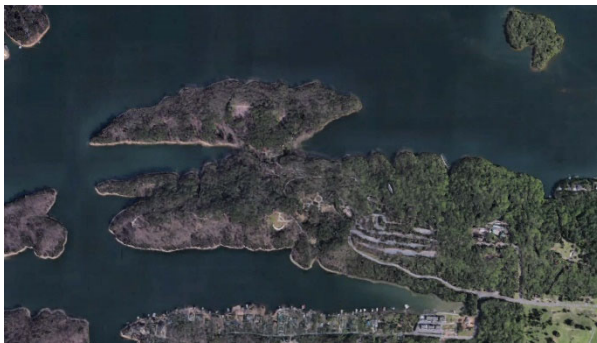


## UDBS CARB COMPLEX 05: REALIZING POTENTIAL

### Context

The state of Arkansas finds itself with abundant forest resources. The forest defines the state's ecological and economic environments and positions it to make significance contributions to the burgeoning field of mass timber. The University of Arkansas Fay Jones School of Architecture + Design sees in this resource both an opportunity and imperative for forest-based pedagogy. Our objective is to develop students whose understanding of timber buildings' myriad benefits emboldens them to imbue the design professions with a knowledge set critical in this century. As a land grant institution, it is also our charge to disseminate knowledge about emerging timber systems so that residents better understand the global ecological and economic impacts of their regional resource environment.



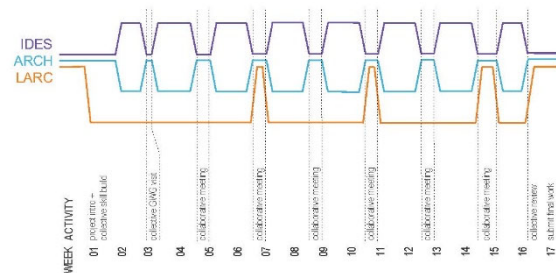
Garvan Woodland Gardens in Hot Springs, Arkansas

Where the forest is a resource for the state, Garvan Woodland Gardens is a resource for the Fay Jones School. The University's 210-acre botanical garden is dedicated to preserving and enhancing the region's natural environment for residents' education and cultural enrichment. The Gardens sublimity belies its high visibility; visitations will crest 225,000 in 2021, with visitors from all states and multiple nations. This represents a 20-30% increase in visitations over the past 18 months, an indicator of demand for spaces that encourage engagement with nature. The Gardens are an object of study for the School, both for their contents and users' interaction with them. For our students, it is a place to occupy the liminal zone of natural and built environments and explore the dialogue between forest and timber.

It is in this context that the School was provided a significant gift by the Whipple family, one of the largest forest landowners in the State. The gift facilitates student-led design and construction of a five-thousand square foot Ross and Mary Whipple Family Forest Education Center at Garvan Woodland Gardens. Critically, this environmental education center and economic development tool will be made from Arkansas-sourced timber and educate the local, state, and national public on the character and value of Arkansas forests and the use of wood for the betterment of society and the environment. The Center will also provide arts education and cultural experiences for the public while advancing the mission of Garvan Woodland Gardens as an outreach effort of the Fay Jones School. The conceptual, driving ambition of the project is to create a set of immersive experiences that are simultaneously *in the forest* and *of the forest*.

### Project Development

To develop the project, the Urban Design Build Studio (UDBS) is organized into a series of interdisciplinary studios around a single theme: CARB COMPLEX. An anastrophe, the title suggests two fundamental dimensions of students' exploration: 1. Material – forests, trees, and wood, the three sequential forms the constitute timber's carbon-sequestration regime, and 2. Program – a complex for education, exhibition, outreach, and advocacy. These dimensions are explored concurrently in three disciplines: architecture, interior design, and landscape architecture. Collaboration among these disciplines is curated in a rhythmic pattern marked by alternating periods intradisciplinary isolation and interdisciplinary convergence:



Intradisciplinary isolation / Interdisciplinary collaboration

There have been four studios to date, each focused on incremental advancement of the design:

**UDBS CARB COMPLEX 01: *Big Picture*.** As the initial studio, the students' work was focused on comparative analysis of multiple sites, understanding of material potential, exploration of potential building and educational programs, and initial engagement with stakeholders. A multi-volume body of research that addressed spatial, programmatic, material, and logistical potentials was produced by the studio as a foundation for subsequent work. This work informed the calibration of stakeholder meetings, discrete evaluation of seven sites, and investigation of numerous strategic proposals that were advanced and evaluated with Design Review Committee engagement through UDBS summer internship opportunities. At the completion of the summer internship, a single site was identified, and baseline building program established.



*Development of the WFFEC to date*

**UDBS CARB COMPLEX 02: *Too Strange to Believe*.** Utilizing work developed in Big Picture, this studio employed the concept of an exquisite corpse to investigate potentials of each individual program space and relative form in isolation, relative combination, and comprehensive composition. Working at multiple scales, including full-scale delineation of space, this method supported program validation in the context of multiple formal, organizational, and tectonic strategies.

**UDBS CARB COMPLEX 03: *The Reciprocal Moment*.** In this third studio, students explored tectonics through reciprocal exchange of ideas. A sequential process that included material assembly process supported the development of four comprehensive schemes that were evaluated by Stakeholders and the Design Review Committee to initially identify two valid approaches for development, and at the conclusion of the semester, a single conceptual design, and a material system orientation. UDBS summer interns advanced the single concept through Schematic Design.

**UDBS CARB COMPLEX 04: *Reconciling OUTside within / Reconciling INside without*.** The fourth studio (Fall 2021) studio built on the previous three studios and two summer internship windows and focused on identification of systems, their integration, sequential phasing, and finite tectonic strategies. Refinement of the design considers issues of structure, enclosure, and spatial experience.

These four studios are analogous to phases of design in practice, respectively: Pre-design, Conceptual Design, Schematic Design, and Design Development. It follows then that the next studio will be commensurately aligned with the next phase of practice: Construction Documents. This next studio, and the focus of this proposal, is a critical inflection point in the realization of this project: ***UDBS CARB COMPLEX 05: Realizing Potential***.

### **The Studio**

The project site, the generous funding opportunity, and the work of the previous four studios have built both latent abilities in UDBS's institutional knowledge and qualities of the project that can only be proven through implementation. Realizing this potential recognizes its emergence as fact. The bridge between the project's ideation and its construction is crafting Construction Documents and Prototypes, and it is in these forms that the project's potential will be realized in CARB COMPLEX 05.

There are two overarching objectives of the studio. One is to advance the Ross and Mary Whipple Family Forest Education Center design documentation to a point of constructability. This acts as a vehicle for the second objective, to build among the studio cohort a deeper understanding of the performance and potential of timber. At this point, there are few students who aren't familiar mass timber, its impetus, its aesthetic, and its stated potentials. But what we hope to build is an epistemology that transcends familiarity. It is not enough to *know about* mass timber; students and emerging professional need to *know* mass timber. That is, they need to know mass timber in a way that is unique to the material and not an analogous translation of other, dominant material systems. Our strategy here is to eschew visually-dominant methods in



*Students working at-scale, in wood*

favor of more tactile modes of working. This haptic (from the Greek “to lay hold of”) approach is based in crafting construction documents and physical prototypes, and it builds in the students a more intensive understanding of timber. Ostensibly visually-based, construction documents vary from other drawings in that they are fundamentally explanatory, rather than representative. In crafting them, students need to express an understanding of how the material works, not just how it looks. Physical prototypes are an extension of this logic, in that their construction requires of the students an understanding of the material’s behavior, and they are similarly used as explanatory artifacts.

This project and its pedagogical objectives are rooted in its region, and a haptic basis for the project’s realization and experience is critical for its stated objective of being “in the forest, of the forest.” In his *Towards a Critical Regionalism*, Frampton suggests that tactile experience is critical in understanding a place: “The tactile resilience of the place-form and the capacity of the body to read the environment in terms other than those of sight alone suggest a potential strategy for resisting the domination of universal technology.” In advancing both an emerging technology and a broad understanding of timber, the methods of this studio are both in, and of, the forest.

### Work Plan

UDBS students meet at the Fay Jones School of Architecture + Design Build Lab, an off-campus facility which provides normative classroom spaces, a computer lab, enhanced digital fabrication capability, metal and wood shop facilities, as well as extensive covered assembly/pre-fabrication space. The interdisciplinary cohort will meet here, three days per week, for the 15-week semester. (Build Lab image).

In addition to the Build Lab, the studio leverages considerable personnel and infrastructural resources. The three teaching faculty members, Professor John Folan, Associate Professor Kim Furlong, and Assistant Professor David Kennedy have extensive experience in teaching, research, and practice related to wood, mass timber, and design-build. UDBS also engages external consultants with expertise critical to the project’s structural and systems development. Within the University system, the Arkansas Forest Resources Center in Monticello, Arkansas provides forest resource-based expertise, and the School enjoys industry support from Weyerhaeuser, Anthony Timberlands, and Structurlam. These personnel and infrastructural resources come to bear throughout the studio and project development, imbuing the project with expertise and a pragmatism.



UDBS students at work in the Build Lab

The project schedule is determined by the project’s needs but modified as conditions cause it to shift. Though the course is structured with ambitions for predictable and productive outcomes, it is subject to the realities of an unpredictable building environment. That said, to facilitate creation of construction documents and prototypes, integration of consultant input, review, and dissemination the semester is organized as follows:

**SCOPING** (2 weeks): Students will identify the type, quantity, and quality of drawings and prototypes that are needed to communicate the project. This “dissection” of the project’s development to date will build comprehension of its history and objectives. Critically, this time will also be used to develop the working modes by which the artifacts are completed.

**PROTOTYPING** (6 weeks): Students will create a full breadth of “drafts” for the prototypes and construction documents. Leveraging a work-shared BIM setting, this single set of documents will cover the full scope of typical design documents. The prototypes will engage real building materials and physics, if finalized levels of finish. This phase of the studio will conclude with presentation and dissemination: the students will present the work to a pre-determined Design Review Committee for feedback, and they will engage with a set of consultants to expand the scope around building systems.

**INTEGRATION** (4 weeks): Working from the Draft artifacts, DRC feedback, and consultant input, the students will develop an integrated set of construction documents. This document set will be the basis for a costing exercise.

**FINALIZATION** (3 weeks): The students will continue to develop the construction documents in response to the costing exercise results. Simultaneously, they will craft finalized versions of the prototypes, representative of the material, physics, and finish. The drawings and prototypes will be presented to the stakeholder group, including Whipple family

and Garvan Woodland Gardens representatives. Following the presentation, the students will package their work for dissemination among the subsequent cohort.



*WFFEC Model development*

### **Next Steps**

The project will continue to develop after the conclusion of CARB COMPLEX 05: REALIZING POTENTIAL, where the scope of work is predicated on the character of the project at the semester's close. Over Summer 2022, the project will be advanced by full-time interns who emerge from the studio. These interns foster continuity in the work and are equipped to address outstanding gaps in its development. Their work will position the project for subsequent phases of work, including implementation of Phase 1 in Fall 2022.