

# CRAFTING STORIES ABOUT WATER AND THE CITY: TRANSDISCIPLINARY DESIGN COLLABORATION FOR SOCIAL IMPACT, AND PEDAGOGICAL METHODS

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## Abstract

Trends in graphic design are proving that the practice is no longer limited to simply layout, type, and discrete artifacts. Critical and divergent thinking, transdisciplinary collaboration, as well as the call to design working for social good (rather than the expectations of consumption) are reshaping and expanding the practice. How can graphic design education, and specifically curriculum, engage students in these new practices as well as create experiences resulting in real outcomes outside of the idealized confines of the classroom?

In this paper we will give an overview of the Advanced Graphic Design Class at San Francisco State University and its transdisciplinary and collaborative work demonstrating how this curriculum addressed pedagogical goals to prepare students for the new challenges and expectations of design practice.

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Keywords: Design, Graphic Design, Education, Curriculum, Design Research, Transdisciplinary, Collaboration, Co-creation.

## ABSTRACT

The trends in graphic design are proving that the practice is no longer limited to simply layout, type, and discrete artifacts. Critical and divergent thinking, transdisciplinary collaboration, as well as the call to design working for social good (rather than the expectations of consumption) are reshaping and expanding the practice. How can graphic design education, and specifically curriculum, engage students in these new practices as well as create experiences resulting in real outcomes outside of the idealized confines of the classroom?

In this presentation we will present the collaboration of students in the Advanced Graphic Design class at San Francisco State University and Arup, a world leader in engineering, design, and planning. Students worked with Arup's research team Foresight and Innovation whose work raises awareness about the major challenges affecting the built environment and to think more creatively about the long term future. Over the course of the semester students explored the issues and social implications of water in the city of San Francisco. Utilizing design research exercises, prompts, and direction from Arup, students published a "Thought Piece" for internal distribution to Arup's engineers. This collection of visual narratives articulates for Arup's engineers water's diverse social and cultural impacts in the urban environment, raising awareness of important issues that are not typically considered in their discipline or processes.

In this paper we will give an overview of the project and its incorporation of design research methods, social engagement, and transdisciplinary collaboration with industry. We will give examples of student work, workshops, and review the successes and failures as well as the next steps for developing and expanding this model of curriculum.

## INTRODUCTION

In response to changes in the profession and expansion of the discipline of graphic design, design programs must now prepare students in new ways of practicing and thinking about design. In this paper we will give an overview of the the Advanced Graphic Design Class at San Francisco State University and it's transdisciplinary and collaborative work demonstrating how this work addressed pedagogical goals to prepare students for the new challenges and expectations of design practice.

## CHANGING EXPECTATIONS OF THE DISCIPLINE

A great deal of what designers have traditionally done is now commoditized, off-shore, and available to most as do-it-yourself. In response, graphic design is evolving and expanding its practices. Transdisciplinary collaboration and co-creation, understanding and working with systems and complexity, a focus on sustainability, designing for social good, and design as knowledge creation are all part of this expanded view and making their way into industry practices. (American Institute of Graphic Arts)

Also new, is an alternative of design as discipline and inquiry and not necessarily as profession. A radical concept, but one that challenges the designer to think deeper and not be limited to working for a client or brief.<sup>1</sup>

Practitioners and educational programs are beginning to build upon design research as discourse in graphic design. This movement towards an engaged and reflective practice celebrates the mutuality between design experimentation, investigation, and design thinking. It also expands the definition of graphic design itself.

If design is becoming a discipline of collaborative meta and transdisciplinary knowledge creation and design practice can operate outside of profession, then how does design education in general,

and curriculum in particular, engage students in these new practices? Additionally, how might we prepare them for the collaborative environments when they enter the professional domain?

## CONTEXT

The class presented in this paper is the Advanced Graphic Design class in the Department of Design and Industry at San Francisco State University, a four year public university within the California State University system, or CSU.

SF State has one of the most diverse student populations in the country (San Francisco State University) many of whom are first or second generation immigrants and the first generation in their family to receive an advanced degree. While inspiring, it offers challenges. Many of these students come to the design program with keen interest but little background in design, visual arts or other cultural experiences that would enrich their studies. They are often uninformed, misinformed, or confused in their view of design practice. This has some benefits as they are a blank slate but their lack of prior experience and exposure often limits them in their creative abilities and willingness to experiment.

A significant challenge within the degree program is preparing students for today's design careers in two years. During their four years at the university, the first two consist almost entirely of general education classes. While valuable in creating a well rounded and informed designer, it cuts into time that could be spent practicing and developing design skills.

With an expansion of the areas of specialty in professional design practice, it is common for designers to learn advanced and specific technical skills on the job. Therefore, with students' limited time in the program, design research and design thinking skills are viewed as essential competencies and a way to distinguish the degree from shorter degrees in community colleges that emphasize technical skills.

## STUDENT OUTCOMES: CONSIDERING EXPANDED PRACTICES

Within the constraints and context at SF State, after classes in basic core design skills, advanced classes are treated as an opportunity to teach some of the systems thinking, exploratory, and trans-disciplinary methods relevant to current trends in design practice. The Advanced Graphic Design has focussed on varied methods of design research, cross-mingling of disciplinary knowledge, conceptually based projects, and in keeping with the university's mission of Equity and Social Justice, design as a service for social good. (San Francisco State University) Class projects have addressed sustainability and the urban landscape as a content frame to help students understand design as a method of exploration in other domains of knowledge.

The pedagogic goals for the class were to aid in the development of students in order to:

- Visualize and investigate complex ideas.
- Craft visual displays of information such as data, narrative, qualitative and quantitative through mapping and other forms.
- Use design and design research as a tool for informing another discipline.
- Gain confidence and research skills by extending themselves into another area of expertise.
- The opportunity to collaborate with other disciplines and experts and understand its value and challenges.
- Produce work that extends outside of the idealized confines of the classroom.
- Work across different media modes such as video, sound, print, interactive, and hand-made.
- Use mediums and methods in which they have a particular interest, have a strength in, or simply want to experiment with.
- Use writing as an integral part of the design and design research process.
- Understand that visual communication design can operate as a means of disseminating cultural information and knowledge creation.
- Understand visual communication design's ability to provide social capital.

The class emphasizes development of methodologies and processes of research through exploration addressing concepts and themes discovered by research. Class projects are largely concept driven and analytical rather than focussed on solving discrete problems. An emphasis and significant commitment of time to design research and methods, gives students the opportunity to experiment and encourages the exploration of diverse perspectives and experiences.

To facilitate transdisciplinary investigations, the theory of Landscape Urbanism has been integrated into class projects. Within the practice of Landscape Architecture, Landscape Urbanism considers the interconnected and hierarchical network of forces at play to view the city as a landscape — a term usually reserved for the natural world — which behaves as an ecology of forces and agents, a metabolism, not merely a collection of forms.(Corner, 2006) This theory, new and different to the students, challenges their conventional perceptions. Viewing “urban” in a new way, they are encouraged to develop imaginative explorations rather than the usual outcomes such as historical overviews, inventories, and comparisons of form. Additionally, it has them view design problems through a systems lens. Students discover hidden themes, codes, and concepts within the urban landscape and visualize them as narratives, scenarios, maps, and other forms of graphic information so as to create another “view” of the city. In Fall 2010, a collaboration with the Art and Geography departments explored the buried streams of San Francisco within natural, historical, and social contexts.

By investigating the urban landscape students must engage with tangible subjects outside of the classroom. It insists that they go out of their usual habitats and comfort zones and become good at observing the complex and layered space of material and spatial culture and connect these observations into a broader context of cultural forces considered in a systems view.

## THE FUTURE OF WATER: CLASS PROJECT WITH ARUP'S FORESIGHT AND INNOVATION

In the Spring of 2013, the class collaborated with Foresight and Innovation, a small research team within the large international engineering and design firm Arup. The Foresight team “identifies and monitors the trends and issues likely to have a significant impact upon the built environment and society at large. They ... raise awareness about the major challenges affecting the built environment and their implications.” (Arup Foresight)

Foresight has a legacy of working with design programs within areas of shared interest in order to explore issues from an academic and student perspective, and to engage with the community in which they operate. For the class, the participation of Foresight provided the continuation of the classes urban theme, to work with other disciplines and experts, and to raise the stakes for students with real world project and partner.

With direction from Foresight, students created a small published “Thought Piece” examining water and its relationships and impacts on the built environment and human needs. This small book is a typical publication produced by Foresight. A collection of visual and written narratives for internal distribution to Arup's engineers, it illustrates for them diverse social and cultural issues impacting the built environment not typically considered in their discipline or processes.

What follows is an overview of the projects and exercises from the class during the collaboration with Foresight in the Spring of 2013.

### PRELUDE: INITIAL EXERCISE WITH ARUP

The class started with a preliminary meeting and exercise in Arup's San Francisco offices. For many students it was the first time in a such an environment, and the experience of meeting in Arup's impressive work spaces was eye-opening and inspiring, making explicit that this was a

“real” project, not a simulation with fictional clients and objectives.

Through small group exercises, students were introduced to themes and issues effecting the built environment. Exercises used Foresight’s “Drivers of Change” publication, a collection of cards

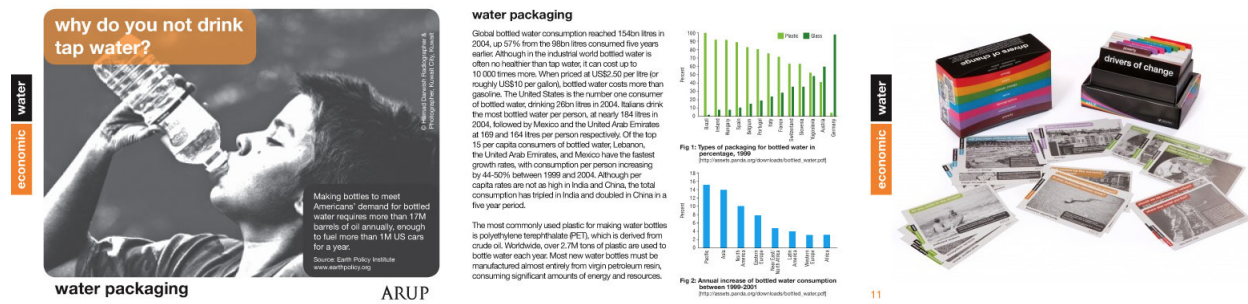


Fig. 1

After the Foresight workshop, the class then began a series of exercises to further investigate the subject(s) and explore possibilities for design research and practice.

## WARM-UP: EXPERIMENTS

The first exercise had students contribute to a fictitious publication called “SF Mappa-Auqua”, a low-tech “zine” illustrating as maps and schematics different principles of water in all its forms within the city of San Francisco.

The title of “Mappa Auqua” makes reference to Mappa Mundi, medieval world maps that were schematic and/or conceptual and meant to illustrate ideas, narratives, or principles. Students were introduced to the Situationists and the theory of Psychogeography as a way to emphasize playful exploring and creating unexpected views of San Francisco and water. Guy Dubord’s “Theory of the Dérive” was read and served as a prompt for students to wander the city and observe it in terms of its relation to water in diverse ways. The goal of the exercise was to encourage students to think and create divergently in open-ended explorations leading to the creation of a propositional and conceptual map. Playfulness and strangeness provided opportunities for discoveries that



would be unlikely in a traditional or brief driven exploration. By allowing students unlimited creative freedom, it might open them to greater creative possibilities when the constraints of the final project come into play later on.



Fig. 2

## EXERCISES: COLLECTING AND UNDERSTANDING DATA: RESEARCH AND IMAGE ARCHIVE

To initiate their research, students created a comprehensive archive or catalog of imagery related to water. The process consisted of a collecting and organizing a series of images that were to be found (web search) and self-generated (illustrations and photographs) from visual audits of specific geographic locations.

Images were shared in online platforms (Picasa, Google Docs, Dropbox) systematically

categorizing content as an exercise and creating an accessible reference system for visual information to be used in subsequent research. This exercise also helped students to gain a better understanding of concepts for their projects and provided direction for further inquiry.

GIS [Geographic Information Systems] and Google Maps were used in order to generate maps cataloging phenomena centered around the project themes.

Students produced a typological study. Image grids were created using photographs of research locations in field and images generated from Google Maps Street View. The typologies included multiple examples and variations of a single element or instance of water and within the urban system. This study assisted students in understanding how cataloging for the sake of observation can reveal patterns and further insight into the larger systems at play.



Figure 3

## EXERCISES: EXPLORATIONS THROUGH MULTIPLE MEDIUMS

A series of in-class exercises were conducted to explore ideas and methods of communication in various mediums.

Writing exercises guided students in their design research, assisted with the development of ideas and content for their projects and introduced them to the role of designer as author and editor. In one exercise, a focused 20-minute in-class writing session had students write and then evaluate each others' writing focussing on choice of content, style, and voice. These writing exercises generated content for what would ultimately be included in the final project, Foresight's Thought Piece.

Expanding from the typology studies, students produced image matrices, grid compositions of photographs, with imagery from their previous archives exercise. The matrices were built around subjective, objective, metaphoric, and connotative/denotative meanings structuring content and producing simple conceptual constructions about water and system.

Responding to their research and collected materials, students created printed flyers about their concept using only typographic form. Hierarchy, system, and concepts of page layout developed communication strategies for their concepts and assisted in conceptualizing f content for upcoming project work.

Content from this project was distilled down to 5–10 words and incorporated into a billboard campaign in the year 2050 in order to communicate the future of water. This assignment placed the messages into the urban landscape and required students to consider audience and meaning anticipating a specific audience in the final Thought Piece.



Figure 4

Audio and video were used as a mode of research to document activities and observations in a selected neighborhood that related to water. Students used video methods as varied as journalism and surveillance exploring message and narrative in a sequential form. This particular application of research allowed for unexpected outcomes as students were able to capture aspects of human behavior that had not been previously observed. For example, one student “caught” a neighbor meticulously washing his car for an extended period of time, leaving the water to run into the street gutter. Prior to this, the student might have easily overlooked the activity.

## PROJECTS: CREATING THE FINAL WORK

The second half of the semester-long work was to create the actual book; a culmination of their research, and content creation and collection within the format, design, and narrative constraints of Foresight’s Thought Piece format.

At this time, Foresight returned to the process as collaborator. Their participation in critiques helped shape and direct, and problem solve the work from their expert perspective.

## PROJECT 01: QUANTITATIVE AND QUALITATIVE DISPLAYS

The first project utilized Foresight Driver's of Change Cards which served as prompts for individual research. Eleven urban systems common to cities were compiled in a matrix: information, mobility, wellness, nourishment, shelter, entertainment, waste, energy, commerce, governance, and security. These systems are highly interconnected and can be characterized by the flow of physical resources and related services into, out of, and within the bounds of the city. The single subject of water was then cross-referenced with each of the eleven subjects to illustrate water's intersections with and connectedness to everything in the urban system.

Using these cross-references, students analyzed the subjects water & system in the city and created quantitative and qualitative visualizations of their discoveries in maps, charts and diagrams. Atypical outcomes were encouraged; some of the designs were static two-dimensional representations of three-dimensional space, but others were dynamic or interactive, representing space or behaviors, real or imagined, without regard to context or scale. Students became interested in social issues, public policy, and economics, things that involve real situations that affect society.



Figure 5

Representatives from Foresight attended the review of Project 01. The review concluded with a



brief exercise that had students, faculty and Foresight categorize and label each body of work according to one of the eleven themes of urban systems. Students were then paired and assigned a relevant theme to collaboratively research and to further focus the work into discrete chapters for the final Thought Piece book.

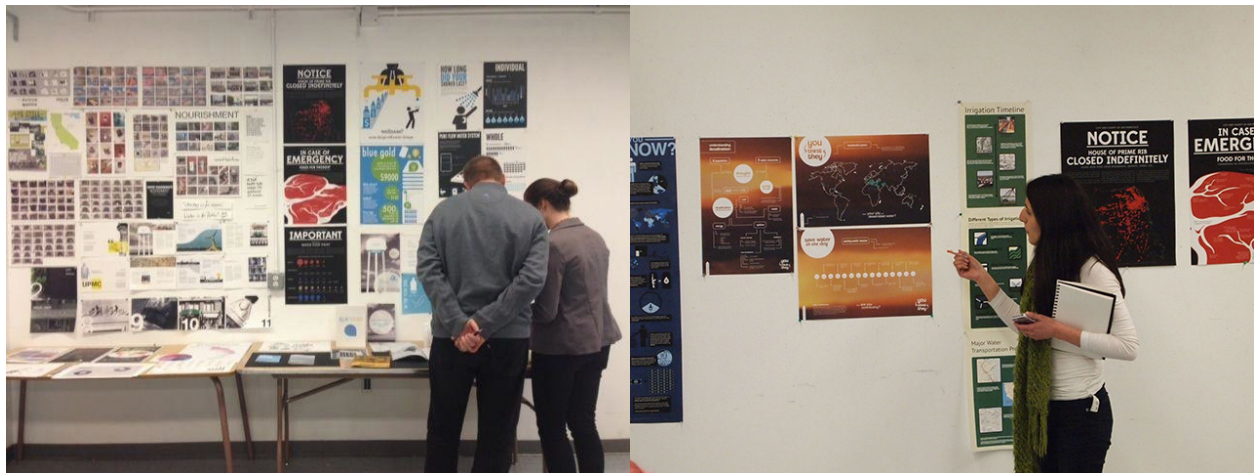


Figure 6

## PROJECT 02: CO-CREATION OF CHAPTERS

In the next project students created preliminary designs for the chapters for the Thought Piece, now titled “The Future of Water”. Students worked in pairs and were assigned to a specific urban system from the earlier critique. Students distilled their previous research and work into concise and descriptive multi-page narratives that illustrated water’s connection to their specific system. Additionally, copy for each chapter, developed from their previous writing exercises, was carefully rewritten undergoing multiple edits and revisions in order to effectively communicate their system theme.



Figure 7

Later, with Foresight, a critique was held for a review of the fully constructed chapters. Content, sequence, flow, consistency were considered and discussed. This process allowed students to assess the success of their designs and how it communicated to their audience, Arup.

Displaying all the pages of the book sequentially on the wall produced the opportunity to realize how and if the chapters were interrelated and how they might be better organized and provided a platform for the critique of image choice, quality, and consistency of language. Foresight's significant depth of experience, as well as student's sense of their authority as expert, provided valuable feedback, incentive, and inspiration for students in assessing the quality of their work.

### PROJECT 03 / FINAL DELIVERABLE: THOUGHT PIECE WITH ARUP FORESIGHT

The preliminary designs produced in the previous project were now developed into comprehensive and polished four page chapters. The final deliverable, the Thought Piece, was in the form of an A5 format book and a digital version in the form of PDF and publication on Issu.

Typographic styles and page layout were predetermined by the graphic standards of Foresight's

publications, forcing students to work with constraints ensuring consistency and unity of the narratives.

Producing the publication in a timely and collaborative manner further enhanced student's project management skills. Students not only worked as designers, but also took on task of copy editing, project management, and photo retouching.



Figure 8

## ASSESSMENTS:

Finding enough time in the project for extensive research and preliminary design explorations within a single semester was difficult. Many of the students in the program have very demanding schedules, juggling school and work. Consequently, getting them to commit the time necessary for deep and reflective research and investigations is a significant challenge. One solution might be to decrease the number of exercises and deliverables in order to extend the various research



phases.

Working within Foresight's style guidelines for the final Thought Piece at first seemed like a burden and creativity killer to the students who, up to this point in their studies, had been directed to develop their own unique graphic solutions to problems. The students were surprised to find that working within these tight constraints provided other design challenges. Working their vision into a prescribed graphic language, maintaining adherence to styles and continuity throughout the publication while using their own photo and illustration content provided many design challenges. They understood the value in tackling the problems, limitations, moments of trouble and occasional chaos, and the need for organization and communication. In the end they felt that this experience better prepared them for the profession.

Collaborative research methods and resources had the benefit of improving results and expanding domains of knowledge for the students; in this case an increased awareness of social and environmental concerns.

"The research I did for that class and what I learned from my peer's research has educated me on many issues that I feel I was totally ignorant of. Some of my findings from the class I am applying to other areas of design as well. I definitely have a new way of seeing the designed world." - Lindsey Millen, August 2013

The initial more experimental design research methods in the early exercises demonstrated to students the depth and breadth possible in researching a subject. Engaging in complex investigations and analyses, synthesizing diverse ideas and concepts, exploring semantic and rhetorical constructions all contributed to a more sophisticated execution of the final project. Using diverse forms of media opened them to new possibilities of form and language in the final project.

Writing was an unexpected and difficult task for many of the students. Despite a wide range of writing competencies among the students, hesitance and mixed outcomes, it was a positive experience overall. It increased their ability to articulate some of the ideas and issues they were exploring, and many found that their writing abilities improved. As a part of their research work, the writing extended the scope, depth, and insights they gleaned about their subject matter and a great deal of their writing made its way into the final Thought Piece. In some instances, unexpected discoveries were made. Students were sometimes more comfortable in personal reflection in writing. For example, students admitted to purchasing bottled water and leaving the water running while brushing their teeth.

The projects' collaborative methods and activities were new to the students and provided opportunities for them to engage in ways of designing not yet experienced. Working with experts from another discipline gave them both the opportunity to gain insight directly rather than through the usual secondary research sources. Foresight's direct feedback also provided them opportunities to experience how these types of conversations and informative meetings function in a professional context.

As students collaborated with each other in the final design of the book, they became aware of the many many tasks, roles, and talents needed for the success of a demanding and time sensitive project. Students who had greater difficulty in producing design work meeting the standards of the Foresight piece were often the ones who stepped up and delivered valuable contributions as managers, writers, editors, etc. Students learned by working together and sharing skills. For example, some students were bursting with knowledge of the technical aspects for production and shared their skills in design software and print production, others in editing and refining the written texts. For some, the contribution of assessment, critical thinking and dialogue were their major contributions. Consequently, students had opportunities to take on various leadership

roles.

## NEXT STEPS

Currently, there are plans to continue this curriculum and studies with a collaboration between SF State and University of Nebraska–Lincoln, where Asher is now teaching and developing new courses similar in scope to the class we have just shown. This collaboration would offer students many new opportunities. Contrasting San Francisco and Lincoln, students can compare different systems; urban and rural contexts of the built environment including the differing perspectives and concerns of the two regions. It also will require that students work collaboratively at different levels; both in-person with their class peers and remotely with the other institution. By collaborating remotely students will have the opportunity to work through the challenges of different communication methods and media. It will also offer students the opportunity to use some of the collaborative technology tools prevalent in today's profession.

## CONCLUSION

We might argue that we give students core technical skills – form, typography, layout, etc.– and let them learn the rest on the job. It is a simple and viable option for smaller, shorter programs, such as a two year Bachelor of Arts degree in a public university. Or maybe it isn't such a good idea as these students, without the extensive training that comes from a four year design school program, require the thinking and creative skills and practical experience that set them apart from a student that has had four years of typography classes.

Regardless, we don't expect that the road to an expanded and more holistic view of design practice is easy. Student expectations, the limits of faculty time and institutional resources offer many obstacles. Students often simply want a sexy poster to give a pop to their portfolio. The idea that they expand their knowledge to urban infrastructure and water policy, visualizing systems, working to someone else's rather mundane style guides, sharing tasks, coordinating

schedules, writing and editing (and spell checking!) is not the FUN and sexy projects that most design program brochures (or design studios for that matter) showcase. But these are, as we know, many of the real skills these new designers need now and certainly in the future. At the end of this semester we felt that the methods and curriculum offered provided students with valuable knowledge and experiences that will serve them well in their futures as designers.

## NOTES

1. Daniel van der Velden of the design group Metahaven makes a case for design research, a discipline embedded within design processes as well as a discrete discipline, as a liberating practice for the designer, bringing them out of service and labor and into the creation of knowledge.

“Consequently, the knowledge economy ... will quickly become a thing of the past, if holding a mouse proves cheaper in Beijing than in the west of Holland. The true investment is the investment in design itself, as a discipline that conducts research and generates knowledge – knowledge that makes it possible to seriously participate in discussions that are not about design. Let this be knowledge that no one has asked for, in which the designer is without the handhold of an assignment, a framework of conditions, his deference, without anyone to pat him on the shoulder or upbraid him.” Van der Velden, Daniel. “Research & Destroy.” *Metropolis M*, April 2006. <http://metropolism.com/magazine/2006-no2/research-destroy/english>

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## FIGURES

1. Drivers of Change Cards, Arup / Foresight, <http://www.driversofchange.com/water/water-packaging/>
2. “The Body as Filter”, Anthondy Bauda, and “Water = Tourists = Food = Pigeons”, Lindsey Millen, from Exercise 01: Mapp Aqua.
3. “Water as Wellness and Health” a Google Maps + Site Investigation, Judy Chu from Exercise 03: Big Data + Mapping, Typology of Water.
4. “Distilling Content About the Future of Water into 3 - 10 Words”, Thrudy Rhegan, Lindsey Millen, Judy Chu from Assignment 03: Billboard of the Future.
5. “Water and Waste / Plastic and Water” Pages from Process Book”, Lindsey Millen and “Water Sufficiency / What We’re Doing Wrong”, Gabriella Medina, from Project 01: Quantitative and Qualitative Maps + Charts + Diagrams.
6. Review of Work, Project 01 with ARUP / Foresight. Photo Stacy Asher.
7. “Water Sufficiency / What We’re Doing Wrong”, Gabriella Medina, from Page designs from Project 02: Chapter Designs.
8. “The Future of Water” Prototype prints of Arup / Foresight Thought Piece book. Photo Stacy Asher.