

“What You Can Invent over the Weekend” and the Recurring History of Corporate DIY

Samantha Shorey

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Abstract

At the emergence of the contemporary American maker movement, O’Reilly’s *Make:* magazine positioned making as a method of innovation beyond the system of industrial research and development. These narratives emphasised the value of hands-on, material engagement for inspiring novel ideas and building inventive minds. This Do-It-Yourself (DIY) spirit was positioned as inherently oppositional to the corporate groupthink of “do as you’re told”. Today, dominant public discourses tend to emphasise the power of digital fabrication tools – collapsing much of the innovative potential of the maker movement into a single set of material practices and thus limiting the analytic field of making research.

In this “Entering the Field” format article, I explore two maker texts: early issues of *Make:* magazine (published between 2005 and 2007) and a collection of pamphlets produced by General Motors Information Rack Service throughout the 1950s. These pamphlets were distributed for free in order to inspire and advance General Motors (GM) employees. Through connecting these collections, I both extend and complicate an industrial history of making as a source of innovation. I argue that, more than any particular set of tools, it is DIY practice that defines the core of *Make:* magazine’s vision of making. However, as the pamphlets at GM illuminate, these practices are never fully outside of industries that benefit from the betterment of makers. Taken together, these stories reveal DIY as alternately challenging and contributing to corporate logics – a cyclical process that yields a current cultural moment in which makerspaces are installed in the ground floor of offices at Google, Facebook and, unsurprisingly, GM.

Keywords: Do-It-Yourself, maker, corporate culture, innovation, General Motors, *Make:* magazine

Introduction

Since the emergence of the American maker movement, O’Reilly’s *Make:* magazine has put Do-It-Yourself (DIY) practice at the centre of what it means to make. The cover of their inaugural issue touts “181 pages of DIY technology”. The coffee table book commemorating their first year

of publication celebrates “the creativity and the resourcefulness of the DIY movement” (“Maker’s Corner” 2005:183). While proponents and critics of making increasingly focus on the digital fabrication tools that have become the movement’s most visible symbols, the hands-on and material practice of DIY is at the core of the maker movement’s potential for innovation.

DIY can occur through a variety of materials and practices. More of an orientation than a specific set of skills, DIY is defined through “creative activities in which people use, repurpose and modify existing material to produce something” (Buechley et al. 2009: 4823). How might bringing our attention to DIY open the boundaries of what we recognise as making? DIY activities like fixing, tending and home improvement occur in domestic space. They can be both sustaining and productive of something new. This expansive definition of DIY represents an opportunity to open the analytic field, allowing researchers to recognise an array of innovative practices that occur beyond ubiquitous makerspace tools like 3D printers.

At least since the era of *The Whole Earth Catalog*, DIY culture has championed the perspective that basic tools and empowered action are transformative on a personal, local and global level (Turner 2006; Sivek 2011). Projects like these have, at their core, the ethos of DIY. Yet, their successful integration into high-tech industries suggests that DIY is also compatible with corporate logics. Previous histories of DIY reveal a complementary relationship between DIY culture and businesses that benefit from capable and creative employees. For example, throughout the 1950s ham radio hobbyists were recruited by the emerging electronics industry, in part because their self-taught status was seen as a sign of personal dedication and practical knowledge (Haring 2007). General Motors (GM), in particular, began blurring the boundary between at-home hobby and career training as early as the 1930s with “model coach” kits that groomed young men for the future work force (Oldenziel 1997).

In the following article, I connect these currents in DIY history by tracing early narratives of *Make:* magazine and positioning them alongside a set of mid-twentieth century DIY manuals produced by GM for their employees. Taken together, these stories highlight DIY as a site for producing multiple orientations to innovation, both contributing to and challenging corporate goals.

The General Motors Rack Service

Throughout the 1950s and 1960s, General Motors Information Rack Service printed hundreds of thousands of DIY booklets for the men and women employed in GM production plants and offices (IPA Review 1956). The thin, colourful guides were stocked in reading racks alongside a range of other self-improvement and informational guides. They were staple-bound and light: free to take, easy to bring with you and very popular. A field report from a pro-business think tank praised their success (and their potential as company propaganda) stating, “GM puts out more booklets than automobiles” (ibid: 10).

By 1956, GM had produced more than 500 titles on various subjects – about a quarter of them about “home and family” (ibid: 10). Many of the booklets in this series were DIY guides that

would not be out of place in *Make:* magazine. Titles included the following: *What You Can Invent over the Weekend*, *Rugs You Can Make*, *125 Simple Home Repairs* and *Transformagic: How to Make Old Furniture into New*. In their introductory pages, many of the booklets emphasise that the guides are meant for beginners, amateurs or at-home hobbyists. “There are many things you can make out of concrete without being an expert and at very little cost”, assures H. Wood (1953), author of the booklet *Concrete Ideas* (2). Inside, the instructions use common, inexpensive tools and proportions are measured by the shovel-load.

In GM’s Rack Service booklets, practical knowledge acquired through experience is emphasised over theoretical, textbook expertise. There is also an assumed level of competence in booklets like the *ABC’s of Hand Tools* (1943), which was originally published for the maintenance staff of the armed forces. Adapted for the GM audience, the foreword explains, “it was thought it might be equally helpful to other people – the civilian mechanic, high school student, or amateur repairman found in most households”. Tellingly, each of these audiences is described as having “years of practical experience in the shop” (ibid: 3). They address a wider American culture replete with DIY knowledge.

Today, the key figures of the contemporary maker movement speak nostalgically of the time when America was a nation of makers (Frauenfelder 2010). In higher education, especially, making is framed as a way of reclaiming and reteaching students basic material competencies that have disappeared due to our digital and consumer-driven world (Shorey 2019). Seen alongside the *Make:* magazine narratives that follow, it becomes clear that DIY is valuable because it helps makers develop material skills sets and develop new product ideas. Yet, neither of these completely captures why GM would encourage employees to pursue DIY. Because the DIY guides were distributed at GM plants, a fair number of the recipients were certainly people who were manufacturing car parts on industrial production lines. These workers were handy. And, opportunities for enacting new ideas are limited in Fordist systems that focus on the batch producing of standardised parts (Vidal 2015). Why then might GM have invested in DIY?

A call for submissions in the 1958 *Writer’s Market* provides some clues for the intentions of the rack service booklets: “The main theme is service; to inspire or to make the reader want to advance” (Writer’s Digest Books 1958: 409). DIY was as much about self-improvement as it was home improvement, and the rack service charted the direction of growth. The DIY booklets were published alongside others that educated readers on American enterprise, civic responsibility and the power of positive thinking. This contextualisation gestures towards the way that DIY, like making, is embedded in larger cultural projects of professionalisation and socialisation, which are often gender normative. Especially demonstrative of this point is the series of pamphlets titled _____ *Men Like* which includes *Soups Men Like*, *Pies Men Like*, *Cakes Men Like* and the spin-off *Meats for Men*. The GM rack service booklets were published during the time when DIY was established as an ideal in American culture, specifically as a method to define separate spheres of masculine and feminine domestic work (Gelber 1997). With these realisations comes a renewed attention to the subjectivities that are developed by makers and doers of any creative practice.

Contemporary Corporate DIY

Today, DIY still has a place at GM. GM's "careers" page on Facebook recently posted a video of a group of GM employees building a 3D printer for their new makerspace. "Our makerspace is about collaboration and bringing new ideas to life", they write enthusiastically, ending the post with hashtags for "automotive", "innovation" and "technology". Technologies like 3D printers allow engineers to quickly create physical models of potential components or devices. Rather than sending out specs and computer aided design files for prototype production, employees can DIY on site. Creating a makerspace that supports these activities makes a lot of sense for a company like GM that manufactures automobiles. Although modern cars contain more than a hundred million lines of code, they are inescapably material. Makerspaces have been key in spurring innovations at the nexus of software and hardware.¹

Yet, makerspaces are also becoming a fixture of technology offices for companies whose primary products are digital. In the ground floor of Google's Seattle office is a keycard-accessible workshop. Hammers, pliers and rolls of duct tape hang on a wall of peg-board above a station with a computer monitor and 3D printer. Workshops like these can easily be seen as just another Ping-Pong table or nap-pod: spaces meant to bring a spirit of fun and restorative leisure to what is ultimately professional life. However, makerspaces have a more direct line to the productive and creative goals of technology companies. Founders of the first Google workshops described them as an effort to inspire the "verve and creativity" of the garage workshop where the company was famously founded (Liedtke 2011; see also Turner 2018). As technology companies grow, they increasingly resemble the large firms they once disrupted. Remaining on the cutting edge requires connecting workers to the entrepreneurialism and innovation that brings about new ideas. Corporate makerspaces are, at least in part, an attempt to encourage and capture the spontaneous creativity of DIY practice.

How Making Became Innovative

Throughout their early issues, *Make*: magazine positions DIY as their central intervention into technology culture. Magazine contributors build new creations from raw materials and they engage existing technologies in acts of personalisation, modification, experimentation and repair. Much of the maker movement's value is generated through a narrative that points to DIY as a neglected source of innovation. For example, in a design brief discussing the potential of open source cars, the author posits as if speaking to GM. "Do you want to see innovation in the hybrid electric automobile market? There's an R&D department composed of millions of people in millions of

¹ The most famous example of this is probably the company "Square", co-founded by Twitter's Jack Dorsey. Square is a digital payments app but their key innovation was material: a small plastic card reader that can be plugged into the audio jack of a smart phone. The card-reader was prototyped at a TechShop makerspace in San Francisco (Schwartz 2011).

garages around the world” (Griffith 2005: 46). This instantiation of the corporate abbreviation for research and development (R&D) legitimises the knowledge produced by those tinkering with old cars and sharing information in auto-tech chat groups. DIY practice becomes a source of product development, of innovative ideas.

DIY practice is also valued within *Make:* magazine as a source of innovative thinking. For professional engineers and designers, DIY can light the creative spark that is dimmed by the structures of technology corporations. In its inaugural issues, *Make:* magazine puts forth a perspective on technology industries that frames them as slow, unwieldy and risk-averse. Alternately, DIY is a hands-on and imperfect creative process (Sterling 2006: 18). These material engagements are framed as incredibly productive for innovation because they help designers let go of the minor, iterative improvements that define industrial design processes (Lidwell 2005: 32). From their perspective, corporate R&D will only ever lead to outcomes that are similar to what already exists – rather than something new, divergent and truly innovative.

Both of these narratives position DIY as the driving spirit of the maker movement and a challenge to corporate ideals. It is DIY that disrupts the tired habits of engineering and design to inspire innovation. It is DIY that takes the inadequate solutions produced by technology companies and uses them as the basis for something new. Without DIY, users and engineers can never become *makers*. Yet, central narratives about the maker movement mobilise a limited definition of DIY. Rather than being framed as an approach or mindset, commentary has increasingly centred digital fabrication tools as the impetus for innovation (Upbin 2008; Tierney 2015). Electronics and robotics are naturalised as the de facto methods of making, narrowing who is recognised as a maker along racial and gendered lines (Buechley 2013; Faulkner/Mcclard 2014).

Maker movement narratives that centre digital fabrication further the perspective that its tools – not designers, orientations, goals, and collectives – are the drivers of change. These discourses rest upon a “technosolutionist” point of view in which technology is treated as the solution to social problems (Lindtner/Bardzell/Bardzell 2016). Technosolutionist visions of the maker movement centre artefacts and devices. Garnet Hertz (2018) critically summarises this perspective in his manifesto *The Maker’s Bill of Rights*, declaring “the world’s key problems won’t be fixed by simply adding 3D printing, open source, and the Arduino”. Digital fabrication tools like these are lauded as empowering and democratising because of their “open” design. They make the tools of production, and their associated instructions and schematics, readily available to users. Yet even this type of expertise is not widely distributed. As Shoshanna Zuboff (2019) argues in *The Age of Surveillance Capitalism*, the concentration of technical knowledge in contemporary society creates a small, powerful and privatised labour pool driven by economic imperatives.² Research that

² Zuboff (2019) actually makes this point by comparing modern tech-giant Google to GM at the peak of their success. When GM reached its highest market capitalisation in the mid-1960s, it employed nearly *ten times* more people than Google did in 2016 (312, emphasis added).

locates making through the presence of digital fabrication tools will mostly find this type of maker: where corporate logics bleed into creative practice, constraining paths for action.

The maker movement has long advocated for a democratised view of innovation in which amateurs and enthusiasts are seen as a wellspring of new ideas. Inspired by (and sometimes directly referencing) the research of Eric Von Hippel (2005), early explanations of the maker movement emphasised the creative power of “lead users” and “alpha geeks” (Dougherty 2005: 7; O’Reilly 2009). By using a word like democratisation, Von Hippel invokes a vision of innovation that occurs beyond the elite purview of professional engineering. Yet, design researchers Björgvinsson, Ehn and Hillgren (2010) observe that Von Hippel’s notion of democratised innovation almost always has novel products as its end goal.

Product-centric notions of innovation limit our ability to recognise other outcomes, processes and participants as part of making. As Debbie Chachra (2015) writes in her article *Why I’m Not a Maker*, the maker movement’s emphasis on the production of artefacts reinscribes value into some labour processes, at the expense of others. An activity becomes “making” if it is public, profitable and performed by men. This delineation constrains our field of view to the most visible sources of new technology: makerspaces, hackathons, incubators and start-ups. Here, the methods of design are heavily influenced by the goals of industry and Silicon Valley (Avle/ Lindtner/Williams 2017). They produce a corporate orientation to technology that emphasises action over deliberation and scalable solutions for communities who may not be included in the design process (Irani 2015; Costanza-Chock 2020). Recognising DIY as the engine for innovation in the maker movement provides a new agenda for making research – one that may be capable of recognising innovation done differently and as something separate from high-tech tools.

A Future for DIY

The GM Rack Service booklets first came to my attention in a one-page article printed in the inaugural issue of *Craft*: magazine (the short-lived sister publication to *Make*:). Under the winking title “A Crafty Worker is a Happy Worker”, the founding editor of *Make*: Mark Frauenfelder (2006) describes the stack of booklets he found at the thrift store. “Can you imagine any major corporation today handing out booklets to its workers titled *There’s Magic in Clay*?” he asks (18). Yes, I nod. I can.

DIY – as both a site of self-improvement and a site of innovation – is productive for technology companies. Decades of cultural studies scholarship demonstrates that the cultural industries have long been parasitic on the creative activities of everyday people. Yet, in *Understanding Popular Culture*, John Fiske (2010 [2001]) calls for a renewed research agenda. “Instead of tracing exclusively the processes of incorporation [...]”, we must investigate the “vitality and creativity that makes incorporation such a constant necessity” (18). Bringing our attention, as researchers, to DIY practice opens our field of vision to forms of making beyond those that are predefined by corporate culture. Yet, perhaps more importantly, it refocuses our attention on the ethos of DIY –

the “vitality and creativity”, in the words of Fiske – rather than digital fabrication tools and their outcomes. From this perspective, it becomes clear that mindsets, ways of doing and subjectivities are the most significant products of DIY practices, including making. It is here that we find *both* the radical and the reproductive potential of DIY.

In localised design communities – organised around both practical interventions and more overtly political projects – we see innovation activity that challenges rather than reproduces corporate logics. Activities like these are what Matt Ratto and Megan Boler (2014) have termed “DIY citizenship”. DIY citizenship projects often involve outsider innovators who leverage the skills of home improvement to reimagine public space for collective good (DiSalvo 2014; Light 2014). Though many examples are speculative or ephemeral, similar projects are also widely evident in the everyday. For example, the curb cuts that are now a common part of neighbourhood plans were originally designed by disability activists who altered concrete to improve sidewalk accessibility (Hamraie 2017). In this and other forms of “DIY urbanism”, individuals and small groups that are not often recognised as innovators are nevertheless innovating to improve their immediate communities and address structural failings (Douglas 2018). Here, participants develop new subjectivities and political orientations through making and doing together (Dunbar-Hester 2014).

To be sure, DIY cultures face many of the same challenges as maker culture. There is a long history of DIY movements that have also fallen prey to a kind of technosolutionism that Langdon Winner (1986) calls “build a better mousetrap” theory (78). Like their more corporate counterparts, utopian technological projects also place invention – of albeit more sustainable and more culturally responsive artefacts – as impetus enough for social change. Gender inequality is reproduced even in DIY communities that explicitly seek to disrupt structures of dominance (Dunbar-Hester 2014). And, those who already possess various types of social power have greater resources for enacting DIY in their environments and fewer consequences for doing so (Douglas 2018). DIY is rife with contradictions. As an analytic category, artist Florian Cramer has questioned “whether DIY is still a useful term at all” because of its ability to describe “extremely opposite” creative forces and political agendas (2019). Contradictions like these make DIY a site of ideological struggle rather than discursive closure.

Reconstituting DIY as the core of making has the potential to open the analytic field, casting the glow of innovation onto practices and participants who are too often overshadowed by the dominant discourses of making. In exploring the corporate history of DIY, it also becomes clear that DIY practice holds the same potential for co-option, dominance and exclusion. As Lucy Suchman observes, discourses of design have hegemonic power. They centre a singular mode of future-making – defined by specific locals and material practices – which minimises our ability to see how innovation can be done otherwise (Suchman 2018). However, Dennis Mumby (1997) reminds us that hegemonic control is never complete. It is animated by the *struggle* for meaning, holding the capacity for dominance and resistance, at once. Mumby observes that acts of resistance against corporate systems often fail because workers build shared identities based in other forms

of structural dominance, like patriarchy. How might alternate histories of DIY help us to see the way that the gendering of creative practice constrains the radical possibility of DIY and of making?

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