The Architecture of Migration: Teaching Agency in Adaptive Refugee Housing

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Increasing man-made and natural disasters compel architecture educators to revisit how students as future practitioners can best address the challenges of housing a growing number of forcibly displaced people. The complexities of domestic and global contexts are difficult to generalize. Migrant demographics and their economic and political circumstances vary widely, as do time lines for resettlement and the possibility of eventual repatriation. The broad classifications of displaced people (e.g., refugee, asylum seeker, internally displaced people) do not illuminate distinct personal conditions.

Through background research, interviews with experts in the field, and experimental teaching, we consider how forced migration trends challenge established pedagogical approaches and existing models of architectural practice. We evaluate the role of architects when designing for uncertain and turbulent contexts in which empathic design is essential. The diversity of situations makes it impossible to determine a fixed playbook to follow. We conclude that rather than prescribing a definitive professional role or predicting a standard set of responsibilities, we can address these questions by formulating critical thinking exercises and identifying key considerations as they relate to distinct circumstances. We must look ahead to a time when our students will need to work out solutions and strategies on their own and provide attitudes and skills for sensitively addressing dynamic crisis situations.

1. INTRODUCTION

The need to house refugees is a global emergency. The UNHCR estimates there are 82.5 million forcibly displaced people as of June 2021,[1] the highest number on record; with more than half internally displaced. Settlements in Jordan and Germany revealed tensions between centralized management and residents' volition as a core issue for refugee communities[2] as the requisite organization and behavior guidelines conflict with instincts to improvise solutions for more habitable environments. The comparative study showed that refugee communities in distress fare better if empowered as key decision-makers. This paper and related video synopsis, funded by the Oregon Global Justice Project,[3] emphasize how architectural educators may prepare students to be more effective in facilitating stakeholder agency and devising their roles as designers in distinct circumstances. In some of these complex situations, the architect needs to be directly responsible for designing solutions. But in others, the architect's role should shift to 'architect as facilitator', to enable future inhabitants to actively shape their environments. It becomes necessary to listen to stakeholders and interdisciplinary experts and then collaborate on solutions with sensitivity to cultural and building traditions. For example, architect Phoebe Goodman of UNHCR recounted a situation wherein she advised the community that locally sourced thatch roofs would be more effective for heat mitigation than corrugated metal roofs. However, out of respect for their longer-term interests in shaping their housing settlements, she acquiesced to her community partners' preference for metal roofs.[4] Similarly, the complexity of the varied refugee situations shown in Ennead Lab's work[5] forecasts that we need to change our approach to architecture education to address complex crises. As architects, students will need to engage varied constituents into productive dialogue. Therefore it is crucial to foster communication and interdisciplinary collaboration skills. For students to effectively work within inequitable situations, teachers need to cultivate awareness of implicit bias and potentially incorrect assumptions, and sensitivity towards the displaced person's life experience. Figure 1 shows how this

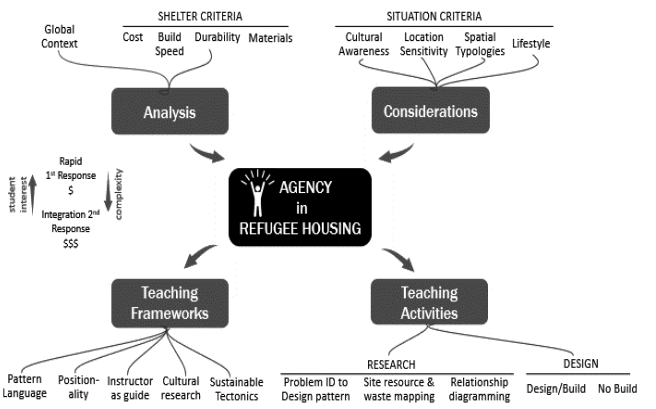

Figure 1. Global shelter criteria and specific situated considerations shape teaching frameworks and associated activities.

paper starts with an analysis of global shelter design criteria and site-specific considerations. The paper then examines emergent teaching frameworks, proposes a future teaching scenario, and finally explains how pedagogical approaches could prepare students for future architectural practice. The complexity and range of situations preclude a prescriptive curriculum sequence or approach to addressing the needs of forcibly displaced communities.

2. AN OVERVIEW OF SHELTER IN PRACTICE

2.1 STARTING POINT: WHICH SHELTER IS BEST?

Through seminars, studios, and our research, we sought to better understand the complexity of teaching about housing for displaced people. Our first move was to examine housing typologies from rapid shelter to more permanent constructions, considering the time lines, stakeholders, material transitions, occupancy scenarios, and effectiveness of designs. Should resources be allocated towards rapidly deployable shelters with shortened life spans? Or should shelters be more durable, taking on longer build times to involve greater community control and design development? We analyzed the UNHCR Shelter Design Catalog,[6] which describes UN standard shelters and iterative versions of locally-tuned examples adopted in Africa, the Middle East, and Southeast Asia. Each instance includes lifespan, time to build, cost, materials, workforce, tools, square footage, and construction methods. Contrasting graphs in Figure 2 reveal the balancing act between shelter build time, longevity, and unit cost.

The UNHCR advocates for locally sourced materials and labor[7] but is also careful not to prescribe solutions. “Emergency shelter needs are best met by using sustainably sourced materials and construction methods as would be normally used by the refugees themselves or the local hosting population. Only if adequate quantities cannot be quickly obtained locally should emergency shelter material be brought into the country.”

Not atypically however, synthetic materials, such as plastic sheeting used as ground cover or polymer panels used in the IKEA-sponsored Better Shelter Refugee Housing Units, are deployed in urgent situations. When shelter for hundreds needs to be erected rapidly, site planning decisions with lasting effects are often done spontaneously. The political context of unwanted migrants can make it challenging to build appropriate permanent housing and therefore the construction of rapid (but fragile) temporary settlements can take priority. Typically, both informal iterative improvements and centrally planned land-use patterns emerge. Later, shared institutional buildings and public spaces with higher structural and environmental requirements are needed, and their greater investment requires careful negotiation between stakeholders.

While the UN standard rapid solutions (family tents & refugee housing units) have been field-tested for structural and environmental performance, their intended use as temporary

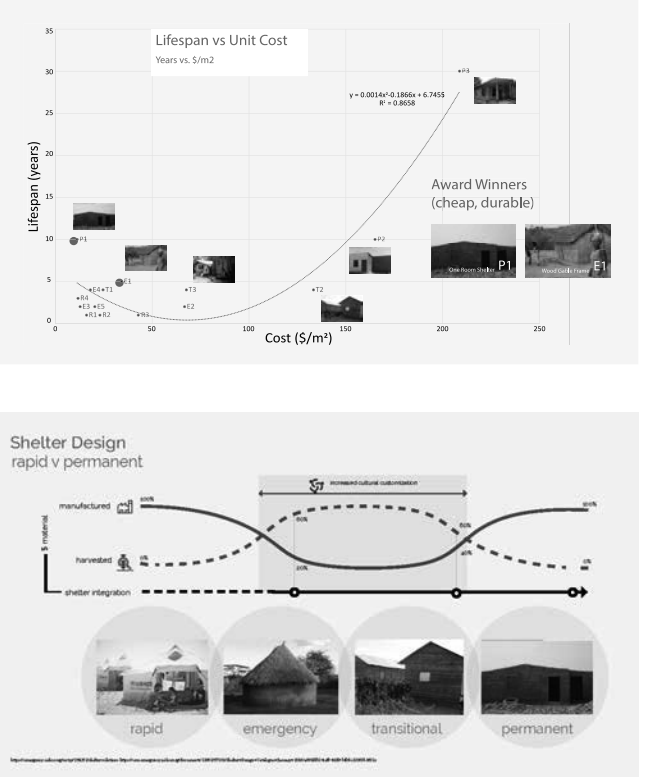

Figure 2. Emergency responses prioritize rapid build time while long-term solutions prioritize durability (top). Pre-fabricated rapid shelter and permanent housing use more manufactured materials, while transitional improvisations often draw on local materials (bottom). Graphs organize examples from the UNHCR 2016 Shelter Design Catalog.

structures makes them poorly suited for the typically longer inhabitation.[8] Thus, adaptations to rapid shelters and transitional shelters may favor local low-tech building materials with significant ad hoc adjustments made over time. For the most permanent building solutions, the material palette consists of synthetically made building materials which require more sophisticated tools and skilled labor.

2.2 FITTING REFUGEE SETTLEMENTS INTO THEIR CONTEXT

Using more sophisticated building materials and methods for rapid and permanent shelters brings an environmental and cultural impact. The imported manufactured solutions lend themselves to resource-intensive mass production with large transportation costs. Expedience makes them heavily repetitive and less conducive to cultural customization. A “one size fits all shelter” can be ingeniously packaged, lightweight and less expensive to make, but more difficult for spatial adaptation or local repair. By contrast, shelters using locally sourced materials have less pre-determined construction, allowing more flexible arrangements for culturally responsive adaptation. Therefore, more flexible locally sourced building systems can provide the welcome opportunity to personalize

and humanize the resulting environment, as confirmed by Ennead Lab Architects fieldwork.[9]

Building technology needs to be situated within the site's ecological resources, and the inhabitants' cultural traditions of spatial relationships. The design needs to balance potentially conflicting priorities such as build speed, durability, ability to evolve and unit cost. Building choices that employ local resources and resident expertise create more familiar environments and provide productive activity for residents. Moving forward, the urgency of immediate shelter needs to be balanced with its longevity, cultural suitability and longer-term cost. At any stage of the temporal shelter design sequence, a protocol that supports early and continuous community involvement creates settlements with cultural customization: a meaningful process yielding a meaningful product.

3. TEACHING FRAMEWORKS & RELATED ACTIVITIES

Prioritizing shelter and community design criteria for refugees can be guided by conceptual frameworks. These ideas, that are useful for research seminars and design studios, emerged from PI discussions and faculty interviews.

3.1 PATTERN LANGUAGE

In approaching the complexity of refugee issues, it is helpful to unpack the layers of dynamically evolving situations. Christopher Alexander's co-author Dr. Hans Joachim Neis has been developing a Refugee Pattern Language based on several years of studying the refugee housing issue in European and U.S. settings with colleagues and students.[10] The Pattern Language method[11] identifies typical design challenges, then breaks them into discrete sub-problems with related solutions. The refugees' stories move the pattern focus towards a dynamic process, addressing archetypal gendered experiences and family needs within a shifting journey. Neis with students and colleagues have begun to catalog design ideas in this fluid process considering interrelated spaces at various scales. For example, for refugees in Rome, skilled craft communities could provide purpose and income. Space allocated to therapy gardens and protected playgrounds can provide healing counterpoints to crowded flats.

In teaching an Architecture of Migration seminar, architect Grace Aaraj uses a Pattern Language approach to addressing basic human needs. After a global migration introduction, each student researches a specific refugee culture, its adopted natural context and political situation in order to design appropriate solutions. To address the complexity of the refugee settlements, designs were composed of discrete patterns that ideally knit together into a comprehensive whole. Student Kieran Chan-Johnson aspired for residents to shape their own fates, as he believed that refugees would know better than anyone else how to meet their own needs. So he sought to design the tools and infrastructure for shelter, food and water, social connection, and dignity. The discrete nature of the design patterns makes them more easily transferable.

Dr. James Miller also uses elements of Pattern Languages in designing for the environmental aspects of Pacific Islander migration.[12] His doctoral work examined how the Marshall Island inhabitants who resettled due to climate change have been able to maintain cultural patterns.[13] He teaches cultural geography so that students respect immigrants' specific cultural frameworks, with attention to how spaces support social cohesion. For example, as islanders placed into standard apartments can feel separated and isolated, they will be more at home in specific shared space clusters where they can practice interaction protocols that reinforce kinship bonds.

3.2 REFRAMING THE ARCHITECT'S ROLE TO BE A FACILITATOR

Instructors find that heightening students' awareness of their own privilege goes a long way to shifting the architect's role from "all-knowing expert" to a "facilitating guide." Seeing this as paramount, Miller asks his students to develop a positionality statement on Day 1 of his classes, which will be revisited throughout the term with greater awareness about personal experience shaping how each person perceives, understands and acts.

This approach is echoed by Dr. Menna Ahmed Agha[14], who identifies as a displaced Egyptian Nubian, and has taught about working with underserved communities in Egypt, Germany, Belgium, and U.S. To foster more culturally sensitive architects and cultivate strong community relationships, Agha asks students to reflect on their own epistemic positionality and acknowledge that the Western version of truth is not universal.

She criticizes the way that our institutions elevate the expert professional above the client, part of a larger pattern of institutionalized "Othering." She identifies a tension between the dominant culture and those on the receiving end of services, due to overly pre-scripted interactions that deny the full participation of residents. She sees that architects are needed to help immigrants establish their own spatial patterns in a new place, and for those who seek to return, build temporary shelters as a liminal space between two cultures. In order to engage clients more equitably, she creates situations where architects and clients plan and build together.

3.3 REFRAMING THE INSTRUCTOR'S ROLE AS TEAM GUIDE

In considering how teaching needs to adjust for cross-cultural settings, the instructor as team guide or coach can be more appropriate than teacher as a sage. For example, in teaching a diverse range of graduate students, Logman Arja explained his role as instructor is to provide stimuli:[15] "It is a melting pot where everyone injects something. My role is to set up the table, to write the rules and assignments. I allow students to express themselves so I learn with the students. …I consider the students like Research Assistants, as we are writing this together. I orchestrate the effort and they are very efficient in materializing a vision I put before them."

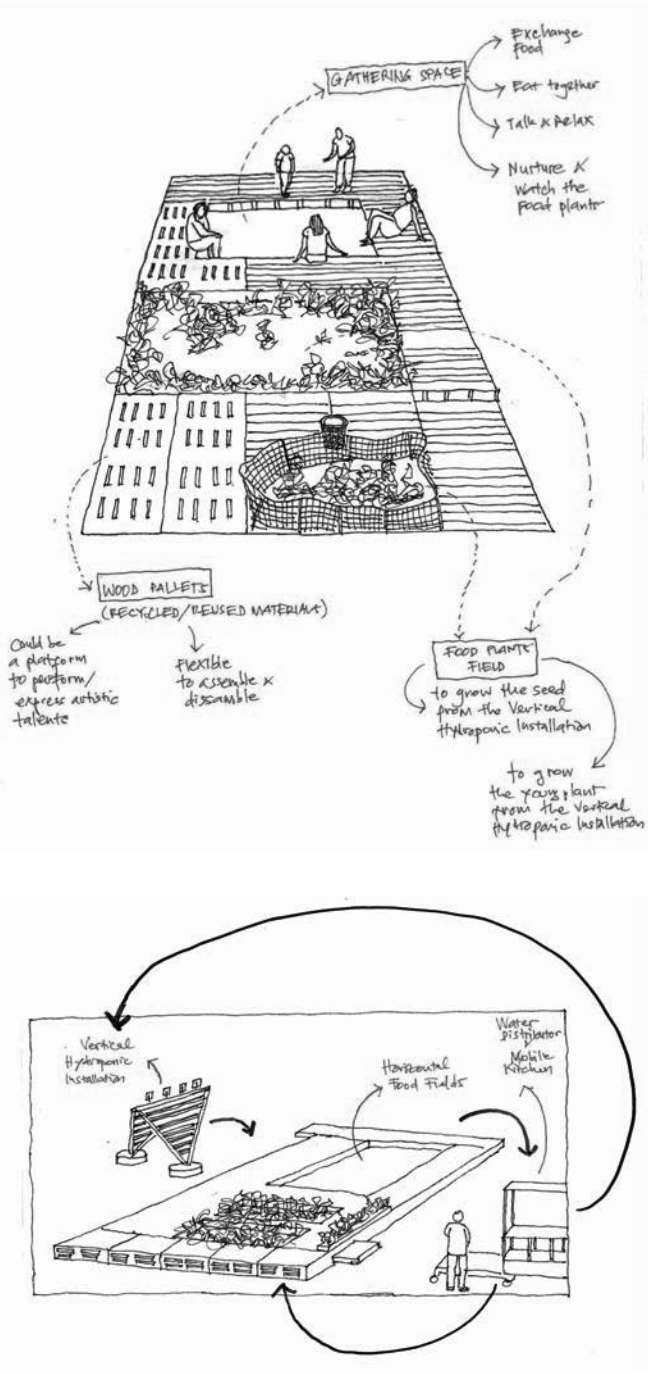

Figure 3. For Sri Lankan Tamil women in India, gardens plus mobile kitchens provide hope, nutrition and economic empowerment. By University of Oregon student Klara Indrawati.

Miller says that a designer needs to be more facilitator than expert, one who brings technical skills and the ability to mediate and translate within the bureaucratic, technocratic world of planning and building departments.

3.4. DEVELOPING CULTURAL SENSITIVITY

Developing a strong understanding of stakeholder situations is key to determining a sensitive design solution in complex socio-political contexts, with sometimes contradictory considerations. To generate situation appropriate solutions, Neis draws upon his experience with Pattern Language to immediately engage methods of active client engagement. Within an academic setting, direct contact with current displaced persons may not be possible, but recordings, documents and humanitarian aid professionals and refugee colleagues may be engaged. Agha agrees that listening to clients is key. She explains, "as it may be unfamiliar, architects must listen carefully to understand words that would help them understand how space is used and seen in another paradigm. What does it mean for that person to walk, to dance, to celebrate?" She also warns us that sometimes it is best not to build at all. At times, in teaching design studio, we also have a professional obligation and tradition to engage students in the practices, physical making and concrete design that may be at odds with giving equal standing to clients or communities as leading the design process.

Prioritizing cultural analysis is key for Aaraj, who needed to stop students from jumping too quickly into architectural solutions. Rather, designers need to delve first into the structure and mechanisms of refugee relief delivery to better understand how to maintain dignity and cultural relevance within constraints of costs and time. An example of tailoring to fit the situation, a student design transforms a refugee camp's barren public space into food production network (Figure 3). The author explained that by providing an agricultural basis and a mobile restaurant, the design could provide hope and empowerment to the women refugees.[16]

3.5. SUSTAINABLE TECTONICS INFORMED BY SITE RESOURCES AND CLIENT ABILITIES

In designing for refugees, architects need to consider how residents' original homelands shape perception of space and how the new homeland provides unique opportunities. Cultural and religious traditions influence how people can gather, such as gender separation or spatial hierarchies by seniority. Materials, colors and spatial forms may carry symbolic meaning – residents' mental images of home and worship space may set expectations. The new residents can help professionals to interpret how they could work with the site's natural resources, and incorporate local materials for building, craft or industry.

Those internally displaced by traumas of conflict or natural disaster are naturally more at home with the countries'

building tradition. For example, at UC Berkeley, Instructor Logman Arja teaches students to design for the internally displaced persons of his home of Darfur, Sudan. By telling the compelling story of how the villages suffered destruction and residents have lived in turmoil, he engages students into his mission for creating new futures with zero-waste ecological development. Because Arja emphasizes a circular economy, the whole course is based on giving the residents' agency in situations that fit the local setting, building on available resources and expertise to create a development plan. To find appropriate solutions, they investigate traditional industries such as agriculture, fishing, pottery-making, leather tanning, and weaving. This helps them envision how these skills could be ramped up towards economically and ecologically sound endeavors. The research engages their imagination to fill out the information gaps and leads to individual design proposals for parts of the master plan. The projects consequently build on cultural and spatial traditions to meet resident needs such as clean water, accessible energy and meaningful employment. For example, one of his students proposed that ponds for raising fish could be made into more intensive hydroponics + aquaculture centers, using the Living Machine model, with gridshell enclosures created from fast growing bamboo.[17] The site is portrayed as a place of change, with both ephemeral and permanent structures.

In designing shelters for U.S. Oregon refugees fleeing wildfires, homelessness or other traumas, Nancy Cheng's students considered how readily available timber products could be assembled by unskilled labor. The Timber Tectonics in the Digital Age studio challenged students to design emergency shelters and plan their transition into a permanent cooperative residential community. University of Oregon Architecture students and Oregon State University students in Wood Science & Engineering, and Civil Engineering worked together in small groups to design the phased development of a supportive community. One group found that underutilized small-diameter Ponderosa Pine logs and cores from shaving veneer logs could be deployed for a structural framework. The students designed metal connectors that would allow assembly of the poles into tree-like roof canopies that could unify a family of buildings. (Figure 4) Between a permanent floor and a large translucent canopy, residents could construct their own rooms or create larger amenity spaces with lightweight insulated panels.[18] Designing a building system with local materials, straight-forward assembly and flexible configurations provides opportunity for self-build personalization.

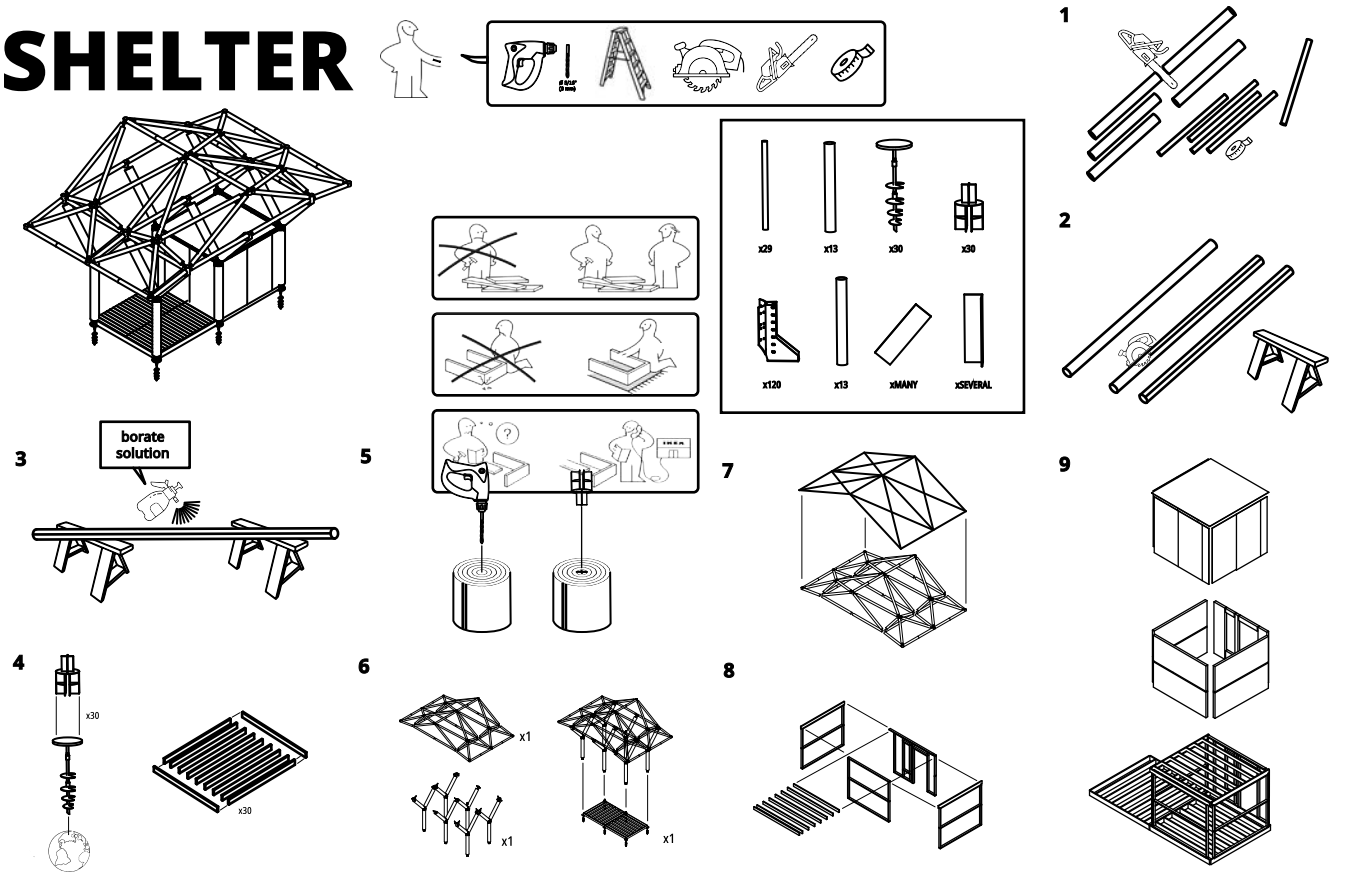

Figure 4. Connectors simplify building canopies with surplus ponderosa pine poles, infilled with modular enclosures. Team design drawn by University of Oregon student Isaac Martinotti.

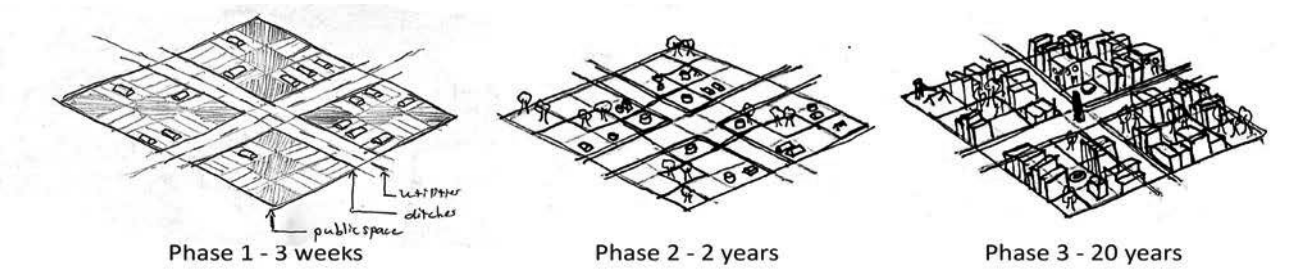

Figure 5. Speculative transformation of setbacks and easements through growth phases of Ugandan Bidi Bidi Refugee Camp, by University of Virginia graduate student Brandon Adams

4. TEACHING AGENCY: LESSONS LEARNED FOR THE DESIGN OF EVOLVING COMMUNITIES

How do the above-mentioned principles come together in teaching practice? Below describes a possible scenario of how a curriculum could be.

Introducing a design studio or seminar focused on forcibly displaced people begins with a temporal understanding of the design program, especially if the type of structure anticipated begins with a rapidly deployed solution that will transform over time into a semi-permanent or more permanent type housing. The idea of temporality in design is not new. Flexible space is a given in school and office design, and is well established in practice, but it takes on a different direction in the case of housing that may need to be significantly changed over time.

Within a design studio, an architecture student may be asked to develop a shelter requiring rapid change within 1 to 2 years. The change may be due to the fact that the initial site plan, developed in the fleeting time frame of an emergency, needs to expand to include a greater variety of spaces or to adapt a more mature reading of site constraints, such as a water, sanitation, and WASH (water sanitation and hygiene) systems. Most importantly, the shelter may need to evolve with the growth of community agency and confidence in making key decisions over their lifestyles, increasing ownership of design and construction decisions.

4.1. TRANSITIONING FROM TEMPORARY TO PERMANENT

Neis notes that while designers are often drawn to design of emergency shelter, more significant challenges typically come in subsequent stages of settlement. There's no perfect world where one can look into the future and do just what is required. Instead, imperfect ad hoc decision-making happens when under-resourced, overwhelmed with logistics, and operating with limited information for calculating risk. The initial footprints of the first shelters typically expand with small additions and are strengthened with available materials. Due to such changes, the surrounding circulation spaces may need to be rerouted or otherwise stand in the way of land use re-allocation. For migrants to thrive in a new setting requires some assimilation, with culturally supportive dwellings integrated into the city in ways benefitting neighbors.

4.2 STAKEHOLDERS IN THE DESIGN PROCESS

The prerogative of an architect to make design decisions as part of a complex negotiation between stakeholders may be more limited than in conventional practice. Ennead Lab has noted that as the phasing of housing changes from rapid deployment to more semi-permanent settlement, there's an increasing need for communities to make changes that better address their own needs and capacities to re-make and re-think their own environments as design leaders.[19] The role of architects in this process needs to be constructive but not overbearing. In order to preserve flexibility and empower a new community's ability to take the lead as their situation become more stable, architects may need to enjoin themselves from presumptive decision-making and setup a set of place-holding solutions:

- What site plan can meet immediate needs without foreclosing alternatives?
- What building systems can be changed more easily and securely?
- What environmental conditions can be addressed quickly and not impede more informed future site development?

4.3 DESIGN WITH THE END GOAL IN MIND: AGENCY FOR A TIME OF UNCERTAINTY

The design studio itself occurs in a constrained amount of time over a single academic term, so the programming of and developing a design solution can be overwhelmed by more complex problems. Still, for any given studio, instructors need to determine what represents the known and unknowable conditions, and must recognize how such limited knowledge impacts the quality of design decisions. In our approach, we reverse engineer the pedagogical model by beginning with studying the trajectory of long-term refugee settlements as the basis for setting up a design problem. We use understanding of the long-term challenges of more permanent settlements to inform how one could approach the rapid response pre-settlement design phase.

Accordingly, Earl Mark's rapid shelter design studio emphasizes design in relationship to site, circulation climate, materials, building structure and continual transformation. Each student researches and develops the narrative and history of their hypothetical or real community. Past students have reflected on their own personal or family experience of forcible displacement (e.g., natural disaster, persecution) to enrich the study. This is supported by suggested readings across different fields that address such topics as gender-based violence, humanitarian aid, healthcare, WASH, religion, politics, diaries, and an increasing number of case studies.

In the next studio, Mark's students will study how longer-term change exerts influence on the initial choice of a more flexible structural system and site plan. For example, a student in his rapid shelter seminar sketched a proposed transformation of setbacks and easements over three phases at a Ugandan refugee camp (figure 5). Future classes will have a greater emphasis on modular systems and adaptive construction, both hard-shell and soft fabric systems, that lend themselves to transformation into more normative urban fabric.

5. CONCLUSION

We have described how architecture teachers have engaged in refugee issues. This range of teaching approaches for diverse cultures could be useful throughout a 21st Century design curriculum. Breaking down situations into solvable mini-problems can be useful for the increasingly complex scenarios facing architects. Rather than counting on a reproducible approach to solve every situation, designers need be more flexible, especially in interpreting the design program. Whether caused by the climate emergency, technological advances, or human decisions, the constancy of change means that environmental designers need to be alert to new information and adapt to the upcoming forecast.

Being able to communicate an effective strategy with displaced communities across cultural barriers and to foster partnerships becomes increasingly important as the demographics for both higher education and clients become more diverse. Some displaced peoples may be better positioned to construct their own spaces, in terms of professional backgrounds as well as skilled labor. Other groups may not be able to do this directly but need to engage in a dialog to ensure that their cultural and particular uses of spaces can be more effectively accommodated, both in terms of individual and clustered housing units and other structures.

We have gained a better appreciation of how choice of available materials, the reading of cultural identity and geography, and the particular nature of forcible displacement can drive a more nuanced design response to circumstances. Less well understood is how to anticipate a temporal phased-in building time line when conditions may be politically or environmentally less stable. Pruitt-Igoe Housing teaches us that even in well-intentioned projects, visionary architecture can disastrously fail to take into account cultural issues or predict negative impacts on residents.[20]

For us to better prepare designers we need to explore each instance of rapid shelter or more permanent new housing as having a relatively unique set of professional responsibilities. Architecture is a "team sport,"[21] so that whether an architect performs as player, coach or something in between, may depend upon learning how to adjust as circumstances require. A more secure future depends upon adaptable building systems increasingly transformed by empowered communities responding dynamically to future events.

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