meant that residents at each case study site did not enjoy the homogenous temperatures of a centrally heated (or air-conditioned home). Instead, they endured the sharp contrasts of temperature between inside and out and between cold air and warm water. Residents relished the thermal delight of different temperatures. Indeed, Will (Green Hills) spoke of the joy of having a "dip in the river on a hot day."

In these ways, bathing was still relaxing and pleasurable for many at the case study sites. It did not become simply a utilitarian act. For example, the bathhouse at Tinkers Bubble was a relaxation room. Given the lack of access (in a community of sixteen people plus visitors and volunteers, only one bath was allowed a day), however, a bath remained a monthly treat. In other words, the comfort was reconfigured temporally and spatially away from the convenience of a privately accessible bathroom.

## Conclusions

This article has used an analysis of bathrooms in British self-built eco-communities to interrogate the ways in which comfort is reimagined. Thus, this research has demonstrated how comfort is practiced, rather than experienced passively. Examining bathrooms allows us to begin to understand this important interplay among buildings, practice, and comfort and is a useful space in which to explore how collective conventions can be changed and more sustainable practices developed. Finally, this article has sought to extend and challenge social practice theory to better engage with those already living a highly ecological lifestyle.

Comfort is not predetermined or fixed but is instead a process that can be renegotiated. As demonstrated, there are existing working examples where comfort has been reconfigured to reduce the negative environmental consequences of conventional expectations for comfort. This reconfiguration of what a bathroom is, and should do, helps inform the debate as to the perceived tension between sustainability and comfort. If comfort in bathing practices can be reconceived as being about cleanliness, sharing, bodies, and thermal delight, then this can have implications for other everyday practices. Therefore, conceptually, this article challenges the presumption often propagated in social practice theory that practices cannot be changed unless social and material infrastructures are also radically altered. The examples explored in this article illustrate that radical change can be instigated despite significant institutional and cultural barriers. The creative and resourceful measures by which residents at these eco-communities established a sense of comfort suggests that other forms of comfort (particularly those that are resource greedy) could also be reconfigured.

Although it is important and necessary to understand why people perpetuate environmentally

unsustainable practices, unless we explore how it could be reconceived we miss a vital part of the story. The bathing practices explored here were reconceived in knowingly alternative and marginal spaces. We need to know what these practices are, what possibilities they offer, and in what context they exist. Too much of the existing work on sustainable practices concentrates on the mainstream and the conventional, exploring dominant social and material infrastructures. This misses the opportunity to understand where the quest for sustainability is heading and fails to explore the possibilities of a radically different route.

This article has illustrated the detail of what these alternative possibilities look like and how they work. The case studies make visible all of the different elements of what constitute bathrooms, elements that are often hidden from residents of conventional housing. Plumbing, waste disposal, heating systems, and water provision are literally hidden in walls and under houses. The engagement required with all of these elements has ramifications not only for those living in these eco-communities but also their friends, families, and visitors, who also engage with these more transparent bathroom practices. These pockets of alternative ways of being have influence far beyond their apparent remit, however small-scale or marginal they might appear.

This engagement with the elements of bathrooms is not, of course, free from problems. Residents of the case studies had all endured a process of experimentation and failure. Rather than repeat these mistakes and potentially dissuade people from being more ecological, we need to learn how residents overcame the challenges. There is still too much focus on institutional, governmental, and capitalist barriers to alternative ways of living. There remains a need to explore how people negotiate and overcome these barriers, often through informal skill sharing, creativity, trial-and-error, and invention. As such, social practice theory needs to be engaging more with some of the hopeful solutions and alternatives, with those practicing the alternatives, so that we can understand how it is possible (and comfortable) to live differently.

Simultaneously, this article urges a rejection of conventional norms of comfort. The notion of comfort as an attribute has been repeatedly called into question by eco-architects (e.g., Humphreys 1978; Brown and Cole 2009) and a more embodied sensual understanding of comfort advocated by academics (Day 2002; Pink 2004). All too often, however, government

bodies and commercial interests encourage the notion that comfort can be standardized. This article calls for more varied examples of how, in what ways, and in what context comfort is reconceived and practiced. Such an approach is particularly pertinent and needed in encouraging greater understanding and acceptance of eco-housing where, as already explained, there remains a presumption that ecological living requires a foregoing of comfort. Central to this task is the need to explore how comfort is practiced, rather than just passively felt or experienced. Comfort, as demonstrated in the example of bathrooms, becomes an active configuration of achievements and therefore a condition over which individuals can have significant control. This focus on the practice of comfort gives more agency and possibility to doing comfort differently.

Exploring bathrooms in British eco-communities has demonstrated the relationality of comfort, how it is therefore possible to reconceive comfort, and how comfort can be understood as a practice. This focus on practices also challenges social practice theories to more purposefully engage with those already living a highly ecological lifestyle to understand how radical change is navigated. It is from this perspective that this article offers hopeful ways forward and avenues through which comfort, sustainability, and practices can be better understood and ultimately improved.

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