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Human–environmental Relationships in the Arctic: Mapping and Analyzing Shishmaref

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Abstract

This article examines the process of analyzing the Arctic indigenous village Shishmaref and evaluates the applicability of Western planning analysis methods for the interpretation of the living environment. The analysis approach is partly phenomenological, i.e., the analysis of the village is based on the researcher's own observations. At the same time, the aspect of the community and its views on the environment are examined. The framework studies the role of the architect from the perspective of participatory design. Based on this research, Western design models do not seem suitable for indigenous village planning, but a genuine participatory approach is needed from the beginning of the planning process, i.e., also in the analysis phase. This requires enough time and working on-site; therefore, a slow planning process is needed. Accepting the importance of traditional knowledge as part of the planning gives a new direction to the design of Arctic indigenous villages, especially to their relocation.

Keywords: Arctic, village, indigenous, planning, architecture

1.0 Introduction

According to Ronald Inglehart (1990), people don't act unless they want to reach a goal. A small group can contribute to solving the issues that are most important to them. They don't necessarily have the strength or capital to promote all their goals at the same time, or they have to choose between the levels of different goals. In small indigenous villages, for example, the promotion of important common issues such as obtaining funding for schools might be the primary goal. Architects or planners, in turn, set other level goals as well, such as for architecture, aesthetics, and functionality. To support the local community's need, they must strive to involve local knowledge in the planning process. What is apparent is that the involvement and engagement of the particular community should be in place from the beginning of a project.

Participatory design and user-centered design have taken inspiration from each other, and classical roles of users, researchers, and designers have started to merge in the co-designing process. In user-centered design, the user produces the input for the design. Similarly, in participatory design, the user is more like a partner in the design process (Sanders & Stappers, 2008), and design work is directed not just at the user but, rather, is done together with them (Spinuzzi, 2005, p. 165). The goal of participatory design is to create design solutions that support the goals created by the users themselves. On the other hand, at the end of the project, it is important to show participants how their ideas are reflected in the plans, which can also have a key impact on the acceptance of the outcome.

In user-driven design projects, the designer receives the information obtained from the users and, at the designer's discretion, strives to include it in the final design. In participatory design, on the other hand, information is exchanged, and the plan is continuously developed together with the users. Central to the success of participation is the careful planning of inclusion situations. Equally important is the organization and coordination of these situations. Often, the facilitator has a research or architectural background. In participatory projects, the end-user is treated as an expert in their own work. It is essential that they be able to support the users and provide them with tools for ideation and expression. In any case, the architect must ultimately be responsible for the overall picture of the analysis and must also plan and make decisions based on the information available (Spinuzzi, 2005, p. 165).

The collection, documentation, and analysis of tacit information are central to successful participatory analysis and planning. Due to the intensity of participation, too little attention is paid to the systematic processing and analysis of information, which may leave valuable information silent (Horelli, 2002). In general, it is emphasized that participatory situations must be carefully planned and delineated in order to maximize the benefits of each workshop or of other situations. It is also thought that if too much freedom is given to the person directly involved, the project schedule will be delayed and the budget exceeded (Laframboise et al., 2002, pp. 316–318). By setting a clear goal for the participatory situation, e.g., workshops, the amount of information to be processed and analyzed can also be controlled. In general, the goal of involvement and the resources available influence how many users are involved, i.e., the depth of involvement.

In traditional planning, information is obtained from users and is utilized in the design process. Users are mainly informants, and the role of planners and architects is emphasized. In co-design, users and designers are more or less equal in the process. However, quite often, the architect succumbs to the organizational focus and does not always seem to even remember who they are designing for, at least apart from the idea level. As for the roots of participatory design as a philosophy emphasizing democracy and equality, it is difficult to see this in practice as strongly as it appears in the research literature. When planning indigenous built environments, participatory design offers a method to involve and engage the local community, and it should be in place from the beginning of a project. The process of planning requires more participation and activity than usual—not only participatory planning but also a new kind of in-depth understanding of the whole culture.

The village planning and provisioning of social housing have been a continuous challenge in the north since the governments began taking an active role in the welfare of indigenous peoples. So far, the research interest has focused more on the development of buildings suitable for Arctic conditions, not so much on cultural sustainable development in the design of buildings or villages. Living conditions in the Arctic among the Inuit, Saami, and indigenous peoples of Chukotka were examined in a comparative study, the SLiCA project (Poppel et al., 2015), but the development of housing or villages as built environments was not at the core of the project. However, there is clearly a dynamic relationship between culture and the built environment. The Zero Arctic project (2018–2020) provided carbon neutral, resilient, and sustainable Arctic construction. Its aim was to find out how various applications of traditional knowledge could be applied in the development of modern construction. The project consisted of case studies from Finland, Canada, and Japan, which highlighted the importance of understanding local traditions and cultural aspects of living when designing

sustainable buildings in Arctic regions; however, only Canada's approach to the planning process included a design charrette consisting of a 3-day workshop in which the Inuit could directly interact with building stakeholders. (Arctic Council Working Group, 2020)

This article examines the physical features of the Shishmaref village through the ordinary tools used during the planning process. It seeks to answer whether the western conception of the environment can reach the value and perception of the indigenous environment through traditional tools of planning analysis. Also, the community's role and its views on environment analysis are examined. Participatory design in this research is focused on the knowledge created and used by the users. In this work, it will be called *traditional*, *indigenous*, or *local knowledge*; this knowledge is based on experience and is often difficult to express formally. It is the starting point for the process of knowledge creation, where interaction is used to make explicit information from users' everyday perceptions and established practices. The rich cultural history of indigenous knowledge is a living entity that continues to evolve. A key method of participatory planning is to incorporate local knowledge into plans, but the planning phase is excluded in this article. Rather, the aim here is to create new methods to support the presentation of local knowledge.

The article begins by describing the Shishmaref village formation and the current situation. An introduction of the analyzing tool and the architectural analysis on-site will be followed by participatory methods, i.a., a questionnaire, mapping assignment and interviews. The focuses in this article are on the analysis and mapping phases of the planning process, which normally precede the planning or are considered an early part of it. In one case study, an architect with a research background acted as both a performer of traditional site analysis and as a facilitator of workshops, an interviewer, and also a researcher. Participation served as a fruitful platform for the emergence of entirely new knowledge. During the process, the architect's analysis of the village expands and receives new interpretations through local knowledge. At the same time, the suitability of the prevailing design practices and analysis model for the design of indigenous villages is critically examined.

The primary methods used during the research were working on-site and engaging locals through a participatory planning approach. These methods served as procedures for data collection as well as user involvement. The field trip took place in November 2018, and the researcher returned to the village in August 2019. The analysis in this article is mostly based on the observations in 2018. During an ordinary design situation, architects make their observations from a few hours to few days, at most. Sometimes, the architects are not even involved in the analysis phase, but they get the material as ready-made input data at the beginning of the planning process.

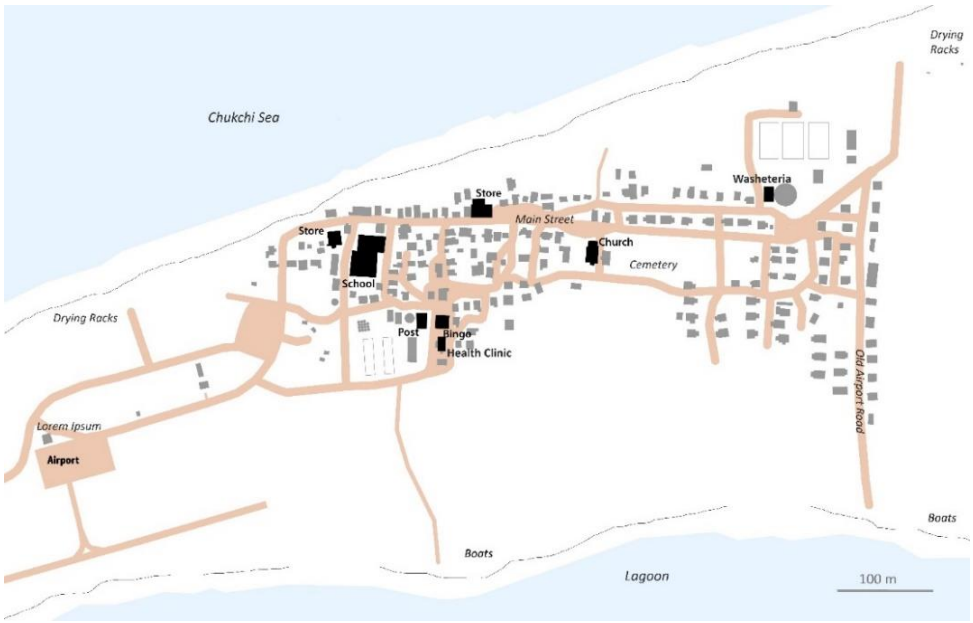
2.0 Shishmaref Village

Shishmaref is an Inupiat village of almost 600 people located on the barrier island Sarichef in the Chukchi Sea, north of the Bering Strait. The Kigiqtaamiut people have inhabited the coastal areas around Sarichef Island for thousands of years; the area was a seasonally occupied settlement used by people who migrated across the landscape seeking the best places to gather food. Until the mid-19th century, the inhabitants were semi-nomadic and were economically and socially self-sufficient. In the early 20th century, many semi-nomadic communities in the Arctic began getting pressured by the U.S. government into settling in permanent locations under state-induced policies. In 1901, the Inupiat

people living in the Sarichef area encountered the permanent influence of the Western world when a post office was established on the island. Soon after, a church and school were built, coupled with the onset of compulsory education, and a permanent village was established. (Marino, 2015, pp. 5–9).

Today, there are around 150 houses in Shishmaref. The island is bordered on the north by the sea and on the south by a lagoon (see Figure 1). The journey to the mainland is about five miles. The economy is primarily built around subsistence. Shishmaref has a snow cover for at least six months of the year. Transportation in, from, and to the village takes place in winter, mainly on snowmobiles and ATVs, but there are also a few cars. In winter, as the lagoon and sea freeze, sleds are the only means of transport around the village (see Figure 2). During the summer, getting around the island becomes easier; the most important vehicles are ATVs and cars, which are to transport, for example, village maintenance supplies from the airport, just like in winter. The village's only year-round connection to the outside world is air travel to Nome, with 1–2 flights a day.

Figure 1. Shishmaref is bordered on the north by the Arctic Ocean and on the south by the lagoon (the north is at the top).



Source: Author.

The residential buildings in the village have almost the same typology. The house has a cold porch to store food and other items. The corridor-like entrance hall opens into a living room with kitchen in the entrance corner. The hallway and living room give access to the bedrooms. The house is compact and functional. The decor of local living rooms often reflects the meaning of the community: the walls are filled with photographs of relatives and bone engravings and other crafts are also visible. The buildings' conditions vary. Despite their sometimes shabby appearance, the buildings' interiors can be in good condition, and they are generally warm. Attention has been paid to the energy efficiency in planning new housing types, and the energy efficiency of old ones has been improved.

Figure 2. Shishmaref Main Street in November 2018.

2.1 Possible Relocation

In the State of Alaska, more than 30 communities have been identified as potential candidates for relocation due to the consequences of climate change, Shishmaref being one of them. So far, village planning in all U.S. Arctic villages facing relocation has focused on practical issues such as energy efficiency, infrastructure, construction methods, material choices, and funding challenges. The village master plans have been unambiguous: the houses are grouped into rows on one or two straight main streets in almost military order (e.g., Cold Climate Housing Research Center, 2017).

Shishmaref is threatened by sea wall erosion, and the risk of intense flooding is increasing. In 2016, the residents of Shishmaref voted to relocate their town for the third time. The community has been exploring various relocation options since the mid-1970s, but despite ongoing conversations with government agencies, an organized relocation has yet to occur. On the contrary, some new houses have been built, and the school has been renovated and was expanded in 2019. This reflects the strength and adaptability of the community. Not only do they expect something to happen, but they are actively caught up in everyday life. Talking about climate change or relocating the village is not part of everyday life in Shishmaref as it seems to be in the field of research.

During the last two decades, Shishmaref became an important case study for researchers interested in environmental migration. In *Fierce Climate, Sacred Ground*, Elizabeth Marino explores the environmental and cultural aspects of environmental change in Shishmaref. She shows how the stress and uncertainty challenge culture and identity (Marino, 2015). Also, many studies on geophysical investigations at Shishmaref have been published, as well as on shoreline erosion and protection (e.g., Mason et al., 2012)

During the first visit in 2018, a plan for the new village on the mainland in Mertarvik was in the media. There was a suggestion that old military barracks could be part of the housing plan, and the village master plan also seemed to follow the basic idea of building sites along the main road; the plan was almost drawn with a ruler (DeMarban, 2018). Could the village plan be more something

that could strengthen the identity of the local community? So far, such discussion has not taken place.

Climate change will bring about lifestyle changes in Shishmaref despite the village's location. The new village would be on the mainland and the traditional hunting areas would be much farther away. The new village planning might offer positive opportunities for maintaining culture if the local voices are heard. At best, it could also contribute to the empowerment of culture. According to the Shishmaref Management Plan (2016):

> Shishmaref is a safe and resilient community. We want to be a viable community that respects and honors our Inupiat culture and traditional values. We will work together and with partners to develop projects and policies to protect our residents, infrastructure, natural environment, and subsistence resources. We will preserve and enhance our community for us and future generations. (Shishmaref Strategic Management Plan, 2016)

These values should also be remembered when planning the built environment.

2.2 Analysis of the Village

According to Kevin Lynch, a city image consists of three parts: (1) identity [recognizing or identifying objects], (2) structure [a recognizable pattern], and (3) meaning [emotional value in relation to these objects]. Lynch emphasized identity and structure in his research, although he also recognized the importance of meaning and evaluation. (Lynch 1960) When analyzing Shishmaref village in this research, the emphasis was also on identity and structure. However, the meaning was surveyed using participatory methods.

Lynch's ideas about cities were not directly suited to small Arctic communities. Lynch stated that there is a public image of any given city that is composed by overlapping many individual images and that each individual image is unique. He classified the contents of the city images into five types of elements: paths, edges, districts, nodes, and landmarks. The analysis tool of the Arctic villages in Finland, developed in the early 2000s, is loosely based on these five elements, which were broadened and clarified. The tool aims to recognize the physical features that have a positive meaning for the village identity and to use them in the design in order to strengthen that identity (see Figure 3). The analysis is done on-site on a map (see Figure 4) (Soikkeli et al., 2005, pp. 25–30; Soikkeli 2017, pp. 10–19).

Mental image factors are perhaps the most significant stimuli in forming a village center image and in defining the basis for planning. Some of the most essential mental image factors include travel routes, boundaries of surrounding zones (boundaries of green areas, built-up areas, shorelines, fields, etc.), unbroken environmental entities (uniform, distinguishable borders between nature, housing, different kinds of activities), functional and visual focal points (meeting places, landmarks), and views into and out of the village.

Figure 3. The most essential mental image factors according to Soikkeli et al. (2005, pp. 25–29).

1. **Village center structure**
   - *Visual and functional structure*
     - Coherence
       - Clearness / fragmentation
     - Structural arrangement
       - Does the village have a center?
       - Location and interrelationship of commercial, administrative, and other functions
       - Availability and attractiveness of commercial services
       - Are functions centrally located or scattered?
       - Are there empty business facilities?
     - Identifiability and orientation of the villagescape
       - Hubs / village center features that strengthen identity
       - Are there dense areas?
       - Continuity / discontinuity
     - Compatibility of new and old buildings
     - Basic scale of the buildings
   - *Meeting places*
     - Constructed / planned meeting places
     - Spontaneous meeting places
     - Functionality
   - *Mobility*
     - Functionality and appearance
       - How are different modes of travel taken into consideration (pedestrian / biker / motorist)?
     - Impact of public transport on the villagescape
       - Traffic and stations
     - Parking and road areas
       - Does the road unify or separate?
       - Demarcation of the street space

2. **Village center identity**
   - Villagescape identifiability
     - Overall structure, travel route network, old village routes
   - Gaps
     - May be positive or negative
   - Important views or lack of views
     - Preservable, lacking or restorable views
     - Views within the village center / looking out of the village center
   - Relationship with the surrounding cultural landscape
   - Landmarks
     - Church, public buildings
     - May also be small and modest
   - Preserved old buildings
   - Particularly unique sites
   - Relationship to bodies of water
   - Dominant features
     - Building density
     - Basic scale and dominant characteristic of the buildings

3. **Care of the village center surroundings**
   - Buildings
     - Vacant and / or dilapidated buildings
     - Repair of old buildings / preservation of their original appearance
     - Conservation of historic buildings
   - Landscaping and trees
     - Take note of good / bad solutions
   - Lighting
   - Existing street fixtures (lamp posts, park benches, bus stop shelters, etc.)

Figure 4. Researcher's analysis map in Shishmaref, first draft.

Source: Author.

The findings of the analysis were drawn on maps. They were used when the results were presented to the villagers. After the discussions during the meeting, the analysis map was supplemented. Landmarks, culturally and historically important sites and buildings, important trees, important views, and missing views were marked on the map with additional explanations. The markings were made by hand so that the locals did not complete the analysis presented to them but they were ready to express their own opinions.

The center of the Shishmaref village is formed by a school, a bingo house, and two stores. Life revolves around these buildings. The school is actively used from morning to night. After the school day, the building is silent for only a moment until it is filled again with life when the children and students come to play basketball. Seasonal celebrations also take place there. The school has a strong role and tradition in the community, although the teachers are largely non-indigenous. The atmosphere is different in the Bingo hall, which is a bit run-down, although attempts have been made to patch some of the broken windows.

The public buildings, including a post office and a health clinic, are complemented by the dense group of residential buildings and sheds. The prefabricated single-family houses, almost all built according to standardized housing plans are mostly single-story. The location of the buildings almost seems randomly placed near the public buildings, to the east of the school and northeast of the Bingo hall. To the north of the school is Main Street (see Figure 2), which runs eastward, almost touching the walls of the stores. From there, the settlement slightly loosens and ends at the church building, which borders the cemetery. To the north of the cemetery, there is a clear row of houses framing Main Street. The clearly defined street space ends at the laundry building, and the old tannery building behind it, near the seashore, has been abandoned. The newest residential street has been built on the site of a decommissioned runway. These houses define the street space to become a little wilder than in the area of older houses. Between the row of houses and the cemetery, there is a dense but slightly disjoint area with passageways.

On the west side of the school, the buildings stop shortly after the second store. Here, the nature takes over, and the sea almost reaches the road. A conventional road bridge railing has been built at that point. Before the road and village structure continues forward, however, the old houses had to be relocated around the year 2000 after the land eroded. If there is no snow, racks for drying seal meat appear farther down the beach; during the winter, they loom as skeletal structures. Behind the airport is a landfill. The presence of modern times is also indicated by the oil tanks covering the view when looking toward the school and the snow-covered, dormant playground built near the road fence. Numerous boats are moored on the shore of the lagoon, awaiting use.

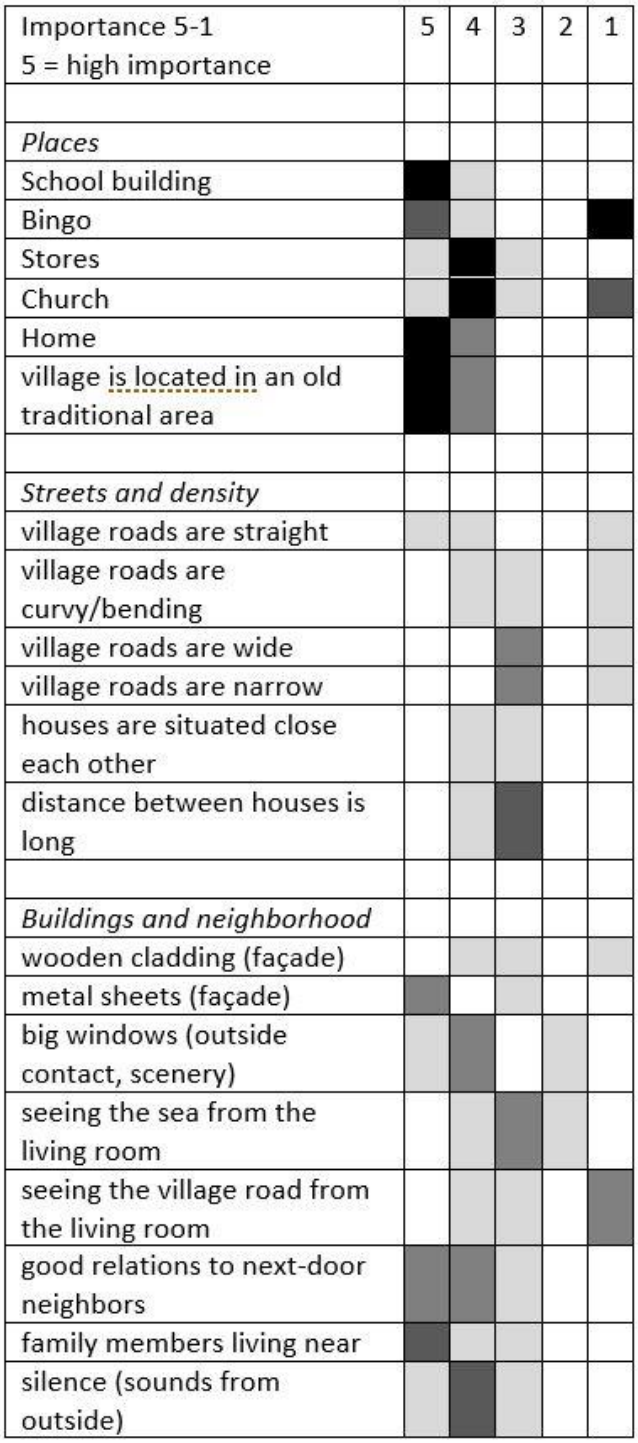
For the architect, the village is clearly demarcated. To the north and south, a border is created by the sea and the lagoon. To the east, a border is formed by a new row of houses built next to the Old Airport Road and the end of the buildings is a border in the west. The absolute border is the airport building. On the other side of the border is the infinity of the sea or the flat landscape that eventually merges with the sea.

2.3 Questionnaires—Winter 2018

After the analysis phase, a three-page questionnaire with a map was distributed to 15 villagers. The survey consisted of three sections, with questions and mapping requests related to a local knowledge map, living environment, and building stock. Seven forms were returned, all of which were completed by

males. Although the response rate was low, the respondents delved deeply into reflecting on their own environment. The responses were closely linked to culture and the importance of the proximity to nature in relation to subsistence livelihood and social events. Both multiple-choice questions and open-ended questions were used (see Figure 5).

Figure 5. The importance of some factors related to quality of living.



Note: Questionnaires (n=7), Mapping Workshop (n=6).

2.3.1. Boundaries. According to the respondents, the village was considered to stretch over at least the whole island of Sarichef, not just the built environment. The newest area to the east of the village (New Airport Road), as well as the sea and the lagoon, formed some sort of boundary for some. Most respondents were unwilling to draw the borderline, but the part of the seawall consumed by erosion was seen as a clear boundary in some answers. This area is situated on the northern side of the village, located at the corner of Main Street, with a low metal fence built on it, which is typically used on road bridges—there is no access to the sea. According to many respondents, the village extends to the sea and the mainland (see Figure 6). This view was later strongly highlighted in discussions and interviews.

Figure 6. The sea and the lagoon are integral parts of the village.

2.3.2. Places. In addition to their own homes, the respondents considered the school and stores the most important places. The school allows friends to meet, and the events held there unite the villagers, so its cultural value was considered to be great. One of the responses also highlighted the health station as a comfortable place. There was no reason mentioned for this, but the health center is a neat newer building. In one response, the Bingo hall rated as the most unpleasant building; this respondent verbally resented excessive gambling and expressed that the most important building for him was the church. Negative emotions were associated with the landfill, and the laundromat was considered a boring place, but it was also thought to be important for daily routines. It was not clear from the answer whether the dislike of the washeteria came from the building or from the activity taking place there, but this suggests that the built environment is also associated with mental evaluation, not just architectural preferences.

Home, work and hobby, and friends' houses were perceived as important neighborhoods. The old historical settlement—the archeological site—was raised as an important identity factor. New roads, a ban on alcohol, and friendly people were seen as pleasant things in the village. Garbage cans, dogs allowed to run loose, and dirt were considered unpleasant.

2.3.3. Streets. The intersections of the streets where visibility was poor were also found to be unpleasant. These corners are mostly near the Bingo hall and in front of the school. Buildings in this area are densely located, it is difficult to make a difference between the road and informal routes. The respondent who emphasized poor visibility felt that the buildings were built too close to each

other. Other respondents did not consider the village to be too densely built. The newest area of the village, which was built using standardized houses on both sides of the old runway (Airport Road), was mentioned as a particularly pleasant area. One respondent considered the view from the end of the new road to the mainland to be the most beautiful. Another highlighted the beauty of the lagoon, "It looks like millions of diamonds, summertime reflection, I mean."

2.3.4. Architecture. There were no clear opinions about the beauty of the building materials nor how the buildings were built. The density of living ranged from two persons to nine persons in a house with three rooms. The most important requirement for a house was good thermal insulation of the building. The façade material was not considered particularly important. The school has a metal façade, but most of the houses are covered with plywood. Different façade materials age differently, and a worn plywood façade makes even a well-maintained building look a bit shabby. However, this was not raised in the responses. Many respondents valued large windows, but there were no special wishes per se for the window size. The views from the houses, both out to the street and to the sea, were not strongly related to good housing. In Western housing construction, views of the landscape are perceived as important, and it is often the landscape that is the starting point for architectural planning. The most significant issues in Shishmaref were social relations and a certain openness both within society as well as towards the landscape.

2.3.5. *Other*. Silence was considered a praiseworthy attribute. Respondents appreciated the nearness to nature, especially the sea in their living environment and village, which is related to their livelihoods. The location of the village in the old, traditional Inupiat area was also highlighted as very important. No particular importance was seen for the straightness or curvature of the streets, their width or narrowness, nor for the height of the houses. One respondent preferred tightness to spaciousness in the village. It was also considered important for family and friends to live nearby.

2.4 Mapping—Winter 2018

A workshop—the map task—was set up in the Bingo hall, which also serves as a community gathering place. It opens in the morning when lotteries are sold, and the day ends with evening Bingo. The map was taken to the hall around 10 a.m. and collected just before evening Bingo started at 4 p.m. The map task was explained to the interested participants, who were asked to mark the following: buildings and places that are personally important to them; the most important cultural building; the most beautiful street and group of houses; and the most scary and unappealing area (see Figure 7). People seemed interested, but they were a little bit shy and busy with the lotteries. Only one person participated when the researcher was present. The researcher left a map with clear instructions in the hall and then exited, hoping to give more space to those interested. To entice participants, some chocolate and a prize box advertising a chance to win woolen socks were put next to the map. After three hours, the chocolate had disappeared, but the task itself did not arouse interest. People in Shishmaref have been studied quite a lot, so perhaps there was also some research fatigue. However, the researcher had contacted people outside the Bingo hall, and when she returned, the discussion had started to flow with those who were not present before, and the mapping was almost seen as being fun. But still, a researcher or architect is an outsider, and getting to know the locals takes time.

Six people were involved in the mapping task and in the discussion about the village image and identity. The questionnaire part of the survey described earlier in this article was for individuals, but the mapping task was based on group work and reflection. A short summary of both is seen in Figure 5. Respondents' comments confirmed some of the researcher's thoughts, but at the same time, more detailed information about the village was given by the locals. They generally felt that the most important buildings were the school, the Bingo building, and both stores, where friends occasionally meet up. The actual heart of the village was regarded to be the church, the school, and the Bingo hall, which are all strongly related to community members as spaces for activities that strengthen mutual ties. The post office, health center, and laundromat were not mentioned. On the other hand, the activities in the latter mentioned centers are not related to activities that are important to the whole community but rather serve the residents on a personal level. One of the respondents also highlighted the seafront coastal area where the seal meat drying racks are located; it is also a place that is at the core of the culture—a subsistence way of living.

Figure 7. A map used during a workshop in Shishmaref.[1]

Source: Author.

Main Street was seen as the most pleasant street. At its starting point, Main Street is clearly lined with buildings that leads to the cemetery. On the other side of the cemetery, the houses are old standardized houses. At the beginning of the street, the building stock is mixed in scale and materials and the street line is not as cohesive as farther down.

Only two villagers set out to name the most comfortable building group. They preferred the newest types of houses, an entity of houses located on both sides of a straight street formed by the old runway. One of the respondents, on the other hand, found the street scary because it is poorly lit in some places, and the built village ends there. Dogs in the area, which are often on the loose, also added to the discomfort according to the respondent. The oil tank area was unanimously considered an unpleasant place.

[1] The villagers had the opportunity to map their favorite or least favorite places, important places, and scenic places, etc. The boundaries of the village were also discussed.

2.5 Interviews—Winter 2018 and Summer 2019

Ten villagers ranging in age from 12 years to almost 80 were interviewed in a structured way, and several informal discussions with locals also took place. A participation method called "gåtur"[2] ("a walking trip") was also used (de Laval, 2014). The guided walking tour consisted of small groups of locals. Observations during the tour were written down and discussed later. A gåtur is a good way to elicit and obtain access to the implicit phenomena of people—place relationships and people's experiences, in particular. During these gåturs, informal discussions took place with one to four villagers at a time. In the interviews and discussions, remarks that had arisen and had been highlighted in the survey and the earlier mapping were repeated. Group interviews for the children were arranged at the school library during their playing and drawing time, but those results are not discussed here.

The interviews raised the same questions as before, and the perception of how the villagers perceive their environment became clearer. The stories of the history of the village's construction took shape, for example, during a three-hour interview with one respondent at his home. As a child, he lived in a sod house and has seen the village change from a small, remote Inuit village to an ever-increasing Westernized world in everyday life. He talked a lot about the cultural change, modernization, and disappearance of the language. According to him, the pursuit of one's own good is taking over the communality and the pursuit of the common good. The change in attitude has caused conflicts, e.g., in terms of land use, but the most important cultural feature has not disappeared: caring for the weaker residents. A portion of the catch is set aside for older relatives or disadvantaged people who have lost their fishing or hunting abilities. It is not about pity or mercy, but respect: one day, you will be in the same situation yourself, but now it is your turn to help and participate in the community's success.

2.6 Important Features for the Locals in Shishmaref's Built Environment Based on the Survey

The researcher's analysis map, questionnaires, and mapping workshop results brought out local values and attitudes toward the built environment, but not very thoroughly. These are the most typical tools during planning processes. However, it was only leisured interviews and discussions that deepened and expanded the understanding. The following is an example of some observations and reflections on possibilities for village planning.

2.6.1. Streets and density. Both questionnaires and especially the interviews revealed the challenge of actively using snowmobiles. In winter, snowmobile trails dominate the village landscape. The routes run in many directions and there are a lot of snowmobile rides. This poses dangers, especially around the school and Bingo hall, where the public buildings are located. In that area, residential buildings are also densely built, and the road structure is unclear. The easy mobility of the snowmobiles—they do not have to be turned but they can continue straight ahead when leaving home—is an important goal in the planning of transport networks. In summer, the goal remains exactly the same, but the vehicle changes to a four-wheeler. If the means of transport cannot continue going straight, it must be provided a space where it can be easily turned, i.e., a sufficiently wide road or place in the yard. Modern mobility supports the traditional way of living and subsistence: leaving and coming home. The most beautiful streets in the village were defined as two very clear road lines, namely the area of the old runway and Main Street. The buildings are located close to

[2] Gåtur is an environmental, psychological method developed in Sweden and Denmark.

each other, and the village structure is quite dense there, but not as dense as around the Bingo hall. Visibility on both streets is good and clear: the streets are safe. Beauty is not just an aesthetic value, but it also includes other values, such as the feeling of safety (see Figure 8). There were some internal conflicts in the responses. Some respondents preferred Main Street, where the buildings are quite compact, but in general, they preferred the loosely placed buildings. The same responses criticized the tightness and density around the Bingo hall; some noted the danger of the place when there is low visibility. From this, it can be concluded that the respondents do not long for a very low-density village, but for clear road lines that can be safely used, especially by snowmobiles. Likewise, it must be possible to leave and enter the house and yards safely and with simple driving lines. However, this does not mean straight roads.

Figure 8. Shishmaref street view in August 2019.

In the survey, some respondents indicated their preference for straight road lines. Continuing the discussion later, it became apparent that the straight roads were actually not visually appealing. It was perceived as a bit difficult in some wind conditions also, but it was considered safe for motoring: a straight and wide road exposed pedestrians. If the questions about the straight roads had been raised before starting a real planning project, and answers interpreted directly, the conclusions had been misleading. Deeper reflection, however, brings new possibilities—can safety be achieved by using also alignment of horizontal curves?

2.6.2. Built environment and meeting places. The most important everyday meeting places are the two stores along Main Street, the school gym, and the Bingo hall. The Bingo hall also hosts non-lottery activities, but due to the disadvantages of gambling (including addiction and the financial aspect), some respondents even resented the building. Similarly, some villagers felt that the church was important not only for the maintenance of religion but also for the maintenance of culture. However, religion is not an important factor for all villagers, nor is it a factor that maintains culture. Buildings that are perceived

as important have a strong communal or personal significance: friends and family members meet occasionally or regularly in those places. Their architecture or visibility in the village does not matter. In earlier Western village research (Soikkeli et al., 2001), buildings that are important for visibility or that are architecturally pleasing to respondents may be considered significant buildings.

2.6.3. Housing. Almost all the villagers have lived in Western-style buildings all their lives. The Inuit housing tradition is not familiar to them, but some elders still remember living in sod houses in the 1950s. According to questionnaires and interviews, the respondents did not have specific aesthetic desires connected to housing architecture. The features mentioned were mainly functionality and community relations. The view to the sea was sometimes appreciated, as was the street view, but this was not emphasized. Silence at home and, therefore, sound insulation were considered important. Other basic important features also included adequate heat.

Interviews with the villagers in Shishmaref revealed that the current houses offer a good solution for living, but the cramped living conditions were considered a problem—there is a serious housing shortage in Shishmaref. There was also a strong wish for flexibility when life situations change. The representative or representatives of the older generation should be able to move into their children's homes. On the other hand, the village structure should allow young families to build a new building near their parents. Based on the discussions, young people would rather build near their parents' home than elsewhere in the village, but that is not possible. Could an expandable standardized housing house and a flexible village structure be a good starting point for planning?

Despite the seemingly harsh living conditions, beauty also has meaning in Shishmaref's built environment. The users personalize the environment with their own approval and views, which might not always be the same as those of the architects. The need for storage space also requires consideration. Western culture holds a value of invisibility for certain things, which is also sometimes called a Scandinavian design. A lot of things are hidden in closets and storage rooms, making it possible to retrieve things as needed. In Inupiat villages, practically everything you own is needed and used, so there is no need to hide anything; things must be easily accessible and are being used regularly. The crafts are waiting for the right moment to be made. The only 'vanity' in the visible living space is on the walls in the form of photographs presenting family and relatives, carvings, and remembrances. This is strongly linked to having respect for and remembrance of the community and the wider community; it is the maintenance of one's own roots and cultures. Yards, on the other hand, are open storage spaces, which is practical. In villages where importing goods is expensive and inconvenient, it is important to re-use them as much as possible. Thus, old plywood boards, pieces of board, boxes, etc., occupy the vicinity of the buildings. There is no need to build separate sheds for them because that would also confine precious building materials 'in vain.'

2.6.4. The village – the sense of a place. The built environment is strongly connected to the community and culture. The community and livelihood, on the other hand, are interconnected—one cannot survive alone. Community and subsistence livelihood strengthen the culture. In every interview, the villagers highlighted the importance of community: friends and family need to be close. The activities and village life are also strongly related to livelihoods. The concept of home is strongly related to the traditions of existence: food acquisition, customs, skills, traditional knowledge, and the connection between family and place. The word 'subsistence' or livelihood refers to more than just

products derived from nature; it signifies a way of life as well as a direction and relationship to the landscape and members of the community.

The concept of home and village in indigenous communities living on subsistence is a broad concept. It is not just a building with a yard or group of buildings, but it also includes regions and land use (Magga 2015, p. 110). Respondents in Shishmaref did not define the boundaries of the village like the researcher did. For the latter, the village took shape in relation to the built environment, and the beach defined the boundaries to the south and north. In previous studies (e.g., Soikkeli et al., 2005), the boundaries of the Western villages were perceived by an outside designer and residents in a similar way. The demarcation of the village was largely determined by the density of construction.

The surrounding nature is seamlessly part of the village in Shishmaref (see Figure 9). For an outsider, the shoreline seems to draw the boundaries of the village, even though the built environment ends before that. However, for many villagers, the sea is an extension of the village, not separate from it. For some residents, the only clear built boundary is in the east part of the village, with houses that have been built on the side of the old runway.

Figure 9. Landscape surrounding Shishmaref.[3]

The mental connection to the village's history and to its location near the old archeological village site was considered very important. The ancestral link between people and place is fundamental and inextricable. The built environment and planning might be a medium through which this link could be reinforced. The old area of the seal drying racks outside the village is strongly linked to livelihood, and it is an important community-unifying factor for the villagers. Likewise, the views from the village to the sea and across the lagoon to the mainland are important parts of village identity. During the summer, the locals spread out on the mainland for gathering, hunting, and fishing in their old ancestral areas. It is an integral part of their yearly cycle and their lives, although these trips outside the basic village usually last only a few days. Shishmaref is not just a village or a place; it is a way of living.

[3] The landscape is a repository of intangible values and human meanings. In Shishmaref, the landscape and the village have a close connection. Home and the surrounding area are "used," which means they are full of activities that give the area meanings and associations. These kinds of cultural landscapes have a strong bond with indigenous knowledge.

2.6.5. Values and planning. Today, the villagers in the Inupiat area seemingly live in a very Western way. Most villages, for example, have a water supply network and drainage, even though Shishmaref lacks those. The last sod houses disappeared from residential use in the 1950s at the latest, and they disappeared permanently over the following decades. Modern standard construction houses have brought a new kind of housing culture and have also shaped the existing culture. It is a lengthy two-way process, and a change in housing is part of it—residents are shaping their homes, but housing is also shaping how they live. The housing types do not have an active role in empowering the culture as dance and drumming have. The roaring television in the corner reinforces the American identity, which is also part of modern Inuit identity. However, it is harsh to argue that culture is disappearing because housing, mobility, hunting, fishing, etc., take place through modern means and methods. This claim was made by a school employee. According to him, Shishmaref will disappear, and it is not worth building a new village because the traditional culture has already gone. Accepting that a living culture is and has always been adapting and changing is not easy to understand for someone with a different cultural background. However, the values of the culture are still strong.

Among the common values of Alaska's indigenous people, sharing and helping each other are important (Alaska Native Knowledge Network, 2020). The values are also reflected in caring for the weaker ones. The elderly are taken care of; they typically live with their children's families when they can no longer get along by themselves. Therefore, the house should also serve as a three-generation dwelling. The most important issue would be to solve the problem of cramped houses. For the designer, this creates a certain contradiction. Saving heating energy encourages compact building, i.e., small and low spaces. On the other hand, the house should be flexible enough so that it would enable an elder to move in. The concept of one's own space differs from the Eurocentric view, and the requirement for one's own space is not absolute in requiring one's own room. One's own space can be a place, for example, in the living room, where the resident can do beadwork. Shared spaces can be found in the common workspace of the village, where people gather, for example, to do engraving work. Personal space can also mean one's own bed. There are different perceptions of what constitutes personal space in different cultures (e.g., Baldassare & Feller 1975, pp. 481–503), which is also something that an architect should keep in mind.

3.0 Discussion

For a planner, this situation poses challenges but also opportunities for understanding the village. The basic premise of both village planning and housing design should be to enable livelihoods and, thus, strengthen the culture. This does not mean that when the villagers appreciate a clear street structure and easy driving for snow machines, the streets of the village should be designed in a straight line, and the houses should be situated sparsely along the street, as discussed earlier. In the analysis phase, the challenge is in the comprehension when the designer and the local community have different cultural backgrounds. Even understanding the questions the same way or interpreting the answers in depth is a challenge.

In Shishmaref, the participatory research was carefully prepared in advance, but the methods chosen were not entirely successful. It is difficult for an outsider to attract locals to participate if there is no clear, practical benefit seen in a given task. The established participatory design methods serve Western communities where both the researchers and the participants have the same cultural

background. The fruitful collaboration in Shishmaref took place at a stage when the researcher was perceived to be at least somewhat familiar. That happened during the second one-week visit. At the end of the first visit, and especially during the second visit, the villagers were already talking very freely and enthusiastically about their experiences and thoughts about the village. Freedom and flexibility of time are demanded when the goal is participatory analysis.

During the analysis phase, it turned out that the analysis of a traditional indigenous village structure done by the architect alone remained incomplete. Therefore, the locals were also involved in the analysis process. For example, the terms "border" and "density" were commonly used in the analysis of villages but meant different things to villagers than to those in Western countries. Participatory analysis must go deeper than the surface and must seek to understand the meaning behind the terms. At the same time, it must be remembered that the opinion of one participant does not yet reflect the opinion of the entire user group.

An architect's role in village planning is challenging and demanding. It is necessary to design a functional environment—as always—but planning solutions should also strengthen the community. Quite often the community is used to getting something after waiting several years, and people are satisfied when they get it. Therefore, it is the architects' responsibility to set higher goals than just fulfilling customers' basic needs. The debate on climate change and sustainable development has focused too much on economic and ecological sustainability. This can be seen in research on Arctic built environments, which has focused more on buildings than on village environments. Cultural sustainability should be at the core of the planning for the indigenous villages in the Arctic. Examining the fundamental needs of a community—including the cultural needs—reveals a framework for design implications through which we can both evaluate the existing village structure and propose a new interpretation of a village. Like people, built environments are complex things that try to balance daily needs with set goals. Finding ways to satisfying interrelated needs and aspirations is a major part of what planning is all about.

When previous research projects on Western village environments (e.g., Soikkeli, 2017, p. 19) emphasized the importance of a good environment as a cultural service provided by the municipality, this goal was not enough in the relocation processes. Indeed, the best cultural service provided would be to plan an environment that cherishes the Inupiat values and thus strengthens the culture and community. The built environment also has a role in this, even if it is practical, dictated by necessity, and scarce. There are also more needs than the capacity to finance and build. Good architecture and planning do not need extra funding; it is more a question of intent, of understanding the culture, and furthermore, of giving enough time for the planning processes, including genuine participatory planning. When all the priorities are woven together carefully and thoughtfully, they can create villages that strengthen the cultural identity of communities.

The indigenous architecture or the idea of community-led design (e.g., Grant et al., 2018) was not disussed in this article, but the focus was on attempts to understand the village environment. In the discipline of architecture, there is a strong emphasis on creative control during the studies. It is time to re-learn and give an even greater role to local communities; it is part of the decolonization process as well. There is a strong demand for the internal understanding of cultural responsibility—extending the design analysis phase from current practices, slowing the process, and genuinely listening to the local communities could be a good start.

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