

Fundamentals of the Foundation: Sustaining The Basics

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Take Nothing for Granted

Most people are visually illiterate. Why should it be otherwise? We have a text-based culture. Our educational systems teach us to value text over image.

Just because you have eyes does not mean to say that you can see. From childhood, when we are persuaded to learn the alphabet, through adolescence, when we are taught to amass vocabulary and word skills, to adulthood, when we never finish polishing our ability to communicate through words, proportionately, in our culture, very few people spend as much time and patience and intelligence reading images as they do reading text.

Our sophistications of communication are text-based, in the spoken and the written word. By comparison, the interpretation of the manufactured image in our culture is undernourished, ill informed and impoverished.

Peter Greenaway, from *Rembrandt's J'Accuse*

Because Nothing is Granted

Recent years have seen the necessary and inevitable return of broadly-based ecological consciousness. Among the effects of this change, far more a paradigm shift than a passing fad, are calls to overhaul the curricula at schools of architecture to reflect the new challenges and opportunities that lie ahead for both the profession and society at large.

For reasons both obvious, and too numerous to list, this curricular overhaul is universally recognized and already well underway. Not surprisingly, we embrace it wholeheartedly. But change, no matter how necessary or urgent, never comes without difficult choices.

As foundation design educators, our concerns for sustainability follow several entwined paths: some defined by current conventions, others less so. Among the latter, and the primary subject of this essay, arises the problem of sustaining an effective and sufficient First Year

curriculum in the face of what we may call the *Perpetual Crisis of the Zero-Sum*.

A familiar problem vexes accredited schools in architecture throughout North America, and (we can only assume) beyond. In order to meet the stringent requirements imposed by program accreditation processes, a fundamental range of skills and capacities are incorporated into the base set of degree requirements and assessments. Further restrictions are imposed – from within or without – on the number of in-house credits in a well-meaning effort to ensure a broad-based liberal arts experience. Host institutions, under increasing pressure to graduate students in a timely manner, may additionally restrict the maximum number of credit hours taken before surcharges and other penalties ensue.

Thus, for a number of historically inextricable and valid reasons, we face the crisis of the *zero-sum*. In short: to add something new, we must first drop something already in place. In order to be responsive to notions of new content – Sustainability, for instance, we must simultaneously entertain a list of what constitutes 'old' content. To ask this inevitable question – what is dispensable? – we must raise an even earlier question in the sequence: what is *indispensable*?

In schools of architecture, foundation studies – what we also call Beginning Design classwork – is already pretty full. Like that of subsequent years, it is full of new ideas to be learned, and skills to be mastered. The proper, indeed the *necessary*, charge for a First Year program is to prepare students to pursue an architectural education.

A cynic might suggest that our post-Beginning Design colleagues would prefer that *all* skills be taught in the first year, freeing them to indulge in pursuits less onerous than actual pedagogy. Cynicism aside, First Year is a *preparation* for study: its fundamental nature ensures that decisions regarding what to include and what to postpone are crucial, and fraught with consequence.

For simplicity's sake, we refer to these necessary modes of preparation as The Basics. As beginning design educators, we argue that such fundamentals need be design pedagogy. In the long run, The Basics comprise Beginning Design's only necessarily sustainable practice.

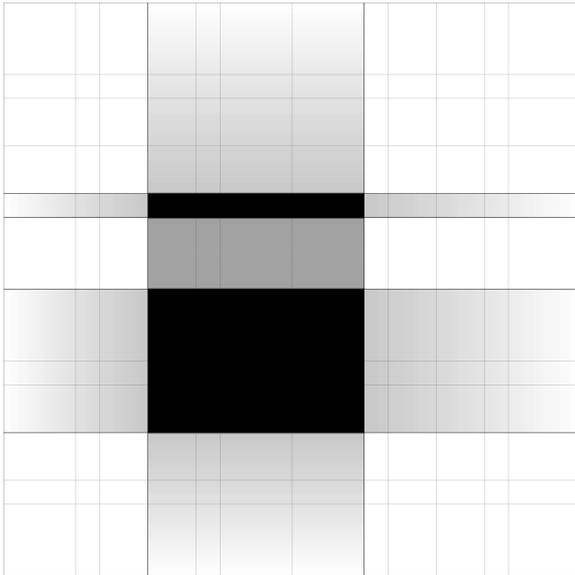


Fig. 1. Architectural design is premised on visual 'graphicacy'. Basic exercises in figure-ground lead to more advanced awareness of syntax of figural and volumetric composition.

Our argument rests on a parallel supposition: that students provided with these basics will ultimately be better able to integrate sustainable practices. The underlying premise is to understand the implications of any part of a practice; one must first understand the *general premise* of that practice, and its underlying principles. Evaluations of architecture require an understanding of *what characterizes* architecture, just as an appreciation for poetry requires an understanding of what characterizes poetry.

And just as poetry draws upon higher functions of language itself, architecture draws upon higher functions of *visual and physical modes of knowledge*. Most of us don't remember learning language, but it was difficult, and took years. And before we could have meaningful discussions, we first had to learn how to put meaning into those discussions. So, the first task in beginning design is *to measure and augment a student's ability to see and sort through visual phenomena, and learn to articulate criteria to those observations*. In a nutshell, that comprises the entirety of what we describe as The Basics.

What Can We Sustain?

We begin our direct address on sustainable practices with a question: is sustainability *show-able*? Does it have a significant visual component or is sustainability a data-driven feature of design? Because we are design teachers, we concern ourselves with design as a skill set. Certain aspects of practice, theory and critique must await basic competence to be either understood or effective.

Beginning courses in architecture [should] provide students with the means to design. This includes a large dose of learning to visualize architecture. Toward that end, start with a working definition of architecture as the organization of material and form toward purpose. If sustainability is not a mere list – is not only about data – but holds potential for changing what architecture is and what it is about, then at some point that has to *show*, somewhere, somehow as form. This is part of our concern.

The approach that we take at our school in teaching first year students prominently trains them to interpret form diagrammatically. In this, students not only compose, but also analyze the composition of form. Thus far, we find that students can in a relatively short amount of time, understand the creation of formal relationships, spatial relationships and sequence, and visual and physical paths among those forms. This capacity is at the heart of the diagram as an analytical and generative tool. It is also a by-product of visual skill. To speak to any issue including sustainability, requires a level of capacity to speak at all.

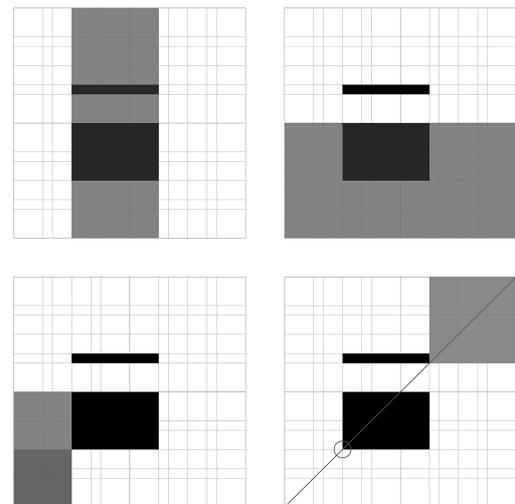


Fig. 2. Four studies of defined and implied fields derived from the initial figure-ground study in Figure 1. The ability to see, and to subsequently construct visual order isn't an intrinsic skill, despite widespread claims that we inhabit a 'visual' culture: such capacities must be learned, and it can be taught.

Toward a New Basis for The Basics

We present an argument here for what is commonly mislabeled as *visual literacy* as a prerequisite to competent design. We begin with the definitions of three abilities:

- 1 **Literacy**: the ability to recognize, interpret and use letters to represent language.

- 2 **Numeracy**: the ability to recognize, and use numbers to represent mathematical ideas.
- 3 **Graphicacy** or *graphic ability*: the skill to recognize, interpret and use visible elements to represent visual concepts.

All three of these abilities can range between rudimentary and expert. For this narrative, our focus is on defining the degree of graphic ability that is most vital and necessary to beginning design education. Furthermore, the sort of overall cognitive development fostered by graphic skill needs explication in the face of the real pressure to de-visualize architectural and design education.

Along with other newfound capacities vying for inclusion, sustainability as a criterion for architectural education appears to presuppose the ability to design. Yet the fact remains that fundamental criteria, including conceptual, contextual, structural and material organization remain dependent on the capacity for making order. All of this suggests that *formal design skill needs to come first*.

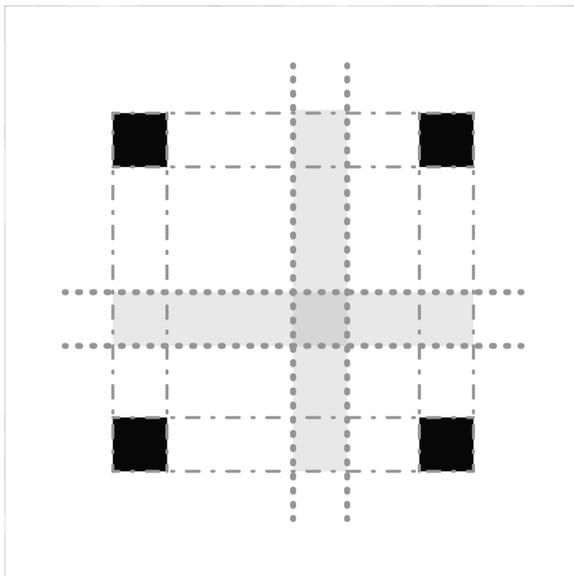


Fig. 3. A simple diagram illustrating other possibilities for defined and implied space, in this case using a base composition of four figures. Fields shown are implied by subdivision and proportion.

What follows here is a rather brief synopsis of a sequence of principles tied to exercises that pair drawing with design skills acquisition. From this foundation, we have found that our students are better able to analyze and organize toward a purpose. Sustainability is, after all, an outcome, a set of criteria for acting in the world. Furthermore, sustainability as a sophisticated set of relations requires pattern recognition in a meaningful way.

We argue for leadership from designers, not merely compliance. What follows is one mode of demonstration to clarify the underlying logic.

Figure-Ground

We recognize that often a description of formal learning raises the specter of formalist thought. Our response is simple. In order to read, we learn the alphabet and the syntax of language. Speech occurs all the time without that formal learning. However, define literacy as that set of competencies. Recognition of formal structure is the equivalent graphical ability.

Seeing form begins with figure-ground recognition: it is both a psychological framework and an intellectual structure. It makes visual both objects and their context. It is the foundation of contrast in our visual cortex and, arguably, thus finds its ways as a term the way that we perceive and organize ideas. Ironically, because of its fundamental nature, we often take it for granted in routine culture. Part of a college education, which includes architecture, is learning to identify and question what a student formerly unconsciously assumed.

It is for those reasons - recognition and interrogation - that figure-ground is indispensable as a formal idea. It facilitates analysis of single and multiple relationships among figures and with the ground. Even in its most diagrammatic form, the resulting visual model prompts and tests the clarity of our understanding. Sustainability as a property blossoms once we can establish multiple grounds for multiple observations (See figures 1-3).

The components - distinct observations - thus become open to arguable order. Simply put, we can then visualize competing venues for action in order to determine distinct outcomes. The judgment as to which outcome is optimal or most desirable presupposes the clear construction of alternatives.

Constructing alternatives is the soul of design. The construction makes ideas see-able. It makes them graphical. It makes them drawings. This is why we draw: to record and provoke relational speculation. Drawing proves the observation of three-dimensional relationships in a manner akin to the ways that writing explicates language.

However, drawing in its fundamental structure, offers an intrinsic, distinct epistemology compared to language. It creates a graphical field of action and observation, analysis & speculation that is native to our response to visual evidence.

Visual Skill

Honing the skills of observation/recording and analysis/speculation within the visual model defines the expert potential of the graphical domain. Skill at intelligent visual practice is the

equal of both literacy and numeracy. As such, it requires distinct training with specific results to develop toward expertise.

When we ask what architecture students' exiting skills need to be, our answer will always presuppose competence at utilizing a sophisticated body of knowledge. The base intellectual skill however, is simple pattern recognition among both qualitative and quantitative states of affairs. This ability to discern, sort, categorize and engage is intrinsically formal and recognition of formal pattern needs to be manifest in order to assess skill. (see figure 4)

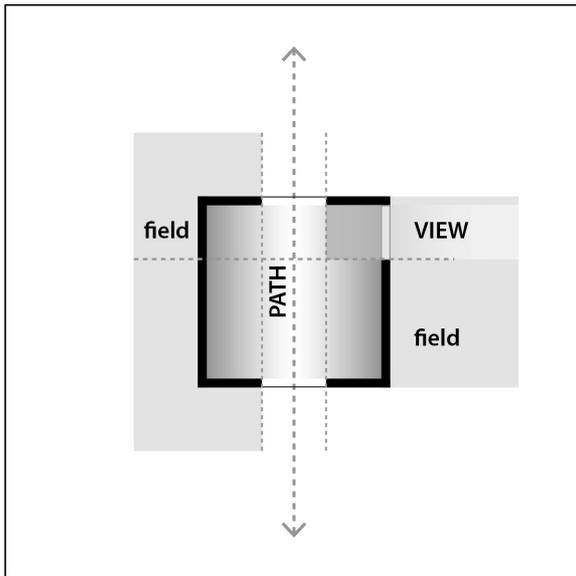


Fig. 4. Basic gestalt principles are tied to fundamental phenomena of proportion and volume, establishing the basis for the student's nascent development of architectural vocabulary.

A beginning design course can either test for visual skill or teach those skills explicit in developing expert practice. The best argument for establishing drawing as a necessary skill is its utility for both demonstration and assessment, something it shares with writing and mathematics. It also supports the argument for design as a practice and not a commentary or intent.

One of the exciting challenges presented by sustainability is that, thus far, conversations have largely relied on data and verbal description. It is our contention that conversations regarding sustainability rely on data. It is our contention that effective teaching of sustainability must move to the visual. This presents two particular opportunities: presenting the sustainable visually and diagramming its effect on quotidian design. We see presentation as a fundamental issue of drawing.

The diagram is fundamental to the design studio and studio instruction. Furthermore, because of

the nature of diagramming, particularly its ability to present compound ideas, teaching sustainability must use existing skills or run the risk of seeming secondary, or even irrelevant. The best strategy for sustainable practices is to supplement fundamentals of design, not supplant them.

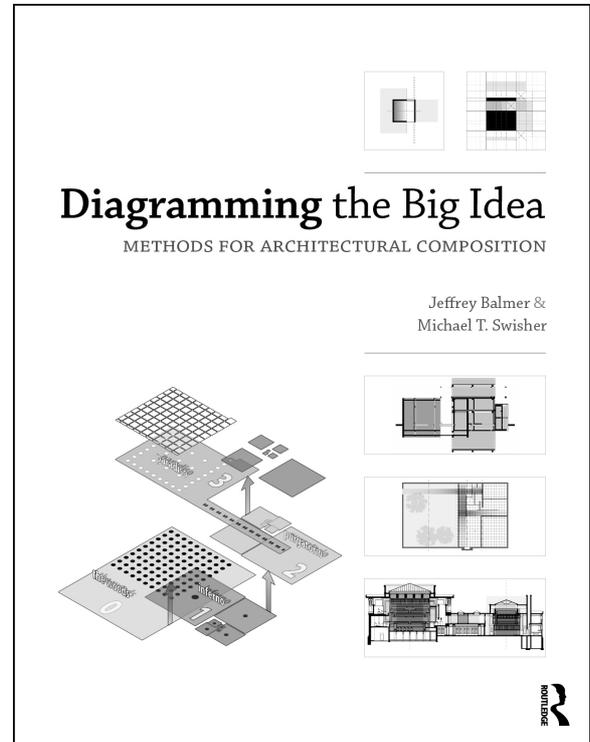


Fig. 5. Our research has led us to publish a general introduction to visual 'literacy', with a specific focus on principles of formal composition, *Diagramming the Big Idea* (Routledge, 2012)

Diagramming

In foundation-level design classes, the relevant properties of the diagram fall under two categories: strategic form and tactical elements. The strategic forms are reduced drawing, abstraction and drawing with overlay. The tactical elements are ensigns, figure/ground elements. While there are certainly other terms possible, the strategies and tactics hold. In realizing sustainability as an issue, and considering how to teach it, scholars and teachers must recognize those elements which demonstrate themselves (and to what limits) within this diagrammatic framework, and which do not. Solar orientation certainly is an easy fit. Control of apertures, likewise, has a ready presence. Material lifecycle, on the hand, is nearly impossible to diagram, being a dominantly fact-based concept.

In constructing an effective curriculum, issues of sustainability need to separate into fact-based manipulations, and diagram-based, graphical

ordering. It is incumbent upon upper-level researchers to consider this if their findings are to reach the broadest disseminations. Failure to do so will result in pedagogic isolation from foundation education, as well as confused and ineffective future practitioners.

Both for the reasons listed above, and because of the dearth of existing texts with which to instruct students on the grammar of architectural diagramming, we set out three years ago to develop our own text. Our findings are based on primarily on our experience as foundations instructors, but our research was also directed toward a establishing more broadly-based discourse on diagramming within the larger realm of what we have earlier called 'graphicacy'.

The result of this work, *Diagramming the Big Idea* (Routledge, 2012) is designed as a general introduction to visual 'literacy', with a specific focus on principles of formal composition. Meant to be useful to beginning students as well as experienced designers, our aim has been not to deliver a definitive treatise on the subject, but to open up a fundamental premise of Foundations studies for a more energetic discourse, re-focusing conversations surrounding first principles in architectural education.

Conclusion

Often the parity of literacy, numeracy and graphical ability in defining human intelligence obscures the particular significance and contribution of each. They ought to work collaboratively, as partners rather than antagonists. Parallels exist, translations occur and correspondences appear. The key to research in any specialty or concern in design is balance. The challenge in pedagogy is one of appropriate timing and fit as regards learning outcomes, not competition over desired architectural outcomes. In the end, the more practiced students are across a variety of cognitive systems, the more profound their basis for insight. This holds for architecture. It holds for sustainability.