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8 EASY STEPS TO GROW YOUR OWN NATION!
Danny Wills

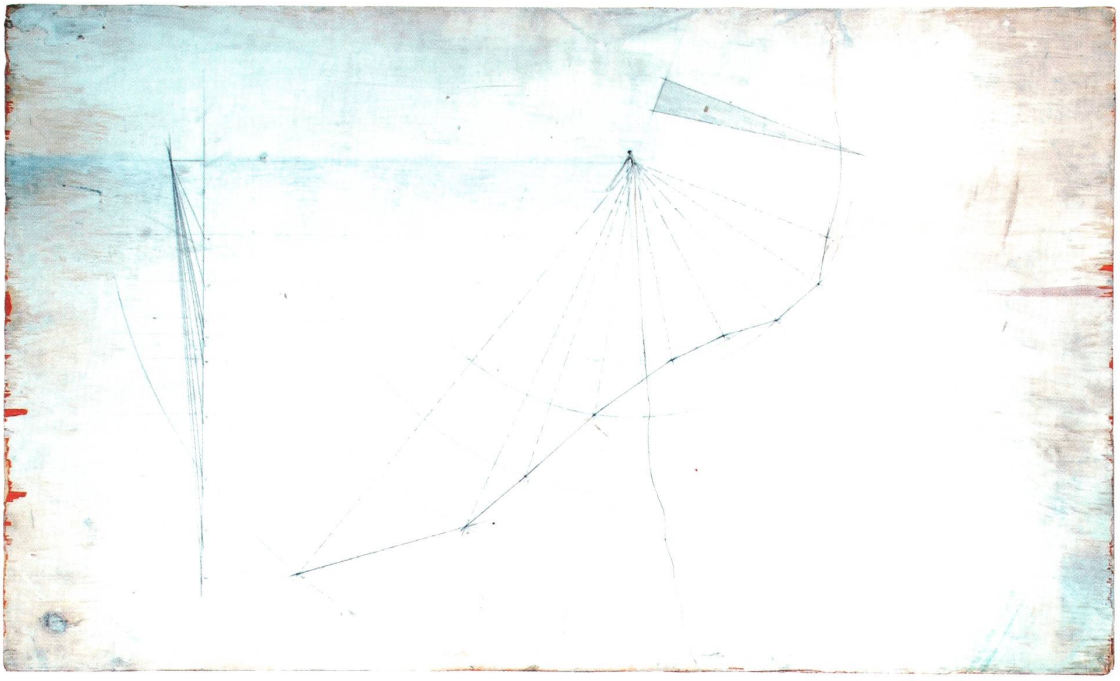

fig. a
Danny Wills, Measuring a Curvilinear Slope, 2014.

STEP 1: Study up!

«I am entirely a farmer, soul and body, never scarcely admitting a sentiment on any other subject.»[1]

Thomas Jefferson, a few months after retiring as third president of the United States, made a catalogue of his collection of books on agriculture. In a handwritten letter, sent to the Library of Congress, he listed such titles as ‹Bradley's farmer's guide›, ‹The Country farmer›, and ‹Abercrombie's gardener's pocket-dictionary›.[2] To some, these titles would allude to the various self-help books one could see on the kitchen counter of a weekend gardener. In fact, Jefferson's awareness and fondness of these books ran deep, as he himself sought out their knowledge for his own land on the hills of Monticello, Virginia.[3] Surveyed, planned, designed, and built by Jefferson, Monticello was his own personal laboratory for discovering his vision of the world, from architecture and planning, to science, art, and society.

At the center of this laboratory was Jefferson's primary concern, the farm. Over the span of most of his life, from the age of twenty-six up until a month before his death, Jefferson built and ran this farm. On and off its grounds, his collection of knowledge around the subject of agriculture was cultivated with extreme care and curiosity. As he explored the New and Old Worlds simultaneously, crafted national legislation, and built some of the country's most respected buildings, the farm remained his main depository for collected ideas.

Other books listed in his agricultural library promoted a more scientific endeavor. ‹Dr. Home's principles of agriculture and vegetation›, or ‹Forsyth on the culture and management of Fruit trees›,[4] point to a more investigative survey of method and science. At the top of the list, ‹The husbandry of the ancients by Dickson›, described as a «judicious compilation» of agricultural antiquity, summarizes the philosophies, theories, and practical implementations of the Ancient Greek and Roman agriculturalists.[5] It is clear in his description of these books that his neoclassical ambitions were not purely limited to his architecture.

But his survey of books was more than a catalogue for the Library of Congress; it was a shopping list. Jefferson saw merit in his collection far beyond useful gardening tips, stating, «never was there a moment when it was so necessary to unite all the wisdom of the nation».[6] From techniques aimed at soil preservation, to systems of planning fields, and philosophical discussions on the statelihood of the farmer, Jefferson was curating a list of his vision for the nation to be preserved in the country's archives.

Ironically, one book never made the list. Jefferson's very own ‹Farm Book›, a personal record of the lessons, techniques, designs, experiments, and admitted failures of running the farm, signals his relentless and methodical knowledge cultivation process. Even though his book was not listed, it eventually made it to the national archives, as did every piece of paper—letter, list, map, and legislative document on agriculture—that his pen ever laid claim to.

This canon of correspondence, in full form, was Jefferson's curatorial device to enact his yeoman farming principles learned from his own farm, on the great American landscape.

STEP 2: Explore your surroundings!

«The object of your mission is to explore... for the purposes of commerce.» [7]

Enlightenment science was centered on the idea of exploration through orderly and rational methods of first-hand observation, systematic classification, and accurate recording. In the revolution of new methods for exploring and explaining the natural world, the independent and free thinkers were heralded as the leading figures of progress. Assembling a complete catalogue of the Earth's flora and fauna was not only seen as a possible goal, but as a necessity for the development and improvement of a philosophical soul. The mutual relationship between these possessed objects of nature, according to Jean Baudrillard, constructed a ‹system› for personal microcosms to emerge.[8]

Subscribing to this mantra of self-discovery, Jefferson sought to understand both his personal environment and that of the continent he was in charge of leading. After traveling over parts of Virginia, observing local farming methods, and documenting various plant types, he decided a national exploration of the newly acquired territory west of the Mississippi River was in order. In his letter of instructions to Meriwether Lewis and William Clark for their western expedition, Jefferson insisted on the collection of items ranging from botany to ethnography, but curiously spent many lines requesting documentation of «the soil and face of the country, it's growth and vegetable productions, especially those not of the US [sic]».[9]

Jefferson wanted Lewis and Clark and their team to take as many chances to send back their journals, maps, notes, and observations, as well as artifacts, some of which contained implementations and devices for agriculture. His emphasis on their importance was echoed in his fear for their safe passage, warning, «[in] the loss of yourselves, we should lose also the information you will have acquired».[10] In the end, the expedition team, consisting of soldiers trained in botany, ethnology, mapmaking, and zoology, sent back to Jefferson more than 200 new plant and animal species, creating a collection of the culture of the Native Americans and the use of their land.

Jefferson's amassed knowledge of Native American agriculture reflected his interest in it as a valued item. Showcasing the findings in the foyer of his home, in Monticello, he dubbed the space the ‹Indian Hall›. Through the layered arrangement of display boxes inside, he decided the importance of the New World's inhabitants, flora, and fauna curiosities.[11] With his very own wunderkammer he placed himself and Monticello within the context of the larger universe and subsequently as the leading figure for the new American enlightenment.

STEP 3: Survey your land!

«And our own dear Monticello... How sublime to look down into the workhouse of nature, to see her clouds, hail, snow, rain, thunder, all fabricated at our feet!»[12]

From his studies of the Native Americans, Jefferson came to understand that land was both sacred and valuable, but only if made productive. In order to understand the potential of his own land, he first needed to comprehend its limits and contents. Citing European surveying and cartography methods, and using only a ‹Gunter's chain›[13] and a compass, he constructed a series of maps representing this land. Documenting and recording topographical features, mineral qualities, and amounts and types of trees, his maps revealed «great fields upon which real material conditions are isolated, indexed, and placed within an assortment of relational structures».[14]

These maps, and the techniques that derived them, were based on significant natural features and landmarks—trees, rocks, and rivers were triangulated as two-dimensional positioning elements. Their resulting geometry created on paper a series of lines radiating from one point, caught in a succession of other expanding dots. On paper, numbers drift in multiple directions, hovering over curves denoting rivers and meadows. The wilderness of the angles, the splines and the unparallel vectors created inaccuracy, and ultimately, inefficiency. It was all too much for Jefferson. He needed order.

Jefferson surveyed his fields of Monticello primarily as a tool for imposing order on his farm, but the traditional techniques were not orderly enough—using nature's own structures for measurement proved insufficient. Nature was wild, and the new Enlightenment science sought to evolve man into one that could harness this wilderness, not be overtaken by it. In order to truly master this world, Jefferson needed a new surveying method.

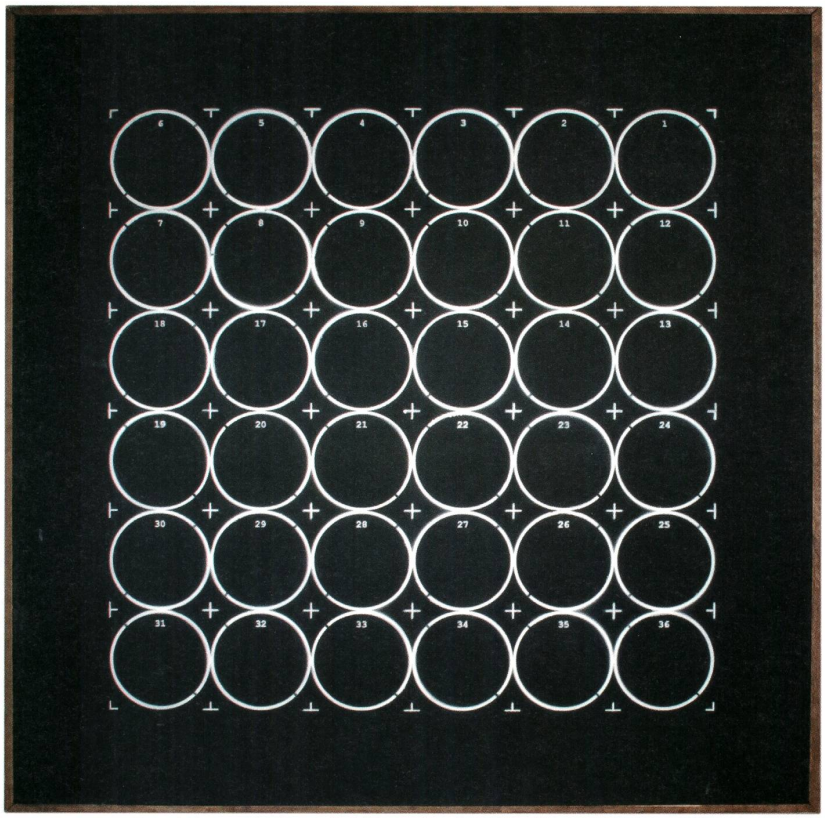

fig. b
Danny Wills, The Land Grid Machine, 2013.

fig. c
Danny Wills, Earth Silos, 2013.

STEP 4: Prepare the ground!

«The surveyors, as they are respectively qualified, shall proceed to divide the said territory into townships of six miles square, by lines running due north and south, and other crossing these at right angles... The plats of the townships respectively, shall be marked by subdivisions into lots of one mile square, or 640 acres, in the same direction as the external lines, and numbered from 1 to 36.»[15]

Within the pages of his notebook, Jefferson created charts and tables full of statistics gathered on Virginia's plants, noting their space requirements and seedling/flowing schedules. Building off of these statistics, he designed new layouts for his farm, effectively revising boundaries to match his ambitions for efficiency. On paper, plot sizes shifted and changed shape with lines forming tight parallel columns; on the land, the ox-bow carved these lines into the ground, as it moved back and forth in linear succession. Jefferson was designing a structured system, influenced both by the techniques of mapping and improved agricultural methods of plowing the land.[16]

In 1784, while a Virginian delegate to Congress, he took the lessons learned from his farm to the national scale. In perhaps the most extreme manifestation of mapping-cum-dominion, he created the Land Ordinance Act and subsequent Public Land Survey System, which measured, divided, valued, and sold almost three-quarters of U.S. controlled land west of the Mississippi River. To facilitate this process of land distribution, the Ordinance Act outlined Jefferson's precise mechanisms of «construal and construction»,[17] that is, measurement and boundary. Unlike previous cartographic sciences, Jefferson's plan was for the simultaneous discovery, cataloguing, and possession of land. It is important to note that Jefferson made this plan prior to sending Lewis and Clark on their expedition. Maps and plans of new territories were created prior to their exploration, placing the unknown earth into empty boxes of equally sized squares, all arranged in a perfect never ending grid. The surveyor's chain, once a tool for creating representational maps of the land, became a political device for the United States to draw its own fences and borders.

It was his new nation's goal to empower the independent yeoman farmer through this systematic and mechanic division of land.[18] However, when these settlers traveled west, ready to lay claim to their newly bought land with their deeds in hand, they did not expect the encounter with native groups occupying the land. Their aboriginal relationship to the earth did not consist of boundaries or formal modes of property ownership, which allowed the ‹discovery rights›[19] of the European newcomers to gain sovereignty to the land their maps claimed they owned. Thus Jefferson's grand land sale, in pursuit of its gridded rationality, turned into a form of internal colonialism, obliterating locality in the process.

STEP 5: Plant some seeds!

«The greatest service which can be rendered any country is to add a useful plant to it's culture; especially a bread grain. Next in value to bread, is oil.»[20]

Through the collection and trading of seeds, Jefferson was using his farm plot to seek a deeper knowledge of the workings of nature. On his large desk, amid a sea of correspondence, Jefferson arranged his collection of seeds. It is on this flat terrain, as Bruno Latour argues, that the various plant specimens «from different locations and times» spread out on the surface, «become contemporaries of one another», under Jefferson's «unifying gaze».[21] His curated set of seeds, from European rice, Irish potatoes, Italian olives, French grapes, and African sesame, arranged in mathematical and geometric positioning, sought to define a new order of agriculture. In total, his collection contained 330 varieties of nearly 90 species of vegetables and herbs.

Though he adapted experimental techniques of crop rotation, field fallowing, and soil regeneration, Jefferson saw critical problems within the current state of agriculture on the new continent. «Good husbandry», he noted in his book, «consists in abandoning Indian corn and tobacco», for it quickly deprived the land of its quality soil, harming the earthen assest.[22] Seeking to design a more productive and healthy territory, he filled his ‹Farm Book› of charts, tables, and lists testing the placement and scheduling of various plants. Through this playing field he imagined a microcosm of the world's resources, experimenting with their reshuffling like something akin to Buckminster Fuller's New World Game.[23] Jefferson's Land Ordinance Act built the shelves and cabinets to hold the collection of his vast green laboratory. With his catalogue of these specimens freshly planted in the soil, he could now design a more productive nation ready to enter a global market of food trade.

STEP 6: Harvest your goods!

«Okra... failed. Eggplant... failed. Sorrel... failed. Roman Broccoli... failed nearly. Windsor beans... killed by bug.»[24]

Though in theory Jefferson's grand planning scheme for his farm built itself on sustainable practices and acquired knowledge, the reality of his experiments led to a constant series of gardening failures. When describing his experiments of vegetable growth and distribution, he noted countless incidents of plants being killed by adverse weather situations, lack of proper management, bug and pests, or for other unknown reasons. Determined to succeed in his experiment, Jefferson continued until late in his life to find processes and methods to plant and harvest food other than corn, wheat, and tobacco, of which he saw as destructive to the soil's fertility. He designed new plows, tested plant rotations, tinkered with species, and built structures for processing food. All at the same time, he kept precise recordings on seasonal changes, weather reports, and even the anthropological workings of his slaves by cataloguing their tools and possessions. Jefferson hoped that by documenting every item in the ecosystem of his farm, he could attain a more controlled understanding of its mysterious workings.

Seeking a deeper knowledge of the nature of the universe involved comprehending the totality of creation—in other words, ammasing the complete collection.[25] Jefferson, on the other hand, could not handle the pressure that this entailed. Through curating his selection of plants, he irreversibly reduced the potential of nature, throwing out multiple varieties of vegetables to make singular efficient strains. These strains, tested for their durability, functionality, and productivity, helped create a more self-sufficient homestead. Ironically, most of these strains turned out to be the same ones Jefferson saw as a necessary evil.

STEP 7: Sell your product!

«...there is a vast alarm here about corn. the price at present from 15/ to 18/. but not to be had indeed at any price. my situation on that subject is threatening beyond any thing I ever experienced. we shall starve literally if I cannot buy 200 barrels, and as yet I have been able to find but 60 [sic].»[26]

In pursuit of a dream to have the entire country run by self-sufficient individual farmers, an industrial landscape was created, one fueled by the promises of economic freedom. After its placement, the land under the Jeffersonian grid would soon grow into a market driven farming network, with a succession of industrial and architectural devices to facilitate this flow of capital.[27] Jefferson designed and built a series of structures and machines for his farm, aimed at the rapid processing of grain and its storage. Corn, tobacco, and wheat were too important to his farm economy to be abandoned. Even though he would have considered life much happier without them, he was forced to acknowledge their ability to be stored and preserved for long periods. Not only did storage and preservation allow farms to survive through harsh winters, it also permitted easy distribution to distant places. The ability to be stored in barrels, transported by horse, and placed on a steamboat headed north to Washington,

expanded the market for Jefferson and his fellow farmers.

Though he accepted corn, tobacco, and wheat as a cash crop, he did so only to illustrate the importance of continuing to fund his research. The cultivation of these plants allowed his farm to survive while other experimental plants continued to fail. Undaunted, his dream of an independent agrarian society continued.

Soon, however, this dream met a growing capital expansion he helped create. The word was out—if you owned your own land, the profits of its production could be endless. Land was now being purchased by everyone, even those unable to afford it. «Purchased with a mortgage, and equipped with labor-saving machinery paid for through bank loans and credit agencies», property ownership «required more of a forty-year working life to pay off».[28] Even though he insisted on «commercial intercourse»[29] with the Native Americans and other nations, debt was an unavoidable speed bump to independence.

For a philosophy built on the principle of individual economic freedom, Jefferson became bound to the market. His farm was forced to remain afloat during the swells and tides of this global market. The easiest option for him and his country of farmers was to grow more of their cash crop. After all, with the abundance of newly acquired land, it was cheaper to buy new than to try remediating the old.

STEP 8: Repeat on end!

«...cultivators of the earth are the most valuable citizens. they are the most vigorous, the most independent, the most virtuous, and they are tied to their country and wedded to it's liberty and interests by the most lasting bands [sic].»[30]

The ‹cultura animi›[31] of Jefferson's United States was not entirely representative of this European rationalism it sought to replicate. The culture of the new American empire was also built on the principles of commercial gain, in this case through the expansion of the territories of knowledge and resource. Knowledge, and the cultivation of it, became not just a human right in the eyes of the Enlightenment; to Jefferson it also meant economic commodity. This industrious mentality was defined through the early 19th century term ‹manifest destiny›, the belief that it was the Anglo-Saxon American's mission to expand their territory from coast to coast. Exploration became tantamount to conquering; discovery ultimately meant immediate possession, with objects of one's personal collection defining and adding value to that individual. Thus Jefferson's ambition for his nation to become independent free-thinkers meant a country of individuals laying claim to land and the valuable resources it contained, as discovering the potential of the land was a full expression of the unique self.
In his attempt to understand the land, Jefferson created devices, tools, methods, and processes of representation which, in effect, removed him further and further from the actual ground he operated on. Jefferson's relentless collection of objects of knowledge, from plant specimen to data, led him to focus too squarely on the paper. Eventually this curatorial process reduced his land to a monoculture of tobacco, corn, and wheat. While the diversity of nature remained in the coffers of his collection, his farm would suffer the consequences of dependency on a national culture of destructive cash crops. Ultimately, his ambitions of building a new nation of diverse culturists would meet the same fate of his farm, a failed experiment.

1 From Thomas Jefferson to Thomas Pinckney, 8 Sept. 1795, ‹The Papers of Thomas Jefferson›, John Catanzariti (Ed.), Princeton University Press / Princeton 2000, pp. 457–458.
2 Letter to Wilson Cary Nicholas, 16 Dec. 1809, ‹The Papers of Thomas Jefferson Digital Edition›, Barbara B. Oberg and J. Jefferson Looney (Ed.), University of Virginia Press, Rotunda / Charlottesville 2008–2015, pp. 81–83.
3 «I have & set them down on my own kowlege [sic]» Ibid., pp. 81.
4 Ibid., pp. 82.
5 Ibid., pp. 82. These authors in Dickson's anthology formed what is referred to as the Geoponici, a collective of ancient Greek and Roman authors of subjects on husbandry and agriculture. The goal of the authors was to spread the practical, theoretical, and philosophical knowledge of farming through various forms of political devices.
6 Ibid., pp. 83.
7 Extract from Thomas Jefferson to Meriwether Lewis, 20 June 1803, ‹Thomas Jefferson and Early Western Explorers›, Gerard W. Gawalt (Ed.), Manuscript Division / Library of Congress.
8 Jean Baudrillard, ‹The System of Collecting›, in: John Elsner and Roger Cardinal (Ed.), ‹The Cultures of Collecting›, Reaktion Books Ltd / London 1994, pp. 7–24.
9 Jefferson, letter to Meriwether Lewis.
10 Ibid.
11 Anthony Alan Shelton, ‹Cabinets of Transgression: Renaissance Collections and the Incorporation of the New World›, in: John Elsner and Roger Cardinal (Ed.), ‹The Cultures of Collecting›, Reaktion Books Ltd / London 1994, pp. 177–203.
12 Extract from Thomas Jefferson to Maria Cosway, 12 Oct. 1786, ‹The Papers of Thomas Jefferson›, John Catanzariti (Ed.), Princeton University Press / Princeton 2000, pp. 443–455.
13 Andro Linklater, ‹Measuring America›, London / Penguin 2003, pp. 16–17. Divided into 100 links each measuring 7.92 inches, the Gunter's chain was a device that reconciled traditional English land measurements with the decimal system. One acre measured 10 square chains in the Gunter system.
14 James Corner, ‹The Agency of Mapping: Speculation, Critique and Invention›, in: James Corner (Ed.), ‹Mappings›, Reaktion Books / London 1999, pp. 213–252.
15 Thomas Jefferson (principal author), Land Ordinance of 1784, ‹Documents from the Continental Congress and the Constitutional Convention, 1774–1789›, Manuscript Division / Library of Congress.
16 Thomas Jefferson, ‹Farm Book›, Edwin Morris Betts (Ed.), Thomas Jefferson Memorial Foundation, Inc., 1999, pp. 227.
17 Corner, ‹The Agency of Mapping›, pp. 201.
18 Andro Linklater, ‹Owning the Earth: The Transforming History of Land Ownership›, Bloomsbury / New York, 2013.
19 The specificities of these conflicts arising over the ownership of land versus occupation can be traced to a significant Supreme Court decision ‹Johnson v. M'Intosh (1823)›, which essentially grants legal function to the European Christian power that discovers the land. This decision, coupled with the ‹discovery doctrine› paved the way for the convenient justification of moving tribes from their ancestral homeland.
20 Extract from Thomas Jefferson's ‹Memorandum of Services to My Country›, 2 Sept. 1800, ‹The Papers of Thomas Jefferson Digital Edition› pp. 2.
21 Bruno Latour, ‹Circulating Reference: Sampling the Soil in the Amazon Forest›, in: ‹Pandora's Hope: Essays on the Reality of Science Studies›, Harvard University Press / Boston 1999, pp. 25–79.
22 Jefferson, ‹Farm Book›, pp. 227.
23 Richard Buckminster Fuller, ‹The World Game: Integrative Resource Utilization Planning Tool›, Southern Illinois University / Carbondale 1971.
24 Jefferson, ‹Farm Book›, pp. 35.
25 Anthony Alan Shelton, ‹Cabinets of Transgression›, pp.181.
26 Thomas Jefferson to Thomas Mann Randolph. 7 Feb. 1796, Manuscript Division / Library of Congress.
27 William Cronan, ‹Nature's Metropolis: Chicago and the Great West›, W.W. Norton & Company / New York 1992.
28 Andro Linklater, ‹Owning the Earth›, pp.180.
29 Jefferson, letter to Meriwether Lewis.
30 Extract Thomas Jefferson to John Jay, 23 Aug. 1785, Manuscript Division / Library of Congress.
31 Latin: lit. ‹cultivation of the soul›, first century B.C.

Danny Wills, born 1987, graduated from The Cooper Union School of Architecture, where his thesis explored the intersection of agriculture and architecture in rural America. He is currently a design studio coordinator and researcher at the Urban-Think Tank Chair of Architecture and Urban Design at ETH Zurich.