Virtual Schools & Reimagined Homes

Interweaving Indigenous Education Sovereignty within Colonial Learning Landscapes

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ABSTRACT

Virtual Schools & Reimagined Homes

Interweaving Indigenous Education Sovereignty within Colonial Learning Landscapes

Camelia Layachi

This research-creation thesis examines the concept of learning space as a means of addressing liminality in both “learning" and "spatiality,” contrasting with the idea of a systematic, static, built enclosure. Recent research on educational spaces primarily reflects western academic discourse, overlooking the fact that modern schooling models and their spatial concepts represent, for Indigenous peoples and other communities, a continuation of colonial legacies. By examining Indigenous (Amazigh) perspectives on space and learning, and using weaving as a pedagogical tool, the creative component accompanying the thesis provides an experimental foundation for a decolonial and dematerialized pedagogical space. It investigates the Amazigh concept of Asegmi (Indigenous education) and the transmission of Amazigh knowledge through weaving across homes and virtual spaces as a symbol of Indigenous educational sovereignty and resistance. It also presents Amazigh weaving as a spatial element that proposes an unstable logic that portrays the ambiguous relation between an individual's identity/knowledge and domestic/educational spaces in their solid form. This thesis unfolds as a series of theoretical explorations and experimentations which emphasize Indigenous ways of learning, non-architectural perspectives on learning spaces, and the introduction of a subverted virtual space that fosters the reimagining of Indigenous knowledge systems and practices.

Keywords: research-creation, Indigenous educational sovereignty, Indigenous knowledge systems, Amazigh education, learning space, liminality, Amazigh weaving, decoloniality, virtual space.

Territorial acknowledgment and beyond.

Historically, the Indigenous peoples of North Africa have been designated by the term "Berber," a label steeped in discrimination that originated from Arab and European colonizers. In Arabic, "Barbar" connotates to "babble noisily," or "jabber;" similarly, the Greco-Latin term "Barbaroi," (as it appears in Greek and Roman accounts) refers to people who did not speak Greek and were thus deemed to have an incomprehensible language (Maddy-Weitzman, 2011, p. 2). Over time, the term "Berber" has undergone a transformation in its meaning, shifting from an initial definition of being different or "other," to one that portrayed barbarism as perceived by various western colonizers. Similarly, "Moors," used to refer to the Indigenous peoples of Mauri (Amazigh Indigenous territory under the Roman rule) and became a blanket term for the dark-skinned Indigenous and non-Indigenous habitants of North Africa during the Portuguese slave trade (Wolf, 1994, p. 458). My people and I call ourselves Amazigh (*pl. Imazighen*), in the Indigenous "Tamazight" language. Furthermore, some Imazighen use the term "Tamazgha" to refer to our Indigenous land which encompasses Morocco (including western Sahara), Algeria, Tunisia, Libya, Mauritania, the Siwa oasis in Egypt, Mali, Niger and the Canary Islands. This reappropriated homeland provides my people with an "imagined community" (Maddy-Weitzman, 2011, p. 17), symbolizing the land of our origins where we, Imazighen, historically spoke and continue to speak a common unifying language albeit with dialectal variations.

Most of the non-native body of research continues to simultaneously refer to Amazigh peoples and Tamazight as one generic term "Berber." The autonym "Amazigh" means "the free man" and yet, Imazighen remain subject to oppression when they are labelled with names imposed upon them by their former colonizers. I am perplexed by the archives (mostly colonial accounts) and Amazigh contemporary research that uses the terms "Amazigh" and "Berber" interchangeably. It implies that both terms are legitimate and are often justified by the author's assumption that the wider audience might not know the term "Amazigh." In my writing, I will exclusively employ the term "Amazigh", as I recognize the complex historical implications of language whereas the term "Berber," carries colonial notions of "otherness" and "savageness," which reinforces the colonial mindset. This is not an issue of rejecting "Berber" as the English equivalent of "Amazigh," but an example of the reproduction of a linguistic hierarchy that goes deeper than being a simple exonym. It is a term that even if it has been accepted for decades into common usage, it does not exempt it from being free of bias. If you do encounter the word "Berber" in this thesis, please bear in mind that it is either used to refer to colonial accounts or to respect the work of other Amazigh scholars who chose to appropriate the term for retrieval purposes.

I would also like to acknowledge that this thesis was developed and written on the unceded territory of the Kanien'kehá:ka, on the Island of Tiohtià:ke. These lands and waters continue to serve as a site of meeting and exchange amongst nations. I recognize and respect the Kanien'kehá:ka as the custodians of the lands and waters and honour the continued connections with the past, present and future in our ongoing relationships to ensure Indigenous voices are heard.

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I dedicate this thesis to my late grandmother Zahra (ⵣⴰⵃⵔ),

for your unending love, guidance, patience, and devotion to pass on Amazigh teachings to future generations.

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Introduction

“Liberating education consists in acts of cognition, not transferals of information.”
Freire (1993). In *Pedagogy of the oppressed.*

From the vantage point of the colonized, a position from which I write, I highlight the profound entanglement of the term “school” and its variants (educational institution, learning spaces etc.) with European imperialism and colonialism (Adick, 2021; Boyer, 2013; *also detailed in Chapter 1*). The space itself is one of many that left my Amazigh ancestors with the saddest and most antagonizing spatial experience while going through several waves of colonization, at the hands of different perpetrators. In Amazigh Indigenous literature, references to the "school space" provoke complex responses. It is met with silence, hinting at unspoken truths and hidden stories. It also evokes memories, including painful recollections of the past and elicits a knowing yet distrustful smile, suggesting a deep understanding of the complexities of education in the context of colonialism and cultural marginalization *(detailed in Chapter 3)*. Pause for a moment and reflect on your earliest school memories. Perhaps these recollections may stem from early educational experiences, or maybe they came later. Some might be brimming with joy and laughter while others might be painful to recall. However, like nearly every facet of life, there is often a combination of the two. Growing up in Morocco, I recall classrooms with white walls, windows in wrought iron frames, wood desks to which chairs in pairs were fixed, a blackboard that aged with the students and a teacher’s desk located in the corner, elevated on a stage. I started my learning journey wearing a white smock, a requisite of classroom etiquette. To the latter, was added the restriction of conversing freely or questioning the teacher’s opinion. Today, after being immersed in the western academic model for a decade where I encountered different learning spaces and practices, I often find myself reflecting on the image of the classroom and the role it played in my perception of knowledge and to an extent, of the world.

After many years spent in classrooms, it has become apparent to me that there has been little change in the ideological character of the teachings or pedagogical approaches. Navigating this experience to attain educational qualifications has, more than often, led Indigenous learners to adopt “survival” strategies allowing them to remain as invisible as possible to hopefully become one day as visible as possible. Moreover, many Indigenous researchers, engaged in work with

Indigenous communities or on Indigenous subjects, are predominantly self-taught, having received minimal curriculum support for areas related to Indigenous concerns (Smith, 2021, p. 135). I write, therefore, from the position of an Amazigh learner who lived in western and non-western social conditions, to say that school knowledge systems were informed hierarchies of theories developed to legitimize Eurocentric knowledge at the center. In former colonies, such as Morocco, schools functioned as mechanisms for perpetuating a modified version of colonial knowledge, designed for uncritical consumption. This exposition posits that our mainstream "Eurocentric" western education system mirrors this analogy of an empty classroom awaiting content. The void represents the expected state, and learners are positioned to be infused with knowledge. If this "emptiness" persists, if diverse forms of knowledge continue to be disregarded within the prevailing educational framework – whether intentionally or unintentionally – thus perpetuating strategies of assimilation, then no matter how many educational reforms are introduced or novel curricula are adopted, there will always be remnants concealed beneath the finished structures of colonialism. Amazigh peoples have long engaged in critiquing history and contesting narratives about the past. This practice is intricately woven into the everyday politics of Indigenous life, forming a crucial component of our ancestral knowledge system. These contested accounts are stored within genealogies, within the landscape, within poetry with our Atlas herdsmen and weaving with our resilient Amazigh women (see Chapters 2 and 4). In the aftermath of colonization, numerous systems have been reclassified as oral traditions, rather than being recognized as tangible tools for the production of post-colonial knowledge. The western educational system has predominantly skirted the issue of its Eurocentric underpinnings in its policies and methodologies. Nevertheless, upon reading about the Amazigh warrior-scholars and their experiences within "opposing camps" (such as the French school) (see Chapter 3), their encounters with the educational process spotlight the presence of such hegemonic pedagogy. "Colonial spaces" they explain, refer to environments that pressure you to be "someone else", prompting you to forget your identity and leave your beliefs behind. It is anything you accept as "normal" or any situation that prevents you from "being Amazigh." Essentially, the concept of a colonial or white space within an educational context requires Indigenous peoples to reduce their expectations of themselves while simultaneously striving to emulate the identity and thought patterns of others. Perhaps for some non-native readers, this might be quite difficult to understand as current school policies are encouraging more and more diversity and inclusion in their curricula,

but this perceived need for adaptation goes straight to the root of the problem, a space that is meant for all does not require inclusion. Moreover, it is quite delusional to assume that the past few decades of reconciliation will erase or repair centuries of cultural genocide and assimilation, and educational spaces are not exempt (Poitras Pratt, 2021). Western mainstream (whitestream) education is still prevalent today, and even more so in ex-colonies. It is a deeply rooted, cyclical and pervasive system that leaves the learner thinking and feeling that white spaces are not only everywhere but even in their heads. If all that remains for Indigenous peoples derive mostly from colonial transcriptions of oral literature, there must then be a simultaneous deconstruction of these transcripts to subvert their hegemonic power and embrace their archival nature even if they are deficient or biased. The relationship between these processes is not a simple one but, at the very least, it requires careful attention to both the context and results of such a connection.

This thesis describes the determination to resist and reject alienating school environments and advocates for Indigenously determined models of education based on a deeper understanding of our world and others, and authentic care and love (Tikatin ⵜⵉⴽⴰⵜⵉⵏ). The research-creation accompanying this thesis is a confrontation between learning with the machine (computer) representing a western "white space" and teaching the machine Indigenous ways of learning. But it is also a story of how to view our domestic and educational spaces with different lenses, and how – in their collision during the COVID-19 pandemic – they brought to the surface hidden colonial legacies. It presents an alternative narrative that documents efforts to transcend the confines of education's predominantly white spaces and reclaim forgotten territories. Throughout my thesis, the aspect of creating within research-creation takes on various forms, that is, observations of my thoughts, feelings, positionality, and actions that are investigated together within a chosen conceptual framework. Although these manifestations take shape as a series of prototypes (developed in Chapter 5), they essentially represent sincere expressions of trial and error, self-doubt, and reflection. In fact, a significant portion of the "research" and "creation" discussed in this thesis did not follow a linear trajectory from research to research-creation. Rather, it involved a fluid process, moving from research to research-creation, then to further research, continually expanding the scope and potential of multiple research-creations. I have strived to maintain transparency concerning the non-linear and organic nature of my learning journey and self-reflection. These processes have profoundly influenced my thesis and the way I exchange knowledge with others. In essence, I have sought to share my knowledge without implying that I

have always known what I tentatively know today, a practice frequently observed in mainstream/whitestream education. Maybe this research-creation thesis could be considered political because I would like to underline the fact that it is not the kind of work I could compartmentalize during "school hours." It is also not something that could have been done "academically, fitting into a timeline." As further chapters also expand on, you might wonder why there is no specific section outlining my methodology, perhaps because I couldn't clearly define one. I have intentionally done so because I honestly do not believe that it would be fair to discuss Amazigh Indigenous knowledge while trying to frame it within an alien structure, let alone writing about it. I made the deliberate pedagogical decision not to use data as things that need to be collected, framed, and categorized. Instead, I chose to treat any data, historical, technical, epistemological, or anthropological, as entities that exist nowhere and anywhere at the same time, just like memories of fragments of time. You might cross their path in this thesis, they might tell you stories, but your destinies will eventually part away.

The lessons that can be learned from the "research-creation" as it unfolds in the last chapter of this thesis are secondary to the lessons I have learned and cultivated during the process. I learned that the process, or "the journey of learning" is far more important for ongoing dialogue and self-determination than striving to be an expert in a particular field of research. Nonetheless, I have come to understand that a written work such as this thesis has the potential to stimulate learning and discourse across distant Indigenous territories, but also in the closest spaces such as the one between the heart and the mind. I therefore wrote my thesis as thought pieces primarily to myself, hoping that I would be able to engage with the difficult line of questioning I was putting myself through. The process of writing this thesis has been a continual challenge, as I grappled with various uncertainties doubts. Overcoming the language barrier required me to train myself to write, with the hope that the tacit knowledge I carried all along would gradually emerge as I kept writing. I wrote the way I think, because writing about processes of making and doing is essential, particularly within the realm of research-creation, for readers to understand the standpoint and perspective that inform my research. Based on my experience in graduate studies, I've found that most academic writing tends to progress logically, leading up to its central arguments or insights in a linear way. I am not certain that the way I drew my connections between theories or between theory and my learning experience is linear, instead, they presented themselves when I needed them in my research journey. This is not a linear thesis argumentation, but an organic one,

constructed of a network of connections, where non-linear expressions of non-linear things are bound to be legitimate tools of knowledge construction.

My personal story of unlearning learning as a graduate student, and unlearning space as an architect continues to be a non-linear process. These are both reflexive and retrospective processes that benefit from constantly questioning certain gestures, repetitions, thoughts, and biases, that engage my entire being. These ideas are challenging to hold onto within myself, let alone to capture in writing. On one hand, I've struggled to distill messy, contradictory experiences into words, sentences, and chapters. On the other hand, I've found it difficult to avoid dismantling the same sentences afterward, as they often seem too self-assured and definitive compared to the nuanced experiences they seek to convey. As hard as it is to explain Amazigh Indigenous Education as something never lived, but always remembered and felt through intergenerational stories, a more significant and enduring struggle is my attempt to determine whether presenting my people's knowledge in this manner – as a thesis that commodifies all the learning and unlearning I have done – does more to solidify my argument or further take it away from allowing Amazigh Indigenous education to exist outside of such institutions. Nevertheless, I hope to contribute to the journey other learners might take to identify and name their own “whitestream/mainstream” spaces, and to make learning empowering for all.

Chapter 1: Retracing the history of learning spaces.

Normal isn’t normal, and neither can it be rebranded into the term “new normal;” it is just what you are used to. The tendency for traditions and institutions to be accepted as predetermined and inevitable seems to be a double-edged feature of human nature. Even when it is illusory or deceptive, this sense of mass compliance (or deference) gives institutional structures persistent staying power to long-standing routines and systems – even when it is evident that they are no longer operating as intended. This is also valid about the educational system that most of us have experienced in schools. Schooling, as we know it, gradually became so entangled with our daily life that it is hard to see around it. It is also so complexly integrated with other aspects of our cultures (whether western or non-western) that it’s daunting to imagine a world without it. To truly revolutionize our comprehension of learning environments and align teaching and learning with colonial realities, we need to acknowledge that the existing educational model was not the

only option. This means recognizing that other approaches can be taken to transform the educational paradigm. Schooling is a social construct and the system's components that we now hold sacred (class periods, years of education, curriculum) are in fact arbitrary (Gergen, 1995). Educational policies that are now considered the norm were at various points regarded as controversial and radical. However, it is difficult to change a system with such a lengthy history. Not only does this legacy tend to limit possible futures but our educational system is also deeply interwoven with many other traditions and institutions that do not necessarily resonate with most of us.

The impetus behind diving into the dusty archives of learning spaces typologies is to provide, beyond a historical context, a critical perspective on the literature that consistently portrays the architectural composition of learning spaces from a western standpoint. Before proceeding further with the historical accounts, it is important to contextualize the notion of "western," since my focus of study (learning spaces) will also be explored through non-western Indigenous approaches. For the purpose of this thesis, the term "western" in architecture (or as an architectural component) will refer to the architectural traditions and developments among western civilizations. The latter encompasses western Europe and European overseas settlements in North America and North Africa. Furthermore, the notion of the "west," beyond its geographical characteristics, inherently holds a connotative meaning depending on who is using the term. For instance, I am inclined to refer to the "west" as "the other" due to my upbringing in a non-western environment. However, when it comes to learning spaces, my understanding of the "west" becomes distorted since the western educational system was the sole model I have ever known. It was in fact so conventionally embedded in my childhood that I had no choice but to accept it, and to a greater extent valorize it above all ancestral knowledges. In doing so, little did I realize that it contributed to threatening the social, cultural and environmental survival of my community, and to a larger extent, other Indigenous communities both in western and non-western worlds. Retracing the conception process of learning spaces throughout time therefore becomes a critique tool to understand the socio-economic and political implications of a design decision that took place in the 19th century, that is 380 years ago, when the first implementation of schooling regimen was established.

The system of western education and the classroom model was rooted in the early history of the schoolroom. It is the material heart of western education and always has been (Dunn, 2000). Since the earliest days of education in European settlements, the school was simply a single room accommodating teachers, students, and supplies. Subsequently, in the 16th century, schoolrooms tended toward similarity in terms of size, shape, and purpose; there was little modification except for the desire to accommodate the necessary number of students. These structures were particularly suited to small rural communities, as they embodied practicality through the use of local materials and were easily integrated with the surrounding urban infrastructure (Fuller, 1994, p. 74-78). It is however crucial to recognize that the origin of schooling was within the household, and home education is not a recent development in whitestream education. Over time, western societies have also practiced homeschooling (Levin et.al, 1992). However, with the introduction of compulsory school attendance and the professionalization of educators, education became institutionalized in physical school environments as we know them today. Initially, homeschooling in the west was practiced among wealthy and noble families to retain their discretionary power. However, over time and throughout colonial history, it transformed into a necessity for working-class families to improve their social status and socio-economic condition through the education of their children (Fischer, 2006). Moreover, the first settlers also had to home-educate their children, since settlement schools were not yet established; Even after local schools were established, the resulting rural, one-room schoolhouses were often operated by churches, based on religious principles, and usually private (Wilhelm & Firmin, 2009). These schools were typically small and isolated, which meant that the teacher was often the only adult in the room and had to maintain order and discipline. The teacher was responsible not only for educating the students but also for ensuring their safety and well-being. There was a belief that discipline and obedience were necessary for success in life and that the teacher had the authority to enforce this discipline (Colquhoun, 1806). This view was reinforced by the prevailing cultural and social norms of the time, which emphasized the importance of conformity and respect for authority. Moreover, the curriculum in rural schools was often focused on basic literacy and numeracy skills, which meant that rote memorization and repetition were common teaching methods (Barnard, 1860). This style of teaching which was initially seen as best suited to the limited resources and the simple, rural lifestyle of the time gradually became a product of the particular social, cultural, and economic

conditions of the time. Schoolrooms became commonly regarded as authoritarian spaces where educators exerted tight control over students' learning and behaviours.

1.1 Disciplined Spaces: The Monitorial Schools

For instance, the **monitorial school (1798-1830)**, first developed in Britain and subsequently adopted by American educationalists, stands as an influential model that emerged from the traditional schoolroom (Dudek, 2012; Markus, 2013). Archival materials indicate that these schools were of considerable size, designed to accommodate between 280 and 1,200 children (Markus, 2013, pp. 55-60) and required a specialized layout to function efficiently. Thus, they became the first instance of architectural spaces structured by educational requirements (Pezzetti, 2020). The school's operational structure hinged on meticulous coordination of movements and tasks, typically overseen by a single or dual master teachers. The monitorial system's salient feature was the use of advanced students, called monitors, to enforce military discipline on their peers and control their movements, utterances, and even access to the equipment allocated for educational purposes (Hogan, 1989, p. 386). Indoctrinated from a young age, monitors worked in a highly choreographed system (Figure 1.1) to establish order and the students, in turn, engaged in mechanical recitations. The particularity of this method of education is that it is fundamentally structural and hierarchical, with a strict and regimented approach resembling that of the military regime.

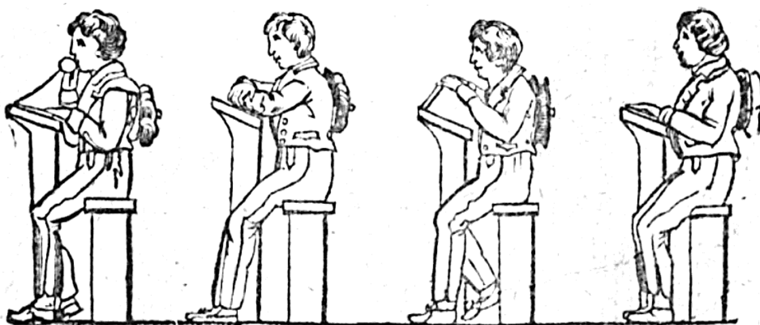

Figure 1.1: "Turn slates" – act of taking up the slate to show command "show slates."
– This is an operation per **writing**.

Lancaster, J. (1821). Exemplifications of the Order of Commands and School Evolutions. In *The Lancasterian System of Education, with Improvements* (p. 27).

This approach ensured that students were focused on their work and were taught in a sequential and well-disciplined manner. The learning of morality, or as we choose to reframe it in ex-colonies as the imposition of neocolonial moral obligations, was then given equal importance as the actual substance of the lessons being taught (Hogan, 1989, p. 409).

Patrick Colquhoun, a Scottish settler merchant and magistrate who is best known for his work on social reform, was a strong supporter of the monitorial system, which he believed was a cost-effective way to "democratize" education. He argued that the expansion of such a system could help address the problem of inequalities and promote social mobility. However, Colquhoun's (1806) educational agenda reflected the experiences of his advocacy of institutional police reform. He stated that popular education sought to give the poor "a right bias to their minds" and enough education to help them retain the religious and moral instruction they receive (Colquhoun, 1806, p. 12), and that to "go beyond this point would be to confound the ranks of society" by fostering discontent among the impoverished and potentially inciting them to revolt. Thus, education was often viewed as a means of controlling the masses which was particularly true in the context of industrialization and the rise of urbanization in the 19th century, leading to larger populations and greater social unrest. Monitorial schools were, therefore, an appropriate solution used to instill values and behaviours that would make the working class more obedient and easier to control (Colquhoun, 1806, p. 23). Carl Kaestle, a historian of education who has written extensively about the role of education in society, recounted and explored similar educational systems of policing that emphasized the importance of the use of intelligence gathering to maintain social control. One example of Kaestle's work on education and control in monitorial schools can be seen in his book *Pillars of the Republic: Common Schools and American Society*, in which he offers several insights into why the tenure of monitorial education enjoyed such longevity (pp. 67-71). He highlights that bureaucrats were attracted to the economic efficiencies of managing large student bodies with few staff, believing that a standardized curriculum would teach immigrants a unifying language [English] and morality [Protestant] concurring with values of "hard work and subordination" (p. 71). While Kaestle (1983) did not necessarily delve into the idea of managed democracy present in Colquhoun's discourse, his work focused more on how education has been used to reinforce existing power structures rather than on how it can be used to promote democratic ideals.

If we are to observe through a decolonial lens the concept of democracy in education, the term educational sovereignty refers to the ability of a community or nation to control and shape its own educational systems and practices (McCarty & Lee, 2014). This includes the ability to decide what is taught, how it is taught, and who teaches it. John Dewey, an American philosopher, psychologist, and educational reformer who is widely regarded as a leading figure in the development of the progressive education movement, brought a more idealistic and aspirational

view of educational democracy that is often seen as compatible with decolonial approaches in education. Dewey (1916) was vehemently critical of the monitorial schools, which he found to be overly focused on rote memorization and the transmission of information, rather than on the development of critical thinking skills and the cultivation of independent thought. Dewey (1916) describes "monitorial school" education in his work "*Democracy and Education*" as functionalist routine. He sees the main issue with education as environmental, where the natural and social relationships of individuals are disrupted by the artificial school environment. "The school space should open material connections between what [the students] do to their environment and what the latter does to them so that their actions and their beliefs acquire meaning [...] and they learn to understand both themselves and the world of living and non-living things" (Dewey 1916, p. 160). Otherwise, the school walls can restrict and limit a student's world instead of "expanding" and "thickening" their space of experiences and knowledge, making their world almost irrelevant.

1.2 Industrialization and Patriarchy: The Graded School

During the mid-19th century, many descriptions of the educational architecture illustrated how learning spaces' layout gradually shifted when the industrialization period reached its pinnacle, hence the classroom model was idiosyncratically becoming a generalized reflection of the "Factory model" (Figure 1.2). The one-room schoolhouses (the archetype of the classroom) were the early model drafted by Horace Mann, an early educational reformer, who was inspired by the Prussian model (1843) of control-by-schooling and defined the process of learning as an act that is specific to a place (school) and a time (study/recess) (Dudek, 2012). The relentless pursuit of industrialist ideals during this era gave birth to **the graded school (1847-1935)**, which was a revolutionary invention that first appeared in Boston in 1847. Before this time, students of varying ages and abilities were placed together in a single room, posing significant disciplinary and teaching difficulties for educators. As urbanization led to an increase in school enrollments in larger cities, even monitorial systems struggled to accommodate classrooms with as many as hundreds of students. Despite the critical situation, Boston's educators were unwilling to adopt the monitorial system developed for mass education and instead chose to divide students into smaller, more manageable groups that were organized based on age and academic performance. In Boston, this "divide and conquer" approach developed a new type of school that, while partially emulating the Prussian model, became the new norm of schooling in North America and later on, in many regions of the world.

Figure 1.2: Assembly factory layout [left] and graded-school layout [right] on Massachuseuck Territory (Boston) in the 1920s.

Boston Public Library, Collection: Boston Pictorial Archive. Digital Commonwealth. [photographs]

The prevalence of factories and residential communities in urban areas led to the establishment of many schools in cities. This urban focus was driven by the need to provide education to the children of factory workers and accommodate the growing populations in urban centers. It is not surprising then that schools had to emulate typical characteristics of factories with "factorylike, dark, and dank" features as a way of preparing students to enter the factory labour force (Figure 1.3) (Weisser, 2006, p. 200). Cell-like rooms were distributed along corridors and separated with walls with partial openings and students would sit at desks that were in rows and bolted to the floor. The newly formed architectural layout suited the "drill and recite" instruction and was used as an instrument for "the supervision of the smallest fragment of life and of the body" (Foucault, 1977, p. 31). Moreover, the architectural features which were inspired by industrial capitalism reinforced, in a sense, the establishment of western ideology (Dovey & Fisher, 2014). The enclosure model served to emphasize the purpose of creating a closed-off reality, and the compartmentalized layout contributed to the inevitable continuation and upholding of unequal power relations between the teacher and the students (Weisser, 2006).

Figure 1.3: Students marching around the classroom.
– This is an operation per **movement**.

Johnson, B. F. (1900). Physical Culture: Primary Book. p 25. [Illustration]

As Battiste (2013) pointed out, education, mirroring the societies it emerges from, is not culturally neutral nor fair. It is based on a patriarchal, Eurocentric framework that plays a role in the subjugation of different groups, minorities and Indigenous peoples (Battiste, 2013, p. 159). Before colonization, gender relations were characterized by equality and harmony, but settler society introduced male dominance in governance, social interactions, economics, and spiritual practices to dismantle traditional kinship systems and impose a gendered structure of violence (Smith, 2005). For instance, the grade school experiment considered that the success achieved over several decades in the primary schools of the city was attributed to having female teachers in classrooms with small groups of children. However, there was a continual desire to keep an authoritative male presence in the schoolhouse (Reese, 2011). The ongoing need for competent teachers provided women with more employment options in one of the limited professions accessible to them, but the belief that women are naturally nurturing led to their confinement to teaching primary-level students (Spender, 1983, p. 77). In fact, they were forbidden from teaching older children. During a time when the responsibilities of a schoolteacher included not only education but also moral and social enforcement, men were deemed as the only suitable candidates for such duties (Reese, 2011, p. 35). In *Pedagogy for Patriarchy: The Feminization of Teaching*, Grumet (1981) analyzes transcripts of classroom discussions and interactions between teachers and students in Boston graded schools between 1900 and 1920. She argues that patriarchy was deeply embedded in the schooling system during this period, as teachers used gendered language and practices to reinforce traditional gender roles and hierarchies. Grumet (1981) identifies several ways in which patriarchy was reproduced in graded schools. For example, she notes that teachers

often addressed boys and girls differently, with boys being praised for their academic achievements while girls were commended for their "good behaviour" and compliance with social norms. In addition, Grumet (1981) argues that the graded school system itself was designed to reproduce patriarchy by channelling boys and girls into different educational tracks based on their perceived abilities and future roles in society (Figure 1.4).

Boys were encouraged to pursue academic subjects and prepare for professional careers, while girls were channelled into vocational and domestic training programs. Recognizing patriarchy as a factoring component in the making of schooling helps us understand the ways in which the discourse of pedagogies was initially framed within the dominant male/female dichotomous thinking. The idea that women's "nurturing" nature prevents them from being effective knowledge holders and transmitters (Spender, 1983, p. 77) was a flawed and harmful construct that further excluded knowledge systems of matriarchal societies, including my Indigenous Amazigh maternal teachings and traditions.

Figure 1.4: American classroom in 1905 with girls sewing and cooking (right) and boys using woodworking tools (left) – This is an operation per **identification (gender)**.

Library of Congress. Baker & Cornwall. [photograph] loc.gov/resource/cph.3a15671/

Nurturing, which was once deemed inappropriate, is in fact the basis of a person's sense of belonging, being and becoming. Our whole conception of ourselves as people, individually and collectively, is based on the stories we are nurtured on, which may or may not correctly correspond to the actual reality of our [schooling] environment (Thiong'o, 1986, p. 15). Our capacity to scrutinize the patriarchal system of graded schools and confront ourselves with this "other" reality creatively is dependent on how we distort or clarify colonial legacies to gain insights into contemporary educational issues. For example, the endorsement of handicrafts simultaneously

served as an argument for and against the use of technology. On the one hand, it symbolized a rejection of the introduction of industrially manufactured pedagogical materials in schools, especially in courses aimed at female students, which were being substituted with handmade items. Conversely, it aimed to familiarize male students with technological work, often supplemented by factory visits to prepare them for vocational training rather than strengthening the connection between their hands and minds, and their critical thinking.

1.3 Commodified Spaces of Education: The Open-plan Schools

Today in the twenty-first century, the majority of classroom layouts, especially in former colonies (Figure 1.5), convey the same hierarchical feature whereby the teacher's desk is positioned at the front, representing both a legitimate source of knowledge and a "symbol of authority and surveillance" (McGregor, 2004, p. 15). Harris (1892) expressed the mindset of many educators in 1871: "The first requisite of the school is Order: each pupil must be taught first and foremost to conform his behaviour to the general standard," he also added: "The great purpose of school can be realized better in dark, airless, ugly places [...] It is to master the physical self, to transcend the beauty of nature. School should develop the power to withdraw from the external world." Even the iconic class bell, which continues to ring in many schools, originated from this period, mimicking a factory bell. These schools emphasized conformity and discipline, effectively becoming factories for learning.

Figure 1.5: Classroom in Anti-Atlas Amazigh region (1945) [left] and in Middle Atlas Amazigh region (2008).

AFP Forum. afpforum.com [photographs]

Now, what about the present? Unlike in previous decades, with schools racing to accommodate a growing population, today, the educational system is routinely criticized for several reasons. For example, they are accused of not providing culturally and socio-economically responsive spaces for minorities, impoverished and disabled children (OECD, 2012). The Educational Facilities Laboratory (EFL), established in 1958, had a substantial impact on school architecture in the 1970s by advocating the use of the "open plan" approach (Baker, 2012). The **open schools of the 1960s and 1970s** constituted the first significant architectural departure from the colonial legacy of double-barreled, or egg-crate, buildings common to schools across the world (Lackney, 1999; Baker 2012). Driven by education and social reforms, the development of open-plan schools from the mid-1960s and around 1980 was a significant attempt to change the physical nature of schooling. Educators and architects undertook a process of reconsidering the social organization and spatial design of schools by implementing an open-plan layout where multifunctionality would liberate the space from any type of partitions, clusters, or rigid boundaries (Figure 1.6). Instead, open plans, as Baker (2012) suggests, encourage users to arrange the interior without restrictions.

Figure 1.6: Open plan classroom on Muwekma Ohlone Territory (San Francisco, California)

Robert Propst, High School: The Process and the Place, ed. Ruth Weinstock (New York: Educational Facilities Laboratories, 1972)

The open-plan classroom phenomenon crossed international borders and, for a time, was widely acknowledged as best-practice school design in several western countries. This period of innovation came after nearly two centuries where the factory "production-line metaphor" was used as the basis for designing school learning environments, curricula, pedagogies, evaluation practices, and school space designs (Brogden, 2007). Open and interconnected spaces replaced "traditional" classrooms as the preferred learning environment during this time. However, the development and popularity of open-plan schools were short-lived.

The influence of the open-plan school movement faded during the late 1970s and by the 1980s the traditional classroom had once again become the favoured organizational and spatial unit in schools around the world. Nevertheless, change had been precipitated: when discussing the failure of open-plan school design, the critical analysis of how we think about schooling and school spaces now and in recent times has brought a new awareness of the distribution, organization and scale of the social world (Thrift, 2006). Under this new theorizing, "open space" has implied an invitation to look at the materialities of institutions, discourses and other practices and to break free from the moulds and boundaries that fixed space to particular territories. Historically the concept of open schools had been thought of as spaces for a "specific stage of life" and for accumulating and distributing cultural knowledge and social experience (Hamilton & Zufiaurre, 2014). In terms of design, this organization has since been subjected to heavy criticism, first by progressive education at the turn of the 20th century and later by radical pedagogies of the 1960s and 1970s that experimented with open spaces and alternative dispositions and ordering of the bodies of students and teachers (McLeod 2014; Prain et al., 2014). Echoing and amplifying this structure of feeling, Foucault (1977) wrote one of the sharpest and most well-known critiques of schooling as a disciplinary institution, questioning the confinement of bodies produced by this arrangement. He considered classrooms (in any shape or form) as individual cells that sought to isolate and sedentarize children and turn them into docile subjects (Foucault, 1977, p. 147).

More recently, talk about ubiquitous learning, learning landscapes, personalized pods or zoned work-flow spaces has permeated the field of school design (Rudd et al., 2006) and given a new language for these long-term critiques of the outdated industrial age classrooms (Cleveland & Fisher, 2014). Interestingly, except for Blackmore et al. (2011), there is almost no debate on the political implications of claims about open-plan schools that wanted to transform school space and

experience and make it flexible and customized to the individual. The demands for increased freedom and flexibility from the 1960s have been co-opted by contemporary cultural and corporate models of "creative or cognitive capitalism," which present themselves as advocates for freedom, particularly in the educational sphere (Bale & Knopp, 2012). Criticisms regarding the oppression of learners, the lack of creativity and the inflexible nature of traditional educational institutions have been adopted and expanded upon in new reform movements. These reforms claim to address these grievances, but interestingly have also forged at the same time, an unexpected partnership with "corporate capitalism" (Bale & Knopp, 2012, p. 112). In other words, influential corporations will continue to take advantage of the digitization of schooling, either to enable data extraction, develop hyperspecialized career pathways and curricula to meet their investments or establish a model where students and their families not only become a future labour force but also loyal customers (Bale & Knopp, 2012, p. 72). A good example of that is what happened during the COVID-19 pandemic, the use of online/distance learning constituted a significant pedagogical stimulus, even though it left people distracted, disoriented or preoccupied with the resulting changes that will no doubt have a long-term impact on society. At this pivotal juncture, it's essential to pose a critical query: Are we, perhaps unknowingly, contributing to the development of new policies, practices, and technological systems that corporations will exploit to profit from the expansive domain of online education? Is the claimed notion of "new-normal" a means to serve, once more, the interests of capitalism as has been consistently the case in the history of schooling? Hence, the assumptions upon which these shifts and displacements from spatial control to a sudden openness and flexibility need to be historicized and problematized.

Chapter 2: Remembering the Forgotten.

I am an Amazigh architect, but most importantly a lifelong learner who asks you to forget about space, and consider an often-overlooked yet fundamental question: how does education happen? I see it as a retrospective and self-determining process and, therefore, a crucial factor for my personal journey towards Indigenous sovereignty. Teachers can convey information. They can assist and they can inspire— and this is the way we have been taught for decades, whether we belong to the western world or witnessed the impact of western educational ideologies on colonized lands. It is well-established that western education systems encourage individualism,

active participation and productivity (Hassan et.al, 2010). However, contemporary research (Reagan, 2004; North, 2006; Freire, 2015; Gaudelli, 2020) shows that behind the western education promoting the spirit of productivity and competition, there is a hidden effort to generate a legacy of "systemic injustice" and "discrimination" (Ngubane & Makua, 2021) because of the lack of opportunities to access this particular model of education and the way it is valued worldwide. King (1991) proposed that the privileged position of educators when enforced in an institutional setting through the use of western philosophy, values, discourses and practices, subverts or subordinates others in a power dynamic. Additionally, Locke (1948) when coining the term "tabula rasa," specified that power structures which establish the teacher as the source of knowledge and the student as a "blank slate", serve to ignore or invalidate the knowledge and experience that the student already holds. It is undeniable that in the field of critical pedagogy, there has been a greater effort in tackling these issues to end student oppression, however (Freire, 2015) pointed out that the theorization of education within the discipline often results in a reductionist view of identity, experience, agency, and history.

As a learning agent who experienced education in both western and Indigenous contexts and witnessed the implications of power dynamics, I have always asked myself this cynical yet disconcerting question: Are we really educating ourselves or have we been all this time educated instead? Learning, first of all, starts as a conscious decision and a dedicated commitment to the process. The latter should be active, deeply personal and involve a comprehensive understanding of one's identity and perhaps, even one's positionality. Education doesn't exclusively happen in predetermined environments such as the standardized space of the classroom, nor between the four walls of our "home study space/office", or between the teacher's lips and the students' ears. Rather, education unfolds within us, at the core of our being. I believe that reflecting on who we are to understand better what we are learning throughout our lives has a profound and crucial impact on how deeply we comprehend the world around us. It is the connections among worlds or the lack thereof that encourage or withhold learners from experiencing the world they are living in.

The foundation of the standard educational model is remarkably consistent and uniform: It requires two definite parameters: "time" (allocated throughout the day and the year) and "location" (either physical in a school building or virtual on videoconferencing platforms). The learning experience is constrained between a succession of timed class periods, breaks, recreational

activities, and physical exercise; then extra time for homework. The conventional curriculum imposes artificial constraints on the uncharted landscapes of human thought, fragmenting the latter into quantifiable and assessable knowledge. Curriculum units and subjects that should flow into one another like river currents are categorized, organized and planned. Schematically simple, the standard educational model hides or rather suppresses the endless complexities of learning and transmitting. And, despite its drawbacks, this model advantageously outlived its time, beyond other pre- and co-existing education systems, on the grounds that it has been well-established, dogmatized, and imposed upon diverse communities and cultures. Yet even a brief analysis of educational history shows that nothing about the currently prevailing classroom model justifies it having been fixed in stone (Freire, 2015). Education, like any other human-made construct, is an invention, a work in progress. It has consistently reflected the political, economic and technological realities of its times and the growing power of imperialist interests. In fact, the progression of education has been ongoing, although not always at a pace aligned with societal shifts. Consequently, some younger generations have been inadequately prepared for rapid socio-technical changes due to outdated educational methods. As one example of this, history repeated itself when in 2020 the current generation struggled while witnessing the paradigm shift in the educational system continuance during the COVID-19 pandemic. It is time – or should I say, past time – for education to evolve differently, perhaps this time, organically.

2.1 Amazigh Education as a space of Memory

However, if we aspire to orient ourselves toward the future, it is beneficial to grasp a foundational understanding of our past journey and where we are coming from. In direct contrast to the etymology of the western educational system, that of the Amazigh is fundamentally attuned to the perception of skills or competencies as the wonderful variety and nuance that distinguish human intelligence, spirituality and "gifts" (Taeib, 2014). But let's begin at the beginning. For centuries, the voices of the Indigenous peoples were as nearly inaudible to the settlers as the sound of the wind. Even today their knowledge and wisdom are passed on orally and simply from mouth to ear and can only be seen and heard by those who have a gift: the gift of transmitting. Throughout every dune, river, mountain and field there is sacred knowledge. It is knowledge within a "traditional" habitat, a village, a home. A knowledge that would sustain and empower generations beyond belief: the balance between culture and land – the land of Indigenous peoples. And what

channelled, for so many years, the harmonic connections between the ancestors and the future? One bridge: Memory.

What does memory mean to Amazigh learners, and more specifically to its diasporic members like myself?

I see the relations between memories, ancestral knowledge and education as the fundamentals that remind us of the current and future generations' endeavours to retrieve, reconstruct and make sense of the past. They reflect the duality of Indigenous resistance by our disposition to simultaneously remember and forget (Nakata, 2012). When we consider both the act of remembering and forgetting together, they offer a nuanced perspective on historical events, providing insights that are relevant to both current and future contexts. As such, I see learning (even within the institution of education) as a dual process of memorizing but also forgetting – an unusual and seemingly counterintuitive approach to schooling. In this chapter, I explore some of the unresolved contradictions related to identity, collective memory, and pedagogies within my tribe/community. I want to detach myself from the virtual paper I am writing on, to walk you along mountains, rivers and deserts and share teachings from my late grandmother, who was the last knowledge-keeper in my family, to guide my responsibilities as a future knowledge-keeper. In this newly-started journey as a researcher, I have lately noticed growing inner conflicts related to my positionality and my learning experience in western academia. The realization of being an Indigenous Amazigh scholar in Canada with a research topic located on Indigenous lands was disconcerting. These two "territories" are separated by laws, culture, and traditions and by different accounts of reminiscences. My community's identity and heritage survived by passing on stories. They are the essence that defines who I am, how I assimilate and produce knowledge and experience life with others and myself. The enduring knowledge of the Indigenous Amazigh (Asegmi ⴰⵙⴳⵎⵉ) persists through the narratives and shared memories of intergenerational survivors who have survived colonization. In most regions of Morocco where ancestral ties to the land still remain, evidence of such knowledge is observed in the daily practices, on the bodies of survivors such as tattoos (Becker, 2014), and across the landscapes through nature-based education (Taeib, 2014), and, thus, despite efforts to assimilate, and forget. Memories serve as a decolonizing tool that helps Amazigh peoples remember the pre-colonial relationships between the land and the collective memory within the community. My personal long-term commitment is to engage in a process of remembering my forgotten memories through unlearning and re-learning while using my

understanding of educational spaces and testimonies from my elders to restore who we were before schooling took place. The elaboration and dissemination of the Berber/Amazigh identity is a multifaceted phenomenon supplemented by the shaping of a "memory community" (Maddy-Weitzman, & Zisenwine, 2007) which involves a quest for a functional historical narrative leading to the creation of new stories, ceremonies, and communal remembrances. The preservation of Amazigh memory occurs through various methods and across multiple tiers. At a more accessible level, the upholding of "Berber memory" involves a significant degree of "mythmaking" and essentializing of the Berber "spirit" (Amrouche, 2013; Maddy-Weitzman, 2011, 51-67). The task of Berber memory work is formidable in itself: Habibi (2004), in writing about the confederation to which my tribe belongs "Zayane," openly emphasizes the intrinsic democratic principles characterizing village societies, reflecting broader aspects of Amazigh culture as delineated in the Berber Manifesto. This cultural ethos underscores communal decision-making, egalitarian social structures, and the preservation of traditional practices. The upland village is portrayed as the reservoir of deeply rooted Amazigh customs, with traditional art (Becker, 2014), handicrafts (Maddy-Weitzman, 2011), and place-based learning (Taeib, 2014). Such a statement is often mistaken for an idealization of traditional life, reminiscent of nostalgia. But it is not about romanticizing the past or "living in the past", it is about learning with the land for the land, with the people for the people, and hence learning in kinship should not be assessed through the structure of modernity but rather implemented as a decolonial tool that frees people from modernity's captive domestication. In essence, it is about "the refusal and rejection of modern ways of knowing, being and doing through pursued alternatives" (Paradies, 2020). Amazigh oral traditions and teachings represent a culturally embedded reservoir of knowledge. While they convey individual concerns, they also transcend to encompass the collective, national, and spiritual dimensions. Poetry, for instance, is a central feature of education in Amazigh oral culture. My Atlas Amazigh elders recognize and locate rivers, valleys and mountains and often use these geographic characteristics and spatial relationships in rural schools and poems to teach and guide other members about mountain routes and water wells (Figures 2.1 and 2.2). Poetry arises not as a body of lifeless knowledge set off from life and taught for its own purpose, but as a "practical science" continuously revivified by experience (Mammeri & Bourdieu, 2004).

To illustrate the latter, I would like to share two short poems that are chanted by Amazigh herdsmen on their way back to their villages:

1. How long neglected to replenish my foothill storehouse?

   Who knows when the snow will force me to seek refuge there![1]

2. Now you cloak me in the thickest of vapours; now the clouds do float away,

   I am indeed your mountain[2]

Figure 2.1: Amazigh teacher teaching geology in-situ (Land-based learning)

Ayouch. N (2017), 00:01:32, Razzia [Film]

Figure 2.2: Rural school on Amazigh Indigenous land.

Ayouch. N (2017), 00:21:54[3], Razzia [Film]

[1] A Storehouse or "Tamidelt" is known among the community to be both a collective crop storage and a communal refuge (Curtis, 1983) - a reference to "foothill" also gives a hint on the usual location of Amazigh temporary or permanent settlements.

[2] The verse is a subtle approach to explaining the cloud formation phenomenon. When the wind blows across a mountain range, air rises and cools to form clouds.

[3] Quote from (Razzia, 00:21:17-00:21:54): "You teach them poetry? – Yes Mr. Inspector from the big city who pretends to know everything […], I teach them to listen to the mountains, to talk to them, to imagine what's beyond them. Yes, Mr. Inspector, what does the language (Indigenous) matter if you strip their (students) voices away?"

2.2 Indigenous Knowledge and Constructions of Legitimacy

Indigenous Amazigh education centers on using language and imagery to cultivate learning experiences. This type of knowledge production, passed down through generations, is integral to Indigenous education, providing learners of all ages with insights into their environment and heritage. Unlike formalized education systems, this experiential knowledge does not rely on a fixed curriculum to impart its transformative impact on individuals and their surroundings. Rather, Amazigh elders, who are the custodians of this knowledge, serve as both transmitters and interpreters. They offer critical perspectives on societal issues and historical events, using their insights to shape the narrative of their culture. This critical approach, as highlighted by Sadiqi (2012), underscores the resilience of their knowledge. It calls for a broader perspective, viewing orality not as a primitive stage preceding written cultures, but as a nuanced and dynamic phenomenon in its own right. Only then we will have a more adequate account of "Amazigh knowledge systems" and "Amazigh pedagogy" going beyond the conventionally presupposed idea that for instance, an Amazigh inscribed knowledge dating back to 200 B.C cannot be more than an archeological artifact.

As noted by Augustine (1999), Mi'kmaq traditional knowledge for instance, is defined as a system built from the survival techniques of Indigenous peoples, which were passed down through generations and preserved in communal teachings and collective memory. Indigenous systems thinking is not divided into specific fields, but this does not mean that it has no foundation in logical thought. Rather, it is predicated on the idea that everything is interconnected and must be viewed in the context of this interdependence. In an Amazigh context, Merolla (2006) argues that memory production and performative traditions are key to Amazigh Indigenous knowledge systems. In her chapter titled: *Intersections: Amazigh (Berber) Literary Space*, Merolla et.al (2014) investigate Amazigh forms of expression – similar to the herdsmen poems given above – in pedagogy. She perceives them as alternative literacies while engaging with the epistemological frameworks, theoretical perspectives, and methodologies derived from land-based knowledge, memory, and practice. The memory becomes then explicit (consciously retrieved) when it involves the deliberate recall and storage of information as spatial and temporal markers within specific historical contexts. The recollection includes the re-experiencing of past events, thereby transforming the ephemeral nature of memory into a potentially tangible form of knowledge, akin to an archival record (Foote, 1990). However, memory work aimed at emancipation requires a

critical approach that does not unquestioningly accept one person's subjective historical narrative. It is rather a conscious act of bringing together individual memories and collective meaningful experiences (Irwin-Zarecka, 1994). According to Tucker (2018), two primary aspects of emancipatory memory work can explain its epistemic authority as a viable knowledge-creating technique. The initial element involves a deliberate procedure of "meaning-making" and interpreting the past (Irwin-Zarecka, 1994, p. 145) whereas the second component is "site ontology" (Schatzki, 2002) which serves as a foundation for "community practice" (Mittendorff et.al, 2006). Both components refer to the underlying structure or framework that defines how a community interprets its surroundings which guide its interactions and activities and shapes its collective identity through embedded knowledge.

Jansen (2009), who wrote extensively on decolonizing education during the post-apartheid era in South Africa, asserts that all knowledge is socially constructed and therefore never straightforward. In fact, he explains that the process of acquiring knowledge is frequently disrupted by the exploration of pedagogical principles such as the transfer of knowledge, the interrelationship between individuals, the means of communication, and the presence of contradictory elements, all of which play a role in bridging generational divides. Furthermore, it is also safe to say that not all memories are preserved or intergenerationally transmitted in order to become knowledge. In this regard, Amazigh emancipatory memory work can be distinguished from everyday popular memory and should be appropriately investigated and given legitimacy as any other form of knowledge that went through a vigorous process of verification. It is important to keep in mind that memory ownership can be both real and to some extent illusionary, but it is also a necessary myth for people and communities to maintain their sense of identity (Field, 2003). Therefore, envisioning Amazigh emancipatory memory work, as a pedagogical framework, is grounded in tangible realities rather than mythical or illusory constructs. It situates the past within the context of place-based knowledge which creates a space where memories are not just recalled but actively constructed, intertwining with Amazigh peoples' interactions with their land and its repository of memories (Taeib, 2014). This interaction is deeply rooted in oral traditions and the relational aspects of Amazigh culture. Within this framework, Amazigh emancipatory memory work acknowledges the historical processes of epistemic injustice that have marginalized Amazigh knowledge, positioning it outside the dominant modern and western paradigms of knowledge (Tyrey, 2018). Emancipatory memory work aligns with the "Berber memory work" struggle for

epistemological justice" (Maddy-Weitzman, 2011). It recognizes the inherent power dynamics in knowledge production, as Foucault's (1977, p. 27) stated in *Discipline and Punish*, "there is no power relation without the correlative construction of a field of knowledge, nor any knowledge that does not presuppose and constitutes power relations at the same time."

Chapter 3: Traditional modernities and spatial alienations

"When you automate an industry, you modernize it; when you automate a life you primitivize it."
Eric Hoffer

Modernity involves a yearning to eliminate anything that preceded it, with the expectation of eventually reaching a moment that can be considered a genuine present, a point of origin that marks a new departure. By appropriating history, Europe and its settler colonies constructed themselves, according to Hosagrahar (2005), as the "prototypical modern subject." The concept of Eurocentric modernity was based on the strict distinction between modern and traditional, that is to say, "to be modern is to be not traditional." In this binary scheme, I believe that what was meant by traditional is not the western archetypal form of learning spaces portrayed in history, but those learning environments from colonized regions that were considered transitory, inadequate, or "primitive." By questioning this binary, my inquiry on learning spaces shifts the discourse on modernity to other geographies outside its conventional western location. From an Indigenous standpoint, the idea of "modern" derives from the extreme inequities of colonialism. Thus, it needs to be subverted from a standardized notion among the west to an attribute that equals, in all respects, the notion of traditional since they are both socially constructed.

The imperialistic nature of the western/modern learning spaces in colonized regions such as my home country (Morocco) contributed to erasing local differences to create a homogenous "culture of education" (Moumouni, 1968). In other terms, the western/colonial school model did not only corrupt the local dynamics of teaching and learning, but also alienated colonized bodies from their own environments (Moumouni, 1968, p. 13). The archetypal classroom, in this sense, constitutes the spatial setting where the tension between the colonial power and the cultural beliefs of local communities takes place. Colonialism either denied or, when acknowledged, deemed the culture of the Indigenous peoples of Tamazgha (the ancestral land of the Amazigh) inferior. The

enforcement of "modernity" as a cultural agenda among the Amazigh has been carried out for centuries through educational and administrative systems that perpetuate systems of cultural oppression, (Lazreg, 1983, p. 389) at the expense of the Indigenous people's educational models. Europe, considering itself the wellspring of ideal culture, progress, order, and civilization, expected the "Berbers" to assimilate into this framework (Bourdieu, 1970), thus creating a distinction between what was perceived as "modern" and "traditional" societies.

3.1 Decolonizing the Traditional-Modern Dichotomy

The apparent dichotomy between the "modern" and the "traditional" warrants scrutiny and critique. Western "modernity" introduced new cultural paradigms to African societies, often undermining Indigenous cultural models and values deemed "traditional" and outdated (Dussel et al., 2000, p. 472). However, "modernity" is erroneously equated with colonialism, neglecting the fact that pre-colonial African cultures possessed their own internal mechanisms for modernization (Mudimbe, 1988). Mudimbe (1988, pp. 182-187) demonstrated that modernization was a continuous process in pre-colonial Africa, therefore, the perceived polarity between "tradition" and "modernity" can be challenged, as "modernity" is influenced by "tradition," and certain traditional elements persist within modernity. Gyekye (1997, p. 217) argued that the acknowledgment of ancestral cultural values in modern societies implies that modernity is not always a rejection of the past. This challenges the notion of tradition and modernity as diametrically opposed concepts. Tradition can be viewed as a set of values transmitted from past generations, subject to some adaptations (modernization) reflecting current needs and habits. In this light, Gross (1992) argues that many traditions prevail in the nooks of modern life. Some traditions continue to exist in private, gradually fading from public view. These traditions may persist by operating underground, away from the public eye. Alternatively, they may adapt to evolve into new forms and expressions, ensuring their endurance in the face of changing societal landscapes. Gross (1992, p. 13) challenges the perceived dichotomy between "tradition" and "modernity," arguing that "tradition" is not static but changes alongside transformations within the receiving generation. This chapter reframes "tradition" not as an antithesis of modernity but as closely intertwined with it. The argument presented is that tradition significantly informs modernity. Modernity, rather than being rootless, is seen as an endeavour to adapt an existing tradition to remain relevant to the current societal context. It is essential to redefine the term

"tradition" to reflect the culture, education, philosophy, and epistemology of Indigenous peoples, freeing it from its negative colonial associations. The resistance of Indigenous communities to colonial domination underscores the diversity of "modernities" across nations, shaped by the specific contexts of each society (Hosagrahar, 2005). The colonial project to introduce "modernity" to the Indigenous Amazigh people of Tamazgha was grounded in the belief that modernity is universally rooted in Eurocentrism.

While the previous chapters dealt with spatial representations of structures of power and oppression in institutionalized learning spaces, this chapter explores negotiations of identity in these same spaces but in a post-colonial context. Mainstream/whitestream educational spaces refer to environments where the world is viewed from a western Eurocentric perspective, often to the exclusion of other cultures and perspectives (Paradies, 2020). Western education, which has its roots in the European enlightenment and colonialism, can be seen as a hidden manifestation of Eurocentrism. The latter is understood as the attempt to present a western understanding of reality as having transcultural application. Given that mainstream education in ex-colonized regions, particularly among Indigenous communities, continues to uphold western-centric ideologies, it is vital to consider empowering approaches to emancipation. The exploration of the Amazigh education system from an Afrocentric standpoint offers a framework to question the Eurocentric nature of schooling and its impacts on post-colonial societies. In fact, a component of the myth propagated by the colonization of Tamazgha was the assertion of bearing a "burden" to introduce education to the Indigenous peoples of North Africa (Bourdieu, 1970). Colonial and settler-colonial states believed that education was non-existent among Indigenous communities even when archival evidence has always suggested that all cultures have an educational framework that maintains and passes on knowledge from one generation to the next, which organically adjusts itself to align with the prevailing societal condition (Gross, 1992). The Indigenous Amazigh concept of education, translated as "Asegmi (tree shoot)," is not easily defined in a single, universally applicable manner. It is a term that invites diverse interpretations (Taeib, interview, February 20, 2021), given its inherent flexibility to mean different things to different individuals. "In our way of life [as Amazigh peoples], we embedded our knowledge and shaped our societies according to an organic culture. We have seen the place of women and with a narrative from under the olive trees we carry the metaphor to the land, to understand the place of transmission today, as well as the value of the heritage" (Taeib, 2014, p. 130). The graves of the holy Ancestors are often

marked with olive trees, which makes it a symbol of life, knowledge and wisdom but also a symbol of death, and this brings healing (Taeib, 2014, p. 132).

3.2 Colonial Learning Spaces in Amazigh Litterature

Asegmi goes beyond the colonial understanding that education equates with schooling, religious and elitist curricula that took place in ex-colonized North Africa (Moumouni, 1968). Assia Djebar's *L'amour, la fantasia* (1995) and *Nulle part dans la maison de mon père* (2007), and Driss Chraïbi's *Le passé simple* (1954) interrogate formal sites of education by showing how the duplicity inherent in classrooms contributes to the authors' burgeoning sense of alterity and rupture with the dominant culture in the ex-colonies of Tamazgha. These texts reveal how colonial school environments contributed to the authors' struggle with their Indigenous identities, leading to a profound sense of identity crisis and alienation. In examining these autobiographical stories and their representations of education, these authors, framing their gaze from the perspective of a child, bring attention to the normative space of the colonial classroom, a space which creates a double consciousness in the colonial subject, removing them discursively, linguistically, and culturally from the home culture. In other words, institutionalized oppression through education instills cultural knowledge and value systems that are contradictory to that of the home and community. Djebar (1985, pp. 260-261) demonstrates this rupture in "L'amour, la fantasia" as she describes the rift produced by colonial education: "These simultaneous learning experiences [from Indigenous and colonial teachings], establish me, but in such different ways, [...] in a dichotomy of space. I do not perceive that the final option is at stake: the outside and the risk, instead of the prison of my peers. This chance propels me to the brink of an insidious hysteria."[3] Her attendance in both Arab and French schools situates the problematic of formal education in the post-colonial Tamazgha: spatial and cultural "differencing" create a rupture in perception, leading even to a kind of dissociative state. Chraibi (1954, pp. 188-189) expressed the same sentiment: "We are introducing you to the enemy camp so that you become familiar with their weapons. This, and nothing else."[4] Djebar's (2007) situation is equally emblematic of the double-edged sword of

[3] **Trans.** Ces apprentissages simultanés [ces deux écoles], mais de mode si différent, m'installent, tandis que j'approche de l'âge nubile...dans une dichotomie de l'espace. Je ne perçois pas que se joue l'option définitive : le dehors et le risque, au lieu de la prison de mes semblables. Cette chance me propulse à la frontière d'une sournoise hystérie. Assia Djebar, "Growing Up in Algeria," in Fantasia: An Algerian Cavalcade, trans. Dorothy S. Blair (Portsmouth, N.H.: Heinemann, 1993), 179-85.

[4] **Trans.** "Nous t'introduisons dans le camp ennemi afin que tu te familiarises avec ses armes. Cela et pas autre chose."

colonial education. The classroom, where mixing, hybridization, and cross-cultural conflict and contact occurred was not only a battleground. They also liberated the above authors from the duality of their identities and provided hybrid frameworks of knowledge that led to the revival of Amazigh knowledge systems. Furthermore, the oppositional gaze of the childhood-self of these authors reveals the complexities, ruptures, and hypocrisies of the colonial relationships and allows them to compare "childhood and nation, childhood and identity, and childhood and home… when all combined becomes a "place" to which all students belong, and which offers a new place to examine the enduring legacy of colonialism." The gaze of their childhood self served through these accounts as a subversive witness to colonial education and its ideological baggage.

Given the colonial view that education was either inferior or non-existent among the Amazigh, I contend that it is crucial for the Indigenous peoples of Tamazgha to define and assert their educational framework. This means they should determine what constitutes education for themselves, rather than adhering to the standards imposed by the colonial system. Therefore, adopting an Afrocentric, and more specifically an Amazigh-centric, approach to education becomes imperative. Various interpretations of Afrocentricity share a common goal of empowering Indigenous peoples of Africa and the diaspora to speak on their behalf. This approach emphasizes the need to prioritize the African experience, a concept known as "African agency" (Asante, 1991). African agency requires that Amazigh peoples should be the main agents in the study of their history. African agency requires that Amazigh peoples should be the main agents in the study of their history. The Amazigh should aim to share their cultural experiences based on their perspectives, separate from the narratives and descriptions imposed by colonial accounts. However, "independent narratives" should not be misconstrued to mean a total and complete disregard for the archival nature of these historical accounts.

The idea of "centricity" in education involves instructing students from the vantage point of their cultural context (Asante, 1991, p. 171). In light of the interplay of identity, education and space, learning environments in postcolonial Tamazgha must be informed by the epistemological paradigm of Amazigh peoples. Asante (1991) also argues that "centricity" applies to any culture. This implies that Asegmi can have an educational system, structure, and space that is also centred on Amazigh cultural references. Asegmi, in its ethical essence, would ensure that the Eurocentric

ideologies presented in the "postcolonial" education system are challenged, and replaced instead by perspectives derived from the lived experiences of Amazigh peoples. It is also essential to ensure that Indigenous education is acknowledged even within the "global village," referring to the diaspora residing outside Indigenous territories. It should be noted that the assertion of the "universality" of education is a construct of the dominant forces in western mainstream/whitestream education, designed to undermine knowledge systems unique to Indigenous peoples and impose their own ethical framework.

Chapter 4: Education and Domesticity - *Postcolonial Insights.*

In this thesis, a key goal has been to ground institutional education in the specificity of forces which serve the matrix of domination. Collins (1990) defines that term as a conceptual framework that acknowledges the interlocking and intersecting systems of oppression that shape individuals' experiences of marginalization and privilege. People experiencing intersecting forms of oppression recognize that these multifaceted oppressions cannot be fully understood or addressed independently. Therefore, I believe it is crucial to differentiate, beyond the geographical landscape, between "home" — the term explored below — as a sociocultural unit of interaction and both the house or domus and the school as spatial organizations that evolved and continue to evolve within the matrix.

4.1 The "House" in the Schoolhouse

Initially, education was deeply rooted at the community level, where members played a central role in imparting knowledge and skills to the younger generation. The early form of such education first took place within the nurturing confines of home, where learning was closely intertwined with familial bonds and daily life. However, the development of industrialization and societal shifts led to the emergence of the schoolhouse as we know it in historical accounts — a standardized, formalized setting designed to prepare individuals for a rapidly changing world. For instance, the first schoolrooms in North American settlements consisted of any space that could accommodate a teacher and some pupils; but commonly, teachers conducted classes in their own homes (Zimmerman, 2009). As mentioned in Chapter 1, the first schoolrooms in North American settlements were commonly within the home space of teachers themselves (Figure 4.1). But,

whether in a private house or a house-like barn, repurposed into a school building, the schoolroom's organization, spatial layout, and educational activities were similar across imperial territories and their colonies (Petrovic & Mitchell, 2018). Existing evidence indicates that before school design became a full-time profession in the mid-19th century when there was no need for specialized spaces in the building, schoolhouses were built by community members or carpenters and mimicked houses in many ways (Thomas, 2006; Hüttner & Guilherme, 2018; Gayman 2018).

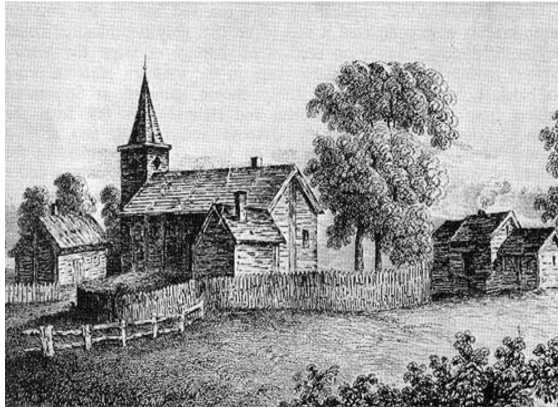

Figure 4.0: First school activity in Selkirk settlement (Indigenous Treaty One Territory) was held in 1815 in the governor's house, with the governor himself leading the instruction.

Butterfield, David. A study of public-school buildings in Manitoba (pp. 8-9).

Thomas (2006) states that "These early buildings [schoolhouses] provide insights into the nature of schooling and the values behind it": even "their name, schoolhouse, correlates with their architectural typology" (p. 219), signalling the growing consensus in the eighteenth century that schools might be places of nurturing, similar to a "home." In contrast, the schoolroom as the premise for present-day educational buildings did not need to exist among Indigenous peoples because the experience of learning was a part of daily life and could take place anywhere (Taeib, 2014; Petrovic & Mitchell, 2018).

It is undeniable that the history of school spaces described at the opening of this thesis *(Chapter 1)* can be oppressive, procedural, and patriarchal. It is equally important to extend this focus on western mainstream/whitestream school spaces beyond non-western ex-colonies to other regions of the western world to acknowledge complex relationships with colonialism/imperialism experienced elsewhere (e.g. Hedge school, Ireland (Suárez, 2003); the underground school in the Kovno Ghetto, Nazi-occupied Lithuania (Frasier & Marie, 2015)). Given the centrality of the home and its geographic environs as the primary Amazigh pedagogical space, as opposed to the normative and standardized space of the schoolhouse and classroom, this chapter is an exploration of the intersection of the ideas, practices, and spaces of *school* and *house*, as a means of gaining

postcolonial insight on the impact of western mainstream/whitestream hegemony on Amazigh life and culture, including as regards pedagogical strategies and opportunities. To do so, it is also imperative to point to the misunderstanding or misrepresentation of the Amazigh house, derived from a settler-colonial, structuralist perspective that has spread through the existing literature on the subject and, by extension, further devalued that space as a rich and fulfilling site of culture and learning. This chapter is also intended to shed light on the receptiveness of the home place as a pedagogical environment in and of itself, one that weaves within it, in complex ways, the habits, learnings, and directives derived from outside stimuli (including colonial stimuli), and the traditions, familial and community cultural traits and other stimuli that are more intimate, personal and local.

In my pursuit of delving deeper into Indigenous education from a culturally grounded perspective, I had the privilege to conduct an interview with Prof. Si Belkacem Taeib, a prominent figure renowned for his contributions to shaping the epistemological framework of Asegmi (Amazigh Indigenous education). The dialogue we've engaged in has profoundly influenced the trajectory of my thesis, as my research was primarily centred on exploring the intricate connection between domestic spaces and knowledge production and transmission, amid COVID-19. The scarcity of easily accessible knowledge concerning pre-colonial times and the intricate nuances of knowledge dissemination imbue my thesis with a heightened sense of responsibility towards myself and my people. In fact, the distinctive Amazigh approach to learning and knowledge systems accentuates the critical nature of integrating Taeib's teachings into my work, facilitating a connection between historical legacies and the contemporary Amazigh community's realities. According to Taeib (2014), the process of learning among Amazigh peoples is life-long and overlaps space through time and relationships; “it is an interconnected system that works with the time and space that connects people where the bonds are as important as the knowledge itself” (Taeib, interview, February 20, 2021). Learning and space, therefore, intermingle without necessarily being mutually contingent. Asegmi begins by emphasizing a form of cognition rooted in physical location, requiring individuals to deeply understand their immediate surroundings and homes. This mode of thinking extends outward in concentric circles, encompassing the family's dwelling, the specific area within the village where the dwelling is situated, the village itself, and finally, the broader land (Taeib, 2014).

The concept of "home" encompasses a variety of meanings. It can represent one's place of upbringing or where the family resides, a location for learning and skill development, or simply a haven of security. Imogen Racz (2015, p. 219) explores these notions in her book *Art and the Home: Comfort, Alienation and the Everyday*, portraying home as a vessel for personal identity and a tangible reminder of individual and childhood memories. Additionally, Racz (2015, p. 120) introduces the idea of "threshold," which delineates the boundary between internal and external, private and public domains. Departing from this statement, it is worth considering institutional education facilities as public spaces and home as the private realm that had to embrace, through time, external concepts such as homework, time scheduling and recently at-home learning in times of COVID-19. As such, in these two contrasting spaces, different sets of rules naturally apply. Racz (2015, p. 10) also describes the act of moving from the public to the private sphere as one of the numerous daily transitions and rituals that we unconsciously undertake. She states that “This physical movement creates a corresponding mental shift from being in a public area, where the rules and threats are beyond our control, to being in an area with which one is intimate.” It is in fact the dynamics of transition between these two spaces (public/private; school/home) that guide my inquiry and encourage me to question other possibilities.

To label a space ‘home’ in and of itself territorializes the space and is positioned within a dense matrix of multiple, overlapping territories and territorial configurations” (Delaney, 2008, p. 31). Home can serve as both a site of struggle and resilience, offering solace, stability, and a means of resistance. It can also become a place of denial, where individuals either rationalize or succumb to external pressures. In my thesis, I conceptualize home as a site of resistance, particularly when it transforms right before our eyes into a "domestic network" for remote work and learning (Muñoz-Najar, et al., 2021). I have previously mentioned the harm arising out of repetition and habitus in whitestream education when they are imposed on or used to exploit communities (both Indigenous and non-Indigenous) who were alienated from the “industrial model” of education (Dewey, 1916; Illich, 1971; Jansen, 2009; Samson, 2017; Adigbuo, 2017). Yet even the home territory as a site of resistance is not hermetic, and does not exist remotely vis-à-vis the wider physical, nor cultural, context in which it resides. Cultures are embodied not just in discourse, signs, and semantics, but also in modes of mobility, gesturing, and engagements with objects, surroundings, and technologies. It is critical to recognize that even within the sheltering confines of home, all the habits we perform are not necessarily our own. According to Bourdieu (1970),

acquiring cultural habitus involves being socialized as an agent where specific practices of cultural knowledge, competence, worldview, preferences and dispositions are highly valued. If some habits are created through our continuous interaction with the external world, others are the reflection of a deep struggle to be a part of the external world, a world originally built to assimilate or exclude different systems of thoughts and knowledges. Adapting or accommodating an extrinsic and imposed form of habit is a subliminal process that has always left colonized and ex-colonized bodies with no internal to oppose the external (Adams et al., 2015, p. 222), and it aligns with the core foundations of whitestream/mainstream education; "we are disciplined through habit" (Foucault, 1977).

4.2 The Kabyle House and the System of Reversal

Channelling these concepts into our home territory cannot be merely inconsequential, especially when they are performed as an act of "designating" an area of one's space, "accommodating" it and "arranging" it like flowers in a vase. It is a process of territorialization, and we become willingly or unwillingly the expression of the latter (Delaney, 2008, p. 45). It is inevitable, then, that external stimuli including those introduced through habit permeate domestic space by virtue of the socialization process imposed by colonizing forces. It is noteworthy that whereas home-place may be understood, then, as a culturally permeable space, one iconic western analysis of the Amazigh Kabyle house depicted it primarily as a "traditional" structure, a unitary construct and the repository of what was deemed to be "authentic" culture. Bourdieu (1970) takes a structuralist approach to link human identity to that particular domestic typology by emphasizing its materiality: he introduces the Kabyle house as a container for human agency that follows a "system of reversal," meaning that it negotiates, relieves and overcomes external tensions toward the creation of a confined domestic life. In other words, the Kabyle house, as perceived by Bourdieu, opposes the public and natural world by embodying its hierarchical values through traditions. Bourdieu's analogy is flawed because it only operates within the colonial perspective of a traditional universe. "Bourdieu was not a part of the village. He needed someone to translate for him; he couldn't access the knowledge - Bourdieu gave meaning to things" (Taeib, interview, February 20, 2021). A more critical reading would highlight Bourdieu's professional ambition and intellectual ambitions throughout his "Indigenous experience," highlighting his approach to Kabylia as a "living laboratory" for an "epistemological experiment" into the continuity and rupture of social practices and cultural beliefs in contexts of tumultuous socio-political events.

This interpretation would connect Bourdieu's Indigenous research to his ongoing philosophical concerns regarding fields of experience and power dynamics. His social and educational status provided him with various research and professional opportunities in Algeria and upon his return to France, which were not available to his Indigenous Amazigh collaborators like Mouloud Mammeri and Abdelmalek Sayad. In the absence of Bourdieu's privileged position, the field of research about “Berbers” would likely not have generated enough interest to be investigated or discussed. Mammeri, who would later come to rely on Bourdieu’s scholarship during the postwar years established a framework that underscores the inherent privilege that Bourdieu had, and amplified his voice, enabling him to address and represent his people in the academic sphere. Mammeri, in his postcolonial resistance, sought to revive the culture and oral traditions of his people, considering his work “an affirmation of something I saw dying out among the men who surrounded me” (Yacine, 1990, p. 71). Bourdieu and Mammeri's initial published “dialogue” (Mammeri and Bourdieu, 2004), while intended as a conversation, reads more like an interview with Mammeri positioned as the informant exposes how Bourdieu was particularly interested in understanding the Amusnaw (ⴰⵎⵓⵙⵏⴰⵡ), being a blend of poetic wisdom and local practical knowledge, and Tamusni (ⵜⴰⵎⵓⵙⵏⵉ) as ancestral knowledge. Bourdieu was particularly interested in how poetry could be both "oral" and "scholarly," a concept uncommon in western traditions. Read retrospectively, Bourdieu’s position betrays his own belief that oral traditions are non-reflective aspects of habitus within his portrayal of the domestic experience in the Kabyle house. Although Bourdieu’s lack of ethnographic attention to the specificities of both regional history and Kabyle oral traditions manifested itself in his analysis of the Kabyle house, his skewed understanding of the Amazigh home was worth exploring because it sheds light on the misunderstandings inherent in the “rite of reversal” as he ascribes it to Amazigh people and, in addition, showcases how the intricate nature of the spaces we inhabit is revealed through their symbolic, and cultural associations.

Delving into Bourdieu’s designation of the Kabyle house as a “traditional” structure and his ideas about the rite of reversal further reveal the problematic nature of his argument, which stems from his summary of the symbolic complexity of the rite of reversal in the Kabyle house in structuralist formulas. For example, he underlines the significance of the spatial arrangements: each division of the space has its rituals according to a balanced division between binary

oppositions: inside/outside, private/public, and dark/light. These divisions reflect a division of the world into male and female spaces (Bourdieu, 1970, p. 137). The Kabyle house and the reversal that it realizes relate two essential spheres of life that are considered (mainly from colonial accounts) to be extreme, incompatible poles: (1) a strange outside, elsewhere, where others are, an environment that can only be faced with male ostentation and male logic; and (2) the most intimate inside, the place that is our origin, an environment of female presence and female affinity (Loeckx, 1998). In reality, the relationship between the world and the house in Kabylia (land of Amazigh Kabyle tribes, currently in Algeria) is not a straightforward one; during the process of reversal, the house does not shun the world, and the world does not alienate the house, the world is not exclusively home-like, and neither is the house worldly. In fact, the real essence of the quest for reversal resides in giving shape to an in-between that allows for ambiguity, where there is room for transition, complementarity, and ambivalence. It manages to place the house in a defamiliarized world, thus making the latter more inhabitable. The Kabyle house and its system of reversal did not emerge as a collective cultural product but were created by specific individuals responding to colonial systems of domination and subordination. Bourdieu was not alone in his misunderstanding: all descriptions of the Kabyle house, even the most precise and methodical ones (Maunier, 1925;1930) or those richest in detail concerning the internal organization of space (Laoust, 1920), contain systematic issues, particularly regarding the ritualization of space dynamics and how it informs Amazigh knowledge formation. Bourdieu never addressed these issues in his subsequent writings. Instead, he portrayed Mammeri as a reinvented or resurrected "Amusnaw" (poetic wisdom and local practical knowledge), able to "mobilize his people in mobilizing the words in which [his people] could recognize themselves" (Bourdieu, 1989, p. 2). The findings of my research, which supports this reconsideration of the nature and implications of the rite of reversal as complex and dynamic, provide welcome insight regarding the position of the Kabyle house, and, in turn, to domestic space, within the system of reversal. This insight is the rationale behind my strategy of exploring the home in the context of the matrix of domination, including as a pedagogical space.

I now imagine my ancestors' history in more nuanced ways, in the context of colonization. For example, I visualize my ancestors, who had to abandon their nomadic ways of life, unlearning some modes of travelling and becoming physically and mentally dependent on new ones. Over the

last sixty years, Amazigh people have witnessed a massive wave of national and international migration, fast urbanization and state-controlled education (Crawford & Hoffman, 2000). These changes have specifically reshaped where and how Amazigh people live, and thus how they generate and express the meaning of their lives. When Amazigh territories became more crowded due to urban rezoning and booming construction, Amazigh people were further confined to limited inside spaces of their houses. The expansion of vertical buildings and asphalt roads into "the outside" led to the increased isolation of my community and inevitable changes in our educational practices. For this new environment to be acceptable and livable, Amazigh people reshaped their dwellings to reflect their habitual practices by redesigning structures in a way that "inside" spaces ought to be equally important to "outside" spaces to preserve essential artifacts of their culture. It is the recollection of going back and forth between memories of my schooling experiences and my grandmother's house that reinforced, years later, the importance of having a system of reversal, which can allow the creation of an environment and a system of thought that aligns with my Amazighness even when they reflect a present-day distorted sense of modernity. I was also able to recognize, at that earlier time, the aggressive policy of modernization which I subtly observed with the gradual implementation of western ideology in my textbooks and academic curricula. On the one hand, I experienced a learning environment that first strips its learners of their rich vernacular knowledge to implant a modern code that aligns with notions of progress and development. On the other hand, learning through my grandmother's stories was also forward-looking but was not at the expense of our identity; instead, it was the continuation of our ways of being, knowing and learning into the future. Eventually, my experience in these fundamentally opposed learning environments resulted in what I believe is a dual process of learning and forgetting, that is to say, losing familiarity with certain landscapes and getting used to different ones.

The years of COVID-19 similarly comprised a period of re-habituation, of how, following the urgency to isolate ourselves in the face of the pandemic, we both navigated and conceptualized space. It has isolated us in our homes and bewildered us about the possible loss of our habitual ways of living, socializing, working, and learning. The sudden disappearance of the outside and the mounting anxiety lived during the pandemic resonates with issues of spatial negotiations among the Amazigh. In fact, Atlas nomads had to shift their effort from preserving the identity of

their space to educational processes to encourage younger generations to hold onto their Indigenous heritage, by making it an imaginative source of knowledge. This approach can be translated as a 'spatial consciousness' generated by a particular process of "geographical imagination" (Cornwell & Atia, 2012). The latter allows individuals to acknowledge both the role of space and place in their own lives and thus by mapping "their" world or, for that matter, their learning environment, into a local rethinking of community, solidarity, identity and cultural difference and by turning an individual perception of space into something embedded in the collective. Amazigh ideology considers education as a holistic act of life and not a training (Taieb, 2014, p. 91). As such, we move away from the term "habitus" to an act of learning that unfolds as the development of the whole self. Faced with both the suppression of my Amazigh culture due to settler-colonialism and my experience of quarantine during the pandemic, I am trying to separate myself from institutional habitus (in education) to find my own system of reversal; it comes to me that the answer lies in my attempt to understand home through the eyes of my elders. I picture my grandmother's house as a place of origin and return, a place from which to embark upon a journey and come back. As my elders kept reminding me, home is one's identity; therefore, it cannot be expressed solely by the medium of geographical places. Even when located in a geographic paradigm, home does not necessarily refer to a single place, but several places simultaneously (Hegglund, 2019). I believe the main lesson emerging from my elders' understanding of home is that it is possible, not only to envision space and place as mutable, but also as embedded in processes of knowledge formation and production. I suggest that the potentiality of my ancestral system of reversal could be a self-determined approach to gain a deeper understanding of the lived experience of home confinement during the pandemic and the new forms of knowledge dissemination generated in virtual settings (home-learning, distance-learning). Such a strategy presupposes both a shift towards focusing on the ritual's process rather than on form and function (à la Bourdieu, and pervasive in the history of school architecture), and an understanding of the significance of Indigenous education regardless of spatial concerns. Kelly and Kaplan's (1990) research indicate that the practice of reversal rituals in various societies holds heuristic value by openly prioritizing the subversion and restructuring of authority. However, the utility of their approach is not limited to these contexts. Other scholars have followed the logic of their argument to propose a transition from studying ritual itself to examining the process of ritualization

(Humphrey and Laidlaw 1994) – the shift in which "the process of making" is singled out as something exceptional and deeply meaningful.

As I am exploring further the notion of envisioning a reversal in keeping with the fluidity of the Kabyle house as a cultural and pedagogical environment, and, in addition, recalling facets of Indigenous teachings in my grandmother's home, I am gradually realizing that the world toward which I am aspiring reversal consists today of more than just fields, forests, and villages in other valleys. The Amazigh world now reaches far beyond the summits of the Atlas Mountains, and is confronted by a global reality from which "western modernity" or "post-colonial modernity" cannot be escaped. There is a critical gap or, as mentioned above, a missing dynamic of transition that does not explore further the ramifications of a reversal that can no longer succeed in preserving or allowing the re-imagining of Indigenous and local knowledges, knowledges which are constantly subject to the influence of a performative globalized system of education. Neither the reversal of the outside world that Bourdieu (1970) described nor the existing literature derived from Bourdieu's analysis (Loeckx, 1998; Silverstein, 2004) take into consideration the impact of colonial and post-colonial modernity and the paradigm shift it entails. On closer consideration, it appears that the existing literature from non-Indigenous authors tend to, often deceitfully, portray tradition as the sole force organizing the entire fabric of Amazigh knowledge systems and this has an enormous bearing on understanding the Amazigh home as an environment of pedagogical exchange. Asegmi does not conform to the traditional western understanding of tradition. It is not rooted in the past nor does it originate from it. Asegmi transcends both space and time. However, Bourdieu's application of Indigenous Amazigh knowledge within a broader Mediterranean context assumes that "traditional" culture is a unified, if not timeless, entity, with any elements of discord or change seen as coming from external sources. This concept of historical transformation as an external rupture would later influence his theories of habitus. Bourdieu's (1958) early adoption of the "clash of civilizations" model limited Indigenous Amazigh peoples' ability to establish structured frameworks for Asegmi across territories and tribes. It also overlooked how the "traditional" order might have functioned to maintain land and kinship ties. Instead, Bourdieu's model positioned colonial agents from Amazigh communities in a difficult position, torn between two worlds, and forced them to realize that the home they had tried to rebuild through acts of resistance was merely temporary, one of many possible configurations. Furthermore, Bourdieu

believed that Amazigh peoples lacked the reflective and critical abilities to navigate successfully between these worlds, leaving them in a state of alienation.

Chapter 5: Weaving knowledge into the fabric of the virtual.

Time never stops
For those who know how to give
Of their knowledge, of their
kindness.
Stop the clock ticking,
Freeze the movement of the seasons,
Time is inherited.
Such is the way of time.
From my wool, daughter,
Learn my craft.
My only knowledge to bequeath,
My will, my memory for eternity.

Salim Drici

For the Amazigh people, the concept of home is a multifaceted tapestry woven from various threads. It is a dynamic entity shaped by their history of migration and the ever-changing nature of their physical living spaces. Home, for them, transcends mere geography; it is a sanctuary of the soul. It embodies the ancestral practice of constructing a home, encompassing not just the physical structure erected through labor, but also the intangible domain shaped by women through their craftsmanship, narratives, melodies, and verses. In addition to the physical construction of houses to meet our needs, we also utilize these structures and their outward representation to establish and express our individual and collective identities. In their domestic environment, Amazigh women learn to become knowledge keepers: it is the first place where they learn how to weave and develop their first tools of knowledge production and transmission (Harries 1973; Naji 2019). Despite being largely relegated to memory today due to the migration of a considerable segment of the Amazigh population to urban centers, the nostalgia for the process and the learning experience remains vibrant in the cultural imagination and contemporary visual expressions. As Becker (2009, p. 72) writes, “visual arts have become an important means by which activists

construct a transnational Amazigh identity, linking members of the Amazigh cultural and linguistic movement across national borders.”

5.1 Understanding memory formats from manual weaving to 3D modelling.

Notwithstanding this displacement, Amazigh weavers continue to show power and determination in their struggle for heritage preservation. The daughters who learn from and with their mothers or their elders acquire, through weaving, experiential skills to manage their home and therefore their territory. The status that weaving holds within Amazigh communities is further evidenced by the centrality of the carpet in the vicinity of the home; this centrality also underscores the continuing agency of the makers of these carpets. It makes visible and palpable this often-hidden part of history, knowledge-keepers history. It is important to point out that throughout history, women who mastered the complex tradition of weaving have never been schooled. This aspect is particularly significant within the scope of my thesis, as the entire weaving procedure adheres to mathematical principles. It is noteworthy that elderly weavers, lacking formal education, often exhibit superior weaving skills compared to their younger, educated counterparts (Samama, 2000). This phenomenon is not unique and is also evident among other cultures and disciplines, such as the Diné peoples, and Salish peoples (Broudy, 1993). Their weaving techniques not only bear resemblance to those of my ancestors but also encompass the development of string games rooted solely in mathematical concepts, despite lacking formal schooling. Thus, an opposition between institutional knowledge framed as “mainstream/whitestream education” and Indigenous education “Asegmi” unfolds as a new performative contribution of knowledge creation and dissemination revealed by multigenerational weavers. As Meyer (2008, p. 217) asserts, “We must develop new theories from ancient agency so we can accurately respond to what is right before our very eyes,” meaning that Indigenous pedagogy and its methodologies have been a part of our life since the beginning of time to help us understand and navigate through the multifaceted dimensions of life (Denetdale, 2020; Kovach, 2021; Smith, 2021). Hence, weaving an Amazigh carpet is presented as a pedagogical tool that is not only rooted in tradition but is also characterized by its reliance on the intergenerational transmission of knowledge and a tangible manifestation of learning through collective memory.

In fact, my obligation to memory and resistance gave birth to one of the first conceptual thoughts of my creation-piece, a nostalgic memory of a distinct carpet specifically designed by my tribe/confederation (Ait Warayn/Beni Ouarain). My tribe comprises seventeen different sub-tribes, all of whom were mostly settling in the most northeasterly part of the Middle Atlas by the 9th century AD. As semi-nomadic people, my ancestors were primarily shepherds and goatherds who have historically moved their herds from one grazing land to the next in the high mountains. The Ait Warayn confederation, comprising seventeen distinct tribes, exhibits a captivating and nuanced variation in the patterns of the carpets they create, as illustrated in Figures 5.1, 5.2, and 5.3. These "white giants," as coined by Blazek (1997) while referring to my tribe's carpets. represent a direct link to the earlier weaving traditions of the Ait Warayn confederation and in their turn have had a fundamental influence on the development of the textiles woven by Morocco's mountain nomads. Flint (1980) highlights that textiles crafted by nomadic communities, such as my ancestral carpets, do not adhere to a precise central axis nor are they delineated by definitive borders. Instead, they feature repetitive sequences of horizontal patterns, which signify "an evenly sustained succession of equal parts. This can perhaps be related to a non-hierarchic society and a nomadic lifestyle" (Flint 1980, p. 58) alongside distinct conceptualizations of spatial and temporal dimensions. As a matter of fact, each Amazigh weaver retraces and passes on the techniques of her respective tribe carrying on the traditions and knowledges of making colours and patterns (This chapter will provide a detailed examination of Amazigh weaving, and will offer a comprehensive description of its techniques and cultural significance). Within this framework, one can comprehend a mode of creation that unfolds without a predetermined template. The weavers' immersion in both cultural and environmental aspects within the tribe preconfigures the entirety of future woven landscapes in their cognitive realm (Vandenbroeck, 2000, pp. 30-32). "In such connection with the land, meticulous planning becomes unnecessary; rather, things evolve and materialize gradually, guided by an underlying general idea that often only manifests itself in the culmination of the creative process" (Ramirez & Rolot, 1995, p. 148). In fact, the inspiration of weaving in my tribe is in no way an intellectual process: weavers that I have met explain that their designs are already "just inside their hearts" allowing them to select "whichever they wish." For instance, Samama (2000, p. 55) describes the mental configuration of space and thread counts during the learning process, and that skilled weavers do not draw on these. Describing how weaving is learned in my region (Middle Atlas), Samama writes: numbers are very important to young weavers, especially

those who had the opportunity to go to school. They can count the threads to visualize the pattern [. . .] whereas experimented weavers, who are usually old of age and illiterate, can rely on their spatial memory. As the saying goes “they don’t know how to count, because they already know how to weave.”

Figure 5.1: Ait Warayn Carpet-1 (Blazek, 1997)

345x190 cm, 11’4” x6’3’ (1930)
Symbol: Triangle
(Mountain/home/tent)

Figure 5.2: Ait Warayn Carpet-2 (Blazek, 1997)

380x195 cm, 12’6” x6’6” (1970/80)
Symbol: Line or “fringe” (protection)

Figure 5.3: Ait Warayn Carpet-3 (Blazek, 1997)

325x190 cm, 10’8” x6’4” (1990)
Symbol: Lozenge with extended sides
(fertility)

The asymmetricity and organicity of Ait Warayn carpets remind me of a quotation from Ingold (2000, p. 345) in which he states: “the artefact engages its maker in a pattern of skilled activity. These are truly creative engagements, in the sense that they actually give rise to the real-world artefactual and organic forms that we encounter, rather than serving – as the standard view would claim – to transcribe pre-existent form into raw material.” The pattern design of Amazigh carpets thus emerged from a deep understanding by their makers of their cultural and physical environments. However, in the nineteenth century, Ait Warayn carpets were appropriated early on by French and then other European architects as a decorative item that resonated with the “new attitude” and “esprit nouveau” prevalent at the time (Figures 5.4, 5.5, and 5.6). Through design historiography, we can situate Amazigh carpets within modernist architecture at least since Le Corbusier’s Pavillon de l’Esprit Nouveau at the 1925 “*Exposition Internationale des Arts*

Décoratifs et Industriels Modernes." Le Corbusier saw in my ancestral artifacts tools that he could use and exploit by virtue of his privileged intellectual role (Burlando, 2023). Interestingly, his concept of unity, derived from "modules" to "square-shaped cells" was also firstly inspired, according to his 1911 study trip in the Mediterranean, by Amazigh homes in Algiers, which he never referred to by their original name "The Kabyle house" nor contextualized them on Indigenous lands. Instead, they were regrouped under the umbrella of "orientalism" (Çelik & McDermott, 1997, p. 101).[5]

Figure 5.4: Le Corbusier (1925, Maison La Roche) [Photograph] Fondation Le Corbusier Fondationlecorbusier.fr

Figure 5.5: Frank Lloyd Wright (1939, Fallingwater House) [Photograph]. The Rugs and Carpets of Fallingwater. Ruginsider.com

Figure 5.6: Alvar alto (Villa Mairea, 1939) [Photograph]. Alvar Aalto Foundation. Alvaraalto.fi

While "oriental" carpets had always been considered by Le Corbusier as a symbol of extraneous decoration, modernist debates at that time determined that Ait Warayn carpets had to be disengaged from other "oriental" artifacts including several Amazigh carpets from other regions since they embodied a dilemma. On the one hand, their "primitiveness" and manifest connections with "traditions" needed to be retained to align with colonial narrations of primitivity pertaining to colonized cultures, while on the other hand, their unique features representing abstract aesthetic and rationality needed to be incorporated and exhibited within European-envisioned idea of modernity (Burlando, 2023, p. 41). This paradox reveals an important tension, inasmuch as the

[5] Le Corbusier (1941), in *Le Folklore est l'expression fleurie des traditions,* commented passionately on the cellular organization of Ben-Ishgem interiors (Amazigh tribe in today's Algiers): "What an order, what a decision, what a sensible tool to the service of mankind." And he provided an architectural formula for happiness: The key = The Cell = The man = Happiness.

existence of Amazigh carpets in Europe underscores a conceptual interplay between contemporary elements and folkloric/primitive aspects, concurrently portraying the duality of being both "exotic" and foreign (Burlando, 2023, p. 39).

Initially intended for domestic use, Ait Warayn carpets were traditionally woven within the household, often involving the simultaneous efforts of two women or the rotational involvement of various women from the same social group. This collaborative and spontaneous application of patterns resulted in the imperfect yet nuanced decorative quality that found particular admiration within the cultural context of European modernism. However, the spectacularization and commodification of these carpets enforced Europeans to supervise and assess the quality of their making. Enforced by colonial authorities, the implementation of quality regulations and standardized patterns through official certification resulted in a semiotic shift in Ait Warayn carpets and their manufacturing practices (Burlando, 2023, p. 49). Moreover, the initial positioning of Ait Warayn carpets with the pile facing downward in Le Corbusier's 1925 pavilion contrasts with their later use in Europe, where they were predominantly displayed with the pile facing upward, indicative of the gradual semiotic evolution they experienced. In fact, my tribe's carpets were not originally used as floor covers, but rather as beds and bedding. This explains the carpets' loose structure, which adjusts to the shape of the body and offers effective protection against the cold. The alteration let alone disfiguration of my ancestral carpets has reached as far as my homeland, where I was appalled to find that during my last trip, there is now a common practice in which Ait Warayn carpets are "eviscerated" to fit yet another trend of western modern aesthetics (Figure 5.7). The growing disregard for the ontological and cultural value of what these ancestral carpets represent is nonetheless the result of years under oppressive systems, and an "anti-conscientization" act by the weavers that unfortunately "continue perpetuating cycles of oppression" (Austin, 2015, pp. 491-492). Such structure not only resonates strongly with the suppression of Indigenous historical and cultural artifacts, but also knowledges systems [in schooling practices and their built space] (Rameka & Paul-Burke, 2015).

Figure 5.7: Photograph of Ait Warayn carpet after the weaver cut a circular piece off its center at the request of a foreign buyer.

[Author's photograph]

On this account, choosing Amazigh carpets as a source for my research-creation exploration, not only has a particular relevance within western architectural and spatial theories, but also within theories pertaining to knowledge construction and dissemination. Places and objects constituting the built environment shape a medium through which culture becomes real in the material world; the built form carries social ideas within its spatial forms (Lefebvre 1991; Massey 1994; Dovey 2010). The colonial processes of appropriation and assimilation have re-territorialized space, culture and knowledge in ways that subordinated Indigenous peoples by superimposing western epistemologies of placemaking upon it (Tuck and Yang, 2012; Nejad and Walker, 2018).

This re-territorialization today is gradually gaining momentum in digital practices, and virtual spaces. Coming from an architecture background, I gradually understood that the modern industrialization and mass production of my ancestral carpets are not inconsistent with contemporary practices using CAD (computer-aided design) and 3D modelling tools. These tools establish the set of knowledge for understanding, approaching, and discussing space, based on conventions developed within western ontology. This knowledge emphasizes "making for mass production" and "tools informing procedures/cultures of making," often resulting in outcomes that prioritize "efficiency over meaning." In fact, within the last few years 3D modelling techniques have gained attention in the sense that, to accelerate the modelling process, many researchers enforced research on procedural modelling. The term "procedural modelling" indicates a programming procedure of modelling that allows via a rule-based system to attain automatic

modelling purposes and get rid of heavy manual modelling. It produces information objects (entities) created by a sequence of instructions. Procedural model descriptions are like blueprints that help create models with organized structures and repetitive forms more efficiently and effectively than conventional manual modelling methods.

In the present-day architectural landscape, many architects grapple with the challenge of conceptualizing a design process that is entirely devoid of digitization (Walliss & Rahmann, 2016). The widespread dependence on increasingly efficient modelling systems has become so deeply ingrained that questioning the potential consequences of unbridled technological progress may seem absurd. However, such scrutiny is justified, particularly in the context of today's industries, where the emphasis on maximum productivity, profitability, and efficiency is paramount. The recognition of an ethical dimension in every designed system, often at the expense of other knowledge systems, has been subtly woven into the previous chapters of this thesis, which inevitably led me to the following proposition: what if the digital technologies we use to model our everyday environment were to be appropriated precisely to shed light on suppressed or misrepresented knowledge systems?

Almost as a rite of passage, having had, as an architect, to immerse myself in digital representations of space, I gradually developed a sense of liminality such that I started questioning the transition from the physical to the digital and its impact on the nature of knowledge I carry within me. Is it a matter of adaptation, a performance of habitus, or could it be something else? With these interrogations in mind, I am now actively searching for these liminal spaces between physical and virtual, learning and unlearning ways of making, that can reveal different ways to envision narratives. Liminal space is a term that captures the in-between stage, existing between what was and what will be, a realm where transformation unfolds, and knowledge is in the process of formation. This idea has been thoroughly examined by scholars in post-colonial studies, such as Homi K. Bhabha (2012), as they seek to describe the juncture where cultural change unfolds as diverse cultures intersect and engage with each other. I employ the term liminal space in my thinking about what happens to Asegmi when it encounters whitestream/mainstream knowledges and its tools and finds a way to manifest itself in the landless virtual realm. The digitization of Indigenous knowledge and heritage presents a compelling dichotomy of cross-cultural relationships between assimilation ideologies which were central in schooling practices among

colonies all over the world (White, 1996; Carroll, 2009), and Indigenous worldviews, epistemologies and pedagogies (Petrovic & Mitchell, 2018). Brown (2007) contests that this intersection, coined as “the cultural interface” (Nakata, 2002, p. 281), is not a hybridization of western knowledge systems mixing with Indigenous knowledge systems, but rather an act of resilience, rather than assimilation, of Indigenous peoples acknowledging and valuing technological advances as new means of knowledge transmission.

5.2 Indigenous homemaking, Procedural Modelling, and intangible heritages.

By looking at domestic space as a cultural artifact in which learning practices have always taken place, online education/virtual learning is becoming a mode of instruction ambiguously meshed with our private spaces. It is increasingly emerging as a comprehensive force that significantly shapes the overall learning experience, particularly for Indigenous peoples. This new virtual space of learning can become then both a receptacle and a catalyst that contributes to the revival and expansion of Indigenous knowledge systems. Hence, every software or tool used and developed could bear the responsibility to represent the values of what Asegmi stands for: no detail can be regarded as insignificant– everything matters. For instance, to ensure the accuracy of ‘virtual heritage landscapes’ Leavy (2014) presented in his project ‘Digital Songlines’ a virtual cultural rendition of Aboriginal territories in Australia that seeks to record cultural heritage knowledge in a 3D virtual environment, such process required extensive consultation with the original custodians of the story for it to be appropriately exposed. According to Leavy (2014), Indigenous youth are losing their heritage due to identity loss and land dispossession. By including Indigenous placemaking and knowledge practices in a virtually reconstructed ‘land’, he found a way to engage with the younger generation with tools that used to alienate the generations before them. The global paradigm facilitating their engagement and the motivation to challenge it is not solely dictated by technology; rather, it is co-constructed by Indigenous ways of knowing, being and doing, which are translated through the medium of technology. Western usage of technology today dominates both perception and experience, it is therefore essential for a project dealing with Indigenous issues, but also all kinds of culturally relevant projects, to engage with Indigenous technology and have our voices heard. Through my creation-piece, I attempt to subvert the accepted norms in ways that emphasize what makes them different to the whitestream/mainstream

and promote an ethical depiction of Indigenous culture with an approach embedded in its original territory albeit with virtual tools.

In the context of an Indigenously determined creation-piece, one of its early stages has taught me that procedural modelling, when applied to the field of "digital heritage," offers many potential applications. More recently, non-Indigenous researchers Kramer and Akleman (2019) have employed procedural modelling to generate American Second Empire houses displaying their heritage reconstructions. The research showcases the use of procedural modelling allowing the creation of hybrid and speculative designs. But most importantly, it emphasizes the strength of procedural methods as being a tool that enables the emergence of complex shapes difficult to produce by hand while giving more freedom and agency to the human's imaginary regardless of the machine's limitations. I found this approach quite intriguing yet to still resonate with the blind subscription to efficiency discussed at the beginning of this chapter. Asegmi taught me that hands and minds are one, allowing the latter to have more agency while establishing the use of the former as constraining speaks to why it is necessary re-evaluate the knowledge and learning systems we engage with, and the tools we are given to that effect.

It is important to state that procedural approaches only provide indirect controls via rules editing. In other words, the connection with the modelled object happens through a reasoning based on the change of variable parameters. Each change results in an outcome that transforms the modelled object. It is perhaps the span of variables allowing for a multiplicity of outcomes that sparks the current excitement for research and experimentation, but when it comes to digital representations of heritage, I am compelled to ask, what if we were to switch the focus from the significance of the outcome to that of the process? We would then realize that such a system could be subverted and perceived as a succession of trials and errors, similar in interesting ways to a human decision-making approach, making it, therefore, a tool that resonates with Indigenous education, portraying learning and making processes not as a set of instructions, but as a journey. For instance, to create any procedural model, the underlying rules must be understood and extracted; such efforts substantially help in gaining a better appreciation of intangible materials and space. One of the most important parts of developing a procedural system, in my view, is the way it disrupts the established order of 3D space. This involves extracting rules from diverse applications, which, while not originally designed for my intended purpose, are brought together

to interact. The procedural process of gathering all available tools and, most importantly, understanding them through a purpose-built personal/private logic, creates a rigour that can allow for comparison, analysis and conjecture.

In my creation piece, it is through the collaboration and balance between the medium's (Blender) capabilities and my intent to retrieve a part of my identity, while observing the physical space around me and the virtual space through my screen, that I started to observe a hierarchy of dependencies through metaphors. I explored procedural modelling by learning Blender and Node-based programming which allows the controlling of geometry through a visual programming language. I already had some understanding of "the machine's language" from there, but the visions that I intended to craft had much more complexity than what I was used to during my previous architectural practice. Instead, I discovered that procedural modelling at a more nuanced level allowed me to fuse the machine's binary logic and Indigenous protocols for creative expression and experimental explorations in ways that, to my surprise, echoed the poetic expression that transcends my elders' weaving. To a certain extent, using procedural modelling as an educational tool has the potential to communicate a concept akin to Vandenbroeck's (2000, p. 54) description of the learning process involved in weaving, one that "offers the opportunity to envision mathematics and logic differently through an organic calculation of the points necessary to build a story through threads." Similar to a loom, Blender's node-based workflow allows the process (Node-geometry editor/front side of the carpet) and the result (Viewport, rear side of the carpet) to manifest in two distinct spaces.

Unravelling this approach necessitates a comprehensive understanding of the object's hierarchical composition and the intricate dependencies that exist among its various elements. The result is an interconnecting system that builds elements independently while keeping them interconnected, rather than treating them as a single unique object. In fact, this strategy which recognizes the interconnected between objects and meanings is not solely valid in the virtual/digital world, but in the physical world as well. For instance, the loom (azṭṭa) of Amazigh nomadic women, which is a simple and portable structure, is set up directly on the ground, and attached to the two poles that form the backbone of the tent (Figures 5.8, 5.9 and 5.10). While the loom serves a central function for Amazigh communities, who make and unmake their homes as they move through mountains and deserts, it also holds a symbolic and metaphorical meaning to

the formation of Amazigh knowledge. The weaving process, more than just a method for building homes, acts as a manifestation of the Amazigh peoples' relationships with the material world they inhabit. The act of weaving symbolizes the interconnectedness of all things in the universe. Each thread represents a unique aspect of existence, and it is only by weaving these threads together that a complete and cohesive understanding of space, beings and materialities can be reached. Citing an example from Amazigh cosmology, the concepts of time and space are woven into narratives of the primordial mother Tanit, also known as the weaver of the cosmos, who stretched the sky on her loom like warp threads and weaved the world. It is noteworthy to mention that reclaiming the myth of Tanit is manifest in Amazigh carpets in which symbols such as the triangle or the diamond are specifically chosen by the weavers to express that women are the guardians and carriers of Amazigh identity and ancestral knowledge (Becker, 2010, p. 205; Sadiqi, 2014, p.58-59).

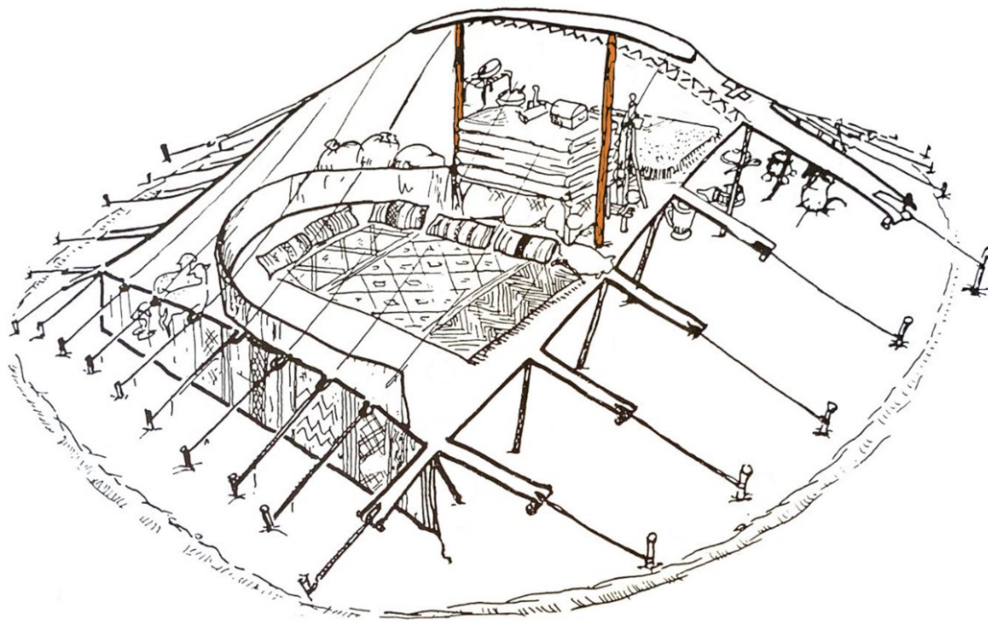

Figure 5.8: Interior layout of Amazigh tent.

Cahiers des arts et techniques d'Afrique du Nord, (5), 1959. [Illustration]

Figure 5.9: Amazigh women connecting the loom's lower beam to the tent's loadbearing beams.

Figure 5.10: Connecting the loom's upper beam.

Nomad Architecture. (2020, February 19) [Screen captures].
youtube.com/watch?v=wXqXQoJTyuA

However, Asegmi, which at its roots is pertaining to nomadism, has slowly given way to a wave of urbanization and modernization that has left its mark on Amazigh landscapes. This transition is evident not just within the culture itself, but also in its methods of production. As Karl Marx (1844, p. 13) pointed out, under the capitalist mode of production, labour does not only produce commodities but also generates situations in which "the worker becomes an ever-cheaper commodity." The era of industrial production has alienated us from our relationships with material and making, numbing our sense of becoming and our ties to the world around us. The intimacy involved in making objects and the labour invested in their creation, while using various tools and mediums, is a fundamental aspect for Indigenous communities and, by extension, the legacy of their heritage. My ancestral loom (azṭṭa) is not only a piece of a tent's structure making it an essential part of the home, but it also embodies a form of knowledge that has long been ignored in the architectural educational canon: an "anti-architecture" approach that thrives in environments of scarcity, rather than being threatened by them; one that values resourcefulness and adaptability rather than glorifying compartmentalization and space planning.

It struck me that my recent learning experience during the COVID-19 lockdown mirrored, in many ways, the lost characteristics of Asegmi that I have just mentioned. I pointed out this analogy between Blender and the loom for the same reason that while I was developing my research topic, I felt the need to go beyond the affirmation of "I am an Amazigh" and explore what

it is like for me to be an Amazigh today who does not speak fluently the language and have never got the opportunity to learn to weave with my grandmother or use my hands the ways my ancestors did. I took the initiative of re-learning what I lost, using the tools that replaced my hands on so many occasions, and this endeavour was greatly sustained by my ability to learn from home. I chose to consider distance learning not as a means that allows the flexibility to study anywhere and anytime, but as a medium that empowered me to thrive in moments of discomfort, reminiscent of the resilience exhibited by my ancestors. It granted me the freedom to detach myself from my curricula and past habits to re-imagine and reconstruct my learning process. Digitally weaving was therefore my hybrid approach to exploring Asegmi directly rather than indirectly, in response to the observation by Freire & Macedo (1987) that "Mechanically memorizing the description of an object does not constitute knowing the object. That is why reading a text as a pure description of an object (like a syntactical rule) and […] to memorize the description is neither real nor does it result in knowledge of the object to which the text refers." I realized that I also could have, just like my ancestors did with the Kabyle house, my own system of reversal while home-learning.

5.3 Knowledge revitalization through re-imagining the system of reversal.

The first phase of my reversal experiment was to try to create a correspondence between the coordinates that form points, lines then shapes to make a set of personal rules and then use them to drive all my intuitive and machinist decisions to recreate the weaving process of my ancestral carpet. Both technology and textile are derived from the Latin word "texere" – to weave, connect and/or construct, thus, it was essential for me to recognize the importance of establishing my own rules (or axioms) that imbue meaning into forms to weave my ancestral carpet and intertwine them with "nodes" in Blender. Being able to automatically find the rules of an algorithm is certainly a very good approach to reconciling intuitive control and procedural generation. However, the main drawback was the need to know why some methods were set for particular settings. It was that challenge that compelled me to seek and reconnect with my memories, and my community to retrieve the process of making that was lost in my family post-colonization.

Making necessitates an understanding of the properties of the tool, but also to an extent understanding the tool itself. The simplification of weaving as merely a set of tools and techniques is evident in the colonial interpretation of the Amazigh term azṭṭa (ⴰⵣⵟⵟⴰ) as "loom" (Bourdieu

1977, Forelli & Harries 1977, Messick 1987). This perspective reflects a functionalist understanding of weaving, viewing it as a utilitarian practice. This interpretation can be attributed to a historical approach that sees techniques as the effective actions of individuals over materiality. If the term “azṭṭa” covers the meaning of technical instruments, it also implies a temporality in which the motor actions of the weavers are performed (Naji, 2020). As an object coming into being, the life of “azṭṭa” meaning the life of the knowledge (weaving) and the receptacle of that knowledge (loom), starts from the warping (Azizzel, ⴰⵣⵉⵣⵣⵍ) phase. According to the accounts of the Amazigh weavers I have talked to during my learning journey, before setting up the loom, the process of warping in the past consisted of digging two to three holes into the ground of the house’s courtyard, into which they would plant wooden or iron stakes. By hammering two stakes into the ground, the weavers used to determine the width of the carpet whereas the length was defined by the amount of thread that was turned around the stakes. The process requires two women to be present, in which one embraces the movement of the thread by turning the warp around the stakes back and forth, while the other sits alternately in front of each stake forming loop knots around them (Figure 5.11). With each passage of thread, the movement of the second woman interposes a strand between the warp thread and the stake (Figure 5.12). This ensures a sturdy border and evenly spaced warp threads.

Figure 5.11: Amazigh women warping.

Lefébure. C (1978). Linguistique et technologie culturelle. L'exemple du métier à tisser vertical berbère. [Illustration]

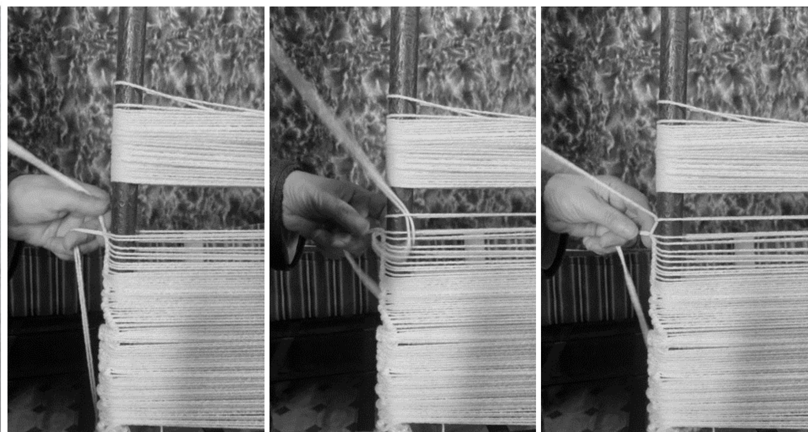

Figure 5.12 (left) and **5.13** (center and right)**:** Knowledge keeper ⵏⴰⵉⵎⴰ warping.

[Author’s photograph]

Today, some of these actions no longer apply, as domestic spaces are no longer designed/built for such activity. Amazigh weavers in urban areas no longer drive stakes and perform ritual gestures, however, they use wooden sticks that they attach to furniture, such as the living room's wooden benches or the bed's metal frame. Amazigh weavers' thinking can be considered animistic in a sense, artifacts are not inert products transmutable by industry, but living beings possessing powers to which humans must accommodate (Hama, 1978). For the animist, Hama (1978, p. 173) explains that "the object of thought" is not only that which is delivered, concrete, to our curiosity. Above all, it is "the other state of that object," its "double" that, when it is inert, its spirit, that we see not so much in our imagination but with our interior eye, where our creating imagination concretizes. It is in this way that reality conditions our being.[6] In this case, the weavers consider all the objects within the domestic space as tools that can contribute to the weaving process.[7] It is this character of metaphysical understandings of inert objects that gives birth to "the art of weaving as an intergenerational tool for knowledge transmission" (Mauss, 2006). I pause for a moment to observe my tools, what they mean and most importantly what they could mean for my learning journey to ensure a possible union of what seemed to me, until this project, to have been oppositional elements of the present-day, namely my Indigenous heritage and the machine/software. Exploring weaving in both physical and digital realms allows me to think around these boundaries. Weaving physically embodies a profound connection to my ancestral traditions, representing a cultural inheritance passed down through generations. This tangible engagement with the loom, yarn, and shuttle is a deeply personal and cultural act, imbued with history and meaning. It serves as a form of cultural continuity, a way of honouring and retrieving and preserving my Indigenous identity that was repressed for many years in the face of post-colonial influence. Learning to create objects and spaces with the machine requires "computational" thinking, and when it comes to procedural modelling, it is framed as "algorithmic thinking." For many years I did not question this new mode of thinking that I started to adopt along with the tool; In a sense, I learned to transform reality into algorithms and other computational

[6] Hama, B. (1978). Le devin. Temps et histoire dans la pensée animiste de l'Afrique noire. Le temps et les philosophies. Paris, Payot, 171-192.

[7] In a personal conversation I had with a weaver, she mentioned her deep admiration for weaving since her childhood, which she remembers was sparked by witnessing a group of women revelling in the activity and displaying a sense of liberation. But the practice of weaving was forgotten in her household, which made her access to a loom unfeasible. She cheerfully declared that she found ways to build her loom in the most peculiar places, first on a window and later, on a ladder.

knowledges and practices as “renderings” or “visualizations.” The act of translating these technical procedures not only influences our environment but also exerts a profound influence on our construction of reality, impacting both its material manifestations and the cognitive frameworks through which it is comprehended. It is by warping the thread using two rolling pins and my bed frame (Figure 5.14) manifesting the adaptiveness of the urbanized weavers back home, and by looking at my screen on which was displayed my reconstruction of the ancestral method (Figure 5.15) that I became aware of the different spaces and temporalities I was crossing at once. What I visualize on my screen is a computational ‘world’ with an internal logic that can only be partial representations of a much more intricate, and often disorderly, reality. These contemplations increasingly occupied my mind. However, unlike the technical challenges I encountered in my architecture practice, I found myself at a loss on how to approach them. All I possessed was a sense that the education I had received all these years had failed to prepare me to grapple with such inquiries. I began to believe that what I lacked, what we all lacked, was an honest “educational” experience that allowed such profound questions to emerge.

Figure 5.14: Warping at home using furniture.
[Author’s photograph]

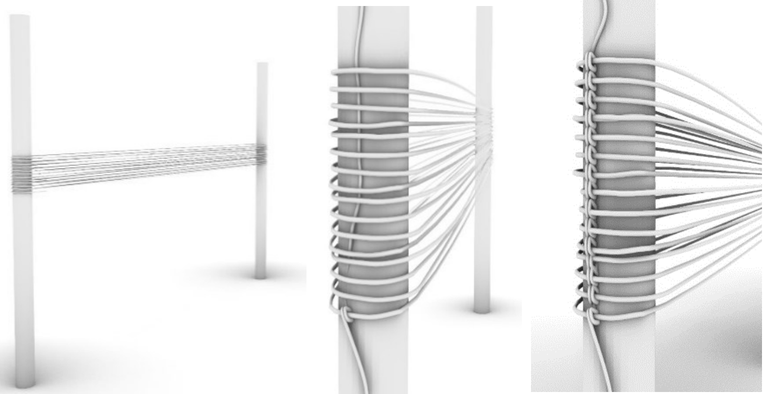

Figure 5.15: Reconstruction of the warping process in 3D
[Author’s work]

When I recall moments of my childhood with my grandmother, she always used to say “Talk and weave” (Awal tzdit) as a way to say that we learn better, listen better, with “busy hands.” My traditional teachings impel me to learn through being cognitively conscious of my body, my environment, my memory, and of others while sharing stories (as tacit knowledge) with them. But

here I am, pursuing my own goal of learning how to weave digitally, as a means to retrieve and frame my Indigenous Amazigh knowledge and experience, trying to converse with a machine and exploring new ways of using my hands differently. We embarked together on this journey, which looked more like a quest at the beginning, trying to find images, textures and digital materials that would resonate with my memories and the carpets I've seen in my elders' homes. Consistent with my intent to create a reversal, which can also be established as a summoning of Amazigh self-determination, my act of remembering is not meant to necessarily find out the way my ancestral carpet really was but to dwell on the way it appeared, in which circumstances it existed and what it can become. As I was exploring a series of pictures of Ait Warayn carpets, I found myself very intrigued by one that represented a river pattern, which reflects, among many other motifs, the environment/space surrounding the weaver (Figure 5.16). I knew its history, and what it meant to my ancestors, but as I familiarized myself with its complex pattern for the purposes of making the translation to its digitization (Figure 5.17), I kept wondering how my machine/software would understand the creation of this pattern by its programmed logic.

Figure 5.16: Ait Warayn carpet, river pattern (Asif) Photo capture from an online shop/showroom "Les tapis sauvages"

lestapissauvages.com/beni-ouarain

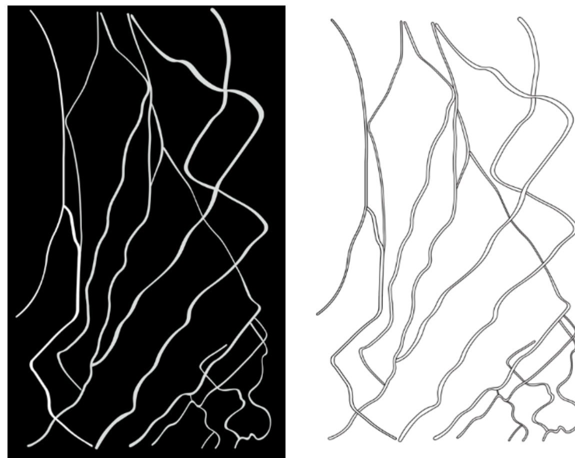

Figure 5.17: Tracing the rug's river pattern into linework.

[Author's work]

I now see the thread's destiny not solely coming to life through wool warping in the material world but one that could continue to evolve on my screen, in virtual dimensions. In Blender, warping refers to a specific feature or technique used to manipulate the shape of an object or mesh followed by the addition of a lattice object that will serve as a deformation cage. The lattice or the

deforming influence, is then resized and refined to encompass the desired areas of deformation. By manipulating the lattice's control points, the mesh is warped accordingly. Through this process, Blender provides a flexible means to manipulate mesh geometry, facilitating various applications such as organic shape creation. Blender's warping, applied to my ancestral pattern, manifested itself through each interstice by redefining the roles of warps and wefts and enabled the cellular multiplication of an entity living outside of the material realm. In my first series of virtual carpet prototypes, the resulting outcome does not entail a crossing-in-and-out between each warp thread; instead, a new form of union is generated at the knot resulting from the machine's understanding of warping and what it creates at the crossing and meeting of the two threads. Figure (5.18) shows the variations of such crossings when different nodes are imposed namely, the curvature expansion, signed area expansion, line contraction, and flow expansion. The practice of knotting in digital weaving is generated by stimulating coordinates through node associations. Here, the knots on the carpet initiate a transformative process. The carpet undergoes a series of changes and mutations, ultimately forming the body of the work (see Figure 5.19).

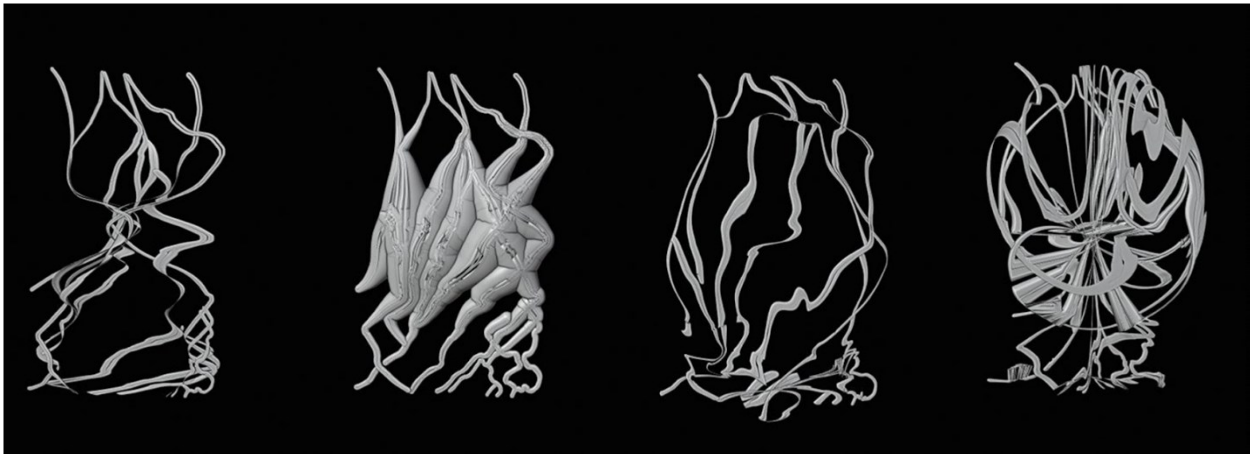

Figure 5.18: (Left to right) Curvature expansion, signed area expansion, Line contraction, Flow expansion.

[Author's work]

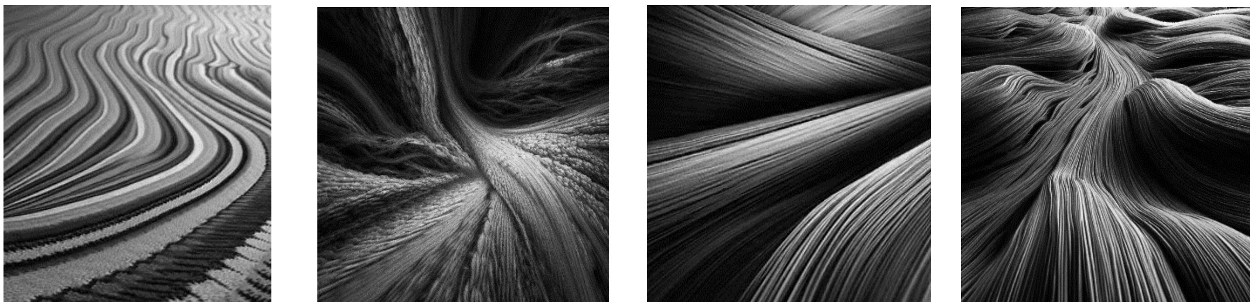

Figure 5.19: Renderings of "Amazigh liminal carpet series." (1st prototype).

[Author's work]

What I visualize on my viewport, is not merely a set of polygons set to look like my ancestral carpet; it is a statement of contemplation or awareness with the machine. The repetition that I sense is in fact the expression of repeated (or repeating) heritage across different milieux and territories, including virtual ones. I have previously discussed habit as a form of behaviour that is repeated unconsciously, indicative of an automatic learned process, somewhat divorced from conscious thought. How does this form of repetition with a machine inform the previous modes of repetition that used to oppress and assimilate my people in schooling practices? After all, my experience of weaving lacked a metaphysical understanding of the act, because prior to this research, I was not able to bridge my technological upbringing in a digitized world, and my Indigenous upbringing through stories. However, once I learned with the machine, and opened a conversation with the latter, the act of weaving still bypassed my conscious thought and appeared to be "in my hands," albeit in a different way. Amazigh women have immortalized their history and life experiences in tangible expressions that transcend time. Through weaving, they depict themes of nature, motherhood and cycles of life and death. Each carpet symbolizes a personal narrative, often created collaboratively by a mother or grandmother and her female descendants, fostering a profound intergenerational bond and transmitting a shared legacy. It is perhaps my yearning for this specific and unique learning experience, after losing my grandmother, that is at the heart of my creative process. Weaving serves as an alternative medium for storytelling. By digitizing this tradition, a light is shone upon my ancestral culture aiding the preservation of Amazigh knowledge systems. It clarifies for me an aspect of creation that engages me as a whole individual. It suggests how that interior part of me who grew up with western educational standards far from "tradition" and "craft" is nonetheless resilient in connecting to buried stimuli and memory, and recognizing their value when they arrive.

Digitally weaving signifies a transition from the metaphysical realm, in which the Amazigh weaver becomes the embodiment of past memories and recollections and serves as a spiritual intermediary to the tangible world – a world where "The end of one journey/movement is the beginning of another, in an upward spiral that finally leads to fusion, emptiness and nothingness" (Vandenbroeck, 2000, p. 260). But whereas the symbolic reborn digital carpet similarly reflects a cyclical vision and is itself a product of union displaying that sense of "emptiness and nothingness," prototypes in Figure 5.19 are not my ancestors' carpets, but artifacts of my culture that were processed through the machine. It figuratively urges a departure from established

knowledge, my recollections, and the void space of "emptiness" or "nothingness," which is none other than a liminal space. There is an overarching theme in my experimentations which is keeping both my knowledges (Indigenous and Non-Indigenous) intertwined while observing moments of transitions. I do not intend to shift from "traditional" to "modern", nor from "physical" to "digital", but to comprehend the processes that feed both ventures. I have noticed that the element of repetition with intentional variation in the scale of elements – unlike the imposed repetition schemes mentioned in the colonial legacy of schooling – play a big part in Indigenous meaning-making. Translating this into Blender would mean having procedures that are not just elements that repeat at various scales, but ones that encourage finding a way to revive my heritage-based knowledge system while answering a retrospective line of questioning:

- *Do the procedures follow my previous iterations or are they guided by predetermined rules established by the system?*
- *To what extent can randomness or intuition be incorporated?*
- *What forms of interferences can I introduce to imprint my identity, past, present, and future, onto my interactions with the machine?*

Given all the algorithms that can be implemented into Blender, it is easy to let methods of research (empirical and non-empirical) get the better of you (just as it is the case with mainstream schooling), and lose out on opportunities to communicate other symbols, associations, and designs that, too, are essential ingredients to having meaningful and unique logics of meaning-making. The interplay between the colonial thinking prevalent in my architectural education and the empirical methods inherent to the machine/blender has exerted a profound impact on the outcome of my first research-creation prototype although my experiment was rooted in deep cultural foundations. I found that colonial interventions had interwoven themselves into the very fabric of my cultural heritage: I subconsciously placed my re-imagined carpet in a white gallery setting and used lighting techniques to bring the viewer's attention focus to the piece (Figure 5.20).

Figure (5.20): Rendering of "Rivers flowing into advection nodes." (2nd prototype)

[Author's work]

In this context, the machine represents a tool of colonization, imposing its own logic and methods onto my hands. By reclaiming traditional physical gestures of making, I not only want to resist this imposition but also want to assert my ancestors' cultural identity and knowledge systems. Through the use of my hands and the same familiar gestures, I want to reassert my people's agency and autonomy, showing that their ways of making are valid and valuable across territories and eras albeit the digital one. This subversion is not merely about adopting new technologies but about using them in ways that are meaningful and respectful of Indigenous practices and knowledge. It is a way of asserting sovereignty over the assimilated computational process and reclaiming space within a digital landscape that has often been dominated by western ideologies. In this light, the act of making becomes a form of cultural resistance, a way of asserting indigenous presence and relevance in a world increasingly shaped by technology. It is a reminder that the machine is not just a tool but a product of a particular cultural and historical context, and that its power can be challenged and transformed by those who seek to use it in new and empowering ways. As I worked with the machine on my digital carpet, I realized how our ancestral ritual of warping resonates with my newly discovered way of collaboration with the machine, in which duality plays a crucial role in knowledge production and dissemination. This perspective considers the Other (here the machine/software, whereas for Amazigh weaving, it's the other woman) as indispensable for accomplishing the same task. According to tradition, after setting up

the warp threads on the loom, two weavers sit side by side to begin conceiving the heddle. During this stage, the weaver starts by tying a thread (inelli, ⵉⵏⵍⵍⵉ) onto the heddle bar (Nira, ⵏⵉⵔⴰ) and fastens the whole assembly to the upper lease rod of the loom to hold it in suspension while sewing the heddle. The weaver ties the heddle bar to the warp threads located on the outer side of the loom, without touching the warp threads located on the inner side of the loom (Figure 5.21). Finally, she knots the heddle to the thread placed on the heddle bar. The heddle bar is then attached to wedges positioned between the inner wall and the loom. This allows for crossing the outer and inner warp threads and reversing their positions (Figure 5.22). It is the creation of the heddle that leads to the movement of the threads and the alternation of their positions.

Figure 5.21: Knowledge keeper ⵏⴰⵉⵎⴰ and her weaving partner attaching the heddle to the loom.
[Author's photograph]

Figure 5.22: Knowledge keeper ⵏⴰⵉⵎⴰ knotting the heddle.
[Author's photograph]

When it is suspended and in vertical tension, the azṭṭa (ⴰⵣⵟⵟⴰ) constitutes a space which encloses the elements of the loom which are the frame (Afeggag, ⴰⴼⴳⴳⴰⴳ) made of horizontal beams, the upright beams (Timenḍwin, ⵜⵉⵎⵏⴹⵡⵉⵏ) and the heddle rod system (Nira, ⵏⵉⵔⴰ). It also includes other elements such as the beating comb (Taẓka, ⵜⴰⵥⴽⴰ) used to tighten the weft layers. Azṭṭa is also made of the warp (Ahrai, ⴰⵀⵔⴰⵉ) not to be confused with the stronger threads used for the weft (Ulman, ⵓⵍⵎⴰⵏ) and for the Amazigh knots (My tribe's knots Acherrous/ⴰⵛⵔⵔⵓⵙ use three or four weft threads as seen in Figure 5.23), the sitting area, the light, and the space behind the loom and in front of it. This whole ensemble cannot be limited to one object and solicits all the senses of the weavers, making the perception of the knowledge-object coming-into-being a holistic experience, difficult to delimit and describe for the weaver interacting with it. The construction of the heddle is closely connected to the essence of the carpet's being, hence its designation as "the soul." Thus, it infuses life into it through the movement of the warp threads. Azṭṭa is characterized by three constraining dimensions. Firstly, it is fixed in space and this inflexibility forces weavers to embrace confinement (space behind the loom). Secondly, it is also paradoxical in movement and this dynamic must be integrated into the dynamics of the weaver's body. Finally, it has a slow temporality which reinforces the weavers' disposition towards a slow cultivation of knowledge. As a matter of fact, the latter opposes rapid and mass-scaled modes of instruction (as discussed in Chapter 1), which makes of Asegmi a "slow knowledge" that has always been about the know-how and the know-why while "fast knowledge" (mainstream/whitestream) is mostly concerned about the know-how (Orr, 2002)[8].

[8] "The aim of slow knowledge is resilience, harmony, and the preservation of what Gregory Bateson once called the patterns that connect." (p. 16)
"Unlike fast knowledge generated in universities, think tanks, and corporations, slow knowledge occurs incrementally through the process of community learning motivated more by affection than by idle curiosity, greed, or ambition." (p. 17)
Orr, D. W. (2002). The nature of design: ecology, culture, and human intention. Oxford University Press.

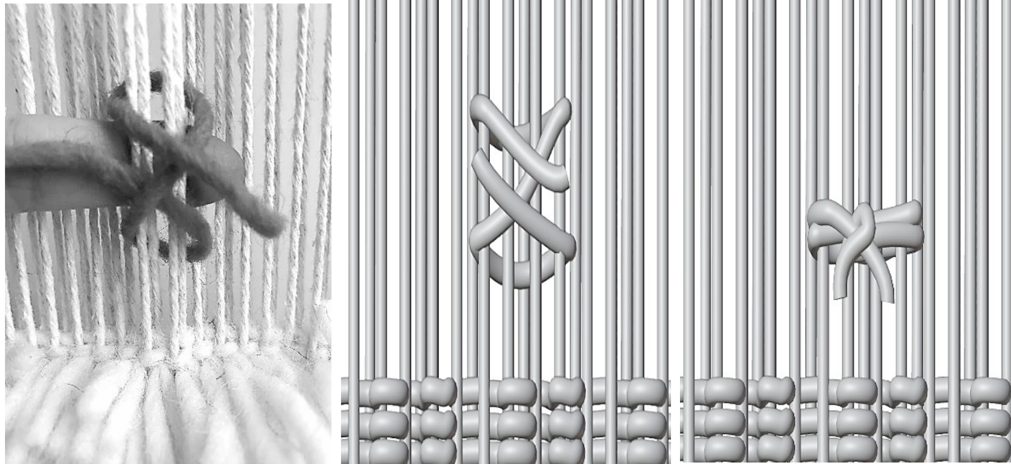

Figure 5.23: Amazigh knot (physical and virtual)

[Author's photograph and rendering]

Upon the completion of the loom's setup, the weavers are able to initiate the weaving. They first start by designing the selvedge cord representing the horizontal border, a simple weave called chef (Ntawi ulman, ⵏⵜⴰⵡⵉ ⵓⵍⵎⴰⵏ) adjoining the lower lease rod. Amazigh weavers first lift the reed between the lower and the upper beam which allows the warp threads associated with the heddle to advance. At this point, they pass two or three weft threads through the warp threads creating a crossing between them at each warp (Figure 5.24). The weavers then insert a new series of weft threads on top of the border and push them to one side of the warp with their fingers. This involves passing the weft threads between the two layers of the warp, alternating these two layers after each turn or pass of threads creates a knotted stitch (Amserreh, ⴰⵎⵙⵔⵔⵃ) (Figure 5.25).

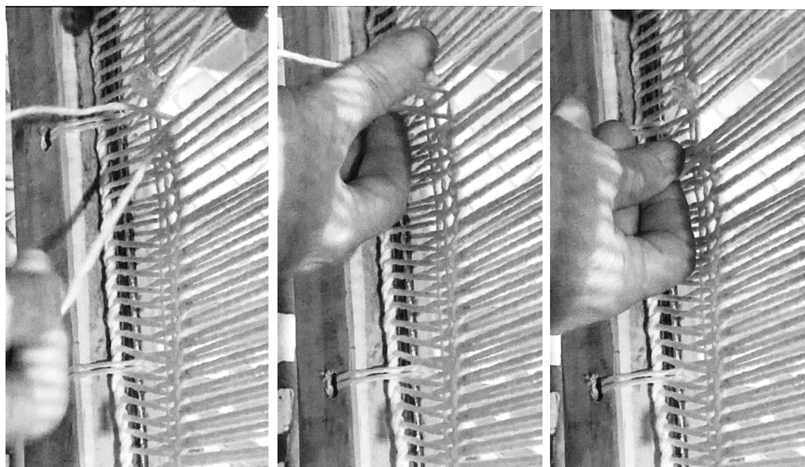

Figure 5.24: Knowledge keeper ⵏⴰⵉⵎⴰ forming the selvedge.

[Author's photograph]

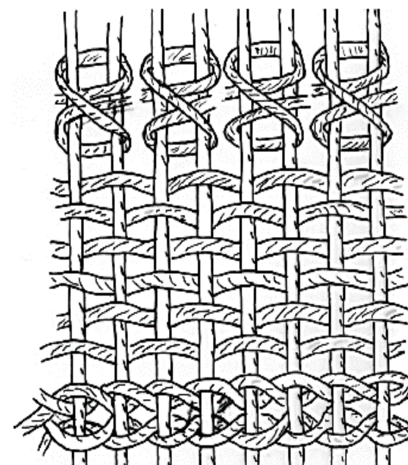

Figure 5.25: From top to bottom: Amazigh knot, knotted stitch, border.

Le Nouveau Corpus des Tapis Marocains - Tome II [Illustration]

The act of pushing can be likened to transcending the confines of physical space, suggesting a movement that extends beyond immediate surroundings, such that “All these concepts have in common a movement from a pole to a destination” (Vandenbroeck, 2000, p. 228). This analogy implies a notion of exertion or force that propels one beyond existing limitations, suggesting a metaphorical journey or expansion into new forms of spatialities. I always try to be aware of my relationship with the machine, and the space we both share. How we can learn from each other, to re-invent the tools that are already there? We are indeed two weavers, the machine/software and I, and we are transcending the physicality that ancestral weaving requires, to a space where all parameters are either digital or virtual. In this specific case, my vertical threads (warp) are considered “passive” foundations which define the overall morphological characteristics, while the intersecting weft “soul thread” (abrat, ⴰⴱⵔⴰⵜ) becoming “Bezier curve/spline” as seen in Figure (5.26) is considered active as it is mimicking the physical properties and bending requirements of the wool (Figure 5.27).

Figure 5.26: Passing the active spline between the passive splines.

[Author’s rendering]

Figure 5.27: Knowledge keeper ⵏⴰⵄⵎⴰ passing the soul thread between the warp threads.

[Author’s photograph]

The active thread is defined by a group of control points, curve variations, and virtual physical properties that although cannot be felt on my finger’s tips, it is nonetheless a lively material memory translated into an immaterial context.

Gestures from the right to the left and in a reversed direction are applied, and they manifest a mechanistic nature in both realms (physical and virtual) simply because they are both based on repetition. The juxtaposition of physical weaving and my attempt at digital weaving reflect this duality not only visually but also during the process (Figure 5.28 and 5.29), when my machine

replicates traditional physical gestures of making, it introduces a profound shift in how I interact with technology and apply my knowledges to create. By imitating familiar actions like passing through, cutting, or tying a knot, a liminal space bridging between physical and digital realms is created, leaving me wondering if virtual entities can and should be treated as physical ones. This connection not only subverts the machine's own hegemony but also the Anthropocene; It catalyzes the emergence of entirely new ways of making, rooted in the honouring of all forms of materialities, including those of our own making, being virtual ones.

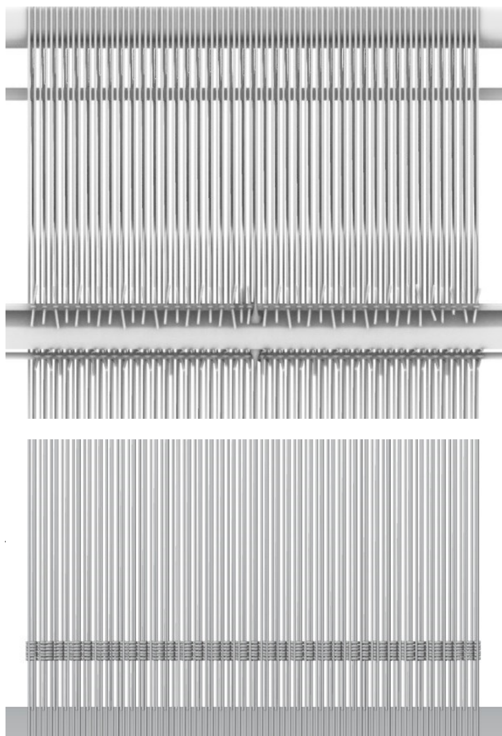

Figure 5.28: My virtual loom set-up.
[Author's rendering]

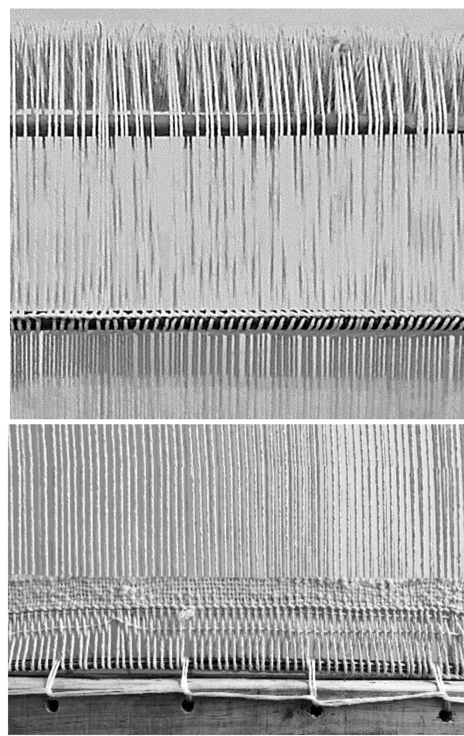

Figure 5.29: My physical loom set-up
[Author's photograph]

For instance, if we consider the constraining materiality of the azṭṭa (loom), it is not limited to its overall shape but also includes the weaving-coming-into-being. Unlike activities that involve manipulating the fabric, turning it in various directions or choosing to start working from the center or a corner, the weaver has to work from bottom to top, adding matter in a linear manner from right to left and then back. The flat and rigid vertical surface of the vertical loom requires the weaver to follow the progression of the weaving toward the top. Therefore, the azṭṭa's materiality is characterized by its fixity and rigidity. Yet its system of tensions and forces makes it a very dynamic object in the hands of the weavers. In its length, the warp is held in tension by the very

mobile heddle rod system. This system is constituted by a chain which traps the warp threads alternately on every other thread. According to whether they are trapped or free, each time the weaver lowers or lifts the reed between these layers of threads, the mechanism brings other warp threads forward or backward, allowing the weft to pass in an alternate manner. At this level of manipulation, the warp forms a unique screen like a wall, and it becomes impossible to distinguish between the even and uneven layers of warp threads (Figure 5.30). It is to this layer that the weaver adds the Amazigh knots. Contrary to wefting, these gestures of "opening" are not parallel and horizontal to the warp, as the fingers of the weavers cross the wall from front to back to throw or recuperate the knots. Whereas during the wefting process, the weaver passes her hands in a kind of corridor between two "layer-walls" of warp threads (Figure 5.31), in the realization of motifs she traverses a unique wall. What seems to be an impassable and fixed wall turns out to be porous. All these gestures of opening and closing, and the rigidity of their system of tension mirrors the node-based visual scripting system in Blender.

Figure 5.30: Single layer of warps.

Figure 5.31: Double layer of warps.

[Author's photographs]

In a way, the fixity and rigidity refer to the virtual surface where Geometry Nodes Editing takes place on Blender's editing viewport. I have always been trained in seeing objects in space, that is in their three dimensions, even when sketching their preliminary forms two-dimensionally. However, I have never thought of space in its virtual nature, one that is constructed by the binary language of a machine. Redefining my spatial mapping and imaginary through weaving, physically

and digitally, allowed the physical dimensionality and virtual dimensionality to co-exist and form new ways of perceiving matter and space. Gestures of opening and closing can be performed at the node level through algorithms, where each one needs to be connected and activated properly to allow for the system to work (Figure 5.32). A reed that is not raised will not allow for the knots to form, nor will nodes that are not integrated properly into the rest of the system allow the creation of the object or intended action on the object.

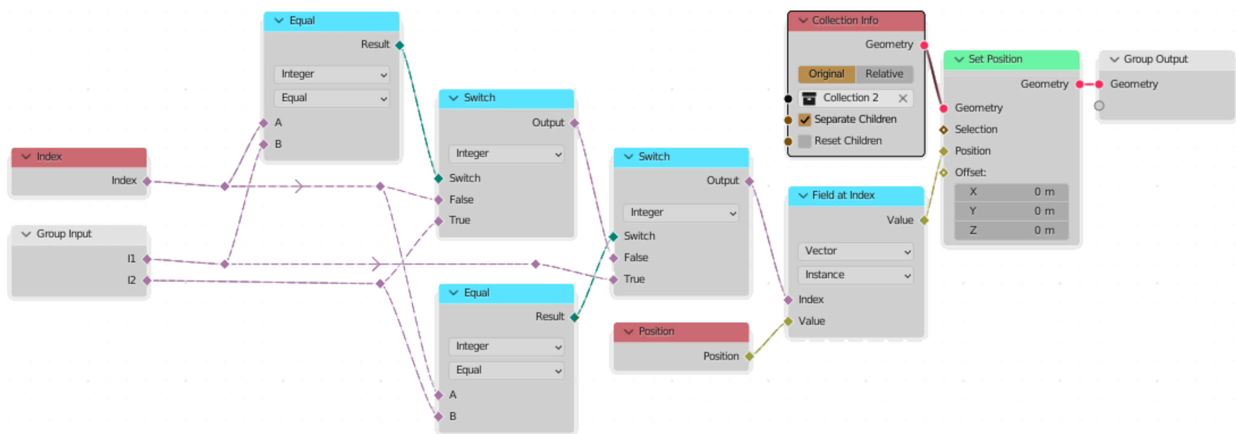

Figure 5.32: Creating a layering system with nodes in Blender.

[Author’s work]

Digitally weaving implies that I need to integrate some of the machine logic and dynamics into the materiality of the azṭṭa and my ancestral process that will in turn extend to incorporate the object-in-the-making. Indigenous material knowledge here is transmitted from one weaver (myself) to the other (software/machine) to be incorporated in its schemata of making. While I use my senses, memories, and emotions to give meaning to the process, the software’s language computes it and spreads it to the virtual space displayed on my screen. Since the method is procedural, the resulting node-based system is inherently affected by my ancestral material, the Indigenous reasoning shaping the data was embedded in the nodes during the weaving process. I always believed that there is a symbiotic relationship between hands and matter, whether the latter is physical or virtual. In fact, when it comes to weaving, I realized that weaving operations were not drastically different from 3D modelling material activity when mediated by geometric nodes in Blender. Digitally weaving begins by creating a grid-like structure, where each intersection of warp and weft threads corresponds to a vertex in the 3D model. These splines (curves in 3D space) are then manipulated to adjust the length, tension, and position of the threads. Where each node

represents a specific action or transformation, it becomes a translation of each hand movement or material movement of the physical weaving process. For example, instead of starting with a standardized group of nodes that would form a plain weave (Figure 5.33), I assigned two different instructions to the virtual threads (splines) I will be using. Based on their coordinates (x,y,z), they either take the function of forming the weft or become Amazigh knots (Figure 5.34). Such a procedure is necessary to correctly translate Amazigh carpets, since weft threads are not flat on both sides of the carpet, instead the Amazigh knots are responsible for the high pile. The colouring of these knots was based on colour ramp which allows for assigning specific colours to the coordinates given, the same way we would pick a coloured thread when we reach a certain point on the carpet's surface, this approach ensures that the colouring will not be bleeding outside the assigned coordinates (Figure 5.35).

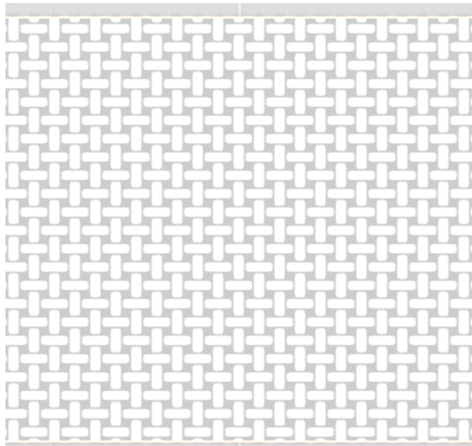

Figure 5.33: Preset procedural plain weave with Blender.

[Author's work]

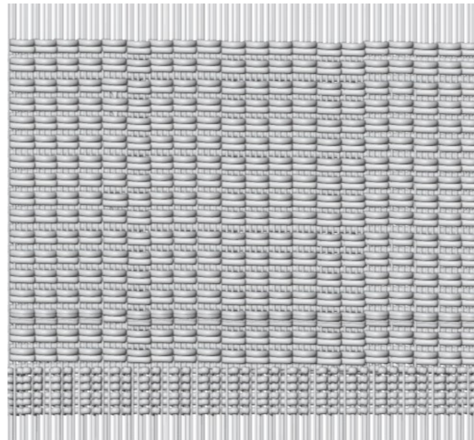

Figure 5.34: "Home-made" procedural Amazigh weave.

[Author's work]

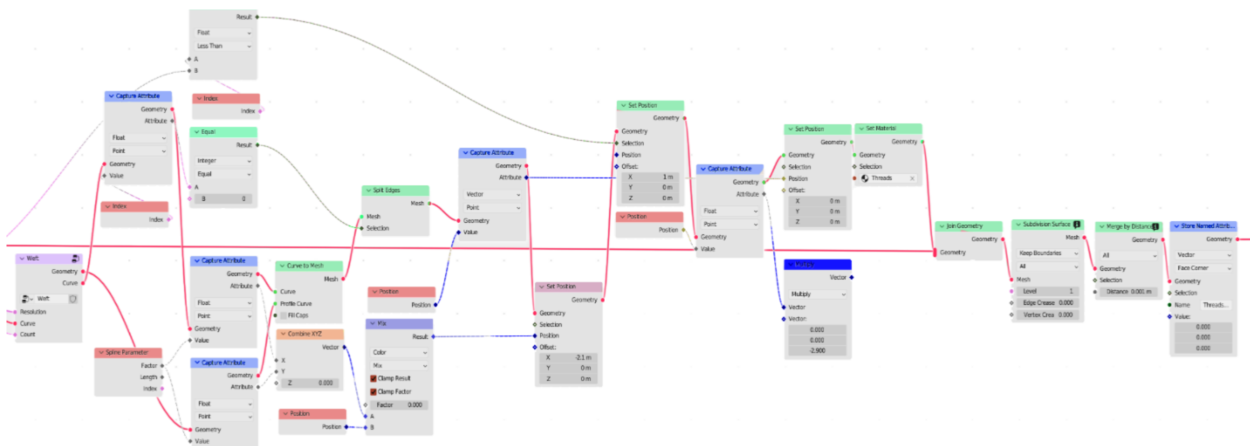

Figure 5.35: Creating a colour-picking system with nodes in Blender.

[Author's work]

However, my new relationship with the machine, driven by systematic observation and analysis, enabled me to critically evaluate the significance of these imprints on my first prototypes. This realization led to an evolution of my experiment, guiding it in a new direction, laying down these concepts as groundwork helped me build an internal logic to inform the choices I made with forms and procedures. It is quite engaging to think of what these algorithms signify – order, unity, distortion, destruction – since I am the person behind the machine responsible for implementing these tools according to their inclinations, to maintain the "union."

I tried to combine both my knowledge of weaving from my elders and the result of my experimentations while giving up less agency to my mechanistic habits and relying more on my ancestral logic. I started to observe each element individually, the knots, the positive and negative spaces, the points of conjuncture etc. The negative space visible between the threads in on my viewport never manifests as a blank space in the physical world, it is an opening, a window on what is behind the loom, your weaving partner, and your surroundings. For Amazigh weavers, the interstices between the threads hold a profound significance, akin to portals leading to an alternate realm. Through these spaces, the carpet traverses from the ethereal and spiritual domain to the palpable and perceptible world experienced by humans. As the carpet materializes in our reality, it sparks contemplation within my community about the fundamental inquiries of one's being at home, yet far from home (land) and the trajectory of their learning journey. The essence of the home largely stems from its perpetual openness, shaped by continual mobility, interaction, and social connectivity that extend far beyond its physical boundaries. "One venture from home on the thread of a tune", Deleuze and Guattari write (1987, p. 311), but home is the thread, a line and not a point. Simultaneously, it defies linearity, representing neither a starting nor a finishing point but a perpetual state of transition. This reflects the enduring nomadic heritage of the Amazigh people, characterized by an ongoing dynamic between spatial influences and identity—a quest to establish a home that extends into interconnected spaces.

The notion of transcending space also manifests itself in another way in Amazigh weaving. For instance, the top side of the rug faces outward, while the underside faces inward. The duality of vertical/horizontal and exterior/interior is now manifested in a front/back aspect, similar to the learning experience during the pandemic, there is what happens in front of the screen/camera, outside of its range and behind it. In fact, the top side for Amazigh weavers is associated with the

outside (of the home), which symbolizes the estranged world whereas the underside of the carpet, associated with the interior, signifies the concealed and private realm of the home. The weaver weaves facing the rear of the carpet, her own world and does not see the external world, visible to society. Taking into account my new relationship with the machine, and the experience lived during the pandemic, the last iteration of my creation piece was more attuned to the liminal spaces I had missed during my first experimentations. I chose to focus on the interplay of positive and negative spaces on the front and back of my computer-woven carpet to establish a texture map (Figures 5.36 and 5.37).

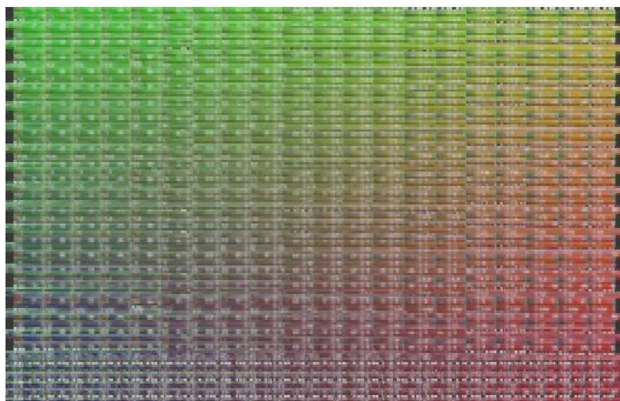

Figure 5.36: UV Mapping of positive spaces (knots).

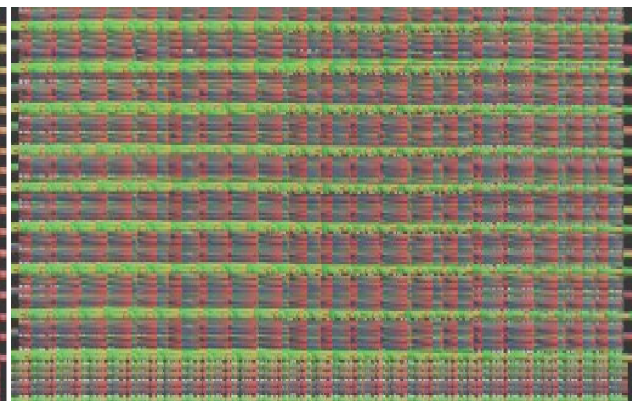

Figure 5.37: UV Mapping of negative spaces (Green for soul threads, Red for warps)

[Author's work]

Thus, Amazigh's weaving makes the dualistic concept explicit, from the domestic space with the ideology of the Kabyle house to the outside world with Amazigh educational pedagogies. Both manifest themselves in the sharing and complementarity of otherness to better apprehend virtual spaces, on and beyond the screen which become unveiled throughout the weaving ritual. The integration of imagery into ritual performances within Indigenous knowledge systems initiates a profound shift in the way relationships with machines, software, and algorithms are perceived and engaged with. This transformation is facilitated by embracing and assimilating the diverse logics and languages inherent in these technological elements, achieved through the conscious adoption of Indigenous ideologies and protocols. Through this process, a dynamic interplay between traditional practices and modern technologies emerges, bridging two distinct worlds together. In this latest iteration of my creation piece, I tried to examine a particular nexus of Indigenous protocols that links symbolism, reproduction and the cultivation of unique imagery.

For my people, these parameters combine conceptions of natural processes and ordinary everyday activities with a rich and complex interpretative world of great imaginative creativity. The Ait Warayn carpet's original pattern, which delineates the river network surrounding my ancestors' village, served as a foundational motif. However, I purposefully refrained from replicating the pattern, recognizing that my personal experiences have not been rooted in the village, nor have I engaged with these symbols in my research-creation in the manner of my elders.

It is essential for me to acknowledge that there are no symbols that portray technology or my present environment, including that of the diasporic community. That is because the gradual transition from land-based knowledge to a more abstract realm devoid of territorial limitations, akin to virtual spaces, presents an inherent challenge in representation. Consequently, I sought to leverage the liminal space between the threads of my computer-woven carpet and my home-learning experience through digital tools strategically allowing both worlds to coexist and mutually enrich each other. On the front side of the carpet, I have crafted a visual narrative that encapsulates my vision of Amazigh futures to the world (Figure 5.38). The positive spaces (coloured wefts), symbolize the rich tapestry of ancestral knowledge, culture, and traditions withheld within us and our homes. In contrast, the negative spaces (passive warps), signify the hidden gaps that exist, and the challenges faced by Amazigh peoples in developing and re-imagining their knowledge systems. The computer-woven carpet, representing the rear side of the carpet, becomes a metaphor for the fusion of tradition and technology, one that speaks of my inner world as a neo-Amazigh agent, highlighting their symbiotic relationship.

I combined my future imagery gos language of Blender to form a new understanding of symbols in Amazigh weaving. By using nodes as symbols (Figures 5.39 and 5.40), I encapsulated the cultural appropriation that has marked my ancestral carpets. This endeavour forges a palpable connection between historical roots and contemporary and future existences (5.41), prompting a revitalized recognition of the value of Indigenous knowledge and dissemination within the intangible realms of virtual learning spaces.

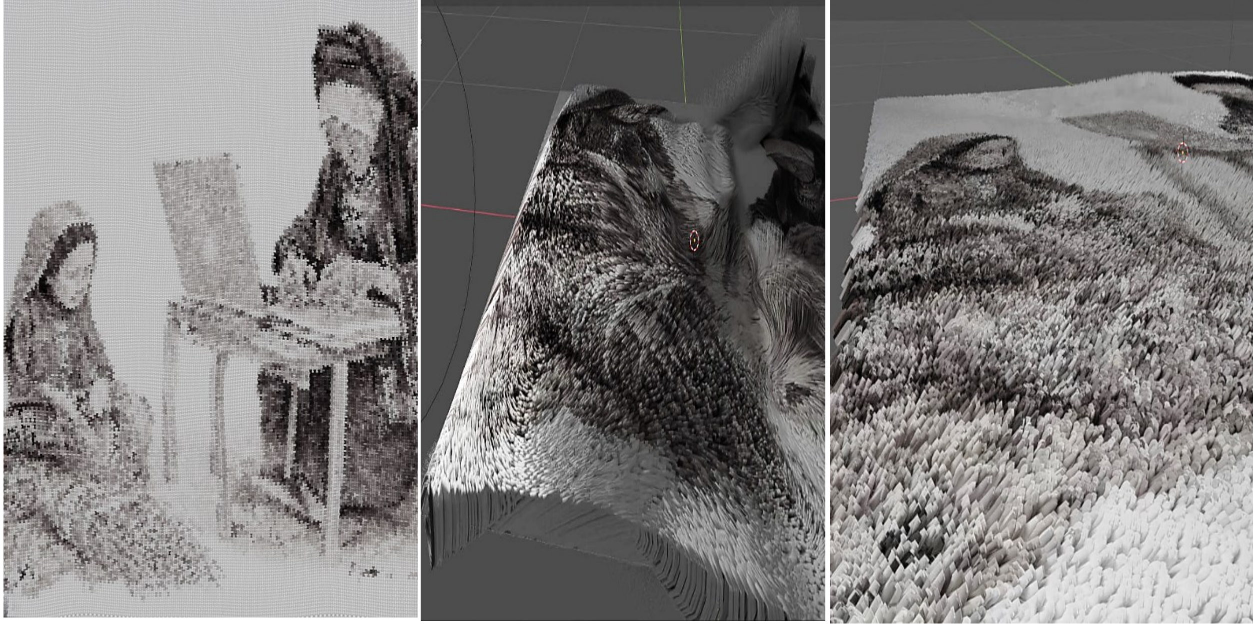

Figure 5.38: Representation of my future imaginary: Elders of the future passing on Amazigh teachings through digital kinship (Front of the carpet).

[Author’s rendering (left) and screen captures (right)]

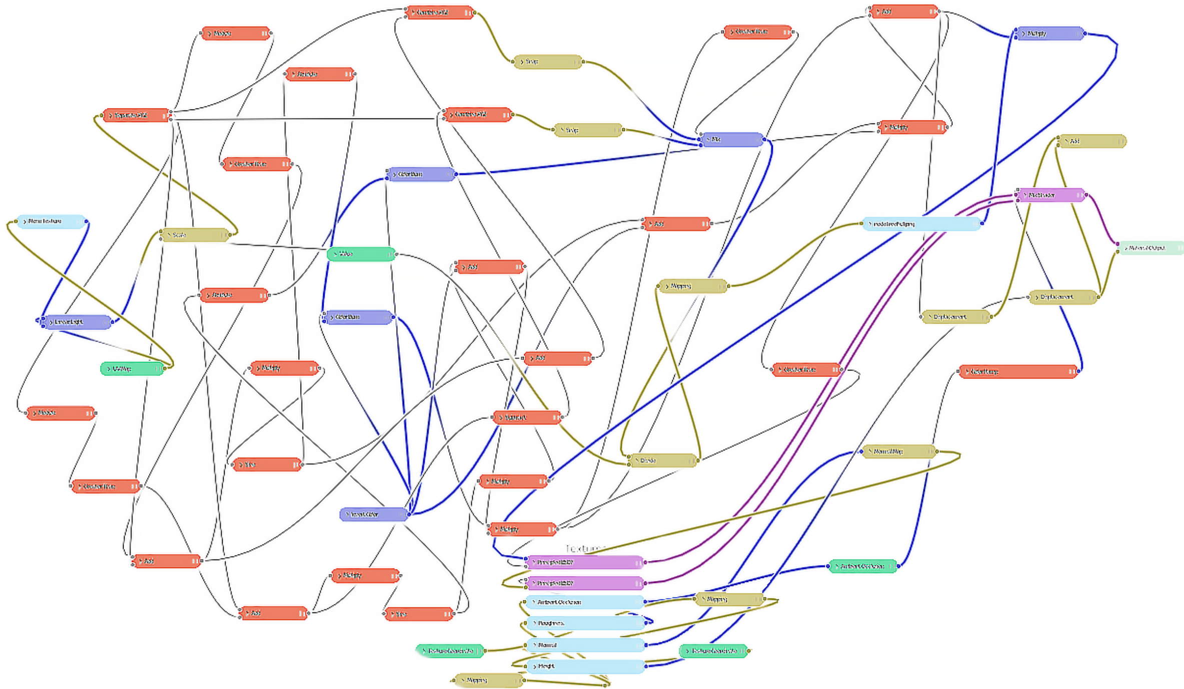

Figure 5.39: Blender’s node-based language forming the virtual carpet and pattern.

[Author’s work]

Figure 5.40: Weaving knowledge into the fabric of the virtual (Rear).

[Author's work]

Figure 5.41: Weaving knowledge into the fabric of the virtual (Front).

[Author’s work]

Conclusion

The colonial legacy of schooling has had profound and enduring effects on Indigenous communities worldwide. Through the imposition of western-centric education systems, colonial powers sought to erase Indigenous cultures, languages, and knowledge systems, imposing a homogenized worldview that marginalized Indigenous perspectives. This legacy is starkly evident when witnessing the disproportionate impact of natural disasters such as earthquakes, wildfires, and public health emergencies including the latest global pandemic on Indigenous communities. The recent earthquake (6.8 magnitude) in Amazigh Indigenous villages in Marrakech (Morocco) on September 9th, 2023, serves as a poignant example; the destruction of schools not only disrupted what used to be the "formal education" but also uncovered the gradual erosion of Indigenous knowledge and practices among the inhabitants of the affected villages. Not only were many of these schools were built with little consideration for local architectural practices or environmental conditions, reflecting a broader disregard for Indigenous ways of knowing and living in harmony with the land, but, moreover, "education" completely ceased to exist in these areas due to the destruction of the facilities. What was perceived as an "alternative solution" with online schooling in Canada and other countries of the Global North did not resonate with all the communities which, to this day, continue to live in remote areas, either fighting for their ways of living, or yet trying to find ways to adapt to the hegemony of technological progress. COVID-19 was the turning point that highlighted for me the inadequacies of education systems that fail to incorporate Indigenous knowledge. In many Indigenous communities, traditional practices and teachings offer valuable insights into coping with crises and fostering resilience. Yet, these are often overlooked or dismissed in favour of western scientific approaches, perpetuating a cycle of marginalization and erasure. Addressing the colonial legacy of schooling requires a fundamental reorientation of education systems.

The exploration of Amazigh weaving in this research-creation goes beyond a mere assertion of educational autonomy or cultural reclamation in response to the continuous colonial presence in schooling practices. It represents a way of ensuring Indigenous and local knowledges transmission from knowledge keepers across material and immaterial territories. It is a form of initiation into making, understanding and creating a relationship with the available tools to express the imaginative heritage of the community and the self. The symbolic act of weaving serves as a

bridge that spans generational gaps, honouring the continuity of knowledge production and transmission while re-appropriating tools that although remind us of systemic inequalities, can also offer us the means to face them as well. As an Indigenous graduate student, I must acknowledge and honour the teachings and knowledge keepers who reside between the threads of this work, the spaces between my words, and the colours of my images. Therefore, I contextualize my research creation prototypes within the framework of narrative inquiry, exploring the significance of self-reflexivity at "home" and producing qualitative forms of knowledge that are based on personal, experiential, and cultural narratives. Self-initiated learning occurs in organic, spontaneous ways. Playing on my living room's carpet while listening to my grandmother's tales taught me about history and culture. I learned how to care for space, objects, dreams and all the material and immaterial entities that shape the latter. I experienced knowledge through the learning paths that captivated my interest and held significance for my family and community. Because of this, my relationship with space, including now the virtual space, has always been positive and reciprocal. My learning experience was deeply relational, extending across diverse connections within and beyond my home/homeland. Both Indigenous education principles and place-making elements became crucial nodes in my journey. These principles not only underpinned my educational path but also instilled in me a profound conviction that they play a pivotal role in fostering a deeper understanding of the environments from which we learn. This understanding, I believe, is crucial for advancing the cause of educational justice. Although my grandmother, the principal actor who inspired most of this research is no longer alive, the knowledge and underlying values that were revealed during my computational and spatial explorations continue to live on among my people, both at home and abroad, in the more dispersed modern world, either as ideals or increasingly today as consciously compiled "heritage."

Interview transcript

Interviewer: Camelia Layachi
Interviewee: Dr. Si Belkacem Taeib
Date: 2021/02/20
Time: 15:00-16:15 (Paris) 09:00-10:15 (Montreal)
Location: Zoom (Virtual Meeting)

You mentioned several times in your book the term "organic education," can you explain this choice of terminology?

Well, you know, “culture,” when you think about it, it means growing things. Growing potatoes, growing fruits, figs, olives, that's culture. Culture is the experience of one with the land. We, as Indigenous peoples, are connected to the land, it is where we developed our roots for thousands and thousands of years, but the land is also connected to us. This dimension has made us into organic beings because our way of living relates to the whole cosmogony: the stars, the moon, the dynamics of the seasons. Organic means being complete, connected, rooted, but rooted is complex in the materialistic world, the definition can be different in a capitalist world. Being rooted for us, Amazigh peoples, is being part of something that exists. Your story, your heritage, your life, the genetics of your parents are anchored in your genes as well, your transgenerational anxiety derived from years of colonization that you get the responsibility to heal, all of it. Organic means basically, being a part of a whole that is alive, that is interactive, that is depending on bonds. Defining these bonds and isolating them is fragmenting them, but to put them together, you need a framework to do that, which is the value system but also the expectation of the land where you grow your culture and develop your knowledge. Organic education (Asegmi) is an interconnected system that works with the time and space that connects people where the bonds are as important as the knowledge itself. Organic education is the experience of an individual in the community in relation to the past, present and future. There are different types of Indigenous educations; each Indigenous nation has a unique way of perceiving education. I feel that all the tools for Indigenous education have to be built in the context of a journey. Indigenous communities here in Canada supported me a lot during

my personal journey. I realized they had all the pedagogical tools in their rituals, ceremonies, and ways of passing on the knowledge for many years. All that is already there, so when they used these things... when they raised me as one of their children, I recognized one voice, and it is the Indigenous voice within me that was speaking and that I didn't hear until then.

You talk about your learning experience as a journey, which gives the impression that it is not bounded to a place. Where would you locate the home (as a dwelling and a homeland) on your education path?

Some say home is where the heart is. My heart is totally in my village, but you see, I have a mom and I have a dad, and they are both from different villages. So as the son of my mom and of my dad, I am totally home in their villages because I am a part of the village memory, and that's one thing that I needed to re-activate. To be part of the story of my village, to know what is happening, to prepare for what's coming when your parents go, to take on the responsibilities, and be part of the story of your people. That's my home. I was also raised in France, and I feel home in both these countries. I can relate to their values, to the beauty of their landscapes… I love travelling also, but when I come back to my elder's land, my deeper self feels at home. My sense of belonging comes from my parents' deep love… unconditional love for their land and identity.

While talking about the home you grew up in, you mention Kabyle food, songs, language etc. How do you see the relationship between your home and the material things around you, and how did they contribute to your learning experience?

It is hard for me to remove materiality from pedagogy, as well as from relations and values. There are four key elements there, and they are all interconnected. Material things express a lot of knowledge; they express lifestyle and genetics as well. We eat the food that is good for us; that way, you learn about your physicality as well. This is the physical and tangible expression and dimension of culture. But to access that knowledge, there is the relationship that you have with the land and especially with the people. I was having this conversation with my uncle just before you called, and he said, "You know when I go home, I am home, but you know I feel bored because I feel like I can't do anything back home - I said, well, you need time, and you need to give your home time, learn to communicate with it and be a part of it. It would help if you started from the beginning; you already have a place. What about the people around you? You still need to learn to

access the knowledge through the connections that are present in the space you inhabit." So, the materiality, which I would call epistemology, the knowledge itself, the tangible things you want to learn, are part of education, yes, but knowledge is not education. The experience of knowledge, the relationship, the methodology, the ontological things bind us together, and once you are recognized by your people, you access the knowledge. If you look at the work of Pierre Bourdieu and his ethnographic research on Amazigh communities and housing in Algeria (ref. Kabyle house), you will see that he needed a translator to undergo his inquiry. Most of his research was on the Berber villages that were disconnected from the mountains, pulled by force to the city to be congregated around the schools and checked by the military; Bourdieu himself was a member of the military. The reason why I am mentioning Bourdieu is because he was not a part of the village. He needed someone to translate for him; he couldn't access the knowledge. Bourdieu just "gave meaning" to things. Because you are Amazigh, you will have access to the knowledge because it is your heritage, and you will vibrate with it and recognize things that have been taught to you by your parents although you did not even know they were there in the first place, they taught you how to learn, and that's the beauty of it. Western education often asks us to unlearn, to relearn our own knowledge through the tools of western education; by doing that, we colonize our education because we reframe it and we become neo-colonial agents. Home for us is a village; it is not a house. It is a village and a story, that is why I can go all over the world and still be home. Because I am still anchored in my journey, in my learning experience, I am an Amazigh learning about the world and all that comes back to me, and I conquer those spaces with my knowledge for my Amazigh peoples rather than having these spaces colonize "the Berber man."

You emphasize your parent's house fireplace, namely "kanun" as the center of gathering, but also as a domestic structure that you culturally "feed" from your overseas experiences. Is the home playing both the role of the receptacle and producer of knowledge?

Home is based on essential needs. I take the metaphor of the fire, which is actually not entirely a metaphor. The elders sit around the fire; they are old, they need to get warm, and kids are fascinated by the fire. Right there, with the two generations meeting, you are travelling time; that's the power of fire already. You will have someone who uses that fire to cook, and someone else will bring the

wood, etc. In Indigenous education (Asegmi), home is the school, the life of the people within the home is your whole interiority, it is your culture speaking. Inside of you, there is also fire that is connecting you to everyone. You are your first home in some way, and you have all the generations within you. School today as a physical institution is trying to provide you with the knowledge that has been judged positive and values that have been chosen historically as positive for that country according to the power struggle that designed that country. School is a very political place. Home is a school that allows you to face the odds, that gives you the strength to do things. Education gives you the tools, but shapes you into a being that is disconnected, somehow. Schools did not want Amazigh children to be a part of their family; they had to give up their heritage to be a part of society. It is the assimilation into something that has been designed, maybe not for you, maybe not with you, could be for you but might not be the way you want, and that is problematic. I had this big argument with my supervisor when I was doing my Ph.d.; he is a Maori elder and used to work for the minister of education in New Zealand. He said you know, being Indigenous is a political thing. I said, "No! I don't want to be politicized," but the reality is that saying that you are Indigenous is already a political statement. Our home (home from the heart right! Our first home!) becomes a battlefield, a place of resilience, and we try to support this resilience, which is the natural growth of the being (it keeps the heart beating), we need to be equipped to resist in order to stay who we are. So there is a very pragmatic thing to do, and it translates into research methodologies. For me, it was about decolonizing education which means being an Indigenous person within a system that doesn't allow it. Is the home the material location for education? Yes it is, symbolically, spiritually, physically, pragmatically speaking yes. In an Amazigh house, all the paintings on the walls tell stories. Every Amazigh house is an artifact; it tells the stories of the family, it talks about the relationship between the woman and the man, it talks about the seasons, the dreams etc. Home as a physical place of education, yes, definitely. And that's why they won't let you do it at home.

In your book, you assert that education does not or should not take place in a governmental institution but "in everyday life, in the families and houses (p. 92)." As far as Indigenous education is concerned, should the home be understood, less as a physical space and more as a domain of activity? How does that differ from institutional schools, which have also started in the last decade to detach themselves from the "physical school space" and are now offering a variety of alternatives such as informal spaces and virtual spaces?

If you look at education as an experience and not as the passing on of knowledge, there are many experiences that you can have in life. There are many different pedagogies; yes, you can teach outside, outdoor education, informal education… They are all formats you can definitely follow, and they would answer all the governmental requirements for education; you can take the program and do it through Berber culture. In New Caledonia, a research colleague named Richard Waminya[9] developed a whole mathematics program based on the construction techniques of traditional Kanak houses; by doing that, he tried to expose and uplift local educational systems. Now, as an elementary school teacher (in Iqaluit, Nunavut), I can take my students outside, and I am provided (by the system) with an objective. If I want to follow an effective teaching pedagogy, I will tell my students this is our goal, this is what we will learn today, look around, explore, then you question things with them, you let them experience, and then you summarize the process to meet the initial objective. I would say I hate this type of teaching, but this is what we have to do, this is what is asked from us because in the end, we need to quantify, measure progress, and say this child knows this and that, but it doesn't say who that child is. However, if you choose a pedagogy of knowledge transmission, you have other ways to teach, you can use storytelling. Some kids might react and say, you are not teaching us anything, well actually I am. I am making you experience things that are going to be part of you because it is a journey to which you are going to connect. It will open my field of experience for you to which you are free to go and interact with to develop your own knowledge.

[9] Waminya, R. (2011). De la conceptualisation implicite du nombre et des figures géométriques dans la culture drehu à leur conceptualisation explicite dans les mathématiques à l'école : étude exploratoire des interactions suscitées par les deux conceptualisations et de leurs effets à partir d'approches pédagogique, didactique et ethnomathématique (Doctoral dissertation, Lyon 2).

As we are experiencing distance learning due to COVID-19, can you imagine a platform for Indigenous education in a virtual setting (cyberspace)?

Hmm, well, first of all, we can question what type of computer you are using? From which country are you doing your google research? Are you using a VPN when you are doing your research? Are your passwords safe? It is all about context. The context of learning is intricated and complex. I see technology as a great tool; it allows us to talk about our culture right now. However, it is always about awareness. I had a conversation with a friend not long ago about the fact of "being informed." If you look online, look at the media (receive news that fits you, algorithms etc.). Technology, in itself, is a dangerous thing, it is not a bad thing, but dangerous because you need to find out how to live with it. Can we learn online to be Indigenous? Hmm... I am not sure about that. Indigenous people are waking up to their indigeneity, and we just started to affirm ourselves and understand that we don't have to be western. Indigenous people are definitely seeking new places of transmission, I am not against the idea that we could exchange online, but I really think that the physical relationships with people, and if possible, on the land are vital. Technology has to stay a tool. It has to stay a tool that you use within a system. Technology has to stay humble. In order to have any kind of position in cyberspace, you need to know your culture, language, you need to be recognized by your elders and your community, and it is a very difficult thing to do because our communities are broken, our people (Amazigh) have very low self-esteem [due to colonial oppression and internalized colonialism], our people will be challenged with anything new. Technology can carry a lot of cultures, yes, but a lot of agendas as well. We don't own that technology yet. During my Ph.D., I did not have a computer. I actually went on a hiking trip in India. I was staying with backpackers and borrowing computers. I just needed my mind to be free. Most of the time, before writing a chapter or anything alike, I would go for a walk. And that's where I get most of my energy, most of my ideas. The school did not provide me with the space that spoke to my way of learning. I had great supervisors and met many great people, but the message is in the medium. The way we were treated and organized, set and framed within the McGill system did not allow me to do my research. I took off. I was lucky because I found people who supported me, then I developed strategies that allowed me to study from away.

Refusing to study at school means you refused to study in a space that was constructed for you, and by travelling you tried to create the space where you could express yourself at best. Do you think that similarly, the home is the best place we could get for distance learning?

It depends on your home. My home was fragmented; I had to rebuild it. The rebuilding of my home was learning of my culture. My home was broken, the metaphoric home, the belly of the mother, the place where we start learning, where all the magic of creation starts, where the Indigenous belief systems begin. I had to rebuild it, find it, reconnect with it, with the land, the earth, the spiritual life. I had so many ways of being in this world, and they were all instruments, and they were connecting me to myself. So, going on a journey, breaking free, even staying away from Algeria allowed me to be even more Algerian, which gave me a reflecting space. We are colonized and traumatized, but we also have cultural ways of being that are conflictual. When is the conflict considered positive/constructive, and when is it the expression of the self-destroying attitude required by the feeling of powerlessness left by colonization? This conversation is always ongoing in me. Maybe you will never be home. But what you are trying to do is rebuild it, heal it with love as the engine, to survive and hopefully to live. Home is not necessarily what connects you to your culture, but you/your spirit are the artifact of your culture. I know this Indigenous elder from Mexico, she was taking some tourists on a hike in the mountains, and they came to this beautiful place.... When they saw that amazing landscape, one of them said: "This place is gorgeous, it would be great to place a statue of the Virgin Mary here." The elder, surprised asked why and that person said "to remind us of the beauty of this place of course!" The elder said "Well, it's already here. It's in front of you." I think artifacts, as technologies, can be traps. But the deep core that you have within you is the expression of yourself coming back to life. This is already saying a lot and knowing to hear yourself is something I didn't know and that I had to learn. I understand that being home is one thing, but at the same time, because we are living in a system that is actively looking at colonizing, we have to know that system. Learning to survive in that system will give you the cultural anti-corps to pass on to future generations. Surviving the system will give you suitable methodologies. Home yes, in but also out within another decolonial system that will connect you to the rest of the world as well. Being home gives you more agency; you can decide for yourself what's good for you or when to do things. We can say that the sense of

ownership does good to us as Indigenous people. It is a part of claiming back our identity. However, the absolute ownership for me is to own a space on our lands, next to our people and we don't all get to have this chance. What is a home for the Indigenous diaspora? Is our home/village/land the same as we conceptualize it? What is home today for an Indigenous person? Claiming to be an Amazigh, reclaiming that identity gives me strength, gives me a sense of ownership and agency, yes, but for what and where? Adopting a post-colonial discourse might take us off-track from the beginning, but being on the journey of cultural recovery is truly a blessing, and that's what matters when we ask all these questions.

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