In the Eye of the Student: "An Intangible Cultural Heritage Experience, with a Human-Computer Interaction Twist"

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ABSTRACT

We critically engage with CHI communities emerging outside the global North (ArabHCI and AfriCHI) to explore how participation is configured and enacted within socio-cultural and political contexts fundamentally different from Western societies. We contribute to recent discussions about postcolonialism and decolonization of HCI by focusing on non-Western future technology designers. Our lens was a course designed to engage Egyptian students with a local yet culturally-distant community to design applications for documenting intangible heritage. Through an action research, the instructors reflect on selected students' activities. Despite deploying a flexible learning curriculum that encourages greater autonomy, the students perceived themselves with less agency than other institutional stakeholders involved in the project. Further, some of them struggled to empathize with the community as the impact of the cultural differences on configuring participation was profound. We discuss the implications of the findings on HCI education and in international cross-cultural design projects.

Author Keywords

HCI; HCI education; bottom-up; postcolonialism; decolonization; cross-cultural design; Egypt; intangible cultural heritage; ICT4D; HCI4D.

ACM Classification Keywords

H.5.2 User Interfaces: User-centered design; H.5.m Information Interfaces and Presentation (e.g. HCI): Miscellaneous; K.3.2 Computer and Information Science Education: Computer science education; K.3.2 Computer and Information Science Education: Curriculum.

INTRODUCTION

We examine the potential role of HCI in supporting digital initiatives for bottom-up documentation of Intangible Cultural Heritage (ICH) in non-Western contexts. ICH refers to social practices and traditions originated within folk culture, and includes oral traditions, customs, language, music, dance, rituals, festivities, craftsmanship, and more [27]. The redaction of the 2003 *Convention for the Safeguarding of Intangible Cultural Heritage* by UNESCO [41] represented a turning point in the extent to which the contribution of non-professionals in cultural heritage projects was sought. Within the framework offered by the definition of ICH, local communities are recognized a crucial role in keeping ICH alive (through an uninterrupted intergenerational transmission). In turn, they strengthen their cultural and social identity within a self-perpetuating cycle that sees community and ICH feeding one another [8, 30]. As a natural consequence, we have been witnessing the proliferation of projects aiming at documenting or safeguarding ICH [44] that involve, to different degrees, local communities with matters such as custody, collection, curation, dissemination, advice, or consultancy [39]. The problem investigated is twofold: the challenges faced by the ICH movement to engage local communities and the lack of established HCI practices in some contexts. We unpack the barriers to engagement in ICH endeavors and the underdevelopment of HCI in Egypt. We then address them within an HCI course designed to engage an Egyptian Bedouin community with engineering undergraduates in technology design activities.

This bottom-up way of working – which has also been defined as 'heritage from below' [35] – supports the idea that cultural heritage, and in particular ICH, could and should be adequately expressed within community-based activities [31]. This approach has greatly benefited from the advancement of digital technologies. Thanks to the unprecedented opportunities in terms of dissemination and access [11], physical and virtual communities are experiencing new possibilities to provide their representation of ICH through digital platforms. This set forth a definite passage from the passive consumption of heritage information, to the active participation in the production, discussion and generation of ICH information that includes grassroots perspectives [2]. However, several underexplored issues in community engagement and participation should make clear how the route towards the bottom-up approach to ICH is far from straightforward. More specifically, community-based digital heritage projects may suffer from a lack of assessment of users' needs and expectations [5, 32]; scattered digital illiteracy [14, 40]; an only apparent or partial

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engagement [17]; the prevalence of individual agendas [31]; and the creation of new divisions with a community [20, 21]. Community participation in heritage projects remains, therefore, a complicated achievement. Related engagement issues need to be explored within each specific social, cultural, and technological setting. We believe that a bottom-up approach to ICH could benefit from HCI participatory methods to engage communities with technologies.

Egyptian cultural heritage is very rich. Besides the globally recognized legacy of Ancient Egypt, a manifold of intangible artefacts completes a multifaceted scenario. In 2008, UNESCO officially acknowledged the relevance of Egyptian ICH by inscribing the Al-Sirah Al-Hilaliyyah epic – an oral poem recounting the migration of the Bani Hilal Bedouin tribe during the 10th century – to the *Representative List of the Intangible Cultural Heritage of Humanity* [42]. This was followed by the inscription of a stick game, Tahteeb, to the same list [43]. However, while UNESCO might have certainly popularized those practices on a global scale, its way of working emphasizes a different model of heritage assessment in which Western 'experts' are presumed as the most capable of capturing the intrinsic relevance of the cultural heritage of developing countries [46]. These two examples show how the activity of UNESCO on ICH in Egypt has been concentrating on a broad level, creating awareness about two spectacular and known cultural manifestations, with little consideration of the parallel urgency of safeguarding the actual community-based practices that keep ICH alive, and with even less involvement of technology. An alternative, complementary approach should be employed that directly involves the gatekeepers of Egyptian ICH in the selection of cultural and social practices that are relevant to them, in the digital documentation of these cultural manifestations, and in the design of suitable technology.

After the 2011 Egyptian revolution, the country had to face a challenging socioeconomic transition phase [1]. Evidence suggests that a full integration of Information Communication Technologies (ICT) into the economic and social fabric of Egypt can be beneficial in addressing development issues [26, 28]. The social computing literature identifies the institutionalization of HCI principles and practices to boost ICT growth in many developing countries [37, 15, 28]. In this regard, Egypt presents a specific set of challenges that result in a fundamental skepticism towards HCI within the higher education system. Findings from two previous HCI Winter Schools at the City of Scientific Research and Technological Applications (SRTA-City) suggest that students' interest focuses on the most technical side of interaction techniques. Outside these two educational attempts, HCI courses are thought as humanities courses, which do not attract engineering students who are accustomed to facts, and struggle to see the relevance in exploring meanings, concepts, and ideas [28].

The change should start from within higher educational programs. Therefore, we proposed the Hilali Network, an institutional-link project between Kingston University London (UK) and SRTA-City (Egypt) aimed at advancing HCI in Egypt, whilst also meeting local interest in documenting Bedouin ICH digitally [29, 34]. The nature of this fund provided sufficient space for the Egyptian partner to push and prioritize their local research agenda. This approach saw the direct participation of members of the Egyptian Bedouin community, engaged in technology design in collaboration with 18 Egyptian engineering students attending an HCI-ICH School at SRTA-City.

The findings from this project contribute to understanding the contextual socio-cultural barriers in training future technology designers on participatory approaches. It makes explicit and details some of the complexities embedded in the concepts of postcolonialism and decolonization where the boundaries between the global and the local are blurred in learning about HCI. By involving a network of collaborators in Egypt, including engineering students, this work can contribute to advancing HCI in the Arab world as well as better involving local communities in the bottom-up participation in ICH digital projects.

BACKGROUND AND RELATED WORK

Decolonizing African HCI identity

The relation of African countries with the field of HCI can be illustrated with two paradoxes. Firstly, despite the great expansion of mobile technologies and connectivity in Africa – leading many countries towards a sort of technology revolution – African HCI researchers are still fundamentally underrepresented within the dominant HCI discourse [7]. This fact is made more alarming by a second paradox, according to which European and American researchers publish more about African HCI research than Africans themselves [7, 4]. Additionally, this corpus of research mostly focuses on the "lack" of African HCI, depicting a scenario where more focus is given to what prevents a proper development of HCI similarly to the one occurred in Western countries [7]. A natural consequence is a representation of African countries as not being internally capable of leading HCI innovation and promoting creative processes [7], and as if they are behind in overcoming barriers and structural hindrances that are actually identified in the Western-produced literature.

The marginalization of African scholars from the dominant HCI discourse has led to the creation of AfriCHI, a parallel HCI conference that gives voice to these scholars while pursuing a delocalized networking process that respected the culture and the language of each scholar as regards to research, dissemination, and presentation [7]. Reports from this conference generally agree on the necessity of asserting the self-identity of researchers – embracing all the diversity that this encompasses – to achieve the emancipation from HCI domination by Western countries [7]. This does not mean that AfriCHI is an isolated community, as it upholds its

bridges with mainstream HCI. However, the path towards the assertion of self-identity of HCI African researchers inevitably goes through highlighting the paradox of collaborating with Western researchers, who cannot often recognize different sets of qualities [7]. The path set by AfriCHI is to establish alternative venues for allowing ways of researching and disseminating that are not colonized by Western structures such as strict deadlines, rigid word limits, slides, and paper layouts.

Arab HCI or Global HCI?

As we have seen, the HCI decolonizing wave stemming from scholarly events such as AfriCHI is mostly supported by and referable to the Sub-Saharan countries. The too remarked cultural differences between the Sub-Saharan and the mainstream researchers in terms of how research is produced and disseminated is one of the most unescapable factors supporting the idea of AfriCHI as a necessity to advance HCI in those countries. This alternative path aims at not putting African researchers in a disadvantageous position when having to participate in the global HCI debate going through research structures that do not pertain the culture of Sub-Saharan researchers [7].

Egypt's position in the global HCI discourse is different, and more in line with the ArabHCI academic initiative [4]. ArabHCI is led by Western-trained researchers who trust the principles and methods produced within the global HCI discourse; however, it sides with AfriCHI with regards to where the intellectual efforts for advancing HCI should come from. Differently from AfriCHI – which is composed of a developed community with a clear decolonizing agenda rooted in the work by established research groups in Sub-Saharan Africa – ArabHCI does not have a separated agenda, as the global HCI agenda inspires the ArabHCI agenda.

Trying to get the best out of both worlds, ArabHCI aims at bridging the gap between who designs and builds the technology and who uses it in Arab countries.

Alternative sensibilities in cross-cultural design

Just like Africans and Arabs, Western scholars are proposing new models and approaches that could overcome the deficiency of colonial design [18, 3, 24]. According to these researchers, the capital sin of Western technology design is a colonialist one. Even though colonialism as territorial enterprise belongs to the past, colonialism as a knowledge enterprise negatively and heavily impacts cross-cultural design projects [18].

The problem with cross-cultural design involving developed and developing countries is based on the expectations of the former that their technology design – based on advanced Western HCI research – would have the same applicable value in other contexts. The ethnocentric view, according to which there is only one path towards technology advancement (led by Western countries), results in fundamental carelessness towards cultural specificities and alternative paths [18]. This naïve inclination is perhaps linked to the relatively recent interest of HCI to cross-cultural engagement issues. In other field such as anthropology, the argument against the advancement of the West as a "destiny" for the developing countries was already incorporated in the epistemological status since the Boasian cultural relativism at the turn of the 20th century.

Postcolonialism computing [18, 24] proposed to replace the "development" discourse with postcolonialism discourse. The failure of many cross-cultural design projects [24] is not to be found in the supposedly embryonic technological advancement of non-Western countries, but into the non-adoption by the latter of alternate and cultural specific sensibilities. Design aesthetics, engagement practices, technology representations, infrastructural and economical situations differ from place to place, making the simple translation of HCI principles and methods to different contexts an unreasonable practice [24]. Differently, cross-cultural design should enact shared responsibilities between designers and users (who should operate as partners) in a "mutual encounter and learning" process [24].

The merit of this literature is to have offered a more fluid idea of postcolonialism as fostered by attitudes [18, 24], assumptions [3, 18], and observations [33] rather than a mere deterministic cause. However, it still explores this within cross-cultural designs in geographically disjointed projects involving Western-led processes. Although we believe that the postcolonialist view does not leave much room for exploring the challenges in cross-cultural design within developing countries, we made these concerns ours. In fact, we tried to bypass the potential lack of the alternate sensibilities of designing "for" the developing world since the very conception of our project. As a result, our approach is strongly localized and configured as a design "from within" a developing country.

Design "from within" the Egyptian context

To move forward HCI in Egypt, we are convinced that we should engage with the global HCI debate. The best way to do so is to lead the design and the HCI research from within, with greater attention towards the local specificities of Egyptian culture consistently with AfriCHI perspective, whilst also being open towards the importation and adaptation of well-established and Western-produced participatory approaches in a sort of 'glocalization' of HCI practices. Our stance, therefore, lies in the grey area between decolonizing and postcolonialism. We aligned with a decolonizing stance by localizing the research activities, actors, and configuring the research as design "from within" the local context. This is why we give a greater focus on the Egyptian setting by localizing the problem of participation within an Egyptian institution, with local engineering students engaging into design a local community. We also drew from lessons, methods, and ideas that were generated from within the mainstream HCI literature. We engaged critically and openly with issues brought by postcolonialism by addressing power unbalance in the school curriculum and

increasing the sensibility towards the local cultural differences through constant and reflective discussions between school students and mentors.

AfriCHI, ArabHCI and the postcolonialist perspective have all informed – in different, yet interrelated ways – the approach we undertook for the Hilali Summer School. We were inspired from each of them in the way we prioritize the following three necessities: localizing the research-based activities and the findings; bridging the gap between designers and users; adopting cultural specific sensibilities.

THE HILALI SUMMER SCHOOL

The Hilali Summer School ran for eight days in August 2017 at SRTA-City in New Borg El Arab, Egypt. The school resulted from shared efforts between SRTA-City (Egypt) and Kingston University (UK). This institutional link was supported and funded by a Newton-Mosharafa grant. The link aimed at advancing HCI education in Egypt by training 18 engineering students from Alexandria University to engage with members from the Bedouin community of Borg El Arab in technology design activities on ICH self-documentation. The theme for the school – Bedouin intangible cultural heritage – was chosen so that the students were exposed to users and participants from a different culture, encouraging them to learn about a new context and revisit any assumptions they had about a typical mobile phone user. Evidence from previous HCI schools at the same institute suggested that this cohort of students may have technically-oriented mindsets and be less appreciative for the topics they classified as "humanities" [28]. They also suggested that students with this university background could be sensitized towards understanding users' participation if they were coached and mentored in an active project-based learning environment [28]. The Hilali Summer School addressed users' engagement and participation with more depth because of the introduction of a particularly complex humanistic-centered theme such as ICH into the learning experience.

The school curriculum was designed so that students would gradually build a partnership with the chosen community, while the instructors – one from each institution – remained as facilitators. The curriculum emphasized hands-on practice and learning by doing [12]. We used the Double Diamond design process model by the UK Design Council to structure the school activities. This process includes a four-stage model – Discover, Define, Develop, and Deliver – with every two phases forming a diamond shape [10]. The first and third phases focused on exploration, while the second and fourth were for narrowing the scope and defining focus. Every stage took roughly a couple of days in the curriculum. Lectures on ICH and HCI were mostly used in the first exploratory stage. In each phase, participatory moments where students worked closely with community members were included.

In the first stage, "Discover", we enticed the students to take a conceptual leap from being the engineering student, who receives a well-defined problem to solve, to becoming a design-thinker, who is responsible with community members for framing the socio-cultural and political issues in using technology to document ICH as a design challenge. We introduced basic HCI concepts such as usability and user experience, and bottom-up approaches to ICH documentation. The participatory moment in this phase was a trip organized by the Bedouin community to their village.

In the second stage, "Define", the students were divided into four teams. Each team had to define the scope of their projects in terms of what manifestation of ICH they would document, who the user was, and what technical challenges they anticipated. To facilitate the translation from data gathering to design, the students were trained in qualitative methods that would help them understand their participants' needs and perspectives (e.g., conducting interviews, ethnographic observations, cultural probes). Every team designed a two-hour workshop with one or two Bedouin participants to gather the information that would help them define their focus. Every team had questions for a semi-structured interview and designed a probe as a family gift for their participants. During this stage, we promoted how crucial it was to suspend any judgement towards the community. The ethnographic training was limited to only this stage as we had to find a right balance between providing a methodological background for HCI and ICH and be attractive to engineering students who are accustomed to scientific disciplines. Also, the student-centered pedagogy adopted [13] was designed so that the students could self-explore new concepts and learn by doing. For these practical and conceptual reasons, we decided not to allocate more slots to ethnography, yet we constantly monitored the students throughout their research activities to close the training gap.

In the "Develop" phase, the students used personas [36] to describe their target users as they defined them in the previous stage. Through a re-adaptation of the create opportunity for design process [23] into a thematic analysis, the students processed the data gathered from the interviews and ethnographic observations to find insights and themes, identify opportunity areas, and brainstorm to generate ideas about potential solutions. They conducted a second workshop, in which they proposed low-fidelity prototypes to one or two participants from the community, who were invited to contribute in the design process.

In the last stage, "Deliver", the students designed four prototypes for mobile applications addressing different aspects of ICH documentation. The prototypes were respectively aiming at: the documentation of improvised Bedouin poems; the authentication of the documenter; the use of games to educate the younger generation of the Bedouin community about the old traditions and customs; and providing an e-marketing platform for Bedouin crafts. The prototypes were presented to community members within an event organized as a mini-conference, where the Bedouins provided their feedback and comments.

METHODOLOGY

This section illustrates all the methodological steps and decisions that have regarded the construction of the school.

Research questions

This paper engages with two main research questions that are relevant to the problems of engagement and participation raised in the introduction. It also brings into the fore the discussion about postcolonialist design and decolonization of HCI in developing countries. These questions reflect our exploratory outlook on the school as instructors and researchers. We ran the school in a way that left the students with much room to make their own decisions. This provided us with an exceptional opportunity to observe: a) how students from a former colonized country perceive the power dynamics and approach a technology design in an ICH context; and b) how the students advocated the needs of a culturally-distant community into the design by applying the concepts learned during the summer school. Consistently with the traditional use of action research within HCI research – that promotes collaborative approaches to solve real human problems [22] – we problematize participation via the students' lenses.

The first research question concerns the nature and quality of the conceptualization of power dynamics within the Hilali Network itself (in terms of both the distribution of power over the decision-making process and the distribution of benefits among all the potential stakeholders). The second research question – which has resonance within the educational field as well as HCI – is the nature and quality of the potentially detrimental challenges the students had to face. We think that satisfactory answers to both these questions will contribute towards advancing HCI research trajectory of students with an engineering mindset.

Methods

All the data collected throughout the summer school saw the active participation of the two instructors and the students. The instructors mostly relied on ethnographic observations and field-notes throughout the school. The deployment of ethnography as a method allowed for detailed descriptions of the students' experiences within the school, and provided an exhaustive scenario of students' reluctances, approaches, reflections, and challenges when dealing with new themes such as ICH, qualitative methods, and user-centered design. A second important source of data was represented by the material submitted by the students mostly through Google forms. This included self-assessment forms, ethnographic diaries, research and critical thinking tasks.

Power-dynamics exercises

Our attempt to engage the students towards exploring power dynamics and politics around ICH self-documentation using technology was carried out with little information given to the students prior to the activity. The reason for this was that we did not want to influence the perceptions of students, who participated by presenting unpressured representations.

The power-dynamics exercise consisted of three interrelated activities. As we adopted a continuous cycle of action and reflection typical of action research [22], we proposed these three activities within an Activity-Reflection-Activity succession. The first team-based activity was loosely inspired by "The Control and Influence Model" proposed by Stephen Covey [16]. The original exercise asked readers to draw three concentric circles, on which to place in the innermost circle things she/he have the most control over, in the middle one things that could be changed by her/his actions, and in the outermost circle uncontrollable yet concerning things. We prompted each group to draw two sets of concentric circles (one for power and the other for benefits), and then place post-it notes representing stakeholders in the Hilali Network. To help the brainstorming get started, we presented an initial list of general stakeholders, such as funders, community members who have/have not access to technology or have/have not the necessary digital literacy to take part, general public, technology designers and developers, computer sciences, and social science academics. After this phase, each group was called to present to the class and to justify their distributions in a peer-review fashion.

The second power dynamics activity consisted of a take-home exercise. After the presentations, the groups had the option to change the distribution of the post-it notes and upload the photos of the final distribution to a Google form. The form also asked the students to describe their two graphs, and – more importantly – any change in perception they might have had after the peer-review and the questions asked by the instructors. The reason for this last question was to allow time for further reflection following new inputs and discussions.

The third and last activity for this topic focused on another localization of the power dynamics and the potential moral implications using an Egyptian case study. After getting acquainted with several complex aspects of the documentation of ICH, we wanted to go more in-depth with these themes through another case study approach focusing on a famous Egyptian instance of ICH, the Al-Sirah Al-Hilaliyyah epic. This epic had received a dual documentation: the inscription to the UNESCO's *Representative List of the Intangible Cultural Heritage of Humanity* [42] and a local attempt to document it fully by the Egyptian poet Abdel Rahman el-Abnudi [19]. Using another Google form, the students were asked to get familiar with UNESCO's and Abnudi's work on the Al-Sirah Al-Hilaliyyah before giving their views on: the two works and the differences between one another; the benefits stemming from the inscription to the UNESCO's ICH list; the issues of authenticity and available resources; and how the use of digital technologies could have impacted Abnudi's endeavor.

Student-led engagement activities and participatory workshops

To answer our second research question – which is based on the reflections upon the detrimental challenges of enacting

participation – we draw from three activities of the summer school: an outdoor trip to a Bedouin *nagae* (Figure 1) – a group of houses for the same extended family – and two student-led workshops with community members.

Figure 1: One of the houses of the *nagae*

The outdoor activity occurred on the second day of the school, and was designed for the students to familiarize with Bedouins' culture and lifestyle. The place was chosen by the Bedouins, who proposed that the students got to know three generations of Bedouins to get a glimpse of the cultural changes over time. Prior to the visit, the students were lectured about ethnographic note-taking and, within this, the difference between observation and interpretation. They were explicitly recommended to be respectful of the cultural differences while enjoying the experience. The reason for this activity lied in the attempt of getting the students and the community to know each other before the upcoming workshops. This provided the students with an authentic research experience in an informal setting.

After the trip, the students were asked to reflect on their experience by filling a Google form asking about their experience (what they liked or were surprised by) and by uploading to a shared drive their ethnographic diaries, in anticipation of the possibility that their findings could have had resonance throughout the rest of the school. The diaries – altogether with all the other student-produced material – were treated with content analysis to elicit the students' perceptions of the Bedouin culture. Our approach was that of a meta ethnography [25], through which we synthetized the qualitative reports made by the students.

The two workshops were, on the whole, designed for the students to reduce the broadness of the fieldwork data into more specific insights and solutions for the design. The first workshop with the community members occurred on the Day 4. At the end of the third day, the students were sensitized towards embracing an emphatic design similar to the one proposed by IDEO HCD Toolkit [23], aimed at developing deeper understandings for users and their realities, as well as being able to connect with their thoughts and feelings. The students prepared semi-structured interviews beforehand to refine the ethnographic data collected during the trip, and cultural probes [9] for the Bedouins to take home, respond to, and then bring them back at the second workshop (Day 6). Besides interview questions and probes, students were also invited to set up three workshop goals, prepare icebreakers and conversation starters.

Between the two workshops, students were called on to reflect on this experience through designated spaces for discussions and peer-review, and a weekend assignment asking them to express their opinions on the effectiveness of their workshops. A thematic analysis was carried out on the raw data collected by the students during the outdoor trip and the first workshop, to produce the final insights and solutions for the implementation of low-fidelity prototypes presented to the community in the second and last workshop. This whole process – from data gathering to design – was entirely led by students, and provided the instructors with a privileged observation point for the main challenges faced by the students.

Recruitment

The two recruitment processes – explained below in detail – are consistent with our objective to localize the problem, the actors, and the solutions of an Egyptian design process.

Community

The Bedouins in Egypt is a tribal community who migrated to Egypt from the Arab peninsula hundreds of years ago. They inhabit the North and Western deserts and the Sinai Peninsula. The Bedouins who live geographically close to the science park are no longer nomadic. Our pilot explorations showed that they were keen on maintaining their own customs, and that some of those customs had been fading away mostly because of having become a settled community. Becoming sedentary has meant for them to go to urban schools, mingling with the rest of Egyptian society, and being affected by modern trends of technology. They confirmed the remarkable changes the Bedouin culture is going through during the recruitment meetings. They also were bothered by the culture misrepresentation in the Egyptian media. Both reasons represented their motivational basis for participating.

The recruitment process started off with the Bedouins working at SRTA-City, who extended the invitation to another community member to join. The recruited members were from different tribes, so we had access to a diverse sample that could better represent the wider community. We recruited five adult males and one female. Three of them had postgraduate degrees, while the others had primary and secondary level qualifications, holding low-literacy skills. In two extended meetings, the Egyptian instructor discussed the educational nature of the project, and the rationale behind our interest in exploring technology design for documenting the Bedouin culture with them. We handed the consent forms written in Arabic language and respected their wish to consent verbally to it.

Students

All the students (11 males, 8 females between 21 and 23 years old) were recruited from the university where the Egyptian instructor is a lecturer. The students submitted an

online application, which included questions about their technical backgrounds and their interest in developing HCI and ICH skills. They reported their level of competency in English, which we used it to adjust the amount of English material in the curriculum design. Students were selected based on their grade point average (GPA), interest in the school multidisciplinary topic, and age as we privileged younger students over those about to graduate. Many of them had humanistic interests, including art, music, and literature. The summer school did not count towards their university credit hours. Upon their selection, the students were invited to participate in the research aspects of the summer school, which entailed their participation in data collection activities including their school assignments and data gathering through fieldwork. The students were handed the consent forms, which they brought back in the first day of the school. The students could participate in the summer school, regardless of whether their consent was given in relation to their participation in the associated research and data collection. Eighteen students were recruited, and all of them agreed to take part as students and researchers.

FINDINGS

Perceptions of power and benefits distribution

As explained before, the first exercise consisted of a team-based selection of stakeholders in community-led digital ICH projects using the Hilali Network as the case study. The rationale behind the exercise was to address a common concern in bottom-up ICH projects according to which communities may not necessarily benefit from the project outcomes when their heritage becomes commodified by other institutions. It also shed light on the perception of power relations by local designers in this project. We wanted the students to engage critically in this discussion before they proceeded with their designs. Power as stated in the assignment was the power of decision-making within the project. A common definition of power was not negotiated beforehand, and this led all the groups to provide different conceptualizations between each other. More specifically, Team 1 (T1) defined power as decision-making and influence over the project, while a second team (T2) saw power as data access and control (see Figure 2). The remaining teams (T3 and T4) defined power in terms of the enablers of the project, or the actors whose absence has the most weight in failing the project. Table 1 shows the power and benefit distributions for major stakeholders as indicated by the four teams. The community was consistently in the center of the power distribution, and for the benefit distributions for T1 and T3. It came second in the benefit distribution for T2 and T4, who also suggested that benefits vary across different sectors within the community (e.g., according to age and access to technology).

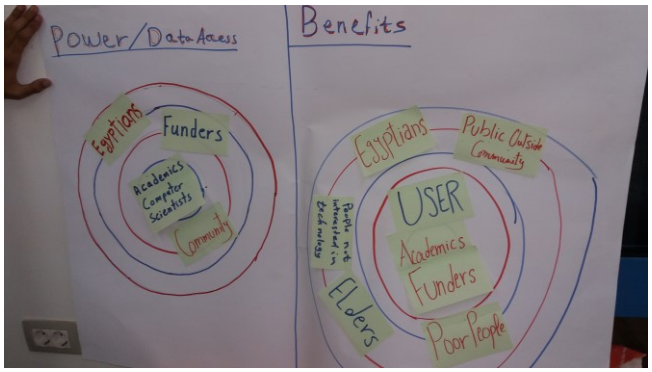

Figure 2: The distribution of Team 2 (T2), before the changes

What was quite surprising and interesting for us in terms of postcolonialism in HCI is how they placed themselves in the power and benefits distribution, either in the center with the academic institutions and instructors or at the periphery preceded by the funders and/or the academics (Table 1). Placing the instructors as central in the power and benefits circles for most of the teams was not anticipated by us since we deliberately designed the course not to interfere with their decision-making. We raised our concerns about the extent of the "supervisory roles" assigned to us or other international institutes in the class discussions. The first two groups defined supervision in terms of technical guidelines, such as the instructors providing mentorship, or social scientists and anthropologists who will check the data produced by the community so that it does not violate privacy standards or human rights. T1 went further to describe the supervision by international institutes:

"*UNESCO to make sure that there is no harm or violence on the community or public.* […] *all of that will happen under the umbrella of human rights to make sure that we didn't violate any of the rights of the community*." This team had UNESCO listed in the innermost circle, and human rights agencies in the second level alongside with an Egyptian national security agency.

Those perceptions, though mistaken in this project, were not challenged by the other students in the class, suggesting the proposed scenario could be realistic to them. We attributed their understandings to the contemporary position of Egypt being a recipient for aid funds that should be overseen by the "The West", and the frontal teacher-centric culture they are accustomed to. More than being a misperception, we had educational reasons to worry about their sense of powerlessness in the project, which conflicted with their technical and design skills. The risk of the perceived lack of agency was to treat our suggestions (or the Western readings we proposed) as "The knowledge", affecting their efforts to contextualize and localize their design solutions. We decided there was no immediate action needed, as the rest of the curriculum was student-led so that students would have first-hand experiences in leading their projects. Further, we knew that a new opportunity for them to reflect on the power dynamics and the role of institutions was just around the

corner. In the following take-home assignment, some of the teams changed the power distribution.

Table 1: Power (white)/Benefit (blue) distribution for major stakeholders as defined by teams – 1 refers to the innermost circle. An arrow indicates a change in position after class discussions led by the instructors.

	Community	Academics	Designers	Funders
T1	1	1 → 2	1	4
	1	1	2	3
T2	2→ 1	1	1	2
	2 - 4	1	--	1
T3	1, 3	4	3	2
	1	2	--	4
T4	1	2	3	1
	2 - 5	1	2	1

In the third exercise, the mini-weekend project, they reflected on the differences between a local bottom-up ICH project, and similar work done by UNESCO. The students recognized the good and bad aspects about both projects, qne they no longer considered UNESCO as one of the main monitoring institutions. Our evidence suggests that the three power dynamics assignments through the reflective cycle helped the students to critically engage with the role of various, perhaps conflicting, stakeholders in designing community-driven technology solutions.

Challenges in enacting participation

The field trip was the first encounter of the students with the community. In their reports, the students appreciated the authenticity of the experience and the generosity of their hosts:

"*Talking to real Bedouins is definitely better than relying on books and movies to study their heritage."*

"*The women I talked to were very open about themselves and more than willing to talk to us as friends rather than strangers."*

They expressed their surprise about the modern lifestyle, the use of technology, the separate legislative system, the alternative medicine techniques, and the gender inequality in the community. The last point had a bigger impact on the design process. The Bedouin community is patriarchal, which could be a legacy of their nomadic past, when the men made all the decisions for the tribe. Those patterns are slowly changing in the community as they settle. Throughout the school, many of the students had a difficult time accepting some male-dominant aspects such as the very little agency women have with regards to marriage. We had an open discussion about the cultural differences with the students, showing our understanding for such emotions. We focused on the extent to which designers should be involved with their participants. We advised them to adopt an objective mindset, and not judge the community based on the superficial knowledge they acquired about the community's history and contemporary life. We highlighted their role as young scientists, who must abandon their subjectivities for an emic perspective. However, not all the students readily embraced the scientific mindset; we observed that a few adopted a "white savior" attitude in that they desired to "fix" the issues they did not like about the females in the community. These students tended to "othering" the community and describing it as "not worthy to design for" and not belonging in a modern civilized world. In the following, we explain how those attitudes affected the students in the design and the interventions we had to make.

"White Saviors" group

In an improvised meeting following the trip to the *nagae*, four female students volunteered to report their fresh impressions about the community. They focused on describing a patriarchal structure which relegates the women to the roles of taking care of the households, giving birth and raising the children. As the time went by, their depiction of Bedouin culture became more and more condemnatory (with words such as "restrictive", "backwards, "bigoted", and "oppressive"), especially when the tale focused on a young female Bedouin who was allegedly self-conscious of her segregated status and with which two of the students had strongly empathized. Looking ahead, the students shared that co-designing with the Bedouins was a greater challenge than they thought before the trip, and that they were starting to see the community as hard to collaborate with and too distant from their cultural and social values. The instructors stepped in explaining that they had gone to the field as scientists, and as such they should have abandoned their judgement to embrace a more objective lens, aimed at understanding the community from an emic perspective.

The legacy of these feelings remerged during the design. In particular, when the students were processing their interview data to generate opportunity areas for design, some of their first proposals overlooked the ICH theme and focused on the issues they saw problematic in the community. They had to generate "How Might We" questions to produce opportunities for design. One of the questions they chose to proceed with was "How Might We enable the women to get more education?". The students of this group were ready to follow a rather unpractical path with unrealistic goals in pursuit of saving the Bedouin women. Nonetheless, the group was responsive to the feedback we provided about their approach and the practicalities of their ideas about designing for the community. At the end, the group communicated that their original ambition was out of reach, and designed a game to teach Bedouin children about old traditions, which was grounded in the fieldwork data suggesting that the gap between older and younger Bedouins in terms of familiarity with ICH was opening. The design

was appraised by the community members in the final mini-conference event.

"Othering" group

Before the first workshop, we provided general recommendations to the class about conducting interviews and successful probe design, and specific advices based on our initial meetings with community members. For instance, we highlighted that participants were likely to be low-literate and less open to experiment with things that make them look incompetent.

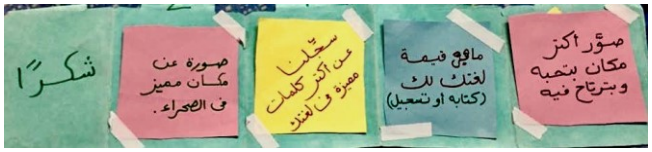

Figure 3: A photo of the failed probe (unfolded), which take the shape of a Bedouin tent when folded. The probe consisted of several tasks explained in text (colored cards). Behind the card representing each task lay a hidden letter. All the fetched letters formed one word.

The group that adopted the "othering" perspective had designed a probe that they described as "creative", yet it was challenging for their low-literate participant to navigate and fully understand (Figure 3). The participant refused to take it as he said he would not have time to contribute to the tasks. The team proposed him to give it to his daughter, suggesting that she would enjoy it, which again the Bedouin politely rejected. The team was offended and left the participant to complete lunch alone. The team described the situation to the instructors as "the probe is creative, but the man is problematic", claiming that the Bedouin was not actually busy, yet rather upset by the mention of the daughter. The issue was discussed in the class debrief, where other students critically reviewed the probe design and the team approach to engage with participant crossing unnecessary privacy lines such as addressing his daughter. Though the team learned from the feedback, they had serious issues dealing with the low-literacy of the participant, too. However, in the second workshop the first participant did not show up and was replaced with a highly educated adult. We observed that they were more willing to accept the second participant's comments on their design even though the man tried to impose his own design agenda on them. In fact, the Egyptian instructor (who this time assisted with the workshop) intervened more than once to readdress the balance of power in the co-design activity. Eventually, this group – which required frequent interventions from the instructors – managed to integrate what they learned from both workshops into their design. Their prototype focused on verifying the information provided by the documenter with an accessible and engaging user interface that was well-received by community members. The community gave positive feedback on all four the prototypes during a designated focus group with them (in which the students did not participate) and reiterated their willingness to keep the collaboration ongoing at a dissemination event later held at Alexandria University.

DISCUSSION

Our approach "design from within" aimed at localizing the problem, the actors, and the solutions of the design process. In doing so, we were very attentive with the *whos* and the *wheres* [5] of the design process and the specificities of the setting.

We devised a localized student-centered school curriculum and took pragmatic decisions about school duration and taught material. We emphasize the fact that this short course was a sensitizing experience towards participatory approaches that are recognized as problematic in Arab culture [4] rather than a full course to teach participatory design which would need more time and different study materials. The instructors observed that the students who showed the "white savior" and the "othering" attitudes had made progress in the other aspects of the taught curriculum except for developing empathy for their participants. Despite learning from previous experiences with Egyptian engineering students [28], the instructors had not anticipated the impact that cultural difference could have on the design process and that it would be so overreaching, having to mentor to prevent further similar situations to occur. The mentoring process was challenging as the instructors tried to strike a balance between providing the students with the room to develop the design agency the students lacked (as it was unearthed by the power dynamics exercise) and maintaining the ethical principles of participatory design. We encourage future endeavors to address the unsurfaced issues in their learning design.

The outcome of the power dynamics exercise suggests that from the students' perspective, the Hilali Summer School had – initially – a colonialist flavor, with Western institutions such as UNESCO and Kingston University misrepresented as having much agency in the design process. However, the findings of the student-led engagement activities suggest that new power relationships – inherently patronizing and fed by a lack of empathy – may take place when students from a developing country lead a design for a culturally-distant community. One could argue that these young students – who have lived most of their lives in a globalized and connected world – have been exposed to Western influence (especially from USA), to the point they could be defined Westerners. If this was the case, where are the boundaries of colonialism in design processes? Is it only to be found into unbalance of resources, knowledge and technology advancement in cross-cultural design? Or is it a "state of mind" that sprouts up whenever there is such an unbalance, regardless of the contexts involved?

We invite the HCI community to reflect on these questions, whose importance is fostered by the finding that leading the design from within a developing country can still lead to the formation of a dualism, in which designers may detach themselves from trying to bridge the disconnection with

users. The dualism identified by the postcolonialist perspective ceases to be revealing when structures typical of colonialism emerge that cannot be explained by that very dualism. We believe that looking at postcolonialism as the "persistency of colonial legacy in various cultural forms, practices, histories and knowledge structures" [5] is still a due and honest intellectual exercise. We also believe that the postcolonial discourse alone was not enough to understand the barriers to the advancement of HCI in Egypt and possibly in similar developing contexts. Moreover, monopolizing the problems with a postcolonial perspective oversimplifies the importance of micro cultural and social realities. Uneven relationships can develop that cannot be explained with the typical unbalance of power, resources, research and technology advancement between the Western countries and the developing world. A decolonizing approach is only part of the solution; the other part can be enacted through going beyond predetermined and overreaching explanation and exploring the difficulties on the ground. Therefore, we believe it is the time to expand the debate in a way to include local practices and the training of local actors. The attention should be given more generally to unexplored dynamics of power and "othering" practices, that can emerge in any design process in which designers and users do not share the same cultural values.

We now turn to a list of recommendations drawing from our experience.

After having identified the hindrances typical of postcolonial literature in a design process not involving Western/non-Western dualisms, we encourage Western scholars conducting cross-cultural design to engage in an open reflective discussion about their practices for training local actors. Borrowing from John Vines et al. [44], we invite them **to explore preconceptions at that micro level**.

The students perceived the learning environment as a safe place to discuss their concerns despite its sensitivity and complexity. This is why **living curriculum resources are needed** [13] now that HCI projects take more and more an international and cross-cultural dimension. Our experience shows that the focus should be on sensitizing towards diversity, appreciating creative and critical thinking. We propose that resources should include backstage files highlighting the justification of any instructors' choice, contextualized examples, and the instructors' field notes.

SIGCHI short schools are a good place to address these issues [37], especially when they do not align with university curricula. Engineering students need sensitization towards humanistic and philosophical concerns.

Local HCI communities should be supported as they play a crucial role in optimizing the design process. Local scholars can take the discussion forward being more aware of their contexts. Scholarly movements such as AfriCHI, ArabHCI and postcolonialism are much needed as they support and encourage polyvocality from marginalized voices. We believe that this inclusion leads to a diverse discourse and, in doing so, can benefit HCI discourse overall.

CONCLUSION

In this paper, we engaged with HCI movements that address overcoming colonization legacy in technology design for non-Western contexts. We took an HCI education lens to engage with future Egyptian designers in genuine open discussions about power dynamics and cultural values to better scaffold their learning experience. Our findings invite the HCI community to question power and diversity in local and global contexts as it takes a broader stance to unbalances in cross-cultural design. Our recommendations, we argue, would enrich the diversity discourse in HCI.

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