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FireCity 2.0: Manifestation of Regenerative Urbanism

Research Studio 2021-22 powered by xLAB @ Dept. of Architecture and Urban Design, UCLA
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In-Person Location: UCLA Campus, Perloff Hall, Room B320
Online Location: https://ucla.zoom.us/j/9759759000
Schedule: Thursdays, 1pm-4pm

0. What is Regenerative Urbanism?

"The planning of new cities, as well as the retrofit of existing cities, needs to undergo a profound paradigm shift. Mere 'sustainable development' is not enough. To be compatible with natural systems, cities need to move away from linear systems of resource use and learn to operate as closed-loop, circular systems. To ensure their long-term future, they need to develop an environmentally enhancing, restorative relationship between themselves and the natural systems on which they still depend."

Herbert Girardet, Creating Regenerative Cities 2014), accessed
https://books.google.com/books/about/Creating_Regenerative_Cities.html?id=mpeQBAAAQBAJ

Regenerative Urbanism* is an aspirational term that encourages the reframing of conventional urban design and planning techniques through contemporary models more dynamic, more elastic, and more faceted than conventional static plan-based ones. A catalyst for a holistic, evolutionary approach to metropolitan development - in this instance one focused on risk management and resilience in the face of natural disasters like fire - it underlines an approach that synchronizes and synthesizes information flows through simulation and forecasting of multiplex forces within an ever-developing intelligence network.

Always learning, the targets and outcomes of Regenerative Urbanism resonate with the research concerns of developmental neuroscience. Analogous to the complex nervous systems of complex organisms and their pathologies, regenerative urban morphologies and behaviors are conceived with anticipatory views toward adaptability, flexibility, and mutation. Physiologically, the organizational components and systemic, structural interrelationships of Regenerative Urbanism aspire to operate with a similar attitude to martial arts, particularly those that mobilize soft and malleable techniques of absorption and redistribution as a response, or even as a preemptive avoidance, of the hard impact of external forces.

Soon to be tested at the fiery interfaces between nature and artifice, between ungovernable wilderness and governable constructs, the combinatory design and planning techniques of a Regenerative Urbanism will flicker between software and hardware. As information in formations, our applied research on Regenerative Urbanism will reinvigorate visionary ideas of and influences on urban design from cybernetics to Metabolism.

See the global ArcDR3 Grand Syllabus for more on Evolutionary Regenerative Systems (ERS) definition and the lenses of ecology, science, and technology.

01. About ArcDR3 Initiative (Architecture and Urban Design for Disaster Risk Reduction and Resilience)

Website: https://xlab.aud.ucla.edu/irides-tohoku-arcdr3/

The **ArcDR3 (Architecture and Urban Design for Disaster Risk Reduction and Resilience) Initiative** is a 3-year global interdisciplinary architecture education project organized by xLAB at UCLA, IRIDes at Tohoku University in Sendai and Miraikan National Museum for Emerging Science and Innovation in Tokyo. It is launched as a part of the Association of Pacific Rim Universities (APRU) Multi-hazard program and involves participation from 11 APRU Universities: UC Berkeley (USA), University of Hong Kong (Hong Kong), University of Melbourne (Australia), National Cheng Kung University (Taiwan), National University of Singapore (Singapore), Pontifical Catholic University of Chile (Chile), University of Tokyo (Japan), Tohoku University (Japan), Tsinghua University (China), University of Washington (USA) and UCLA (USA).

The purpose of the Initiative is to strengthen the integration between theory (research) and practice (design) by creating an international platform for the exchange of knowledge on topics of disaster risk reduction and resilience. With the key objective of addressing "Regenerative Urbanism" and its implications for architecture and urban design, 11 participating Universities have developed

context-specific design studios for the 2020-21 academic year, and will build upon their research during the 2021-22 academic year. ArcDR3 is actively organizing a series of international conferences and exhibitions to present the research to a public audience and expand the urgent discussion of establishing new strategies for designing buildings, cities, and environments. Events include the exhibition "*Living with Disasters*" in Tokyo in April 2022, the symposium "*Manifestation of Regenerative Urbanism*" in Tokyo in April 2022, and the exhibition and symposium "*Living with Disasters*" in Los Angeles in October 2022 and subsequent publication.

02. "Fire" as Local Context

"Our study will be situated in Los Angeles County, an area prone to wildfires naturally, but also experiencing dramatic increases in catastrophic wildfires likely due to a combination of climate change, increasing development at the urban-wildland interface, and a lack of preventive measures and public education."

Prof. Dr. Ali Mosleh, Excerpt from the Research Proposal on
Risk-Informed Integrated Approach to Assessment and Community Engagement

The state of California is naturally predisposed to wildfire activity with its abundance of dry fuels in chaparral and woodland ecosystems, hot and dry Mediterranean climate, and rugged topography of the region's multiple mountain ranges. Seasonal winds combined with hot and dry temperatures establish ideal conditions for wildfires to start and spread.

Historically, California has relied on these basic components of wildfire ecology to maintain a balanced ecosystem, but global climate change and local human activity have exacerbated typical fire conditions resulting in more volatile fire events with higher risk to human safety. Climate conditions have contributed to increased drought conditions and above-average temperatures over the entire state, while urban expansion has pushed human activity further into historic wildlife territories creating more dangerous conditions for inhabitants. In 1933, the Griffith Park Brush Fire in Los Angeles was the deadliest in the state until the 2018 Camp Fire in Paradise. In 2020, California surpassed previously devastating fire records accounting for over 4-million burned acres including the August Complex Fire, California's first recorded gigafire, which doubled the previous record set by 2018's Mendocino Complex Fire.

Wildfire frequency has increased since the turn of this century, where three or more significant wildfires occur each year. Wildfires cause damage to residences (typically single-family homes), commercial buildings, infrastructures such as highways and power systems, and even decimate entire towns (Greenville during the Dixie Fire of 2021). Conversely, a majority of wildfires are caused by human activity. Recent significant wildfires in the Los Angeles Metropolitan Region, including the Woolsey, Saddle Ridge, and Getty Fires, were started by power lines or other electrical infrastructure. According to a 2019 article from the Wall Street Journal, over 1,500 fires may have been caused by Pacific Gas & Electric equipment, of which 17 fires destroyed 3,256 structures and killed 22 people. Wildfires not only cause social impacts, including loss of life and disruption of social processes, but they also expose existing social and economic inequities; for example, when domestic workers still went to work in the evacuation zone of the Getty Fire.

In pursuit of Regenerative Urbanism and as a participant of the ArcDR3 initiative, UCLA's Architecture and Urban Design (AUD) will lead simultaneous synergistic design-research studios at both Perloff Hall and the IDEAS campus. Their work will form and be informed by interdisciplinary collaborations with UCLA departments including Engineering and Planning, in addition to the 11 universities participating in the ArcDR3 initiative.

With a focus on the fire-risk-reduction and fire-resilience, both at Wildlife Urban Interfaces (WUIs) and within interstitial multi-hazard zones in the state of California, the design-research studios will contribute a vital array of design visions and knowledge to the ArcDR3 initiative and help to establish the conceptual framework of Regenerative Urbanism.

By adopting and modifying the global ArcDR3 Grand Syllabus to the California regional context, and engaging with relevant authorities and experts both within the UCLA community and beyond, the studios will operate as a cooperating think tank whose culminating projects will be shared and discussed at international conferences, displayed in international exhibitions, and disseminated through globally accessible publications.

03. Studio Flow (Research/ Ecology Diagram; Counter-Disaster Strategy/ Fire-Resilient Master Plan; Action/ Design of Fire-Resilient Node)

The design studio program addresses Regenerative Urbanism by focusing on fire-risk-reduction and fire-resilient design through an analytical and projective approach structured and distributed over three quarters during the year:

Design Questions:
+   What is Regenerative Urbanism? How can we use it in the field of architecture and urban design to create fire-resilient environments along the Wildland Urban Interface (WUIs) of California?
+   How can we accept disaster as a condition of daily life and integrate it in the design of our everyday environments? How can this shift in attitude and design affect the formation of the community and impact the way we consider space use and ownership?
+   How can the physical characteristics of California (topological, infrastructural, architectural, sociological etc.) be incorporated into a fire risk reduction strategy and become the basis of fire resilient design?
+   How can we develop multifaceted strategies of cooperation and integration between various stakeholders and participants in the ecosystem fire zones?

1st Quarter: Research/ Ecology Diagram:
By examining case studies of fires in California, students will initiate an analysis of the fire within context-specific ecological, sociological, and technological dimensions. These include cultural challenges, layers of governance, economic impacts and opportunities, required expertise and specialization, and spatial relationships of exposure, infrastructure, settlement, and physical aspects. Case studies will be evaluated on four levels: live (housing), work (industry), community (public facilities), and mobility (infrastructure). This research process will be initiated by student teams and will become the basis for

generating the matrix of parameters (ecology diagrams) describing the mechanism of fire as a disaster in California.

Looking Ahead: By the end of the 2nd Quarter, students will be asked to form a statement and write a scholarly essay on "Regenerative Urbanism" by using keywords and phrases related to their research activities.

Fall Quarter Research Includes the Following Phases:

1. **Case Study Research of the California Wildfires:** *This includes the study of 3 major fires in California that will be the basis for developing the fire ecology diagram.*
2. **Design of Fire Ecology Diagram:** *Based on the previous research, students are asked to diagram various parameters such as weather, landscape, architecture, stakeholders, participants, etc. It will be a way to explore and visualize the fire as complex phenomena involving many aspects of contemporary society. These research components combined will lead to the ecology diagram describing the mechanism of fire as a disaster in California.*
3. **Defining Regenerative Urbanism Through a Set of Keywords:** *Students are asked to answer the central question: What does Regenerative Urbanism mean?*

Deliverables:

1. *Ecology Diagram of Fire in Selected California Regions.*
2. *Definition of Regenerative Urbanism: Keywords that define it based on the precedent studies.*
3. *Publication co-authored by (2x) MArch1 & (2x) MSAUD students; draft for end-of-year book.*

Guest Lectures:

Jeff Brown	UC Berkely Researcher and Teacher	Wildfires and Field Works
Prof. Ali Mosleh	Engineering Department, UCLA	Wildfires and Probabilistic Risk Assessment
Prof. Imamura, Prof. Murao, Prof. Onoda, Prof. Maly	IRIDeS, Tohoku University (3x Presentations)	Wildfires and Global Disasters
Brandon Collins	Forest Service's Pacific Southwest Research Station	Wildfire Management and Post-Regeneration
Prof. Kian Goh	Department of Urban Planning, UCLA	Wildfires and Planning Urban Climate Change
Ilkay Altintas (TBD)	SuperComputer Center, UCSD	Wildfires and Artificial Intelligence
Hilda Kwan	U.S. Forest Service Hydrologist	Wildfires and Post Fire Hydrology
Jack Cohen	Retired U.S. Forest Service Researcher	Wildfires and the Mystery of Destruction
John Gaddie	CalFire Fire Chief Butte County	California Wildfires and Agile Leadership

2nd Quarter: Counter-Disaster Strategy/ Fire-Resilient Master Plan:

In the second research phase, each team will develop a counter-disaster strategy based on the information and matrix derived from the research of fire case studies conducted in the Fall Quarter. Students will focus on 1-of-4 levels of evaluation (live (housing), work (industry), community (public facilities), and mobility (infrastructure)) and design a fire-resilient master plan, according to a counter-disaster strategy, that addresses fire from a prevention and/or mitigation point of view. The goal of developing counter-disaster strategies and/or master plans is to test levels of resilience against a network of complex, interconnected relationships between stakeholders and conditions in select contexts. Thus, students will be able to record such connections and propose alternative approaches at the level of a master plan, or in this case, a fire-resilience plan. This approach will lead to the third phase – a prototypical design, which will inform a systematic strategy, a design methodology, and technical specification(s).

Winter Quarter Research Includes the Following Phases:
1. ***Design of the Counter-Disaster Strategy and Master Plan:*** *Based on the Research and Fire ecology diagram from Fall, students are asked to create their own fire-resilient master plan derived from the counter-disaster strategy.*
2. ***Design Brief of the Node:*** *Will be developed during the Spring Quarter and presented as part of a short video for the above work.*
3. ***Scholarly Essay on "Regenerative Urbanism":*** *The essay will use keywords and precedents related to students' research.*

Deliverables:
1. *Counter-Disaster Strategy/ Fire-Resilient Master Plan presented in short video format.*
2. *Design Brief of the Node.*
3. *Illustrated scholarly essay on "Regenerative Urbanism".*

Guest Lectures (Tentative):

Jeremy Alain Siegel (TBD)	Architect, BIG	Resilience design
Henk Ovink (TBD)	Special Envoy for International Water Affairs, Kingdom of Netherlands	Climate Change
Samaneh Moafi (TBD)	Bartlett UCL, Forensic Architecture	
David Turnbull (TBD)	AVCI Architects	
Christy Cheng (TBD)	Associate, OMA	Rebuild by Design
Miho Mazereeuw (TBD)	MIT, Associate Professor of Architecture and Urbanism	Urban Risk Lab Projects
Stamatis Zagrofos (TBD)	Bartlett UCL	
Richard Mollan (TBD)	Hassel Architects	

3rd Quarter: Action/ Design of Fire-Resilient Node:

By leveraging prior research and applying strategies of fire-resilience previously established (Counter-Disaster Strategy/ Fire-Resilience Master Plan) students will design a site-specific project that responds to potential fire-risks. Students will identify the role of the proposed project typology and its effectiveness as an instrument of fire-resilience within the systematic node. With this in mind, students will develop their projects as a prototypical design that takes a stance on fire-risk and fire-resilience under the framework of Regenerative Urbanism. This phase will incorporate the process of refining the ecological, sociological, and technological dimensions that connect the prototype to a broader system. The proposal may address one of the following project types: civil engineering infrastructure, residential community or public, or cultural facility. Projects will be developed as strategically-equipped designs within a broader network of fire-risk and fire-resilience strategy. This will equip students with the tools to articulate designs that confront anticipatory and evolutionary forms and forces emerging in the face of environmental threats.

> *Japan Research Trip (April 8 - April 14, 2022):*
> *As a continuation of the research, students will travel to Tokyo to attend the exhibitions and symposiums developed in collaboration with ArcDR3, to East Japan territories to examine the decade-long recovery projects after the East Japan Great Earthquake and Tsunami of 2011, and important architectural buildings along the way. Guided by members of IRIDeS, students will tour important sites that represent Regenerative Urbanism ideas. During the visit, students will present their developed arguments to our partners from IRIDeS and Tohoku University. xLAB will provide each student with a stipend to offset flight costs. Please note that students will be responsible for paying and arranging their own accommodations, local transportation, and other expenses.*

> *Deliverables:*
> 1. ***Counter-Disaster Master Plan Package:*** *Based on the research, analysis, and counter-disaster master plan developed during Fall and Winter Quarters. (Design of the node from Spring Quarter needs to be incorporated as well.)*
> 2. ***Design of the Node:*** *By employing prior research, case studies analysis, counter-disaster scenarios, and ERS-informed fire-resilience plans, students will design a site-specific project that responds to fire-risks through strategies for fire-resilience.*
> 3. ***Presentation to IRIDeS:***

04. Studio Structure

In order to strengthen collaboration with authorities, experts and colleagues and to create an enhanced studio environment, the ArcDR3 Regenerative Urbanism Studio comprises three unique structural components.

1. **Parallel Design Research Studio:** The parallel structure is intended to create an information exchange between MArch-I's Parloff Campus and the IDEAS Campus in Culver City. FireCity studio will work closely with FireLand studio to share resources and ideas, and collaborate to produce the end-of-year publication. AUD's cross campus intelligence feedback loop and collaborative dialogue will offer students access to presentations by fire, city planning, and urban design experts in local

regeneration efforts, architects and researchers working on regenerative projects, and inter-faculty communication. Parallel design research studios will coordinate efforts to develop diverse proposals based on shared findings. Because architecture yields insights through both research and design, the studios are organized to take advantage of both models of exploration.
Shared Research Library Link: Will receive on the first day of class.
Research Assistant: Antara Murshed

2. **Interdisciplinary Research and Collaboration:** In order to address the question of fire-risk-reduction and fire-resilience in California across a range of perspectives, the joint initiative draws from a diverse network of educational partners and researchers. Furthermore, to strengthen the research and to cover various angles of inquiry, the team of experts from UCLA's faculty will be joined by colleagues outside of the campus. With its dual focus on fire-risk-reduction and fire-resilience, the ArcDR3 Research Group at UCLA has invited distinguished experts in the various fields relating to wildfire activities before, during, and after.

   Also joining the team in an expert advisory capacity is a faculty from the UCLA Department of Urban Planning, Kian Goh, Assistant Professor of Urban Planning, who will provide insights through which to address fire threats at a strategic metropolitan level.

   The guest lecture series has been developed to focus on Regenerative Urbanism topics and invites experts from a diversity of fire-related professions. The guest lecture series, in coordination with the IDEAS Campus, will be central to the research studio and will introduce students to the variable complexities of fire activity and fire-risk reduction and resilience.

3. **Exhibition at Japan House:** Student work will be assembled and presented at the exhibition "*Living with Disasters*" at the Japan House in Los Angeles in October 2022. Students will be expected to participate in the preparation of their work for the exhibition and collaboration with curators and other exhibition members.

05. FALL QUARTER SCHEDULE

LOTTERY / Friday, September 24, 2021

WEEK 1 / 09.30.2021 (In-Person Meeting)
Studio Introduction
- Introduction of small-group and large-group format:
  Smaller Group (2 students): The group will develop a key concept for Regenerative Urbanism.
- Larger Group (Combining 2 Small Groups): The group will initiate the fire case study in California and develop a fire ecology diagram.

WEEK 2 / 10.07.2021 (Online Meeting)
Lecture: 1:30pm - 2:30pm (PST), Jeff Brown (Watch recorded lecture as a Class)
Lecture: 3:00pm - 5:00pm (PST), Prof. Ali Mosleh

IDEAS Lecture: 10.08.2021 @ 4:00pm-6:00pm (PST), Prof.Fumihiko Imamura, Prof. Yasuaki Onoda, Prof.Liz Maly

WEEK 3 / 10.14.2021 (Online Meeting)
Presentation 01
- Presentation of the key concept of Regenerative Urbanism by using precedents as evidence.
- Presentations to be in groups of 2 people.

IDEAS Lecture: 10.15.2021 @ 12:00pm-2:00pm (PST), Brandon Collins

WEEK 4 / 10.21.2021 (Online Meeting)
Lecture: 1:00pm - 3:00pm (PST), Prof. Kian Goh (Watch recorded lecture as a class, followed by a live question/answer session.)
IDEAS Lecture: 10.22.2021 @ 12:00pm-2:00pm (PST), Ilkay Altintas (TBD)

WEEK 5 / 10.28.2021 (In-Person Meeting)
Presentation 02
- Presentation of the case studies. (Overview summary and preliminary analysis)

IDEAS Lecture: 10.29.2021 @ 1:00pm-2:30pm (PST), Hilda Kwan, Wildfires and Post-Fire Hydrology

WEEK 6 / 11.04.2021 NO CLASS (Mid Review Week)

WEEK 7 / 11.11.2021 NO CLASS (Veterans Day Holiday)
In lieu of class, students are expected to initiate the case study research and watch the videos of the following lecture and event, at their own convenience, before the start of next class:
- Greg Kochanowski:
  https://xlab.aud.ucla.edu/irides-tohoku-arcdr3/studio/los-angeles-california-ucla/
- ArcDR3 Student Exchange Event: Confluence and Transfer, Ideas in Exchange:
  https://xlab.aud.ucla.edu/irides-tohoku-arcdr3/event/arcdr3-student-exchange-event-confluence-and-transfer-ideas-in-exchange/

WEEK 8 / 11.18.2021 (In-Person Meeting)
Presentation 03
- Presentation of the key concept of Regenerative Urbanism by using precedents as evidence.

IDEAS Lecture: 11.19.2021 @ 1:00pm-2:30pm (PST), Jack Cohen

WEEK 9 / 11.25.2021 NO CLASS (Thanksgiving Holiday)

WEEK 10 / 12.02.2021 (In-Person Meeting)
Presentation 04
- Presentation of the case studies. (Analysis of Fire and Ecology diagram)

WEEK 11 / 12.09.2021 (Online Meeting)
Lecture: 1:00pm - 3:00pm (PST), John Gaddie

WEEK 12 / 12.16.2021 (In-Person Meeting)
FINAL PRESENTATIONS
- Final presentations of key concepts of Regenerative Urbanism, the case studies & fire-ecology Diagram.

06. Course Objectives

+ To contribute the knowledge above to a collaborative global network of designers focused on contemporary approaches on Regenerative Urbanism.
+ To produce informed inter- and multi-disciplinary scholarship and related design proposals that expand creative approaches to systems and infrastructures for fire resilience in several Wildlife Urban Interfaces in California.
+ To lead the network above towards establishing new formats and protocols for international graduate-level educational models in resilience-focused architecture and urban design.

07. Course Requirements

+ All assignments must be completed by their stated deadlines.
+ Complete all readings before the correlated class meeting and be prepared to discuss them.
+ Students must attend all scheduled class meetings and trips, unless excused for department approved reasons.
+ Three or more absences during the quarter will result in automatic failure.
+ Students will present proof of progress at all scheduled reviews.
+ Course materials must be submitted digitally by the end of the quarter per department procedure. All students are required to submit all final project boards, drawings, animations, photos, and videos. Drawings, boards, and photos should be provided at 300dpi. All animations and videos should be provided as an MP4 file. Students may also elect to take digital photographs of their models and submit these along with their final boards. It is a requirement of this course that all students submit course materials digitally by the end of the quarter. Failure to do so will result in the loss of one letter grade.

08. Academic Policy

+ This program uses video recording or other personal information capture for the purpose of facilitating the course and/or test environment. Pursuant to the terms of the agreement with UCLA, the data is used solely for this purpose and any vendor is prohibited from disclosing this information. UCLA also does not use the data for any other purpose.
+ Students may not distribute recordings or other instructional materials provided as part of remote learning by faculty, teaching assistants, or invited guests.
+ Students needing academic accommodations based on a disability should contact the Center for Accessible Education (CAE) at (310)825-1501 or in person at Murphy Hall A255. When possible, students should contact the CAE within the first two weeks of the term as reasonable notice is needed to coordinate accommodations. For more information visit www.cae.ucla.edu
+ If you are already registered with the Center for Accessible Education (CAE), please request your Letter of Accommodation on the Student Portal. If you are seeking registration with the CAE, please submit your request for accommodations via the CAE website. Please note that the CAE does not send accommodation letters to instructors – you must request that I view the letter in the online Faculty Portal. Once you have requested your accommodations via the Student Portal, please notify

me immediately so I can view your letter. Students with disabilities requiring academic accommodations should submit their request for accommodations as soon as possible, as it may take up to two weeks to review the request. For more information, please visit the CAE website (www.cae.ucla.edu), visit the CAE at A255 Murphy Hall, or contact us by phone at (310) 825-1501.

+ Academic Integrity from the Dean of Student:
https://www.deanofstudents.ucla.edu/Portals/16/Documents/Syllabus.pdf

+ It is a requirement of this course that all students submit course materials digitally by the end of quarter. Failure to do so will result in the loss of one letter grade. Please follow this procedure in digitally submitting your work:

   1. For Studios: All students are required to submit all final project boards, drawings, animations, photos, and videos. Drawings, boards, and photos should be provided at 300dpi. All animations and videos should be provided as a MP4 file. Students may also elect to take digital photographs of their models and submit these along with their final boards.

   2. For Lectures and Seminars: All students must submit required assignments as compressed PDF files. Follow instructions from 1.“*For Studios*” for all drawings, images, and videos.

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