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**RESEARCH**

# Building Castles out of Debris: Reuse Interior Design as a 'Design of the Concrete'

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Large amounts of waste are produced when old furniture is routinely replaced with new as a result of relocations and reorganizations in both the private and the public sector. This article is an anthropological study of reuse interior design, an emerging field of interior design that seeks to enhance sustainability in homes and work spaces through using existing furniture and materials. Redesigners interact with materials not only to explore what they offer *within* the design concept but also how they may *affect* that concept. Recent theoretical debates within posthumanism and new materialism illuminate how human and non-human forces together co-produce socio-material outcomes. This perspective is here brought into productive conversation with Claude Lévi-Strauss' work on the science of the concrete, where he outlines a method for producing new knowledge about the world based on available resources. Building on this conversation, the article argues that the redesigners' work–assisting existing materials and things in their continuous becoming and turning them into new designs–can be seen as a 'design of the concrete'. This has wider implications for current debates about the transition into circular economy where recycling, rather than reuse and repair, plays an important role. However, recycling tends to reduce used things simply to their material constituents, depriving them of important social, cultural, and material values. The redesigners' studio represents a space in which used things and materials are creatively repaired, redesigned or upcycled to be used for new purposes rather than being reduced in material recovery and recycling schemes.

**Keywords:** reuse; interior design; bricoleur; circular economy; anthropology

> Consider him at work and excited by his project. His first practical step is retrospective. He has to turn back to an already existent set made up of tools and materials, to consider or reconsider what it contains and, finally and above all, to engage in a sort of dialogue with it and, before choosing between them, to index the possible answers which the whole set can offer to his problem. He interrogates all the heterogeneous objects of which his treasury is composed to discover what each of them could 'signify' and so contribute to the definition of a set which has yet to materialize but which will ultimately differ from the instrumental set only in the internal disposition of its parts.
>
> Claude Lévi-Strauss (1966: 18)

> As a realm outside of formal value assessments, rubbish also provides a creative reservoir of material and social potential, one that can be harnessed to either effect dramatic change or maintain relative stability.
>
> Joshua O. Reno (2017: viii)

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## Introduction

'You get 200 new ones for 59 kronor ($8), and they are easy to screw in.' suggests John as he watches us work, and continues: 'Are those new?'

'That's not what we do! What do you do with these?' replies Maria holding up a used screw.

'Throw them away!' says John with emphasis.

'That's not what we do!' Maria repeats.

From my position underneath a three-metre long bench, screwing reclaimed wooden planks to a junk steel structure, I listen to the playful quarrel between Maria, one of the redesigners, and John, a regular visitor to the studio. John has caught us struggling to drive some 200 screws into a bench that is going to be delivered to a local school as part of a reuse interior design project. He teasingly preaches the merits of using mass-produced new screws instead. Maria responds in kind by holding up a salvaged screw, making a point about the merits of what they indeed do: reuse. Earlier that morning, Melissa, the other redesigner, had brought what she called a 'candy bag' of assorted salvaged screws and Maria and I are rummaging through it and some boxes of old screws looking for ones that will fit. Cramped under the bench, I envisage the jars of shiny new screws that the nearby DIY-store

> sells–all standard size and straight instead of rusty, worn and crooked like the ones I'm trying to force into the wood. But, I tell myself, 'this is what we do'. John shakes his head in amusement and after a while leaves the studio. In growing frustration, Maria and I pause, locate a jar of unused, standard-sized but nevertheless salvaged screws hidden away in the studio and, relieved, get back to work.[2]

Reuse design, or redesign, (Swedish, *återbruksdesign*) is an emerging field of interior design that reuses things and materials to enhance sustainability in homes and work spaces. For redesigners materials are not only sources of inspiration but also the medium for their designs. They restrict themselves to using only existing materials, which then play a crucial role in the design process. This was a virtually unknown professional field in Sweden until recent years, when it began to evolve in tandem with a general popularization of second-hand goods, retro style and reuse in response to mounting concern about environmental degradation and climate change (Appelgren 2018; Appelgren & Bohlin 2015; Brembeck & Sörum 2017; Ekström & Salomonson 2014; Fredriksson 2013). (**Figure 1**).

The Swedish government has recently declared the 'circular economy' to be a cornerstone of its sustainable consumption strategy (Ministry of Finance 2016). The principle of this doctrine is that the circular flow of materials is essential in enhancing the efficiency of resource usage and in reducing the devastating ecological consequences of waste accumulation (McDonough & Braungart 2002; Webster 2017). Reuse, along with recycling and repair, take centre stage in the transition into a circular economy. Giving the notion of the circular economy the status of official policy, lifts reuse and second-hand out of the domain of private homes and individual consumers and into the realm of corporate offices, public procurement agreements and established furniture manufacturers. In a world that is struggling to resolve the seemingly contradictory desires for both ecological sustainability and economic growth, circulation is an appealing idea. Recycling, reusing and repairing items may help us halt the destructive exploitation of virgin resources and the accumulation of waste without having to reduce consumption. Reuse thus offers a powerful method for addressing one of the most pressing challenges of today's globalized world.

**Figure 1:** Mix of reuse, redesign, and custom build in a kitchen space. Photo: reCreate Design Co.

However, although recycling, reuse and repair seem appealing in theory, in practice, they are often fraught with complexity and contradictions, even in the most trivial everyday situations–such as building with old screws (see Alexander & Reno 2012; Gregson et al 2015 and Valenzuela & Böhm 2017 for discussions). The current dominant linear economic model of 'take-make-dispose' largely forecloses circularity–established structures, practices and regulations make the extraction of virgin resources at one end and waste disposal at the other seem efficient and convenient. The reuse and repair sectors are struggling to develop forms and routines that make them functional and attractive alternatives particularly on a larger scale (Crocker & Chiveralls 2018; Norris 2017). The exception to this is the thriving recycling business, which fits relatively easily with the current economic model, but also produces its own contradictions. It tends to use relatively high levels of energy to extract material value through processes of reduction (downcycling) (MacBride 2012). The recycling process erases the social, cultural and material values that things acquire through use and circulation (Appelgren & Bohlin 2015; Appelgren & Bohlin 2017; Gregson and Crewe 2003; Herrmann 2015). Furthermore, expanding recycle flows tend to become globalized and thereby increasingly disembedded in material, social and geographical senses (Lepawsky & McNabb 2010). When waste in the affluent parts of the world is turned into resources poorer communities often bear the ecological and social burden of dismantling, sorting and purifying waste materials (Sullivan 2014). And although recycling, reuse, and repair may enhance sustainability, it may also mean that toxic elements are inadvertently reintroduced into everyday life (Crang et al 2012; Grant & Oteng-Ababio 2016).

In today's transitional stage of economic models, this article aims to make a theoretically grounded ethnographic contribution to our understanding of the practice of reuse by studying *with* the people and materials that are involved in it (Ingold 2008: 82). Reuse interior design is particularly interesting because of the way it reintroduces existing used materials into the creative design process. This is a form of creating that does not simply rely on an autonomous human subject imposing form on passive materials (Ingold 2012: 432–435). Instead, the work

of redesigners is more akin to growth–a process through which human and non-human becoming unfolds co-responsively (Appelgren & Bohlin 2015; Ingold & Hallam 2014). 'Production…' writes Tim Ingold, '…is a process of *correspondence*: not the imposition of preconceived form on raw material substance, but the drawing out or bringing forth of potentials immanent in a world of becoming' (2012: 435). This resonates with recent theoretical developments in posthumanism and new materialism, which attempt to decentre humans in social analysis to account for the way human and non-human forces together co-produce social outcomes (Barad 2003; Barad 2011; Haraway 2008; Ingold 2011; Latour 2005; Tsing 2015).

The importance of materiality and things in social life and the formation of subjects is not new (Appadurai 1986; Miller 2010), but recent theoretical debates have taken this further. For the purpose of this study, I draw on the following three insights. Firstly, social life is materially entangled which means that humans and non-humans are collaborators in social processes (Holbraad 2011; Ingold 2011; Latour 2005). Secondly, materials are best understood as processes–open and unfinished entities in continuous becoming (Barad 2003; Bennett 2010; Ingold 2012). Thirdly, materials are vital forces engaging humans affectively in co-responsive exchanges (Bennett 2010; Ingold 2012).

The material embeddedness of social life, and the human/non-human interaction that redesign illustrates and that new materialism and posthumanism are concerned with resonate with the structuralism of French anthropologist Claude Lévi-Strauss. In his work on abstract and concrete science (1966), Lévi-Strauss regarded mythical thinking as an alternative to modern science for producing knowledge about the world. His stress on the practical and sensory entanglement of humans and cognitive materials accords well with vital materialism (Barad 2003, 2011; Bennett 2010; Ingold 2012) and thus sheds light on the practical work of redesign today. In what follows, I therefore use Lévi-Strauss' insights into 'the science of the concrete' and intellectual bricolage–making do with 'whatever is at hand' (1966: 17)–to analyse the creative use of used materials, things and furniture in interior design – a kind of 'design of the concrete'.[1] The quotes and ethnographic vignette that open this article highlight some of the key elements of the practical work involved in reusing materials for new interior designs. Fieldwork revealed how stocktaking of what was 'at hand' nearby or through social networks was a formative part of the design process. The quality and character of materials were evaluated, techniques for repairing, upcycling and repurposing were assessed and various treatments and tools considered. The redesigners considered, reconsidered, selected, indexed, interrogated and made discoveries as they engaged with things and materials.

The field method used in this anthropological study was designed to examine the ways that redesigners and materials were entangled in interaction, and how redesigners continually brought things and materials into being. My own position that I describe above, crouched underneath a bench with a screwdriver in my hand, captures the type of long-term participant observation methods that I find fruitful for studying the relationship between people and materials in the creative process and the way they continuously respond and attune to one another. The discussion presented below emerged from approximately six months of ethnographic fieldwork conducted over a total of eighteen months at a redesign studio. I participated in the daily work of extending the lifespan of various objects and materials in designing and creating interiors and furnishings for private and public work spaces. I worked alongside people and their materials to capture the nuances of this work through a kind of sensory ethnography (Pink 2015). Listening, talking, seeing, reflecting, touching and even smelling (for instance, when we had to dispose of some beautiful old oak floorboards because they were stained with dog urine) were all important means of learning about the people and their materials. It was important to interact closely with both the people and their materials so as to understand how each responded to the other and how this unfolded over time as a form of collaborative work (Bennett 2010; Ingold 2012; Ingold 2014).

The studio was run by a small company owned by two interior designers who profiled their company as a social enterprise that aimed to 'rehabilitate both the materials and people', and they had about eight 'participants' working in the studio.[3] Many of the activities centred around the studio itself. This was a space of 200 square metres, mainly packed to the ceiling with all sorts of reclaimed things and materials and with just a few clear spaces to work in. The company was established on a small scale several years ago but had recently grown thanks to work commissioned by companies, schools and the municipality (**Figure 2**).

Fieldwork also took me beyond the studio. This study forms a part of a larger project for which I have been conducting periods of anthropological fieldwork since 2015 and that examines the emerging market for second-hand and reused goods in Sweden. I have been focusing on the field of interior design for two years, talking to and working with redesigners, conventional interior designers, furniture makers, corporate and public sustainability and procurement officers, sustainability eco-label representatives, second-hand furniture retailers and others.


**Figure 2:** The studio. Photo: reCreate Design Co.

## Design of the Concrete

Lévi-Strauss' (1966) work 'The Science of the Concrete' is concerned with different knowledge regimes and it contrasts mythical and scientific thought. Lévi-Strauss argues that while modern science establishes abstract principles, methods and structures for gaining knowledge about particular events or elements, mythical thought operates the other way around, starting with whatever cultural elements are 'at hand' and reusing them to construct new generalized structures and knowledge. Although Lévi-Strauss' discussion is about cognition, he illustrates these modes of thought with examples of people engaging in practical work with materials: 'the engineer is always trying to make his way out of and go beyond the constraints imposed by a particular state of civilization while the "bricoleur" by inclination or necessity always remains within them' (ibid: 19). These two figures could equally be used to illustrate different modes of working with interior design–one works within the material conditions of the particular situation while the other strives to break free of them. The conventional interior designer tends to avoid 'remains and debris' (ibid: 22) when creating new spaces, but the redesigner stays with them and uses them as tools and resources.

For the redesigners I worked with, this set the agenda for the enterprise–'what we do'–and set them apart from conventional interior designers. Since their goal was a more sustainable community and lifestyle, the redesigners strove to avoid newly produced goods that they saw as exacerbating environmental degradation through both exploitation of virgin resources and further accumulation of waste. Instead, they focused on extending the lifespan of existing materials by salvaging and reusing materials that they had found, received or purchased and they allowed these to influence the design process. This does not mean that they opposed consumption. On the contrary, renovating and buying items for consumption constituted the basis of their business and profit model. The redesigners aimed to create stimulating and creative work environments, which they maintain are vital for people's wellbeing and productivity. In short, they promoted renovation as a way to renew and re-energize organizations, but not more consumption of newly produced furnishings.

The conventional methods of renovating workplaces by throwing away old items and replacing them with new is well established. Each year in Sweden alone, office furniture is manufactured to the value of approx 5,25 billion SEK ($656 M) (TMF 2017: 4–5). It is harder to find statistics for how much is disposed of but the Västra Götaland regional authority (population: 1.7 Million) estimates a figure of around 200 million SEK ($25 M) annually.[4] According to people I have spoken to who are involved in this sector, relocations and reorganizations in both the private and the public sector routinely involve disposal of old furniture and purchase of new. Stories abound of high-quality, functional furniture being dumped en masse in skips. I was told that pieces of older furniture were often simply regarded as obstacles for creating the completely fresh start that many organizations wanted when they moved premises or restructured–they were a kind of material hindrance to non-material transformations. The logistics of reusing old items were thought to be complicated and costly and the furniture was considered outmoded and shabby. Renovation usually meant entirely new, 'stylish' interior design with up-to-date furnishings, and staff in workplaces often interpreted this as a sign of the company's prosperity and an expression of care by the management. This differed from the sphere of private consumption, where second-hand and reuse have already become popular for economic, lifestyle or ethical reasons (Appelgren 2018; Appelgren & Bohlin 2015). However, some of those from public organizations have recently begun pointing out how incongruous these wasteful practices are with sustainability policies. This has prompted redesigners, second-hand retailers and industrial re-manufacturers to start providing alternatives that include finding new uses for old furniture and it is encouraging cross-sectoral initiatives to examine what administrative, legal and logistical obstacles there are to reuse (Appelgren et al 2018).

Conventional interior design forms part of a broader system of production and consumption. Each element, from decision making, procurement and leasing to labelling, furniture fairs and product catalogues are based on the premise that old furnishings are replaced with newly produced ones. This dominant model leads to the continual production of waste, which redesigners constantly confront. One public servant I spoke to during my fieldwork told me an illustrative story. When refurbishment of her office was being planned, she proposed reuse instead. She spent a considerable amount of time receiving instructions about how to proceed, and was then told to use the bare minimum of old furniture with no budget for the redesign work itself. Ultimately, the office was refurbished using entirely new office furniture anyway and she was told that this was in the best long-term interests of the organization. She thought that those in decision-making positions felt that breaking with established routines by starting to reuse old furnishing was inconvenient and made planning less predictable and manageable.

Conventional interior design may be understood as a 'design of the abstract'. Designers start from scratch with an empty space that is to be furnished according to the constraints only of a particular set of ideas and requirements. By contrast, the 'design of the concrete' 'remain within' an evolving environment, with existing things and materials, and set out to direct these into desired outcomes. This work starts from a materially, ecologically and socially embedded position, using 'things at hand' to develop the project. As Lévi-Strauss noted of this process, it imposes limitations on the creators' 'repertoire' since they cannot draw upon external resources (1966: 17). Design of the concrete proceeds by considering and reconsidering what is immediately available, interrogating 'the heterogeneous objects' and 'engaging in a sort of dialogue' with them (ibid: 18). This human-materials interchange is important in order to 'discover' capacities and 'index the possible answers' they provide (ibid: 18). The assembly and assessment of existing things and materials reveals not only what these can offer *within* the

design concept but also how they may *affect* that concept. The elements selected from the 'treasury' do not simply fit into a predecided plan, but act upon the plan and may even transform it. People 'discover' what the materials can do and they engage in a 'dialogue' with them, observing how they respond to various ways of being treated and listening to what this tells them. Their potential relates to their past trajectories and 'always remain limited by the particular history of each piece and by those of its features which are already determined by the use for which it was originally intended' (ibid: 19). The redesigner therefore relies on their imaginative skills to draw upon the histories that things carry as they appropriate them for use in novel designs.

## The Collaborative Work of Redesign

> …the engineer questions the universe, while the 'bricoleur' addresses himself to a collection of oddments left over from human endeavours.
>
> (Lévi-Strauss 1966: 19)

Work in the studio was exploratory. It was inspired by the question: what can things and materials *do*? It involved a regular exercise in discovering what materials were available and what could be made with them, how they responded to treatment and how they could contribute to the completion of a design plan.

As with the bricoleurs that Lévi-Strauss described, the redesigners' first step was also retrospective–to get an overview of what was at hand. This was not limited to searching the studio for potentially useful things. They also explored other sources such as construction sites, charity shops and their social networks. This meant establishing a system to make sourcing more efficient. With limited storage capacity in the studio and a world outside that has infinite quantities of potentially useful materials, it was necessary to be selective in collecting things while at the same time remaining confident that demands would be met when they arose. It was simply not possible to keep too large a stock. Despite the fact that there are numerous suppliers of new goods, conventional interior designers also have to work within certain limitations, but for the redesigners, the lack of storage capacity and the unpredictability of sourcing gave rise to a modus operandi in which everything was possible, but nothing was definite. They were careful to explain this to clients. As Maria put it: 'For example, we can't give prospective clients the exact measurements of a table if we don't yet know what tables will be available for the particular project. The buyer has to just trust us that it will work out'.

### *Sourcing and scavenging*

The contrast between working with reuse and conventional interior design is similar to that between second-hand retailers and conventional retailers. As I have noted elsewhere, second-hand retailers face unpredictability in both supply of materials and demand for their products, and this results in a double vulnerability (Appelgren 2018). It is not a matter of ticking boxes on an order form and sending it off to dependable suppliers when demand arises. The supply chain therefore needs continual management, for example by nurturing networks and systems that will facilitate access to required items in anticipation of possible scenarios (ibid). Sourcing through personal networks is one tactic that sets redesigners apart from conventional designers. At the studio I became involved with, scavenging to meet the particular needs of an ongoing project was also used, and a certain amount of functional or 'funky' items were stored for future projects.[5]

Scavenging today, particularly in the urban Global South, has been portrayed as 'an adaptive response to scarcity' by people who lack other means of provisioning (Medina 2001: 238). Reclaiming waste from households, at landfill sites or in areas of the urban landscape is often regarded as a stigmatizing economic strategy of the urban poor (Millar 2018). However, pressure on resources and problems with the accumulation of waste has led to the emergence of a kind of gentrified scavenging in the context of Northern European redesign, where it is mainly driven by ideological, environmental and aesthetic concerns (Ottosson 2008).

For the redesigners I worked with, construction sites, demolition sites and marginal urban spaces were generally good places for scavenging. A few locations in Gothenburg had provided the studio with large quantities of tools, equipment and materials, especially during the build-up phase of the company some years ago. Typically, these were small, run-down industrial areas, workshops and garages that had fallen into disrepair and which the council had decided to clear for redevelopment. These urban interstices were gold mines for salvaging materials that would otherwise have been dumped when the areas were tidied up. The area around the studio itself was one such site that the council was in the process of 'upgrading'. It was still a rich source of scrap. Here, we sometimes went 'shopping in nature' as one redesigner called it when we brought along an old shopping trolley to pick up things that 'might come in handy one day'. However, going out looking for things that might be useful did not occur as often during my fieldwork as it seemed to have when the company was starting up. Now, the participants were looking more for specific items for particular projects. On one occasion, for instance, everyone in the studio was asked to keep a look out for plywood and when somebody saw some stacked up at a construction site in the city centre, one of the redesigners asked the construction company for permission to take it and later on, we picked it up.

Although the redesigners saw the world as being full of cast-off goods that could be reclaimed for interior designs projects, it was not always easy to acquire what was needed. One of the redesigners told me one morning of how she had just spotted something useful at a demolition site and had stopped to ask if she could have it. She was told to ask the site manager, but her request was turned down on the grounds that they could not guarantee that there were no toxins in the materials. She felt this was largely just an excuse, and that strict safety regulations at construction and demolition sites made managers adopt a better-safe-than-sorry attitude and restrict access to these sites.

Scavenging was often seen as an unconventional way to acquire things to which access had been restricted for safety reasons. Sometimes, it was also regarded as an unorthodox exchange that triggered suspicion. The redesigners had on one occasion contacted one of the large charity organizations in the city to ask for any leftover second-hand books for their redesign projects. They knew that this organization was swamped with old books, many of which would end up in the skip. So surely, they thought, their proposal would be a win-win solution that would benefit the environment. However, the charity rejected the idea because they said that a single small actor occasionally salvaging a limited number of books would solve their problem with large quantities of old books. The redesigners suspected that this decision may have been influenced by the fact that it would be a transaction in which they would get something for free and turn it into a marketable commodity. This certainly seemed to be the case in another incident that was mentioned several times. One of the major cultural institutions in the city had invited the redesigners to join a social media community in which materials from cultural performances that were now over were distributed to actors for use in other productions. However, soon after this, the redesigners were denied access, apparently because the legitimacy of commodifying items from a cultural institution had been called into question. Evidently, activities that involved making money out of free goods, even if they were considered rubbish, affected people's perception of their value and the nature of the exchange. Usually, donors were happy to get rid of unwanted things and felt good about them being reused, but sometimes the idea that somebody was profiting from something received for free caused tensions (see Thompson 1979 on the dynamic potential of waste in creating value). The redesigners were clearly aware that this was a socially (and sometime legally) unregulated territory that they must navigate carefully. When we were talking about an unwieldy band of scrap aluminium that decorated the studio ceiling, they told me they had spotted it near a skip but had waited a full month before daring to pick it up. 'You must not be afraid of a little bit of stealing', one of them said.

### *People and materials in responsive sociality*

Sourcing the materials was just the first step. Most of the time in the studio was spent working on them. This included planning, measuring, cutting, sanding, painting, gluing, drilling and nailing all sorts of materials. If sourcing made the redesigners into rubbish collectors, the studio activities turned them into craftspeople who set the materials onto planned trajectories and following their unfolding to realize a planned design concept. On one of my first sourcing trips we picked up some discarded oak floorboards from a house that was being renovated. Melissa explained what their work was about while we were sorting through piles of planks:

> We come very close to the whole process and the materials. Usually, as an interior designer, you stand and point, but we do the work ourselves. Sometimes we wonder if we are doing something wrong (laughs). But we know the histories, where all the things come from. Not only in general, like 'Bohusgranit' (trendy type of granite), but also the individual histories. I wouldn't say ordinary, but conventional interior designers never do things like this [picking up old oak floorboards].[6]

This process brought people and materials together. Skills and knowledge of techniques for working on the materials were, needless to say, crucial in achieving the desired results. However, the bricolage principles of making do with what one has meant that trial and error rather than conventional methods often provided the way forward. This explorative strategy enabled a continuous dialogue with the materials, sometimes with unexpected results.

Sometimes, the materials seemed annoyingly stubborn and refused to respond in productive ways. This was particularly frustrating when much time and energy had gone into redesigning them, with little result. One example was two chairs of the kind typically used in conference rooms in the 1990s, with blue textile upholstery and slim tubular metal legs that were spray-painted grey. The initial idea was to sew a number of differently shaped and colored buttons onto the back of the chairs. One participant tried this out, using different designs, but the result was unsatisfactory and the buttons just seemed to hang lifelessly. Then decorative stitches in different coloured threads were added, but that did not seem to do the trick either. Then someone placed a piece of curtain hem over part of the back of the chair to create a speed stripe effect. Some thought it was an interesting idea, but everyone agreed that it still looked lame. Somehow all attempts to liven up the chairs seemed to fail (**Figure 3**).

Towards the end of one day, Maria started updating us about the ongoing projects and we inevitably got stuck talking about the blue chairs. Everyone looked at them

**Figure 3:** Chairs. Photo: the author.

and took a step back to figure out what was wrong. Maybe there was no hope of making them look 'funky', as the redesigners put it. After a while, we agreed that the problem was the grey steel legs, which made them look institutional. We began brainstorming as we rummaged through the studio, trying various solutions. Finally, someone slipped some black plastic tubing onto one chair leg. 'What a find! That's real repurposing,' said Maria, pointing out how something designed for a certain purpose had been used in a new and unexpected way. I assumed we could then put the black plastic on all four legs and this would solve the problem, but Melissa thought that was too conventional and predictable. So, she suggested using knitting, like the 'guerilla' knitting projects that were now decorating signposts and other metal structures in the city. With two legs completed, someone jokingly mentioned barbed wire, which led to trials with lengths of rusty wire. A whole box of old electric cable was pulled out and colourful cable was wound around one leg, but it would not stick. By now, we had decided to have a different solution for each leg and in the days that followed, we experimented with various alternatives while continuing to work on other projects. Eventually we came up with a set of metal pieces found on a shelf that just happened to fit perfectly. Lastly, wooden legs from a piece of broken furniture were cut into thin pieces and glued to the remaining leg.

The example of these chairs illustrates the collaborative process of solving problems using available resources. Sometimes several people would discuss and try ideas, and other times just one person would poke around in the studio for suitable materials. But the materials themselves were also involved–they responded to human intervention and to each other's presence. Having been salvaged in order to be put to use at some point, the chairs seemed to ask to be redesigned. There followed a process in which people and materials responded to one another. The availability of resources limited what was possible but also made it necessary to break away from conventional methods of problem solving. Barbed wire was deemed too radical and the electric cable would not stick, but knitting enhanced the look and the metal pieces just happened to be the right size. Yet, in another context, with other materials at hand and other people involved, the outcome would have been very different.

### *'Design features' and 'artistic charm'–happening things*

'We call that a design feature. That's how we work here,' Melissa said smilingly after trying to cover a gap in a lampshade made of reused wooden sticks that had not turned out quite as planned. On another occasion, Maria called these things that just happen 'artistic charm'. In these circumstances, 'things just happen' all the time, sometimes leading to mishaps. But these were not considered failures but simply examples of the way that things sometimes respond in unpredictable ways. Chemical reactions might occur, or not. Wood sometimes warped or swelled unexpectedly. Tools left unexpected marks. In an imperfect world of humans and materials, less time was spent trying to maintain (an illusion of) human control, than on collaborating in working out ways to achieve desired results. When things seemed to take the lead, people might jokingly attempt to reestablish their authority over the materials by describing an unplanned result as a 'design features'. This playful inversion of facts and the downplaying of the way the materials sometimes controlled the process seemed to help redesigners cope with expectations from the outside world that designers are supposed to be in full control of the process. The redesigners knew that reusing materials meant flattening the hierarchical relations between things and people. 'You must allow for the things to be as they are,' said Maria, hinting at the integrity of things that she had alluded to on another occasion – an integrity one should not violate. Redesigners and their materials have to adapt to one another throughout the work process in a way that rarely happens in conventional interior design work.

Installing furnishings in their intended locations was a part of the work process that seemed particularly prone to 'things happening'. Putting all the items together in their new environment meant finally seeing the results of a long period of work that had involved many people and materials at the studio. It also involved overseeing the fitting together of the parts into a coherent whole in the particular space. This process presented new problems for the redesigners to solve. Given the time constraints and the logistical challenges of transporting, carrying and keeping track of everything, installment days made special demands of bricolage techniques. No matter how well-prepared the assignment was, there always seemed to be a need for more tools and fittings, so quick decisions had to be made about how best to handle the situation.

When we were installing furnishings at a municipal youth centre, we discovered that the edges of a writing desk did not match. One was too long, while the other was too short. As can easily happen when cutting pieces at an angle, the measurements had been confused, and what seemed to be a simple job of screwing the pieces onto the table now became a redesign challenge. The long piece was quickly cut down to the correct length and re-stained (paint and stain were often brought along), but the short one caused problems. It could not simply be replaced since it was the only one we had, and it had been stained to match the table. We gathered around to discuss possible solutions. One participant suggested using a plastic corner to hide the gap. Another suggested placing a metal angle piece over the corner to give it a 'repaired look' and we agreed that, after all, the story of repair is something to be emphasized rather than concealed. Melissa picked up various angles, corners and hinges that she had found back at the studio and tried them out one at a time. One corner was too small, a red piece of wood created too sharp a contrast and a hinge just looked strange. Finally, a large, rusty iron angle piece was tried, and everyone agreed that it fitted the style and added a visible mark of repair to the desktop, rather than trying to hide it. The result was a 'design feature' with 'artistic charm', a form of design of the concrete. We then found some matching rusty screws in a jar of used screws and used them to complete the

look. The redesigners agreed that this mishap had actually led to the desk being given a finishing touch that went beyond the original plan and contributed to its 'singularity' (Kopytoff 1986).

The decision-making process was often complex in the redesign projects. Humans and materials became somehow entangled and responsive to one another. The redesigners drew up their designs according to a particular vision of what they hoped to achieve, but the materials themselves had considerable leeway in the collaborative process of becoming (Ingold 2012). As noted, the redesigners felt it was important not to violate the integrity of the materials, 'Sometimes it's the material that tells you', said Maria on one occasion, then took a step back and asked, 'now what…?', as if waiting for the wood to respond. However, this attitude did not always hold: 'It is not only the wood that decides', she said on another occasion, when some wood she was staining reacted in an unexpected way.

## Lessons from Beneath the Bench–Concluding Discussion

Redesigners insist on 'staying with the trouble', to borrow Donna Haraway's expression (2016). Their 'design of the concrete' is thoroughly embedded in the material and social environment, making do with 'whatever is at hand'. It differs from the conventional and dominant thinking within interior design, which is often to produce a material realization of a preconceived idea: an empty space is furnished following a particular design plan. By contrast, the redesigner recruits existing materials in a process of formation, a socio-material collaboration of becoming that unfolds dialogically throughout the design process (Ingold 2014). The work involves sourcing materials, drawing up designs, working on and mixing materials, following their growth and becoming, paying attention to how they respond, revising plans and designs and so on. This feedback loop continues until the furnishings are finally installed. This does not mean that conventional interior design work is free of constraints while redesigners is not. All interior design projects are influenced by physical, aesthetic, and environmental conditions. However, the difference lies in how redesigners engage with their materials and explore their potentiality–engage them as collaborators. Ultimately, working with reused materials requires that redesigners 'cultivate the ability to discern nonhuman vitality, to become perceptually open to it' (Bennett 2010: 14). This implies that redesigners renounce human authority in favour of developing caring relationships with materials as they grow and evolve into forms.

Following the redesigners as they affirm the embeddedness and explore the creative possibilities of materials yields insights that are of value in debates about the transition to a circular economy in today's society. The idea of a circular economy recognizes that acknowledging human/material embeddedness offers a possible solution to the destructive effects of our contemporary economic system on the environment. Rerouting material flows to form economic cycles modelled on the ecological cycles in nature can extend the lifespans of materials. This promises to reduce the production of waste and decrease the consumption of virgin resources (McDonough and Braungart 2002; Webster 2017). At present, this occurs mainly on an industrial scale through systems for recycling materials in closed loops and industrial symbiosis. Materials are collected, sorted, melted down or shredded to be reused in new production cycles. This is certainly better than dumping in landfills, but it overlooks the way in which waste may have accumulated other forms of value through use, beyond its mere material resource value, just as heritage objects gain value with the passage of time (Appadurai 1986; Appelgren and Bohlin 2015; Kopytoff 1986). It fails to recognize that reduction is wasteful–reducing used things simply to their material constituents deprives them of important social, cultural and material values that can translate into social, economic and ecological assets. The redesigners' studio represents a space in which used things and materials are creatively repaired, redesigned or upcycled to be used for new purposes rather than being reduced in material recovery and recycling schemes. Adopting a perspective that recognizes the social and ecological embeddedness of people and things is crucial if the idea of the circular economy is not to become a mere extension of the modern efficiency and standardization ideals that are disrupting the way humans, nonhumans and the environment are connected.

Currently, detachment, disentanglement and disposability are reinforced by the social, moral and physical infrastructures of recycling. By contrast, redesigners see caring for their materials as a vital part of their design of the concrete. The lesson in this is that design work, as a form of human engagements in materials, does not have to advance as if there were no yesterday and tomorrow, but can evolve using the debris of the past. This highlights the socio-ecological entanglements we are cast in and how, paraphrasing Geertz's famous quote (1973: 5), the human being 'is an animal suspended in webs of *materiality*'. As Jane Bennett noted, 'all bodies are kin' and are inevitably 'enmeshed in a dense network of relations' (2010: 13), whether people recognize this or not.

## Notes

[1] The bricoleur 'builds ideological castles out of the debris of what was once a social discourse' notes Levi-Strauss (1966: 21).

[2] From fieldnotes.

[3] The people working at the studio were called 'participants' since they were enrolled in government-funded labour market training programmes for the long-term unemployed.

[4] Personal communication with representative of Region Västra Götaland.

[5] This had been even more important in the early years, but had lately become somewhat less important as storage had filled up and other means of sourcing had been established.

[6] From fieldnotes 2016-04-12.

## Ethics and Consent

This study follows the ethical guidelines for social sciences developed by the Swedish Research Council, including informing informants on the research project and their

rights in participating and withdrawing, seeking voluntary participation and consent, as well as maintaining confidentiality and anonymity: http://www.codex.vr.se/texts/HSFR.pdf.

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## Competing Interests

The author has no competing interests to declare.

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