

Digital Vernacular: Practice and Pedagogy

“Design, like war, is an uncertain trade, and we have to make the things we have designed before we can find out whether our assumptions are right or wrong. Research is very often a euphemism for trying the wrong ways first, as we all must do.”

— David Pye.

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A strange and compelling contradiction exists in architecture today. As digital communication and digital tools make everyone and everything in the world more accessible and more alike, there remains a powerful desire to express qualities of difference unique to each regional community, each specific place, and each individual designer. Global digital unification also fosters an equally powerful desire to express new ideas in architecture independent of regional place, which fosters a voracious appetite for a new global architecture built around common ideas, not common place. Our paper responds to this paradox of wanting to be the same and different simultaneously. Digital Vernacular is an idea that combines vernacular design principles of the past and digital technologies of the present with goals of accessibility and appropriate innovation in a contemporary and global design context.

The name Digital Vernacular is a response to a particular mode of contemporary making that embraces the practical, poetic, and ethical principles of vernacular design while utilizing the virtues of commonly accessible computer-guided tools and hand-guided tools. Digital, as an adjective modifying vernacular, is defined as always relating to both hand and computer. The origin of the word digital stems from the Latin *digitalis*, or “of or relating to a finger” (Oxford English Dictionary, 2000). The definition of digital as a “discrete value representing physical quantity” was a natural evolution from working and counting with fingers. In the mid-Twentieth Century, following rapid advancement of electronic computers, the definition of digital evolved to “expression in discrete numerical form” and the now common use of the word. Digital Vernacular joins the past and present by linking hand sensitivity with computer power.

Vernacular, as it relates to making, is defined as “belonging to, developed by, and used by, the people of a particular place and time” (Oxford English Dictionary, 2000). Vernacular has always referred to that which is native or indigenous. With the advent of digital communication and exchange, the very definition of place and time is changing, and the Digital Vernacular recognizes that place and perceptions



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of time are no longer bound to specific locations, but are now related to common circumstances, characteristics, or values held in common by a group of people. It is important to note that the vernacular does not emerge from an isolated group of intellectuals or specialists but rather from the “spontaneous and continuing activity of a whole people with a common heritage, acting under a community of experience” (Clausen and Belluschi, 1994). The definition of contemporary community and the meaning of heritage are rapidly evolving and the Digital Vernacular is defined in response to this evolution.

WORKING PRINCIPLES

The Digital Vernacular is defined by several working principles; three of the most important are logic, sufficiency, and play.

Logic has long been a hallmark of the vernacular. Logic is a defining human capability and characteristic, perhaps most simply defined as the practice and art of reasoning. Logic is a vernacular trait used by common people in specific places and times to organize, evaluate, and process a manifold of conditions and opportunities that are present in community and individual life. Logic could be described as a tool for editing a world seemingly obscure and arbitrary, revealing the legible and meaningful. An example of an editing tool for the Digital Vernacular might be Ockham’s Razor; when faced with several choices, the simplest response is usually the best.

Principles of sufficiency have guided the vernacular for thousands of years, where long-term ecological and social sustainability was not merely a concept, but a way of life. Sufficiency is characterized by the fundamental idea that people can determine what is enough and what is too much, striving for a balance between needs and desires. Prior to the Industrial Revolution, communities practiced principles of sufficiency not by choice but by circumstance. With limited resources and simple technologies visible to all, a natural check and balance was in place. Sufficiency always balances means and ends in an extended time frame and provides a sober evaluation of what is need and what is desire.

It is also important to describe what sufficiency is not, lest it be confused with parsimony or the assumption that past civilizations were any less intelligent, sensitive, or

Figure 1: Playing in Chandigarh, India, Photograph by author

creative than societies today. Sufficiency is not the suppression of dreams or desires. It is not the inhibition of intellect, ambition, or creativity. It is not a call to eliminate specialization or discovery. Rather it is the greater and more challenging exercise of these thoughts and actions, in a context with tangible limits and boundaries that guide more robust, appropriate and meaningful outcomes for the present and the future.

Thomas Princen (2005) writes in “The Logic of Sufficiency” that the paradigm of efficiency and the logic of empire, defined as the “efficient extraction, technological mastery, and accumulation of private wealth” has delivered much to contemporary life. Princen expands, saying “now that the planet is ecologically full it must give way to alternative logics, ones that twist and fall, that have mystery and surprise, that do not maximize anything. They must be at once economic and ecological, rational and self-limiting, innovative and humble.” (Princen, 2005). These are foundational ideas to guide the Digital Vernacular and an antidote to much of the nihilistic design operating in the world today. “The expectation that every new discovery or refinement of existing means must contain the promise of higher values or greater happiness is an extremely naïve thought. It is not in the least paradoxical to say that a culture may founder on real and tangible progress” (Huizinga, 1970).

Another fundamental principle of the Digital Vernacular is related to the most common action undertaken by all people through all ages: play. Johan Huizinga (1970), writing in *Homo Ludens*, states that “Play is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing.” Play predates culture and is fundamental to the animal nature of being human. These characteristics of play are especially important in defining the Digital Vernacular.

Play as a voluntary and free activity is important if the democratization of design and the voice of the vernacular is embraced. Play guided by specific limits of time is important if the design work is to be framed around the conditions of the present rather than future fantasy. If one can say that great works of design reflect their time, then playing within the present, being in the present, is a critical boundary, opportunity, and limit. The clarity, appropriateness, and historical nature of vernacular design are due in part to its powerful expression of a specific time.

Play guided by bounded place is another integral principle relevant to the vernacular, as there are unique qualities and characteristics associated with a specific place. This relates back to the recognition of play as “freedom itself” (Huizinga, 1970), and fosters the ability of people to express their uniqueness and the particulars of the place in which they live and thrive. Bounded place is also another way of describing the essential playground of the Digital Vernacular: the studio. Within the studio, surrounded by materials and tools, the deepest intensity of design is realized under the principles of play.

That play “creates order and is order” is both relevant to the design process and the vernacular (Huizinga, 1970). It is through order that the meaning of design and community can be conveyed and understood. Central to the understanding of the order-making condition of play, is the guidance of play by rules and principles. The best of design is guided by rules and principles, and like play, does not exist without them. There is no way to cheat at good design, and to cheat undermines the fundamental integrity of play. The rules are only the means to the end, the conditions a player must accept and work within in order to participate, as “limited means beget new forms, invite creation, make the style. Progress in art does not lie in extending its limits, but in knowing them better” (Braque, 1994).

DEFINING THE DIGITAL VERNACULAR

As educators, we were interested in knowing what our students were thinking about the digital world they grew up in and what critical point of view they held about a digitally-dominated world. In the spring of 2013 we held a seminar entitled “Defining the Digital Vernacular” for graduate students studying architecture at Lawrence Technological University. As an initial assignment, we asked them to define digital within a contemporary context, drawing on the historical evolution of the word. Their insights opened a curious and rich perspective on what digital can mean in the context of design and the Digital Vernacular.

One of our students, Jia Liu, defined digital as information with value and sensed through impulse. In the context of a finger, she defined digital as the sensing tool for complex subjective data with a direct and physical connection to the entire human body through the critical sense of touch. In her own words: “data and information that the hands help the brain collect.” She defined digital in the context of a computer as the sensing tool for complex raw data with a virtual connection to the human body through all the senses. She noted that the digital finger was prone to fatigue and the digital computer was prone to stamina. In her words; digital tools “push human production capacity to unprecedented heights” to deal with an overwhelming “mass and accuracy of information.”

All students in the seminar formed working points of view about the meaning of digital following their simple etymological investigation. They were unanimous in recognizing that our fingers and numbers, our hands and computers, share a curious connection and common origin of relationship. They recognized that both our fingers and our computers use electric signals to transfer information. They all appreciated the importance of “touch” as the most significant sense to be engaged both literally and figuratively in a process of design that uses fingers and hands, computers and brains.

Following our explorations of the digital we asked students to define vernacular within a contemporary and historical context. Their insights offered a useful and personal perspective on the nature of vernacular and why it might be meaningful in the context of design and architecture. Their insights clarify the meaning of vernacular when working in the Digital Vernacular.

Our student, James Case, stated that vernacular can be defined as a mode and expression that is specific to a time, place, and population and “is environmentally deterministic.” External forces such as local weather, resources, and knowledge help shape the vernacular and it is “typically the resultant of a complicated evolutionary process defined by an unsupplemented set of resources, circumstances, heritage, and traditions.” Vernacular is about “transforming what is given” or “modifying that which is inherited” into what is needed. It is about turning “natural obstacles into assets.” In this respect it is a pure solution to a real problem at a specific moment in time. The place where the vernacular develops is unique and because of this uniqueness “the vernacular cannot be transferred to another location without adjusting, at least slightly, to the conditions of the new location.” Thus, a vernacular is one of a kind and cannot be copied to attain the same results elsewhere. He concluded that “since time does not stand still and change is constant, vernacular is ever-evolving and to define vernacular is an exercise that must be constantly re-examined whenever the conditions that gave rise to the definition change.”

All students in the seminar formed working points of view about the meaning of vernacular that helped to define it for the Digital Vernacular. They were unanimous in recognizing the importance of expressing unique characteristics of time and place

through architecture. They recognized the vernacular as an ethic that leverages the power of community knowledge to continually develop, refine, and innovate through works of architecture and the act of building. They discovered that simple tools can create remarkable things. They appreciated the value of working directly with available resources and the creative opportunity of recognizing limits as assets. They believed that the act of making architecture is ultimately a communal enterprise, not reserved for experts but open to anyone willing to participate in a “hands-on” experience.

THE MAKER

Architecture is not simply imagined, it is real and it is made. In order to move imaginings into architectural reality one must make. The Digital Vernacular has enabled a new generation of architects to move ideas from virtual simulation to physical fabrication. The term “Maker” as it relates to this paper is defined as designers and architects that independently or collaboratively create full-scale outcomes in part or in whole. Makers have a prominent place in the legacy of the crafts and trades, and are the epitome of the persistence of the craftsman. The word “Maker” has also reemerged in recent years through the DIY or “do it yourself” movement also known as the Maker Movement.

William Morris characterized the craftsman as someone who fluidly connected the energies of the mind, body, and soul. The craftsman made with his own hands that which his mind conceived, until the Industrial Revolution separated the craftsman’s ideas from his actions, leaving him alienated from his trade. In *Shop Class as Soulcraft*, Matthew Crawford (2010) revisits this suppression of craft in his argument for the value of work in the post-industrial era. He asserts that craftsmen and tradesmen have both an ethical and moral obligation to the artifacts they make. Both Morris and Crawford, along with many other contemporaries, are reacting to the importance of the master craftsman, not only to production and output, but also to the health and sustainability of a civilized society.

With the advent of the assembly line, Henry Ford changed the fundamental economic model for the production of automobiles and other consumer goods. It was no longer necessary for a carriage maker to understand the tools of his craft, nor was it necessary to know the material, its origin or behavior. It was only important to follow a structured model of assembly. In return, Ford famously paid his employees well for their time. Ironically Ford stated, “if money is your hope for independence you will never have it. The only real security that a man will have in this world is a reserve of knowledge, experience, and ability.” This quote stands in contrast to his actions (well intentioned or not), which led to the eventual consolidation of knowledge, leaving the craftsman to work on the assembly line rather than practice his trade. The removal of knowledge from the craftsman diminished all trades that endeavored to make what they conceived.

After the Industrial Revolution, the craftsman became marginalized and the craft guilds dissolved as a result of the new business values of efficiency and economy. While the Industrial Revolution threatened the craftsman’s place in society, it did not render him irrelevant. There was still a need for skilled labor within the context of the new machine age, “marking the emergence of the modern craftsman” (Adamson, 2010). For example, “hand-finishing of metal was difficult to make absolutely smooth using an automated cutting tool” (Adamson, 2010). The craftsman’s skill and sensitivity were still essential, but only as a fragment of a larger and holistic mechanized system.

The digital age has caused a technological, economic and social change that has reordered economic and technological conditions and opened opportunities for the Maker. In Chris Anderson's book, *Makers: The New Industrial Revolution*, he characterizes this shift as a digital revolution enabled by the democratization of information. This placed the "tools of both invention and production" into the hands of anyone with talent by moving the Maker from the factory to the broader physical world (Anderson, 2010).

The Maker Movement is also seen in the model for Fab Lab based on Neil Gershenfeld's Center for Bits and Atoms at the Massachusetts Institute of Technology. The many labs that have been established under this model all follow a set of ideals and work with a basic set of tools. Gershenfeld asserts that this formula of tools along with the organization of community knowledge enables most people to make (almost) anything (Gershenfeld, 2005). The Fab Labs operate on a nonproprietary open source model using open ideas, information and technology. The Fab Lab Charter defines the culture of the labs as one that is open and where knowledge and responsibility is shared. If you are lucky enough to find yourself in a Fab Lab in any part of the world that subscribes to this charter you will be greeted with open doors and a community of members willing to help and encourage you with your endeavors. You will also find a familiar set of tools that are basic, essential and available for your use.

It is fair to question to ask how the Maker Movement differs from the Digital Vernacular as defined in this text. The divide is primarily framed by discipline and social factors. Maker Movement implies a social change that is also expressed by many as a "revolution". Revolutions and movements with democratized technology are not discipline specific. The Maker Movement and the Fab Labs have leveraged the democratization of manufacturing and information to allow anyone to make almost anything in a supportive community. This is precisely how the Maker Movement is allowed to be both small and global, both artisanal and innovative, both high-tech and low-cost (Anderson, 2010).

The Digital Vernacular shares many of the same principles and attributes of the Maker Movement. Both use mostly the same tool set, similar materials and both operate with the computer and the hand as a constant mediator between idea and outcome. Economic concerns loom over both; encouraging a sufficient and minimal tool set. The differentiation between the architect and the Maker Movement resides in the scale of the intended outcomes and disciplinary needs of the architect. The scope of an architecture project built at full scale is outside of the norm for most Fab Labs. Although this is not always true, it normally only happens when the Fab Lab has an associated disciplinary interest.

Fab Labs and the Maker Movement are essential in providing the social and technological basis for the Digital Vernacular and it is easy to recognize that there would be no Digital Vernacular without their contribution. Architects have been given a new opportunity by the Fab Labs but as it is suggested by their Charter, once discipline specific practice is underway we must "grow beyond rather than within." This is the stepping off point for the Digital Vernacular; it is the architects Fab Lab, it is the discipline- specific interpretation of the New Industrial Revolution.

PRACTICING THE DIGITAL VERNACULAR

Practicing the Digital Vernacular embraces the inherent opportunities provided by new digital technology while maintaining the virtues of working manually with hand tools. To make with the hands provides immediate consequences to design decisions. In a Digital Vernacular practice, an architect can conceive, design, model,

fabricate and realize a design without interruption. A fluid motion of designing, testing, and iteration can be achieved by the Maker. Understanding the importance of designing and making, David Pye (1999) observed that “design, like war, is an uncertain trade, and we have to make the things we have designed before we can find out whether our assumptions are right or wrong. Research is very often a euphemism for trying the wrong ways first, as we all must do.” Design cannot be faked within the Digital Vernacular, it is authentic in its successes and failures.

The Digital Vernacular compresses and intensifies the process of design by integrating all aspects of design and construction into one entity. The architect can be wholly responsible for design and construction, reaching beyond the limitations of normative practice. The combination of designing and constructing is counter to the organizational structure set forth by many professional and trade organizations within the discipline of architecture. When an architect is directly involved in the making and implementation of a proposal, there is a shift of responsibility that is not currently recognized within the bounds of normative professional practice. Digital Vernacular practice is not a replacement for the traditional model of practice, but rather an alternative model. As such, the Digital Vernacular can be acknowledged as a legitimate part of the profession of architecture. The Digital Vernacular holds within it the attributes common to the profession: lengthy and arduous education, expertise and judgment, registration, and relative autonomy. The Digital Vernacular finds its place as a specialization of practice, with each Maker defining a new center. The Maker is the heart and brains of the Digital Vernacular and the Vernacular is its soul. The Digital provides the muscle.

The Digital Vernacular is guided by vernacular principles, aided by digital tools, and realized through specific processes. Though the disciplines of design and architecture probably harbor as many unique processes as there are individual Makers, the Digital Vernacular is realized through processes that share consistent and common attributes and are sequenced in a particular order. A Digital Vernacular process always contains at least three phases, which can be summarized as Guiding Precedent, Defining Proposition, and Fabricating Preference. The phases are typically conducted in this sequential order, though it is also common and appropriate to cycle through the phases, allowing them to function as a feedback loop to one another.

This design process can be illustrated in the project Movable Silence, a conference room designed with students in the makeLab at Lawrence Technological University. The room provided a formidable challenge; it needed to accommodate 6 people, be sound-attenuating, movable within a warehouse space, and have two large sliding doors on the short sides. We intended to fabricate it off-site at the makeLab so it needed to be designed in components, or chunks, that could be assembled for testing, disassembled for transport, and reassembled on-site several hundred miles away. To make things more interesting all of this had to be done on a very tight budget and in 8 weeks.

The challenge of moving a large structure after fabrication but before assembly allowed the students to study precedents that made use of many predetermined parts fabricated off-site. The design team studied many techniques ranging from early Roman rivets to the Crystal Palace and the rise of sheet material and fasteners in the industrial revolution. Distilling the significance of the fastener the students proposed a structure made from plywood, a common vernacular material that is rigid and strong and can be cut precisely on the CNC router. This material characteristic, coupled with the CNC's ability to cut precisely, inspired a Digital Vernacular



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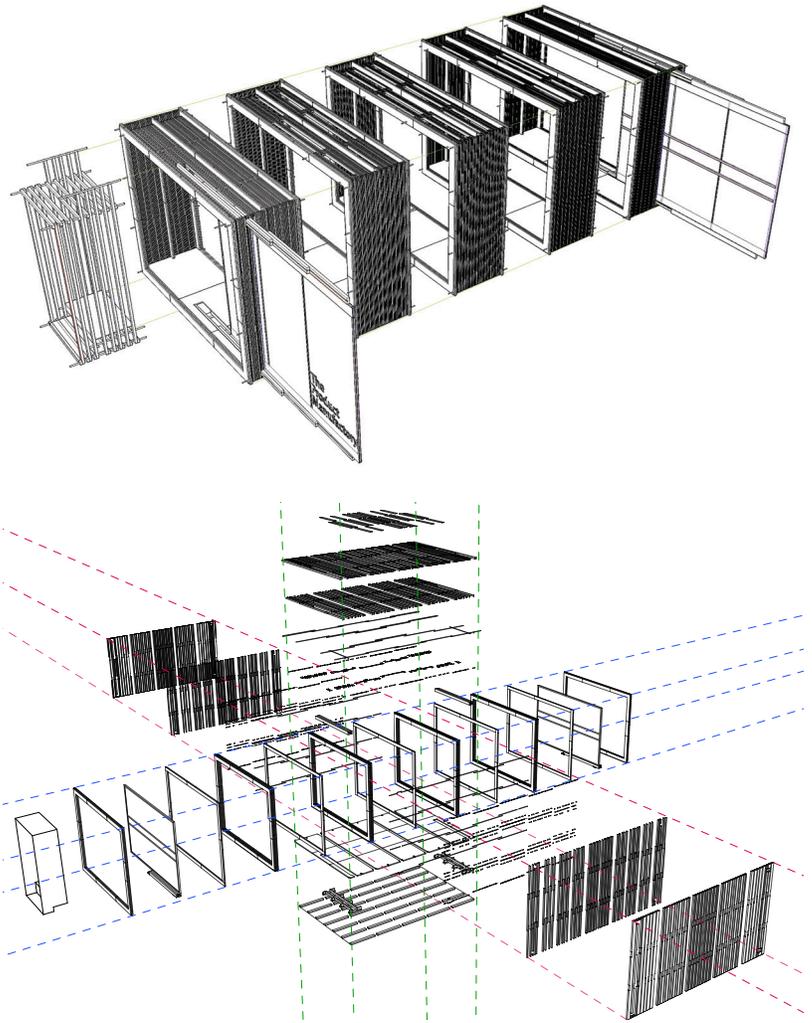
Figure 2: Assembly of two chunks, Photograph by author

Figure 3: Moving, Photograph by author

technique to build structural ribs that would form five primary beams. Using lap-joints, the Makers built each beam with four layers and coordinated fastener holes. When aligned during assembly, the beams could be through-bolted to create one large beam. Other perforations in the beam allowed for larger lateral rods that bound the beams to the light-weight and sound-attenuating skin.

CONCLUSION

Given that logic, sufficiency, and play are guiding principles in the Digital Vernacular, the design and fabrication of Movable silence is a manifestation of these principles. The design was born out of the given conditions of time and place, making the solution logical and constructible. The room was not guided by a desire for new form-making that technology can provide; it only sought to accomplish its task—create a movable quiet place to work.



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Figure 4: Exploded Isometrics, drawings by student team



ENDNOTES

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Figure 5: Completed on-site, Photograph by author, Movable Silence student team: Natalie Haddad, Ergys Hoxha, Eric Rito, Brent Dekryger, Joseph Donelko, Barbra Grossi