

**TITLE:**

Scales of Resistance

Advanced Studio 4, Columbia University Graduate School of Architecture, spring 2016

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"People used to say that just as the twentieth century had been the century of physics, the twenty-first century would be the century of biology... We would gradually move into a world whose prevailing paradigm was one of complexity, and whose techniques sought the co-adapted harmony of hundreds or thousands of variables. This would, inevitably, involve new technique, new vision, new models of thought, and new models of action. I believe that such a transformation is starting to occur.... To be well, we must set our sights on such a future."

- Christopher Alexander, *The Nature of Order*

**INTRODUCTION:**

"What is the status of resistance today?"

The studio will focus on the key resistances of our time, using the conceptual operation of "resistance" as a vital driver for the semester: i.e. resistance to \_\_\_\_\_; the discipline, context, site, program, inequality, changing climate, etc....

This conceptual driver of resistance will play out at multiple scales simultaneously. From the nano,  $10^{-9}$  meters to the global,  $10^7$  meters, we will rethink: materials, buildings, urban planning, and infrastructures. The studio will also challenge accepted notions of environment and technology by questioning nature, ecology and urbanism *through* innovative architecture. From this research, new techniques and patterns in design will emerge, conditions favoring natural ventilation, passive cooling and heating, yet at the same time supporting the hospitable proximity of people living together within their environments.

For over 80 years, the dominant forces of industry, development and even modernism itself, have been fundamentally at odds with how people live together, and in particular, how people live with their natural environments. This studio will propose new fundamental ways people can live, work and learn together *within* their natural environment through operations of resistance.

Though it is now known how individual buildings can become more responsive to their environments without enormous "life support" machines (Ingels, 2015), it is less clear if this knowledge has carried over to our contemporary cities. While density is championed by ecologists over sprawl, by many measures, our built-up urban centers have exacerbated their local climates by overheating—creating the "urban heat island" effect where freeways, high-rise towers, minimal canopy coverage, exhaust from air conditioners, and humid night skies conspire to trap heat in built-up settlements. This effect leads to a whole series of negative externalities from more active conditioning and energy use, exacerbating public health, to resource depletion. To elaborate this paradox at the scale of architecture is to question the specific configurations, forms and fabrics of our cities today and how they can adapt and mitigate for tomorrow.

Drawing from "architecture without architects" (Rudofsky, 1964) and "vernacular prototypes of human settlements" (Maki, 1964) to more contemporary clustered and collective forms, this studio will confront the challenges of climate change, mass urbanization, decaying infrastructure, inadequate housing, social inequity, economic volatility and ecological stress, by documenting and building a catalog of techniques for the social and the cool: creating compact, "antifragile" architecture while cooling hot cities.

**METHODOLOGY/ CATALOG:**

The studio will develop expertise and skills in new forms of organization in architecture and urbanism: from how people live at the scale of a room, to new ways of living convivially and resiliently at the scale of a city. Students will work individually to formulate a critical position *through* design, text and oral debate. We will begin by creating a series of studio-wide catalogs of resistances at different scales (tactics, strategies, grand strategies/ S, M, L, XL):

**TACTICS/ TECHNIQUES:**

-Catalog of agglomerated structural modules; resistance to gravity: arch, box, branch, dom-ino, frame, hive, megaron, pleat, tensegrity, etc.

**STRATEGIES:**

-Catalog of collective forms; resistance to aggregation/ ventilation/ solar access: medina, kasbah, favela, hutong, etc.

-Catalog of natural and man-made organizations; resistance to entropy: linear, orthogonal, fractal, chaotic, self-organizing, self-structuring, unfolding, recurring, matrix—and—corridor, etc.

**GRAND STRATEGIES:**

-Catalog of disciplinary diagrams; resistance to \_\_\_\_\_: form, scale, typology, materiality, structure, frame, grid, regionalism, historicism, industrialization, homogenization, globalization, intricacy, semiotics, sprawl, mechanization, consumerism, capitalism, spectacle, iconic, generic, preservation, figural, phenomenological, pictorial, etc.

**SITE/ PROGRAM:**

Using a re-appropriation of subsidies from carbon-based industries, the studio will ask how the creation of a Brooklyn Green Tech district can act as a catalyst for a green economy locally and for the greater Northeast/ Boston-Washington (BosWash) megalopolis.

Currently, our carbon based energy in the US is subsidized by the taxpayer upwards of \$1 trillion annually when military, climate, pollution and health costs are included.<sup>1</sup> Similarly, the IMF reports annual global energy subsidies at about \$5.3 trillion or 6.5% of global GDP.<sup>2</sup> What if we transferred this outdated subsidy of the carbon economy into an investment in a renewable, green economy? In other words, how can we have economic growth without increasing resource consumption?

At present, the Brooklyn Tech Triangle, defined by Downtown Brooklyn, Dumbo and the Brooklyn Navy Yard, is home to over 60,000 students, 11 educational institutions, and to more than 1,350 innovation companies.<sup>3</sup> With one of the lowest commercial vacancy rates in the city (~ 3%), the Brooklyn Tech Triangle is facing an office space crisis of approximately 4 million square feet<sup>4</sup>. Yet connectivity, activity and adequate quality housing continue to plague the area. Completed in 1964, the Brooklyn-Queens Expressway (BQE), like many urban infrastructure projects of the time, cut-off the waterfront from the rest of the city. Given the isolation between the Brooklyn Tech Triangle and the rest of the borough, how can we re-conceive the regional transportation burden imposed by the roadways of the Manhattan Bridge, the Brooklyn Bridge and the BQE by re-connecting Brooklyn to its waterfront?

Drawing on our catalogs of resistances, the studio will design an urban field station for Columbia University's expanded Earth Institute, reconceiving the Brooklyn Tech Triangle into a mixed-use, renewable energy/ tech incubator district, a silicon valley for the green economy. From the context of this Green Tech Triangle located at the center of the BosWash megalopolis, the studio will fundamentally re-conceive how we can live, how we can work, and how we can learn *together* in the future.

## CONCLUSION

Operations of resistance will be the main driver for each studio project. We will catalog forms and architectures to articulate your scales of resistance, beginning at the level of material—the architecture's fundamental resistance to gravity—to the level of structural aggregation, to the larger scales of resistance in collective forms, organizations, and to intractable problems of the discipline. At stake for us is not just trying to figure out how we can live together in close urban settlements, but how we can continue to do so for generations to come.

## FORMAT:

The studio will meet for desk crits and pinups on Mondays and Thursdays from 1:00pm to 6:00pm. The studio will have workshop/seminar sessions on Wednesdays from 3:00pm to 5:00pm. In addition, students will have access to roving engineers selected for their expertise related to studio topics. At the end of the semester, a prize will be awarded to the best student projects, and the projects will be developed in collaboration with the New Museum for public exhibition at the Ideas City Festival.

## SCHEDULE:

Studio site visit TBD

February 22 – March 4 Arch Mid-term Reviews

April 25- May 4 Arch Final Reviews

## BIBLIOGRAPHY:

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<sup>1</sup> <http://priceofoil.org/fossil-fuel-subsidies/>

<sup>2</sup> <http://www.imf.org/external/pubs/ft/survey/so/2015/NEW070215A.htm>

<sup>3</sup> <http://brooklyntechtriangle.com/2015-update/>

<sup>4</sup> <http://brooklyntechtriangle.com/2015-update/>