ARCHITECTURE, ENERGY, MATTER 1: FRACKED URBANISM
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INTRODUCTION
This studio is framed by three big, interrelated ideas.

1 THE ANTHROPOCENE
The first is the anthropocene, the idea that since human life began, our species has interfered with the earth to such an extent that new geological conditions have emerged. Many of these will play out for thousands, if not millions of years. We have transformed the earth’s geomorphology, its surface, its atmosphere and its climate so radically that scientists have named a new geological era, the anthropocene. One of its dominant characteristics is that it is no longer possible to distinguish between what used to be called nature and what used to be called society. Instead we now live in anthroposphere, a complex technical system of energy, material and information flows, evolving according to its own history in ways we do not control and barely understand.

2 MATTER, ENERGY, DATA
The second big idea is that architecture and urbanism are comprised of matter, energy and data i.e. made up of densities and flows of stuff. Buildings, infrastructure, spaces, cities, urban systems etc. are intensities within the anthroposphere, that complex technical system of energy, material and information flow mentioned above, mobilising it in ever evolving ways. We will think about this metabolically: as a system (or systems) of physical flows and stocks of matter, energy and information, with particular properties and capacities that can be quantified, analysed and visualised in space and time using computational tools.

3 GEO-LOGICS
The third big idea behind the studio is that architecture, infrastructure and urbanism are deeply tied up with geology. Buildings, infrastructure and cities are geological agents, mobilising geological matter (earth, air, fire, and water) and speeding up geological time. Buildings in fact, are little more than geological stuff. How can this intimacy be exploited through design? How can design intervene strategically, and instrumentally reshape or redirect flows of geological matter, energy and data in locations where previous metabolic processes have failed?

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STUDIO DESCRIPTION AND AIMS

If one looks at Google Earth images of fracked landscapes in the USA, one sees a dense array of small white patches linked by a network of straight or squiggly lines. These are the clearings, holes, caps, water tanks, pipes and roads that form the most visible after effects of the ‘anthroposphere of fracking.’ This is an emergent system that began 400 million years approximately 2 kms under the surface of today’s earth and is likely to extend millions of years and great distance into the future.

This studio will investigate how this system came about, how will it play out over time and how design might engage with it.

What is fracking? What is its genetic code? How does its metabolism work? What are the inputs and outputs, stocks and flows that keep it working? Who or what are the actors and agents involved in its networks? At what scale do they operate in space and time? How are they interconnected and how can their flows be spatialised? Most importantly, where does fracking potentially fail? What risks does it take? What conflict does it generate? What dangers does it pose?

These questions will lay the ground for finding spatial and architectural opportunities within this vast and violent territorial transformation. Each student will take up one potential dangerous risk, such as geological instability, water pollution, health-related disease, biodiversity loss, working conditions et al. and develop a strategy for tackling it, such as prevention, monitoring or exploiting. This will be spatialised as a masterplan and a prototypical component of the masterplan will be designed.

Data mining / strategy / masterplan / prototype will terminate the first semester’s work and establish the principles for the second semester. Beginning with a field trip to the Southern Coast of England, the design brief will be scaled up and site specific parameters and conditions introduced for the final major project / thesis of the year.
SCHEDULE

In general, the studio will meet all day on Mondays for tutorials or presentations, which LB and RB will be present. Thursday or Friday mornings (generally alternating) will be used for additional expert inputs, film screenings, workshops etc., or closer to crit times, for additional tutorials. See accompanying schedule for details.

SEMESTER 1

1 STUDIO BRIEF 1: DATA MINING
Monday 23 September – Monday 7 October

2 STUDIO BRIEF 2: FINDING FAILURES (STRATEGY)
Monday 7 October – Monday 4 November
Interim Crits 1: Monday 21 October

3 STUDIO BRIEF 3: FINDING FAILURE (PROTOTYPE)
Monday 4 November – Friday 13 December
Interim Crits 2: Thursday 28 November

SEMESTER 2

4 FOLIO REVIEW
Folio Submission: Tuesday 21 January

5 FIELD TRIP
Monday 09 December: Brief
Tuesday 28 January - Friday 31 January: Trip

6 STUDIO BRIEF 3: MAJOR PROJECT / THESIS
Monday 03 February - Monday 12 May
Interim Crits 3: Monday 17 March
Final Crits: Monday 12 May

7 FINAL FOLIO SUBMISSION
Tuesday 27 May

8 EXTERNAL EXAMINATION
Monday 02 June (Year 2 only)

9 EXHIBITION
Opening: Thursday 12 June
RESOURCES

The following are general resources to draw on for the studio. Each brief will be accompanied by a specific bibliography and useful sources.

FRACKING

http://en.wikipedia.org/wiki/Hydraulic_fracturing

The Wikipedia entry for fracking is very good, with a number of useful references at the end of the entry.

The web site of the major anti fracking lobby in the UK, with a dynamic map of fracking sites, licenses etc.


Fracking.org <http://frackingresource.org/what-is-fracking/>

Fox, Josh. Gaslands (movie).

Numerous publications available on the Department for Energy and Climate’s web site <https://www.gov.uk/government/organisations/department-of-energy-climate-change> (Go to publications and type in shale gas or unconventional hydrocarbon resources).


2011 Shale Gas: Blessing or curse? Geoscientist. 21.4. 14-19


UK Onshore Operator’s Group <http://www.ukoog.org.uk>/

MAPS

British Geological Society (including KML files of UK geology, geology apps for iphone and android etc. etc.): <http://www.bgs.ac.uk>/

Eurostat (Big data on the EU and member countries): <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>

Landmap (UK Datasets and Maps): <http://www.landmap.ac.uk>/

Natural England: <http://www.naturalengland.org.uk>/

Magic (Natural England’s interactive map site): <http://magic.defra.gov.uk>/

Ordnance Survey: <http://www.ordnancesurvey.co.uk>/


MAPPING AND VISUALISING DATA


COMPUTATIONAL TOOLS / SOFTWARE

Other than the more popular pieces of software such as Photoshop, Autocad, InDesign, or Illustrator, the studio will be particular emphasis in the following computer programs:

Rhinoceros + various plug-ins [especially Grasshopper]
RealFlow and Processing

GEOLOGY


THE ANTHROPOCENE


PHILOSOPHY


ARCHITECTURE