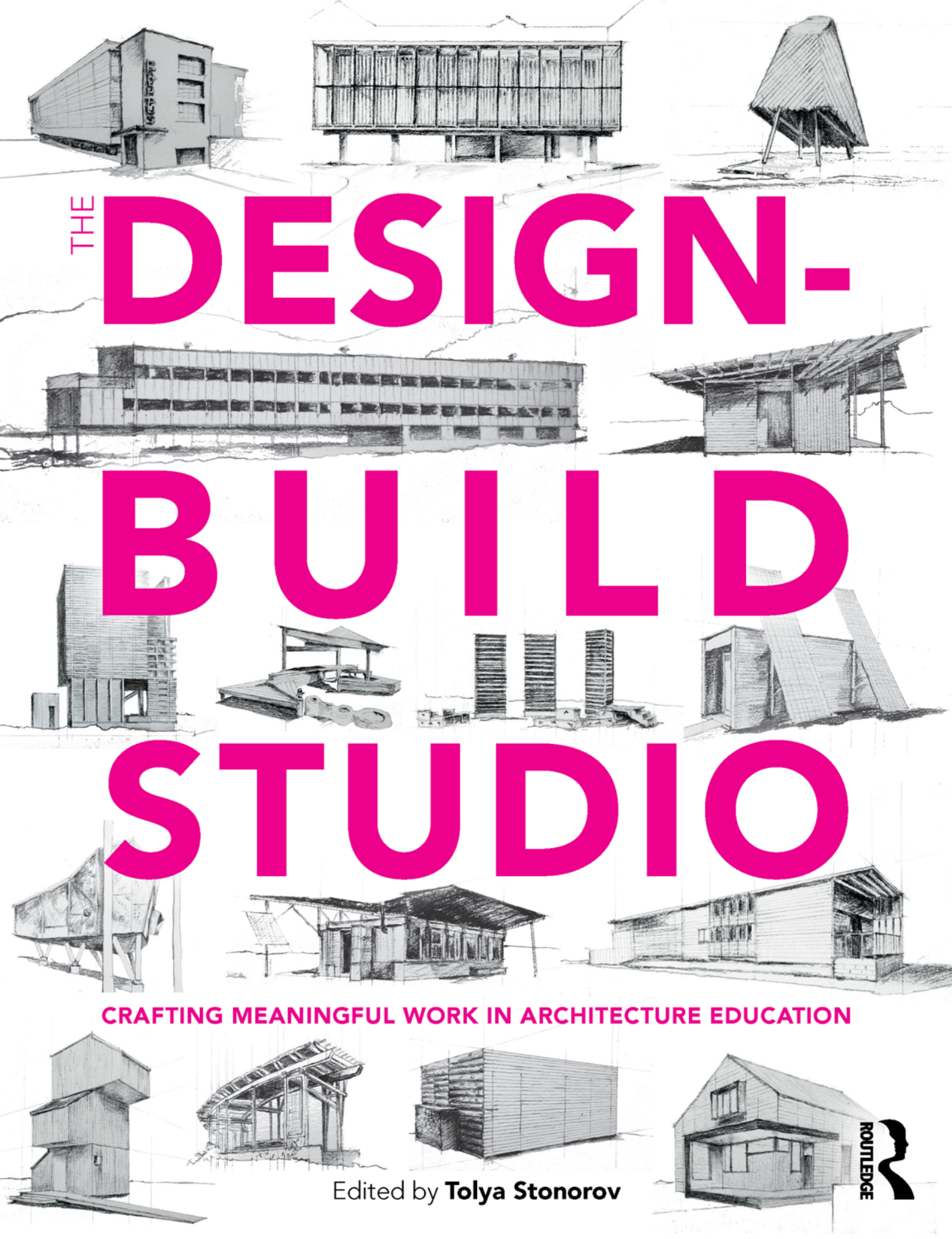


THE DESIGN-BUILD STUDIO

CRAFTING MEANINGFUL WORK IN ARCHITECTURE EDUCATION

Edited by **Tolya Stonorov**

ROUTLEDGE

The Design-Build Studio

The Design-Build Studio examines sixteen international community driven design-build case studies through process and product, with preceding chapters on community involvement, digital and handcraft methodologies and a graphic Time Map. Together these projects serve as a field guide to the current trends in academic design-build studios, a window into the different processes and methodologies being taught and realized today. Design-build supports the idea that building, making and designing are intrinsic to each other: knowledge of one strengthens and informs the expression of the other. Hands-on learning through the act of building what you design translates theories and ideas into real world experience. The work chronicled in this book reveals how this type of applied knowledge grounds us in the physicality of the world in which we live.

Tolya Stonorov is a registered architect, Assistant Professor at Norwich University, Vermont, and co-founder of Stonorov Workshop, an architecture and building collaborative. She received an MArch from the University of California, Berkeley, and has practiced design-build since 2006. Among other honors, Stonorov was awarded the 2016 Vermont Women in Higher Education Peggy R. Williams Emerging Professional Award; her work has been widely published.

"Too many architecture students are trapped in the design studio, denied the visceral act of making what they design, and the sense of purpose realized only when working in partnership with real communities. But this collection of design-build case studies and manifestos marks a turning point in architectural education from the studio to the field. It should be required reading for those who equip students to think with their hands and to apply design to the real world."

Michael Crowley, President, Yestermorrow Design/Build School

"Stonorov advocates for a better architect – one that builds in a more complete way. The multi-faceted approach of building one's designs with the added value of community contributions should be a required experience for every budding architect."

Clifford Curry, FAIA & Co-Founder of the Curry Stone Design Prize

"*The Design-Build Studio* is a deep dive into the methods and lessons of the important educational tool known as design-build. The content provides a thorough presentation of the state of the art, and allows the reader to compare and contrast the thinking and making of thirty of the outstanding leaders in the field. This book presents a learning opportunity that will allow us all to better define what works well, and move further forward in the evolution of this inclusive, pluralistic, and transformative teaching method."

Bryan Bell, Executive Director, Design Corps, Associate Professor, NC State University, Co-Founder, SEED Network

"These sweetly empowering stories share seat-of-the-pants problem-solving, tricks and tips learned in the course of ambitious, student-built public architecture installed around the corner and across the world."

Dana Buntrock, Professor, Dept of Architecture and Chair, Center for Japanese Studies, University of California, Berkeley

The Design-Build Studio

Crafting Meaningful Work in Architecture Education

Edited by Tolya Stonorov

Routledge
Taylor & Francis Group
NEW YORK AND LONDON

First published 2018
by Routledge
711 Third Avenue, New York, NY 10017

and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

Library of Congress Cataloguing-in-Publication Data
A catalog record for this book has been requested.

ISBN: 978-1-138-12179-9 (hbk)
ISBN: 978-1-138-12180-5 (pbk)
ISBN: 978-1-315-65074-6 (ebk)

Typeset in Myriad by
Servis Filmsetting Ltd, Stockport, Cheshire

This book is dedicated to my father, Ric Pfeffer, and my grandfather, Ed Bacon. Together they laid the foundations for my passion for teaching and architecture.

Additionally, to my mother, Elinor Bacon, who has provided profound love, support and inspiration throughout my entire life.

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Contents

List of Contributors ix
Foreword xiii
Adam Hopfner
Acknowledgments xv

Introduction 1
Tolya Stonorov

1 Time Map: Graphic History of the Academic Design-Build Studio Case Studies 6
Tolya Stonorov and Danny Sagan, with drawings by Tolya Stonorov

2 The Future of Community Engagement 16
José Galarza

3 Manifesto for Handwork: Quality, Material, and Ideas 24
Daniel Wheeler

4 Manifesto for Digital Fabrication: Control, Craft, and Agency 32
Adam Marcus

5 Case Studies: Fast Build – Less than One Semester Programs

5A Urban Farm Supershed, Neighborhood Design/Build Studio 44
Steve Badanes, University of Washington; Seattle, WA

5B IDA 1, 2, 3, 4: Island Design Assembly 56
Stephen Kredell and John McLeod, McLeod Kredell Architects, Middlebury, VT, and Jonathan Marvel, Marvel Architects, New York, NY

5C Learn-Move-Play-Ground 1, 2, 3: baladilab 70
Vittoria Capresi and Barbara Pampe, German University in Cairo; Cairo, Egypt

5D Skate Spot, DownCity Design 84
Adrienne Gagnon and Manuel Cordero Alvarado; Providence, RI

5E Sanatorija, Building Works Unit 96
Thomas Randall-Page and Theodore Molloy, Riga Technical University; Cēsis, Latvia

5F Construction Week 2014, University of East London 110
Danny Sagan, Norwich University; Northfield, VT

6 Case Studies: Build – Semester-Long Programs

6A Liina Shelter, Wood Program 126
Pekka Heikkinen and Philip Tidwell, Aalto University; Helsinki, Finland

6B Cloud Nine Farm Shed, Remote Studio 134
Lori Ryker, Artemis Institute; Bozeman, MT

6C The Archistream, 802 LAB 146
Tolya Stonorov with comments by Aron Temkin, Norwich University, School of Architecture + Art; Northfield, VT

6D Wakathuni Early Learning Center, Bower Studio 162
Dr. David O'Brien, University of Melbourne's School of Design; Melbourne, Australia

7 Case Studies: Long Build – Semester-Plus Programs

7A Galileo's Pavilion, Studio 804 176
Dan Rockhill, University of Kansas; Lawrence, KS

7B Grow Dat Youth Farm, Tulane City Center 188
Emilie Taylor Welty and Scott Bernhard, Tulane School of Architecture; New Orleans, LA

7C A Jam Manufactory for Naxií, CoCoon-Studio 200
Ursula Hartig and Nina Pawlicki, Technische Universität Berlin; Berlin, Germany

7D Play Perch 216
Sinéad Mac Namara and Larry Bowne, Syracuse University School of Architecture; Syracuse, NY

7E Mexican Water Cabins, DesignBuildBLUFF 228
Erik Sommerfeld, University of Colorado Denver; Colorado

7F 3 Houses, 3 Years, Jim Vlock First Year Building Project 242
Alan Organschi, Yale School of Architecture; New Haven, CT

Conclusion 257
Tolya Stonorov

List of Image Credits 261
Bibliography 263
Index 267

List of Contributors

Steve Badanes is a co-founder of Jersey Devil, a group of architects, artists and inventors committed to the interdependence of design and construction. At University of Washington, Badanes directs the Neighborhood Design/ Build Studio, where students build small community projects. In summer, he teaches at the Yestermorrow DB School in Vermont.

Scott Bernhard is an Associate Professor of Architecture at Tulane and led the Tulane City Center as director from 2007 to 2012. He was the Architect of Record for Grow Dat and co-taught the Grow Dat design-build studios.

Larry Bowne is a licensed architect and principal of Larry Bowne Architects. He has taught design-build studios and community engagement courses at Kansas State University, Syracuse University and in the Honors College at Purdue University. Both his professional and academic work have been widely published, exhibited and recognized, including the 2013 ACSA Design Build Award.

Vittoria Capresi and **Barbara Pampe** founded baladilab in 2011 as a spin-off project associated with the German University in Cairo – GUC to work on projects with students to discover and activate the hidden potentials of Cairo. Barbara Pampe, born 1973, studied architecture in Bordeaux, Weimar and Delft. Vittoria Capresi, born 1976, studied architecture in Florence and Berlin. Since 2011 they have taught in Cairo at the German University in Cairo – GUC as respectively Associate Professor of Architectural Design and Associate Professor in History of Architecture.

Manuel Cordero Alvarado received his BA from Yale University and earned an MArch from the UC Berkeley. Manuel is a licensed architect in Rhode Island and works as a school construction planner for the RI School Building Authority. He is adjunct faculty at RISD's Architecture Department. His research and teaching are focused on planning in post-industrial cities and the role and efficacy of participatory engagement practices in public placemaking.

Adrienne Gagnon was named a 2013 RI Innovation Fellow for her work with DownCity Design. She believes that Design Thinking and project-based learning can revolutionize education. Adrienne occasionally serves as an adjunct faculty member in RISD's Department of Architecture, where she teaches a course on socially engaged design. She has been the Education Director for Providence CityArts for Youth, a curator of contemporary art for SFMOMA, an art critic and arts educator. She graduated from Yale University and received her MA in Art + Design Education from RISD.

José Galarza is a professor at the University of Utah and the director of DesignBuildBLUFF, where he guides students through the process of designing and constructing full-scale built works, in addition to overseeing the executive administrative duties of the program. He is invested in empowering students through hands-on experiences, while at the same time empowering the agency of indigenous peoples to develop for themselves built environments that reflect their own contemporary identities and values.

Ursula Hartig graduated and practiced in architecture and has been a research fellow and teacher at the Department of Architecture, Technische Universität Berlin since 1997. She founded CoCoon, a sector for intercultural and interdisciplinary teaching, research and practice in the field of build environment, and runs academic Design-Build Studios in Mexico and Afghanistan. She co-directs the dbXchange.eu knowledge platform.

Pekka Heikkinen has been the director of 6B Architects since 1995 and is the Director of Studies at The Wood Program in Finland. He holds an MSc (Architecture) from Helsinki University of Technology.

Sinéad Mac Namara attended Trinity College Dublin and Princeton University, where she received a PhD in Structural Engineering. She is an Associate Professor at Syracuse University where she teaches mechanics, structures,

interdisciplinary design, and design-build to students of architecture and engineering.

Adam Marcus directs Variable Projects, an award-winning architecture and research studio in Oakland, California, that operates at the intersection of architecture, computation and fabrication. He is also an Associate Professor of Architecture at California College of the Arts, where he coordinates the Integrated Building Design curriculum, teaches design studios in computational design and digital fabrication, and collaborates with CCA's Digital Craft Lab.

John McLeod and **Stephen Kredell**, the founding principals of McLeod Kredell Architects, worked with **Jonathan Marvel**, Marvel Architects, in New York City prior to opening their own practice in Vermont. The three architects formed Island Design Assembly, which now is a major focus of each firm's pro-bono work.

Theodore Molloy graduated from the University of Westminster with Distinction in 2012 having previously studied architecture in Glasgow and Switzerland. He worked at Bearth and Deplazes in Switzerland and Sir Nicholas Grimshaw and Partners in London before founding PUP architects in 2014 in London. He has led the Building Works Unit in Latvia since 2011 and is currently a unit leader at Oxford Brookes University.

Dr. David O'Brien coordinates the award-winning Bower Studio program at the Melbourne School of Design at the University of Melbourne. Trained as an architect, David now works with students and community groups designing, building and evaluating infrastructure projects in remote Aboriginal communities in Australia and Papua New Guinea.

Alan Organschi is a principal and partner at Gray Organschi Architecture (www.grayorganschi.com) and founder of the fabrication and construction firm JIG Design Build in New Haven, Connecticut. In addition to his role as Coordinator of the Jim Vlock First Year Building Project Studio at the Yale School of Architecture, he also serves as Critic in Architectural Design and Lecturer in Building Technology. His current research project, the Timber City Initiative (www.timbercity.org), explores the ecological benefits of applying emergent structural wood technologies to the construction of dense global cities.

Nina Pawlicki is a teaching and research fellow at the School of Architecture, TU Berlin, and part of CoCoon – a studio for intercultural and interdisciplinary teaching, research and practice. With a particular interest in actor-driven processes in the design of social spaces she ran Design-Build projects in Mexico, Mongolia, Jordan and Berlin.

Thomas Randall-Page studied Architecture at Glasgow School of Art, Aalto University, and London Metropolitan University. As a student he worked at 6A Architects and after graduating with his diploma joined Heatherwick Studio where he worked on projects both in the UK and internationally. Thomas co-founded Building Works Unit in 2011 and still teaches with this group, running workshops and a design unit at Oxford Brookes University alongside his freelance practice.

Dan Rockhill is the J L Constant Distinguished Professor of Architecture at the University of Kansas and Executive Director of Studio 804 as well as a distinguished professor in the Association of Collegiate Schools of Architecture. He and his students have designed and built nearly two dozen projects in their region. The most recent nine are LEED Platinum buildings and three of those are Passive House Certified.

Lori Ryker is the Executive Director and Founder of Artemis Institute and principal of studioryker. She was previously a principal of the award-winning design-build practice Ryker/Nave Design. She is the author of several books and has taught at Montana State University, Louisiana State University, Texas A&M University, and University of Texas, among others.

Danny Sagan, a graduate of the Yale School of Architecture, began practicing carpentry and design-build in 1981.

In 1992 he established a design and construction practice with Alisa Dworsky that is now known as DS Architects PLLC. DS Architects specializes in high-performance energy-efficient homes. Danny has been teaching architecture and design-build at the Norwich University School of Architecture + Art since 2001. Danny has been collecting oral history data and writing about the design-build movement in Vermont. Most recently he has been acting as Program Director for the undergraduate program at Norwich A+A. Danny and Alisa live in Montpelier, Vermont, with their two daughters.

Erik "Rick" Sommerfeld is an Assistant Professor and the Director of Colorado Building Workshop, the design-build program at the University of Colorado Denver. He has an MArch from the University of Colorado Denver and a BENVD from the University of Colorado Boulder.

Aron Temkin is the Dean of Professional Schools at Norwich University, a licensed architect and a studio artist: in addition to buildings, his design practice includes exhibit design, park design, and environmental graphics. His work has been exhibited and published both nationally and internationally. He received his first architecture degree from Carnegie Mellon University, graduating with Honors, and completed his graduate studies at the Cranbrook Academy of Art.

Philip Tidwell is a studio instructor at the Wood Program in Finland. He holds an MArch from Princeton University and a BA in architecture and urban studies from Washington University in St. Louis. Tidwell is also the director of Peripheral Projects: Architecture Graphics and Design.

Emilie Taylor Welty, AIA is a Professor of Practice and the Design Build Manager of the Tulane City Center. She co-taught the Grow Dat design-build studio and served as the construction manager on the project.

Daniel Wheeler, after years working as a carpenter, entered the Architecture program at Norwich University and recently received a Master of Architecture degree. He now works in an architecture office in Vermont. Daniel also holds a degree in Philosophy and visits his home waters of coastal Maine whenever he can.

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Foreword

Inherent to any educational design-build endeavor is the broadening of the definition of the discipline of architecture. This expansion, this reach, extends beyond traditional notions of design to span into the realm of making. And as such, design-build pedagogy embraces the fullness of architecture as an optimistic act. For architecture extends an offering to the world each time a design is built. It is no wonder that it is students that call for and give rise to design-build curriculums throughout academia.

Design-build serves as a bridge between the academy and the larger world; it offers a rebuttal to the accusations of the insularity leveled at institutions of higher learning by descending the ivory tower and engaging the citizenry in various efforts to transform the built environment. Moreover, design-build attempts to bridge the chasm that exists between the architect who provides "design intent" and the constructor who has legal and financial control over "means and methods" of the building, challenging the legal paradigm that asserts: architects think and builders make. And most often design-build pedagogy serves as a bridge to impoverished communities within our society, providing intellectual and material resources to constituencies woefully underserved by the architectural community.

It is well known that design-build curriculums edify students about the myriad forces that come to shape architecture. Certain of these are technical, like thermal or gravitational resistance, while others are palpable: the scent of wood. Some forces are logistical: time and money; and others are just inscrutable: bureaucratic regulatory dissent. Understanding these influences is important. More important is the experience that students gain in seeing a design idea transformed and manifest in built form. Most important is the attestation to the power of thought and effort to bring about hopeful change.

To actually walk through the threshold that one has intellectually conceived, discussed, drawn, and debated is not simply an affirmation of, but the manifest conclusion to, the original conception. The promise of the pedagogy of design-build lies in the afforded reflection upon the thinking that fostered the architectural idea which led to its making.

As The Jim Vlock Building Project embarks upon its 50th year as an integral part of the core curriculum at the Yale School of Architecture, I am optimistic that its founder Charles Moore's calls for "inclusivity", echoed in Sam Mockbee's appeals for "compassion", have resonated throughout the architectural educational system. This book is testament to the proliferation of design-build programs throughout the globe. And the inherent interdisciplinary nature of these programs bode well for their capacity to adapt to address the distressing needs of this earth.

—Adam Hopfner
Director of The Jim Vlock Building Project
Yale School of Architecture

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Acknowledgments

This book is the culmination of years of research and teaching. It began with an interest from Routledge and I am grateful for their guidance throughout the process and continued commitment to the project.

It would not have been possible without the tremendous effort of the contributing authors; thank you Adam Hopfner, Danny Sagan, José Galarza, Daniel Wheeler, Adam Marcus, Steve Badanes, Stephen Kredell, John McCleod, Vittoria Capresi, Barbara Pampe, Adrienne Gagnon, Manuel Cordero, Thomas Randall-Page, Theodore Molloy, Pekka Heikinen, Philip Tidwell, Lori Ryker, Aron Temkin, David O'Brien, Dan Rockhill, Emilie Taylor, Ursula Hartig, Nina Pawlicki, Sinead Mac Namara, Larry Bowne, Rick Sommerfeld and Alan Organschi.

Thanks also to Norwich University School of Architecture and Art, and specifically Aron Temkin, Cara Armstrong, Danny Sagan and Faculty Development for their continued support of this work.

My editors have provided invaluable comments and critiques. Thank you Alexei Pfeffer-Gillett, Elinor Bacon, Simi Hoque, Amy Woodbury-Tease, Kira Bacon, Sylvia Gillett, Eleanor D'Aponté, Cara Armstrong, Matthew Monk, Lauren Antler and Otto Stonorov.

Of course, none of this would have been possible without the endless love and support of my family. Thank you Otto, Elinor, Niko, Luca and Oscar.

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Introduction

Tolya Stonorov

The academic design-build studio supports the idea that building, making and designing are intrinsic to each other: knowledge of one strengthens and informs the expression of the other. Defined here as the act of physically making what is designed at full scale, design-build is gaining momentum in architecture education pedagogy and curriculum. The design-build studio instills in students a strong commitment to understanding the implications of design decisions and provides deeper knowledge into what it means to be an architect. The importance of the design-build experience, of understanding material relationships at a one-to-one scale is invaluable. Hands-on learning through the act of building what you design, translates theories and ideas into real world experience.

This type of applied knowledge forces the designer to be accountable for her work and provides a deeper understanding of material reality.

Too often architecture students become immersed in the theoretical space of the buildings they design. Through design-build, students track design concepts through to built detail expression. The level of abstraction that often exists in drawings dissolves when students are tasked to physically make a connection – to build the joint they design. Every architect should have to engage in the process of building her own work. This exercise gives a more complete understanding of the consequences of design choices and provides an experience-based respect for the builders who make architecture into a physical reality.

The nature of the design-build studio moves beyond traditional intellectual exploration, hovering between academic (theory) and professional realities (practice). Issues of structure, cost, material procurement and constructability take on concrete importance, forcing students to deal with the real world constraints of fixed budgets and detailed programs.

Figure 0.1 Student fabricating custom turnbuckle, 802 LAB, CASA 802, Northfield, Vermont, USA, 2016

Figure 0.2 Setting the window, 802 LAB, CASA 802, Northfield, Vermont, USA, 2016

Figure 0.3 Handwork, Vermont, USA, 2016

These constraints further enforce the students' responsibility for their design decisions.

Many design-build studios choose to focus their efforts on aiding people and communities in need, highlighting how architecture has the potential to provide real solutions to society's troubles. As a result, students have the opportunity to interact with clients with defined needs in person, encouraging accountability not found in a traditional studio setting. The combination of client and budget realities in the design-build studio gives students the opportunity to understand the power that architecture can have on our world. Students are taken out of the classroom, which encourages the development of interpersonal skills and inspires confidence in their designs; they gain the tools that can make a physical difference in peoples' lives.

Design-build necessitates an in-depth focus on material choices and building methods. These must be understood in relation to the larger context of local and global sustainability. The application of this idea within an academic setting, applies both to the process of designing and the interpretation of the built environment. It is crucial to explore and understand the wider implications of decisions and processes put in motion in the pursuit of design goals. Because process shares the same social and environmental concerns too often singly associated with the products of design, process too must be designed. I.e. equal importance must be given to the decisions of how we make things, as the things we make. Design and research that simultaneously enmesh the immediate and perceptible qualities of projects with the broader implications of design decisions and methods push for new and innovative solutions in thought, process and form.

> *Designers are not trained sufficiently to achieve positive change for people living in undeserving conditions. Design education has to evolve radically to ensure young designers have the capacity to bridge the gap between design and construction, understand the nuances of diverse sites and territories, and communicate more profoundly with local communities and stakeholders. In short, instill a greater social empathy. Manual skills must be developed on the same footing as digital and intellectual skills. Designing the right process must be equally important as the outcome.*
>
> —Laufen Manifesto for Humane Design Culture [1]

Figure 0.4 Digital fabrication joints, Tolya Stonorov, 802 LAB, Northfield, Vermont, USA, 2014

The design-build studio supports the belief of making through thinking and thinking through making. In a world where digital screens dominate much of our mundane work environment, many academic settings are driving the process of physical making toward extinction. Design-build grounds us in the physicality of the world we live in. Unable to press "Ctl Z" when a drill slips or when a joint has excess movement, physical making instills a responsibility and respect for craft.

In part, this book examines designing, making and building with digital and traditional means, exploring the issues and opportunities that are generated by each methodology. With the shift towards digital methods, questions emerge: how are the inherently rich qualities of materials brought into computer-generated design when the initial conceptual explorations are distanced from the rawness of their form? What happens to the maker, the process, the artifact, if the hand is no longer involved? What occurs in this thickened threshold between hand and computer control? As material tolerances approach zero with the use of digital fabrication methods, is there a richness lost in the presence of precision? How does the experimentation that comes from working a material through touch translate and shift when the process becomes automated and preconceived?

There is feedback specific to working with materials, tools and methodologies that directly informs concept, design, assembly and built work. Through the manipulation of a material, one learns what it wants to be and how it most successfully performs. So, when the relationship between hand and material is distanced, how does the material feedback evolve and transform? Specifically, when working with materials by hand, you can literally feel material resistance; when using a digital tool, the immediate physical feedback is detached.[2] Digital fabrication affords many possibilities previously unattainable due to cost, material or labor. How does this shift in making influence the resulting design? These questions and concepts are explored in the chapters on Handcraft and Digital Fabrication.

In the case studies section of the book, sixteen design-build studios are examined through process, product and outcome. The projects focus on community-driven work that, through design, aims to educate and fill in missing pieces in the built environment. The first section, **Fast Build**, looks at

Figure 0.5 Foundations, Studio 804, Lawrence, Kansas, USA

programs that occur in an extremely short time period, less than a semester. This quick timeframe often allows for greater student involvement because the design-build project can fit into a more traditional academic semester without devoting an entire term to the project. The *Urban Farm Supershed*, from the University of Washington's Neighborhood Design/Build Studio, builds a structure where the community is educated about food choices and production. With continued student involvement, the project creates a link between the university and homeless and low-income youth. Island Design Assembly's one-week program on islands in Maine identifies key points of need for a rural population and looks at how to design and build for a community that has an extreme site accessible only by boat. In Cairo, Egypt, baladilab reinvigorates dilapidated elementary school playgrounds through the *Learn-Move-Play-Ground.* At *Skate Spot* in Providence, Rhode Island, DownCity Design converts an underused downtown side street into an interactive skateboard and community park. In Latvia, the *Sanatorija,* from Building Works Unit, builds a miniature sanatorium that highlights edge conditions and examines Latvian culture and tradition. *University of East London Construction Week 2014* looks at how the design-build studio can be re-structured so that all students have the opportunity to participate during their academic education.

Build, the second case studies section, documents projects that follow the traditional semester and are less than a full academic year. This organization allows for more research and precedent exploration, as well as more extensive build times. Still, the typical semester forces concentrated focus and limited conceptual exploration. In Finland, The Wood Program's *Liina Shelter* uses experimental, expandable building techniques to produce stunning and functional refugee housing. The Artemis Institute Remote Studio's *Cloud Nine Farm Shed* looks at how to immerse architecture students in the landscape, locating them with a deep sense of place that serves as the foundation for their design-build work. Norwich University 802 LAB's *Archistream* project examines how to bring architecture to rural communities through a mobile resource center and gallery housed in a redesigned 1969 Airstream trailer. The *Early Learning Center* from the Bower Studio transforms modular units into a joyful, shaded place for children.

The **Long Build** section brings together a collection of case studies that are taught for two or more semesters. Because these types of projects often include programs and logistical concerns that involve increased complexity, students are afforded more time for research, design and fabrication. Due to the greater time commitment, lengthier projects can mean that students are not involved for the entire design-build process. The benefit of longer projects is clear: public involvement, design choices and building methods can be considered in greater depth, resulting in projects that have a

Figure 0.6 Building the Mexican Water Cabins, DesignBuildBLUFF, Mexican Water Cabins, Navajo Nation, Utah, USA, 2014

profound impact on the community. In *Galileo's Pavilion*, Studio 804 employs state-of-the-art materials and processes to create a set of inspired classrooms for Johnson County Community College. *Grow Dat Youth Farm* from the Tulane City Center in New Orleans creatively uses materials to fashion a beautiful and simple structure that is, at its core, about giving back to the community. Berlin's CoCoon travels to Oaxaca, Mexico, to build a *Jam Manufactory* for the women´s cooperative *Naxií*, using simple materials in innovative ways to create a structure that is simultaneously highly contextual and modern. The *Play Perch*, by Syracuse University, creates a whimsical educational structure that encourages student exploration and play. The DesignBuildBLUFF builds *The Mexican Water Cabins*, a material-rich, minimalist set of cabins that aid in bringing tourism funds to the Navajo Nation in Idaho. Finally, the *2014 House* by Yale University's Jim Vlock First Year Building Project pushes the boundaries of housing size, with small-scale living that provides income through an attached rental unit. Together these projects serve as a field guide to the current academic design-build studio, a window into the different processes and methodologies being taught and realized today.

Notes

1 Anna Heringer, Hon. Prof. of the UNESCO Chair for Earthen Architecture, Germany; Luis Fernandez-Galiano, Architect, Editor Arquitectura Viva, Spain and Alejandro Echeverri, Director of Urbam, Medellin, CO; www.anna-heringer.com/index.php?id=6 , www.laufenmanifesto.org

2 A small portion of this text was published in the article: *Garment, Component, Joint: The Worth of Building What You Design; Tolya Stonorov;* Conference proceedings of The National Conference of Beginning Design; California Polytechnic State University; 2016

Chapter 1

Time Map

Graphic History of the Academic Design-Build Studio Case Studies

Tolya Stonorov and Danny Sagan
With drawings by Tolya Stonorov

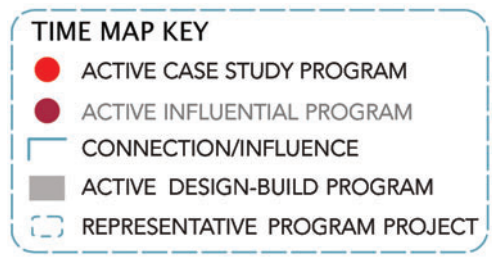
Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Time Map

The Case Study Time Map is a family tree of sorts. Each design-build case study program in this book is shown at the year it began. An iconic project for each program is drawn in the dashed rounded rectangles above. Any key design-build influence or important connection is also placed at the year it began and the connections between these programs are drawn in blue. The red dots are placed at the year the program commenced (with a corresponding number in the center) and continue for as long as the program stayed active. The gray 10% transparent tone shows the rise in the number of academic design-build programs over the years.

The history of the design-build studio is a complicated and sometimes convoluted one. This graphic time map locates the influences and inspirations of the programs specifically chronicled in this book, but it does not assume to be comprehensive.[1] If the relationships between the programs that are documented here appear complex, it is representative of the interconnectedness of this movement. It is important to note that at one point in the history of this movement, almost everyone involved knew each other. Because there are so many programs now, this can no longer be said. However, we are at least all related, if not directly, then through our relationships with a common ancestry. We are also connected in how we choose to pursue the making of buildings and in how we ask ourselves questions. Are we artists or technicians? Which should guide our process, the idea or the artifact? Are we true Modernists or are we an extension of a long tradition? Do we follow the trajectory of the machine or do we live solidly in the realm of hand making? These dichotomies, seemingly as centrifugal as Nietzsche's classic Dionysian and Apollonian, try to find resolution in the Design-Build movement. Living romantically on site while constructing rationally and critically derived forms, we live both metaphorically in the Bauhauses of the cathedral builders and the radical space of Ant-Farm's media burn. We are the utopian children of Buckminster Fuller, dreaming of the universe while practically reasoning over the cost and weight of each nail, following every Btu.

Design-Build was born out of a tradition of radical pioneers. Therefore, it is not surprising that the design-build process lives and breathes in the research wings of architecture schools. In some cases it continues to change the methods we all use. In many cases it makes us all more inclusive and pluralistic. What cannot be refuted, is that by bringing the once radical notion of design-build into the academy, and into the lives of students, we have indelibly altered the landscape of what is possible.



Suggested Reading

EDBKN/European DesignBuild Knowledge Network Consortium. (1 June 2016). dbXchange.eu. Accessed: 5 June 2016.

Goodman, Anna Gloria. A History of Community Design/Build in the United States in Four Moments. Globalizing Architecture/Flows and Disruptions: Papers from the 102nd Annual Meeting of the ACSA, 2014, 503–512.

Inventing Abstraction, 1910–1925, Museum of Modern Art, New York, 23 December 2012–15 April 2013, Organized by Leah Dickerman, Curator, with Masha Chlenova, Curatorial Assistant. 2012. www.moma.org/interactives/exhibitions/2012/inventingabstraction/?page=home.

Lloyd Kahn, Shelter, Shelter Publications; 2nd edition (May 1, 2000)

Note

1 All information is based on communication with the case study authors and individual research.

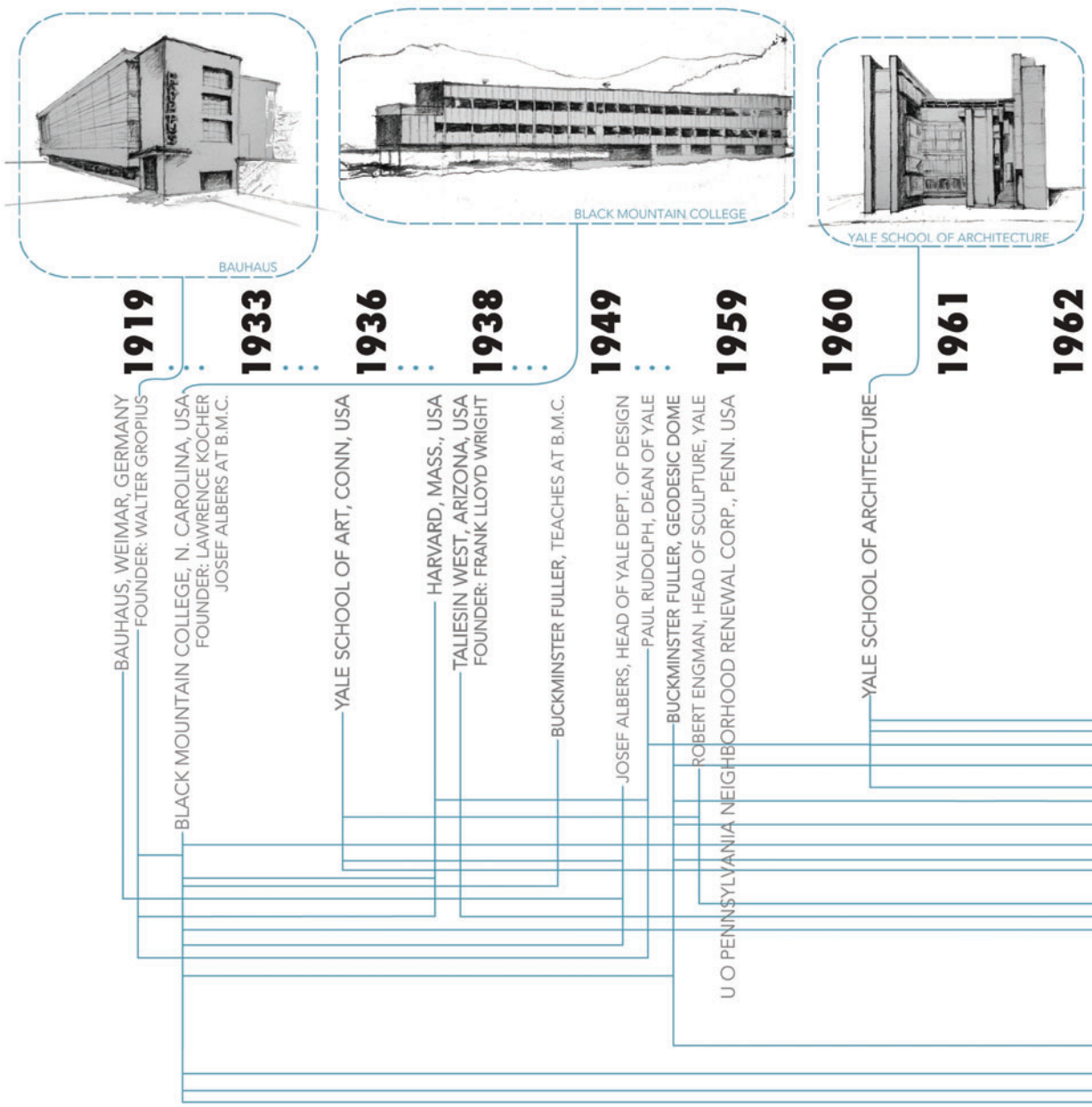


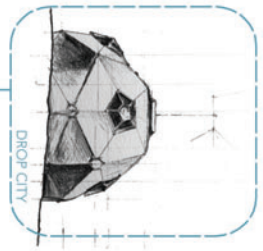
Figure 1.1 Case Study Time Map

ARCHIGRAM, LONDON, ENGLAND

1963

DROP CITY, CO, USA

1964



ARCHITECTURE RESEARCH AND DEVELOPMENT CORP., VT, USA
FOUNDER: PETER GLUCK

PRICKLY MOUNTAIN, VT, USA
FOUNDERS:
DAVID SELLERS
WILLIAM REINEKE
ED OWRE

1965

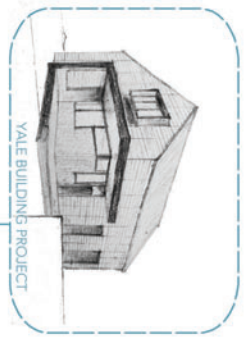
ARCH 2001, PENN, USA
FOUNDER: TROY WEST

1966

HAUS-RUCKER, VIENNA, AUSTRIA
FOUNDER: LAURIDS ORTNER, GUNTHER ZAMP KELP, KLAUS PINTER

YALE BUILDING PROJECT, CONN, USA (1)
PROGRAM FOUNDER: CHARLES MOORE, DEAN

1967



ANT FARM, CA, USA
FOUNDERS: DOUG MICHELS AND CHIP LORD

1968

PACIFIC HIGH SCHOOL, CA, USA
FOUNDERS: LLOYD KAHN AND JAY BALDWIN

1969

PEOPLE'S WORKSHOP, NY, USA
ZOMEWORKS, NM, USA
FOUNDER: STEVE BAER

ARCOSANTI, AZ, USA
FOUNDER: PAOLO SOLERI

1970

UC, BERKELEY WITH ASIAN NEIGHBORHOOD DESIGN, CA, USA
FOUNDER: CLAUDE STOLLER

GODDARD COLLEGE DESIGN BUILD, VT, USA (2)
FOUNDERS: JOHN MALLERY AND DAVE SELLERS

DUNCAN SYME

1971

JERSEY DEVIL, USA
FOUNDERS:
STEVE BADANES
JOHN RINGEL
JIM ADAMSON

1972

YESTERMORROW
WOOD PROGRAM
RURAL STUDIO
NEIGHBORHOOD DESIGN BUILD STUDIO
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
LLOYD KAHN, SHELTER
FARALLONES INSTITUTE, CA, USA
FOUNDER: SIM VAN DER RYN
U O CALIFORNIA, BERKELEY, CA, USA
THE PRODUCTION OF HOUSES, CHRISTOPHER ALEXANDER
SMALL TOWN CENTER, MISSISSIPPI STATE U, MISS, USA
YESTERMORROW DESIGN BUILD SCHOOL, VT, USA (3)
FOUNDER: JOHN CONNELL