0.2 A Definition of DIY: Do+It+Yourself

"DIY" is ambiguously undefined as a category despite being a widespread, ordinary, everyday occurrence. According to the New Oxford American Dictionary, DIY, or D.I.Y., is simply an abbreviation for "do-it-yourself." On its own, this definition provides little clarity. Some theorists like Florian Cramer have asked whether the term DIY actually means anything at all, and they suggest that it is "best understood from within, since it includes personal involvement and entanglement."[1] Other theorists, like Julia Lupton, talk about DIY graphic design as being able to be effective "not only to be *part of* a public, but also to *have* a public, to address an audience through acts of deliberate, designed, expression."[2] Although a number of individuals have worked to define the term of DIY, it largely remains an untheorized activity done by millions of individuals on a daily basis, and not a well-worn domain of academic scholarship. As a result, carving out a general definition of DIY beyond the scope of art, design or technology is useful to bring clarity to a diversity of everyday cultural practices.

In North America, "DIY" often brings to mind home improvement stores like The Home Depot (figure 0.2.1) or Lowes that assist individuals in repairing or upgrading their residences. In Europe, DIY is also synonymous with home improvement retailers, with Statistica listing the leading "DIY retailers" of 2019 as the following home improvement companies: Groupe Adeo (France, with €21.3 bn of revenue), Kingfisher (UK, €13.1 bn), and Obi (Germany, €6.8 bn).[3]



Figure 0.2.1

In popular culture, DIY often refers to stores like Home Depot. Courtesy Kaiwen Yang.

However, it also often refers to fabric shops, scrapbook supply stores, hobby stores, and car part suppliers. Although locations like these attract many professionals, the appeal of DIY is that a job can be done cheaper and in one's own time frame. Notable DIY electronic retail outlets from history included Radio Shack, which sold electronic components for tinkerers to modify or create their own electronic products. In general the common assumption is that "doing it yourself" makes the person using the object responsible for making, repairing, or modifying it. However, DIY is significantly more than this—and it has many interesting historical, psychological, and practice-based implications that are worth unfolding. DIY is technically and culturally much, much more than self-repair without the use of experts. Let me explain.

As a foundation, several cultural and artistic movements can be thought of as being DIY oriented. These include the historical punk movement, Fluxus, mail art, and even phone phreaking—the act of using custom electronic devices to get free long-distance phone calls. Punk embraced a bricolage of hacked fashion and a learn-while-you-play approach to music, while Fluxus often explored art as an ephemeral happening or set of instructions that anyone could do. Mail artists experimented in a similar fashion with things that could be sent through the postal service, which placed more emphasis on a peer-to-peer network of individuals instead of a centralized institution like a gallery or a museum.[4] These threads and the interrelationships between different forms of DIY practice will be explained in the pages and chapters ahead.

In this chapter, I break apart the constituent terms of *Doing*, *It*, and *Yourself* to build a definition of DIY. From there, we can consider what it means for artwork to be considered "DIY." Each subsequent chapter of this book continues to add more lexicon around this core definition of DIY—after learning the core of what DIY is in this chapter, the functional attributes and mindset of DIY culture is articulated through in-depth examples—but let's start with the basics of what we mean when we say "DIY," or "do it yourself."

Defining DIY: Contexts of "Do"

"DIY" starts with a "D" for "Doing"—and unpacking the word helps provide a richer definition of the concept of DIY. To start, doing emphasizes action over planning: it is *do* it yourself, not *plan* it yourself. Because of this emphasis on action, the DIY process embraces jumping into an activity without hesitating to think about formal qualifications or past experience. DIY inherently involves actively manipulating tangible objects. For this reason, I base my concept of DIY on Paul Dourish's notion of action as involving "the creation, manipulation, and sharing of meaning through engaged interaction with artifacts."[5] DIY, in other words, is an engaged interaction with physical artifacts. To this basic understanding, I add that DIY involves a particular *kind* of action, one that is intrinsically rewarding, embodied, and process oriented.

Doing Is Intrinsically Rewarding

Generally speaking, DIY practice believes that there is value in manual labor. As philosopher Michael Crawford argues, the manual labor wrapped up in doing has a strong cognitive, social, and psychological appeal.[6] Similarly, sociologist Richard Sennett illustrates that manual labor and the pride that comes from "doing" have been sidelined by contemporary capitalism. Both Crawford and Sennett emphasize craftsmanship, which is defined as doing something well for its own sake.[7] Craftsmanship and DIY both entail manual labor done by an individual, but they drastically diverge in terms of the finished quality of the work. The doing of craftsmanship is built upon skill, mastery, and artisanal expertise developed over time. "Crafting is about a way of being in the world that requires not just knowledge but practice"[8] The doing of DIY practice is the opposite: it requires no technical skill or experience. In this sense, DIY could be described as nonvirtuosic, more about being in the world by attempting to create things. However, I argue that DIY undergirds craftsmanship, rather than being an inferior alternative. In fact, I see DIY as both a precursor and subset of skilled craft. DIY involves the beginning phase of trying something new because it is fulfilling, which may develop into craftsmanship over time as a result of experience.

Doing Is Embodied

"Doing," in both DIY practice and craftsmanship, is an embodied activity where hands and mind work together. Although DIY can be used to describe learning computer programming or other mental skills, DIY "doing" generally places emphasis on work done physically. In the process, it de-emphasizes the traditional Cartesian split between mind and body. This dualism sees reality as consisting of the two independent components of mind and matter. Cartesianism is echoed by early cyberpunk science fiction authors like William Gibson, who describe reality as taking place in cyberspace, or the "nonspace of the mind"[9]. This dualism prioritizes the mind and intelligence, while the flesh of the body is seen as a limiting force and referred to as derogatory "meat."[10] DIY "doing" is more body oriented, with action taking lead over abstract thought. It embraces "meatspace," or real-world physicalness, through action—with hands leading the way. It is the engagement of an individual as a physical being directly working on a particular task. In this way, DIY shares common ground with research in computer science like ubiquitous and physical computing that downplays screen-centric "nonspace of the mind" platforms like virtual reality.

Doing Is Process Oriented

DIY practitioners regularly take pride in the handmade quality of their activities. DIY artifacts often retain traces of how they were built. They have rough, unfinished components, with tool marks or the handmade process still visible in the finished object. Because DIYers enjoy hands-on experimentation and the use of available tools, their work often has a low-fi aesthetic that reveals process, unique use of tools, or even failed attempts. For this reason, DIY culture often celebrates nonstandard approaches to craft. For example, folk art often has human figures or scenes drawn with nonphotorealistic features or perspectives. Punk ear piercings or clothing modifications are done with a safety pin, not a professional tool. Similarly, DIY zines are often created at home, using inexpensive tools like a coin-operated photocopier instead of hiring a professional printing house (figure 0.2.2). In this sense, DIY prioritizes material engagement over conversation or conventional institutions. This is why the bricolage of DIY practices skirt across or ignore formal disciplines. John Jordan, in "The Art of Necessity," sees DIY as outsider art. By this, he means that its process works outside of the language system of art and the conventional disciplines of knowledge, practice, and power.[11]



Figure 0.2.2

Punk posters at the Cranbrook Art Museum in the 2018 exhibition "Too Fast to Live, Too Young to Die: Punk Graphics, 1976–1986." Photo PD Rearick, courtesy Andrew Blauvelt, Cranbrook Art Museum.

Defining DIY: Contexts of "It"

One appealing aspect of DIY is that the object or activity can be nearly anything: music, haircuts, clothing, videos, automobile repair, or electronics. In other words, "do-it-yourself" uses a generic "it" as a stand-in for any possible thing. Through this, DIY activities can use ordinary objects and materials to sculpt bespoke ones. DIY practitioners also tend to use available materials to shape their own identities or cultures by constructing what they feel is missing from the mainstream.[12] Amy Spencer argues that the "it" of DIY is primarily built as an extension of one's identity or to address something lacking in culture at large.

For the most part, the "it" of DIY can be thought of as a bricolage of whatever is available, and this randomness is part of its creative energy. Claude Lévi-Strauss sees that the rule of bricolage is to always "make do with 'whatever is at hand,' that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project."[13] Reflecting this idea, DIY materials are often everyday items initially designed for another purpose. Lévi-Strauss's bricoleurs, like DIYers, are adept at repurposing odd items into use for an array of diverse projects. While the common definition of "making" has been critiqued for reviving masculine mythologies of technical prowess, I rely on a broader definition of "it" in DIY. This semiotic ambiguity invites us to explore how people in non-Western contexts approach their craft. The skill of these craftspeople comes forth when they forcefully bend and frugally remix artifacts in unexpected ways.[14]

One example is how everyday materials like plastic drink bottles can be creatively reconfigured into a tool for connecting a water tap to a pipe (figure 0.2.3). Similar "hacks" include modifying and using a plastic drink bottle for dozens of different tasks, including crafting it into a funnel, a soap dish, bowling pins, bird feeders, a broom, a gas mask or a wasp trap.[15] The same approach of frugally reusing objects in novel ways also applies to more complex technologies as well: in northern rural India, "jugaad" vehicles are regularly built using assorted scrap parts.



Figure 0.2.3

An example of a jugaad approach to DIY, where a plastic water bottle is used in a frugal and unconventional way to connect a tap to a pipe in Mumbai, India. Photo Dinodia / Alamy.

As a result of using available materials, DIY tends to be inviting and participatory. Spencer cites the skiffle bands of the 1950s as an example of using everyday objects—like washboards and tea chests—to make musical instruments. Everyday materials promote a participatory attitude where anyone can join in and do it themselves. When commonplace objects are matched with a low-fi aesthetic that has traces of the builder's process, it acts like a visual public tutorial that invites others to do the same. Participation, as a goal, can be idealistic. While I argue that there is a benefit to utopianism, barriers often exist to achieving full participation, particularly when "making" is naively deployed without giving attention to why participants might find its western masculine underpinnings exclusionary. For this reason, in this book I carve out space for international DIY electronic artists who use everyday objects like electronic children's toys as a starting point for their audio or art projects. If you can then become familiar with their work and processes, everyday objects can be an invitation to do the same hack yourself: an old robotic toy dog spotted at a garage sale, for example, can be an invitation to transform the device into a customized pollution-sniffing robot in the style of Natalie Jeremijenko's *Feral Robotic Dogs*.[16] Because DIY relies on everyday materials, its invitation to participate is interwoven through the ordinary technologies all around us.

It: The Authenticity of the Everyday Object

In addition to being an invitation for participation, the use of everyday materials can integrate questions of authenticity into artistic practice. Writing about the emergence of Dadaism in 1934, Walter Benjamin saw Dadaists' use of materials from daily life as having the potential to shock the art world and challenge the larger question of authenticity in that sphere. He wrote that "the revolutionary strength of Dadaism consisted in the testing of art for its authenticity. Still lifes put together from tickets, spools of thread, and cigarette butts were linked with artistic elements. They put the whole piece in a frame. And they show the public: look, your picture frame ruptures the age, the tiniest authentic fragment of daily life says more than paintings."[17] Using everyday and available materials can also question the established practices or knowledge within a discipline. In the framework of this text, electronic projects from the fields of electronic art and experimental design push us to question the role of electronic objects in everyday life. In the case of electronics, Jeremijenko's use of old secondhand toys initially asks us: "Why are we throwing all of this stuff out?" or "Why do I need to learn how to properly design a circuit board when I can get more interesting results by modifying the guts of a $50 toy?" In this book I argue that obsolete technologies are much more than e-waste—they can operate as artistic agents of personal, social, technical, and political change.

It: Materials Pushing Back and Object-Oriented Ontology

Material objects also clearly push back against the wishes of a maker, artist, or tradesperson. Acrylic paint behaves in a certain way on canvas, and metal behaves in a certain way when welded. Amateurs with less training simply experience more of an improvised process because they do not yet understand the "voice" of the materials. In other words, each material has its own affordances, strengths, and weaknesses. Within DIY practice there is a close link between human and technical-material actants, and bricolage disrupts the structures of how objects are conventionally used. DIY practice is a zone where materials and technologies are not just controlled or mastered, but where they exert creativity on the development process. The voice of the materials is amplified by an amateur DIY practitioner's lack of skill when understanding and controlling the tools, methods, or processes of their project. For this reason, a finished DIY project often looks like a battle between the original materials used and the desires of the maker, with no clear winner.

One framework to understand this interplay is Object-Oriented Ontology (OOO), which envisions objects as having their own voices and motivations.[18] Ian Bogost describes OOO as putting things at the center of thinking about existence. "Its proponents contend that nothing has special status, but that everything exists equally—plumbers, cotton, bonobos, DVD players, and sandstone, for example."[19] Similarly, I imagine DIY as an inquiry into the nature of existence, as a territory where the wills of objects often speak loudly enough to be actants in the creative process. The commonplace "it" materials of DIY can have "efficacy, can do things, [have] sufficient coherence to make a difference, produce effects, [and] alter the course of events."[20] In this sense, DIY culture challenges the way we see "power," "efficacy," "coherence," and other attributes as exclusively human traits.[21]

Defining DIY: Contexts of "Yourself"

The third component term of DIY is "yourself." This requires elaboration, since it does not simply mean "alone." "Yourself" in this context is more akin to working independently, outside of the control of a manager. The independence is not isolation from people—it is freedom from managers who influence a project. Accordingly, "yourself" often implies an amateur driven by personal goals rather than a desire for financial gain. DIY inherits both of these connotations, of appreciating amateurism and freeing oneself from managerial constraints.

Yourself: The Hedonistic Amateur

A starting point for thinking about amateurism is thinking about an "amateur" as someone that does a task without having making money as their primary goal. However, the concept of the amateur is significantly more complex than just being "nonprofessional." As the notion of implicit rewards explored earlier suggests, the amateur is an enthusiast driven more by interest and love than by finances, duty, or occupation. This meaning reflects the origin of the term amateur, coming from the Latin *amare*, literally "to love." Historian Rachel Maines describes the inverse of utility-oriented production as "hedonized production." This occurs when the usefulness of a thing is overshadowed by the pleasure in or love of producing it. Maines tracks the transition of utilitarian chores into leisurely tasks.[22] Consider the examples of gardening, hunting, cooking, needlework, home mechanics, and brewing. In these cases, a lack of material hardship assists in do-it-yourself tasks becoming enjoyable hobbies. In times of prosperity and leisure, chores shift into artisanal crafts. This applies to the bulk of DIY production in art: it is a hedonized, pleasure-oriented process. Its pleasure in production is an intrinsic reward.

However, DIY practitioners are not always unified in not being primarily motivated by finances. DIY practices are often done out of necessity and a lack of resources, while some DIY activities can be embarked on as a deliberate choice. Although financial constraint is a significant factor—and a topic I more thoroughly address in its own series of chapters—it is worth emphasizing that DIY practices operate without a commercially motivated endpoint. In other words, finances often *force* a DIY approach, but financial gain is not usually the goal. The mirror is not duct taped to be resold, it is duct taped to be fixed. Similarly, if someone produces a self-published, photocopied zine on their favorite topic, copies are more likely to be given away to friends than turned into a widely distributed commercial publication.

Lisa Gitelman brings clarity to amateurism in her outline of a history of the amateur press. She writes that, "it would be a mistake to define 'amateur' in contrast to 'professional' and leave it at that … Again and again, amateurs insist to their readers how hard they work and how much time and effort their papers require, while they also stress that their labor is self improving yet money losing, not profit taking."[23] In other words, DIY production is impacted by the commercial forces of the world, but its practitioners are generally disinterested in exploiting commercialism, independent of whether they are motivated by utilitarian or hedonized goals.

Yourself: Unmanaged, Escaping Taylorism

In relation to not being motivated by financial gain, I argue that the distinction of DIY is in individuals operating outside of the control of an external manager. Florian Cramer states that "DIY thus only exists through its other: an industrial economy."[24] An individual's actions have no oversight by a corporate administrator with an MBA, for example. This applies to both utilitarian and hedonistic DIY practices and is vital to understanding how the "yourself" of DIY is significantly different from just doing something "alone."

The theory of Taylorism is useful here because of its significant impact on contemporary industrial culture. DIY practice vigorously rejects the tenets of Taylorism and its discipline of scientific management. As a result, DIY can be thought of as a design process that can be included in Anthony Dunne's concept of the post-optimal.

Frederick Winslow Taylor, born in 1856, was one of the first promotors of measured and managed efficiency in manufacturing, which was initially called the "task system" and over time became known as "scientific management." This system was based on his extensive observations and workflow tests at the Midvale Steel Company in Philadelphia and the Bethlehem Steel Works, also in Pennsylvania. In the spirit of Lillian and Frank Gilbreth, who were researching efficiency of motion and ergonomics in bricklaying and construction, Taylor analyzed the relationship between time and profitability. He did this by optimizing factory materials, tools, employees, and work arrangements in industrial manufacturing. Taylor's major contribution of relevance to the topic of DIY work was not just the optimization of manufacturing processes. Taylorism was revolutionary in its proposal of a rigid separation between management and manufacturing. Taylor vigorously promoted a split between mental planning and manual production, which sped the transition from craft-oriented apprenticeships into production-line manufacturing in the twentieth century.

Taylor's most noteworthy contributions were published in 1911 as *The Principles of Scientific Management*, which was voted as "the most influential book on management ever published" by the Fellows of the Academy of Management in 2001.[25] Taylorism's antithesis was craft-based production, which he believed placed too much agency and control in the hands of the maker. Taylor's approach was to centralize the scattered and personal understandings of how to craft an object through dedicated managers who scientifically analyzed, optimized, and forcefully standardized production methods. Taylor writes, "it is only through *enforced* standardization of methods, *enforced* adoption of the best implements and working conditions, and *enforced* cooperation that this faster work can be assured. And the duty of enforcing the adoption of standards and of enforcing this cooperation rests with the *management* alone."[26]

This enforced standardization saw significant productivity gains and profitability for manufacturers. Consequently, it laid the path for the fields of business administration and industrial engineering. It also initially resulted in significantly increased wages for workers at companies that had bought into his new, high-productivity mode of scientifically managed manufacturing.[27] Workers saw significant gains in salaries, but this corresponded with a drastic increase in workload. In Taylor's example of Bethlehem Steel Works (figure 0.2.4), workers received a 63 percent pay increase, but the average ore that a worker had to shovel per day changed from 16 tons to 59 tons per person, almost quadrupling individual workload to an output of 369 percent.[28] This staggering increase in output was accomplished by replacing

rule-of-thumb methods with scientifically measured and optimized efficiency, by consolidating the training of employees, and by breaking down jobs into discrete tasks.



Figure 0.2.4

Taylor outlining the financial operations of Bethlehem Steel Works, comparing the previous staffing, productivity, earnings, and costs to using his task-oriented plan. This saw a drastic reduction in laborers, a strong increase in workload per individual worker, a significant increase in pay, and a significant reduction of company operating costs. *Source*: Taylor 1919.

The cost to society, however, was a growing gap between workers and the items they produced. In essence, personal pride of craft and mental engagement with work in factories were decimated. Staffing was also difficult for companies that embraced the scientific management system with workers performing redundant tasks: “In 1913, for example, Ford was forced to hire more than 52,000 workers to sustain a workforce of about 14,000”—which seems to indicate that most workers did not think that the increase in pay was sufficient for them to endure mind-numbing tasks on an assembly line.[29]

The previous craft model for work—which was more human-scale and dependent on personal skill and experience—was overtaken by managerial rigor. Taylor’s concepts helped form the first Masters of Business Administration (MBA) program in the world at Harvard University, where he lectured.

It is worth emphasizing that the “yourself” component of “do-it-yourself” is predominantly a rejection of being externally managed and optimized. The autonomy of the DIY maker is more a rejection of Taylorism than a social isolation from other individuals. It rejects the “separation between planning and execution which seems to be in our day a common denominator linking all industrial societies together.”[30] This autonomy applies to both utilitarian and hedonized DIY practices, and it results in production that is holistic in the spirit of craft-based production and not broken into discrete tasks like an assembly line. As a part of not being managed, the onus is on the individual to figure out on their own what to do. DIY practice is autotelic and self-driven, and depending on the amount of patience and time devoted to the process, the end result can either be a duct-taped rearview mirror or an intricate craft constructed from found materials.

Doing It Yourself: DIY as Post-Optimal Practice

If Taylorism and its efficiency-oriented production lines and management structures are considered a quest for scientifically determining the *optimal* manufacturing process, DIY practice is definitely *nonoptimal*. Taylor abhorred artisanal production. He would have considered DIY production grossly wasteful of time and full of “awkward, inefficient, or ill-directed movements.”[31] In other words, DIY is not concerned with scientifically optimizing objects to be manufactured in the most efficient or profitable mode possible. Rather, it puts planning (or lack of planning) back into the hands of the builder. DIY as a nonoptimized mode of production also relates to the concept of the “post-optimal object,” a term carved out in 2005 by Anthony Dunne within the context of industrial product design.[32] The post-optimal object, as understood by Dunne, is focused on the user’s experience with the finished object over the process by which it is produced. It is worth mentioning that this stands in contrast to DIY work often being a process-oriented hedonistic type of production.

Post-optimal objects start with the assumption that consumer culture has generally reached a level where commercial products are available to most people at low prices, with sufficient features and relative durability. Note that the post-optimal perspective assumes a relatively affluent social and material environment and generally comes from the perspective of product design. In other words, in middle- to upper-class environments many people can fulfill their basic needs for commercial products by going to a Walmart, Target, Canadian Tire, Argos, or other large retailer of commercial goods. Dunne refers to Peter Dormer’s description of the problem as follows:

> This is what differentiates the 1980s from 1890, 1909, and even 1949—the ability of industrial design and manufacturers to deliver goods that cannot be bettered, however much money you possess.… The rich cannot buy a better camera, home computer, tea kettle, television or video recorder than you or I. What they can do, and what sophisticated retailers do, is add unnecessary “stuff” to the object. You can have your camera gold plated.[33]

In other words, in well-to-do environments Taylor’s vision of widespread manufacturing efficiency has already come to pass. Relatively inexpensive and mass-produced items currently represent the most functionally advanced products available. The post-optimal can also be thought of in a nonaffluent sense as an acknowledgment that many aspects of modern consumer technologies do not necessarily bring happiness. In other words, happiness is not directly proportional to how new, fast, or advanced the products you buy are. A more “hipster” perspective might see the rise of artisanal products in the 2010s as an aspect of post-optimalism.

Dunne’s argument is that design should move beyond optimizing products toward building objects that improve life experience by being more interesting, poetic, and engaging. I agree. Operating more in the style of a provocative film, Dunne outlines trends in industrial and electronic design where products take the instigative role of asking questions

like “What does it mean to be human?” or “What role do electronic objects have in our environment?” These questions transform our perception and consciousness of our surroundings. Examples that Dunne describes include several projects that aim to visualize how radio waves permeate our contemporary environment—like their *Tuneable Cities* project proposal that uses a car and radio scanner to discover how devices like audio baby monitors broadcast private conversations into the public environment.[34]

In other words, Dunne’s post-optimal objects are more concerned with asking questions like “How do technologies expose private spaces into the public realm?” than solving functional problems like “How can this product operate more efficiently?” Post-optimal objects leave problem solving to mass-produced products and instead work to uncover a poetic dimension of new experiences for the user. “Driven by poetry, imagination, and intuition rather than reason and logic, they have their own sense, an alternative to our everyday scientific-industrial one.”[35]

The post-optimal object can be defined as a designed object that is not reducible to a set of objective metrics like efficiency, speed, resolution, or capacity. Instead, it is culturally or psychologically provocative. As Dunne elaborates, “If user-friendliness characterizes the relationship between the user and the optimal object, user-unfriendliness then, a form of gentle provocation, could characterize the post-optimal object.”[36] Dunne’s post-optimal object is provocative to the user and observer. DIY goes beyond being post-optimal in its non-Taylorist development process. DIY practice rejects, or does not attain, a mass production mode of efficient productivity. If standard product development is thought of as a quest for optimization, DIY production is both a pre-optimal craft and a post-optimal exploration. *Pre-optimal* refers to a historical mode of craft-based production, and *post-optimal* refers to a response against consumer manufacturing.

DIY production is both pre- and post-optimal in a similar sense to how the Arts and Crafts movement was pre- and post-optimal in mid-nineteenth-century England. John Ruskin and William Morris, central figures to founding the Arts and Crafts movement, saw Victorian-era industrialization as a negative force that degraded workers, social structures, and culture in general.[37] As a reaction against industrial factory manufacturing, the Arts and Crafts movement revitalized preindustrial artisanal production, marrying it with socialist ideals in an attempt to bring labor, products, and capital together for a better quality of life.[38]

Although DIY is a general concept and Arts and Crafts is a canonized “movement” and period in design, both reject mass manufacturing. In cases where DIY is done voluntarily and out of enjoyment for the process, it often takes on a therapeutic role for the maker that echoes the original intentions of the Arts and Crafts movement: it works to reconnect individuals to material craft. But instead of just being disenchanted by industrialization, contemporary individuals also seek refuge from screen-based forms of work and the feeling of being disconnected from how objects are actually made in a globalized consumer culture with “a dark aura of sweatshops, child labor, wage exploitation, pollution, and other dubious specters of globalized production.”[39] The globally optimized product is a personally disconnected product, and the tendency toward DIY practice can be seen as a post-optimal attempt to personally reconnect with how physical things are made.

Conclusion: A Definition of DIY

In summary, DIY can be defined as a materially oriented, embodied practice that is individually directed and non-managed. DIY practitioners generally believe there is a value in manual labor, while frequently rejecting the optimized structure of mass manufacturing. This work is often intrinsically rewarding. “Doing” is an embodied activity where hands and mind work together to manipulate physical materials. The built objects often bear the marks of nonstandard, manual, and nonprofessional approaches to building artifacts. In other words, DIY artifacts frequently have a low-fidelity, “folk” look to them. This often is a byproduct of DIY builders making do with whatever is at hand, a bricolage of limited materials and skills. DIY work is typically done by amateurs driven by a lack of resources and the love of making things, and as a result, DIY projects often bear the visual marks of how they were built or cobbled together—and the process itself is important.

DIY projects are generally built using everyday and available materials and are not-for-profit. DIY is driven by an immediate functional need: to fix something or create an object that addresses what is missing from popular culture. Typically, common materials are used in DIY practice. This leads to an aesthetic of openness—inexpensive materials often promote an attitude where others are invited to do it themselves. The challenge of building the object also leaves traces of how it was built and acts as a visual guide for how to build it. “Yourself” implies an amateur that driven by personal goals—part of a search for authenticity—rather than financial gain. As a result, DIY can be thought of as appreciating amateurism and as an effort to break out of managerial constraints. Rejecting standard metrics of efficiency, speed, resolution, or capacity means that these projects can share the attributes of both post-optimal objects and craft production.[40]

In the sections ahead, this book explores and explains specific trends, themes, and ideas that flow through the diverse field of technology-oriented art during the past century, from well-known projects to lesser-known ones. Five core

themes emerge from this historical blend of DIY projects in art, design, craft, and technology: work dealing with constraints, "unblackboxed" projects motivated by making technologies more understandable and operationally transparent, work that is concerned with embodied existence, projects done as a form of tactical protest, and projects that are co-opted by industry. The five themes of constraint, unblackboxing, personalization, disobedience and co-option are fleshed out in the chapters ahead with an emphasis on extracting several points of leverage that are particular to the dynamic field of amateur-oriented, do-it-yourself technology production. In the end, we will learn several useful lessons: about how artists can help society; how individuals can powerfully enact political or personal change; and how technological innovation emerges from gaps between traditional disciplines.

Notes

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14. 14. Spencer also sees DIY processes as "not trying to seek out new technology." This is partially incorrect, however, since the tools or "it" of DIY can be sought out. For example, someone wanting to make custom T-shirts may teach themselves silkscreening. New technologies or tools can be chosen, but DIY practitioners tend to remain outsiders to the standard way of doing things. By this I mean that they implement nonstandard methodologies, or are actively ignorant of the official way those methodologies are supposed to be used. Several case studies discussed in the following chapters include artists that intentionally tackle the medium of working with electronics, and most of those artists work outside of the professional sphere of being an electrician or an electrical engineer.
15. 15. Vanessa Beatty, *20 Fun and Creative Crafts with Plastic Soda Bottles*, March 4, 2014, https://www.diyncrafts/com/4870/.
16. 16. See chapter 4.3 of this book.
17. 17. Walter Benjamin, *The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media* (Cambridge, MA: Belknap Press of Harvard University Press, 2008), 86.
18. 18. Graham Harman, *Tool-Being: Heidegger and the Metaphysics of Objects* (Chicago, IL: Open Court, 2002).
19. 19. Ian Bogost, "What Is Object-Oriented Ontology? A Definition for Ordinary Folk," *Writing* (blog), December 8, 2009, http://bogost.com/writing/blog/what_is_objectoriented_ontolog/.
20. 20. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010), viii.
21. 21. Emit Snake-Beings, "The DiY ['Do It Yourself'] Ethos: A Participatory Culture of Material Engagement" (PhD diss., Hamilton, New Zealand, University of Waikato, 2016), https://hdl.handle.net/10289/9973.
22. 22. Rachel Maines, *Hedonizing Technologies: Paths to Pleasure in Hobbies and Leisure* (Baltimore, MD: Johns Hopkins University Press, 2009).
23. 23. Lisa Gitelman, *Paper Knowledge: Toward a Media History of Documents* (Durham, NC: Duke University Press, 2014), 140–101, https://doi.org/10.1515/9780822376767; and Karen Sánchez-Eppler, *Dependent States: The Child's Part in Nineteenth-Century American Culture* (Chicago, IL: University of Chicago Press, 2005), 153.
24. 24. Cramer, "Does DIY Mean Anything?"
25. 25. Arthur G. Bedeian and Daniel A. Wren, "Most Influential Management Books of the 20th Century," *Organizational Dynamics* 29, no. 3 (2001): 222.
26. 26. Frederick Winslow Taylor, *The Principles of Scientific Management* (New York: Harper & Bros., 1919), 83. Originally self-published in 1911.
27. 27. Taylor claims that workers using his method receive between 30 and 100 percent more pay than workers of a similar caliber. Frederick Winslow Taylor, *The Principles of Scientific Management* (New York: Harper & Bros., 1919), 28. Originally self-published in 1911.
28. 28. Taylor, *Principles of Scientific Management*, 83.
29. 29. Tony Swan, "Ford's Assembly Line Turns 100: How It Really Put the World on Wheels," *Car and Driver*, April 30, 2013, https://www.caranddriver.com/features/a15115930/fords-assembly-line-turns-100-how-it-really-put-the-world-on-wheels-feature.
30. 30. Georges Friedmann, *The Anatomy of Work: Labor, Leisure, and the Implications of Automation*, trans. Wyatt Rawson (New Brunswick, NJ: Transaction Publishers, 1992), xx.
31. 31. Taylor, *Principles of Scientific Management*, 5.
32. 32. Anthony Dunne, *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design* (Cambridge, MA: MIT Press, 2006), 20.
33. 33. Peter Dormer, *The Meanings of Modern Design: Towards the Twenty-First Century* (New York : Thames and Hudson, 1990), 124.
34. 34. Dunne, *Hertzian Tales*, 137–142.
35. 35. Dunne, 145.
36. 36. Dunne, 35.
37. 37. As arguably the most industrialized country in the world in the 1800s, "Britain was also the first to attempt to counter the malevolent aspects of mass production—the cost in human creativity and quality of life." Wendy Kaplan, *The Arts & Crafts Movement in Europe & America: Design for the Modern World* (New York, NY: Thames & Hudson in association with the Los Angeles County Museum of Art, 2004), 11.

38. 38. Sam Jacob, “What Makes a Maker? Hint: It’s Not Just About ‘Making,’” *Metropolis* (blog), March 23, 2015, https://www.metropolismag.com/design/arts-culture/what-makes-a-maker/.
39. 39. Jacob, “What Makes a Maker?”
40. 40. Dunne, *Hertzian Tales*; Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming* (Cambridge, MA: MIT Press, 2013).