

## **Kangerlussuaq: evolution and maturation of a cultural landscape in Greenland**

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**Abstract.** The cultural landscape reflects the composite influences of the regional physical, cultural, and technological environments. It is a dynamic entity which evolves over time and the perceptions of its human inhabitants is influential in the process. This paper is a descriptive analysis of Kangerlussuaq, a young but maturing settlement located in west Greenland near the inland ice. The site's natural resource base did not attract permanent settlement by the Inuit or Scandinavian colonists, but in the early days of the World War II, the American military took advantage of the exceptional flying conditions here and established an air base. In time, civilian functions developed as Kangerlussuaq became the hub for air travel in Greenland. A transitory utilitarian settlement was eventually transformed into a more permanent settlement. In recent years there seems to be a growing sense of community and place attachment as the cultural landscape begins to exhibit more of the components of a real 'town'.

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## 1. Introduction

A cultural landscape is a living breathing organism that has developed over time and reflects the composite influences of the regional physical, cultural, and technological environments (Koreleski, 2007; UNESCO, 2013). It is comprised of a physical area with natural features and elements modified by human activity that reflect ‘human relationships with and attachment to that landscape’ (Lennon, Matthews, 1996: 4). Anthropologists have suggested that a landscape exists ‘by virtue of its being perceived, experienced, and contextualised by people’ (Knapp, Ashmore, 1999: 1) making human beings ‘...just as much part of the landscape they live in as are the so-called “natural” features’ (Johnston, 1998: 61–64).

Geographer Carl O. Sauer (1925) adroitly summarised the process of the development of a cultural landscape with these words ‘Culture is the agent, the natural area is the medium, the cultural landscape is the result.’ More recently, Wu (2010) tells us ‘Landscapes are endowed with, and continue to foster the development of cultures, legacies, and stories.’ Even in the Arctic there remain very few expanses of land which have not been affected by human cultures and ‘their inputs of energy/matter and/or information’ (Naveh, 1995: 47). The story

of the Arctic settlement of Kangerlussuaq (formerly Søndre Strømfjord) provides a fascinating illustration of the interactions involved in the creation, evolution, and maturation of a cultural landscape.

Kangerlussuaq lies about 75 kilometers north of the Arctic Circle in west Greenland. It is the only inland settlement in Greenland and consequently does not possess the cultural features typical of coastal places. The settlement at the head of the 190 kilometer-long Kangerlussuaq Fjord (Fig. 1) has a relatively short history which essentially begins during the Second World War when the United States established an air base at the location. Over a period of 70 years, the location has undergone an evolution from military installation to international civilian airport. As the transition occurred, a ‘real’ town began to emerge. Over time, a maturing cultural landscape developed under people and agencies with different intents. This paper presents a descriptive analysis of the present-day cultural landscape of Kangerlussuaq and explains how interplays between the physical landscape and human needs and initiatives have created a town unlike other settlements in Greenland. The purpose of this study is to demonstrate through the story of Kangerlussuaq what Nasauer (1995: 230) implied when she stated ‘humans not only construct and manage landscapes, they also look at them, and they make decisions based upon what they see (and know, and feel)’.

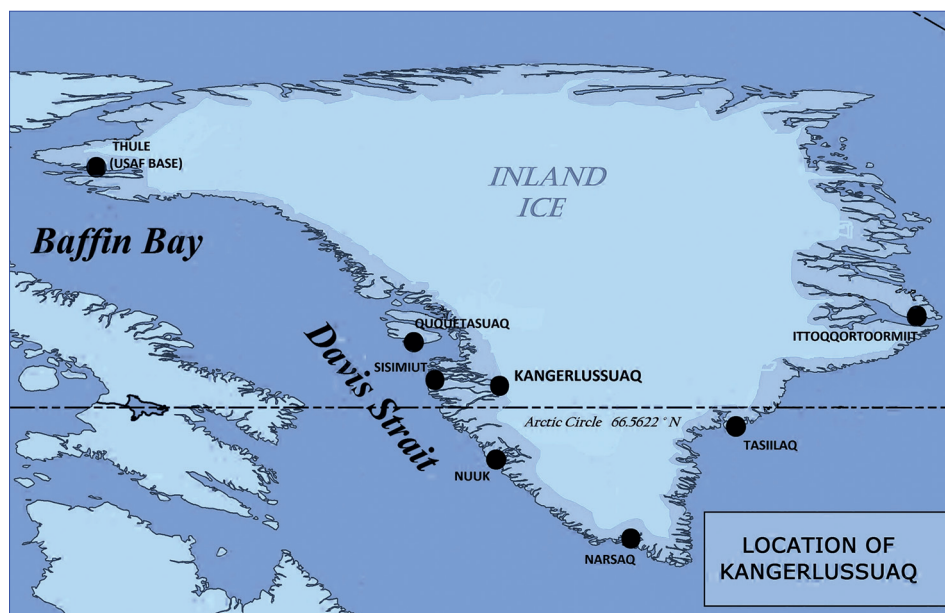


Fig. 1. Location of Kangerlussuaq.

Source: Map designed by author using ArcMap 10 and Microsoft Paint programs

## 2. Materials and methods

An extensive literature review of books and papers on the settlement history of Greenland was conducted to ascertain how the inland settlement of Kangerlussuaq evolved in a different manner than the major coastal settlements on the island. Once this was established, a theoretical framework was developed by examining some of what had been written regarding the components and development of cultural landscapes in general. In order to integrate theory and the reality of Kangerlussuaq the author undertook field work in the settlement during July 2013. Field work incorporated several guided excursions with World of Greenland-Arctic Circle and independent explorations of the settlement and surrounding territory. A series of casual interviews with local residents, airport personnel, and tourists was conducted to gain insight into personal perceptions of the settlement and record some oral history. Upon returning home, the author continued correspondence with several current and former residents and initiated communication with former American airmen who had been stationed at Sondrestrom. Then commenced the crafting of a de-

scriptive analysis in the spirit of the 19<sup>th</sup> Century geographer Carl Ritter who told us that ‘The earth and its inhabitants stand in the closest mutual relations, and one element cannot be seen in all its phases without the others’ (Dickinson, Howarth, 1933: 151).

## 3. The physical setting

The Greenland ice sheet (continental glacier) occupies the heart of the world’s largest island and covers about 7/8 of the landmass. Only select parts of the coastal fringe, particularly in the south and west, are marginally suitable for human habitation.

The site of Kangerlussuaq is approximately 25 kilometers from the edge of the inland ice (Fig. 2). The settlement is situated upon the alluvial plain of the Qinnguata Kuussua (Watson) River which is fed by meltwater from the Russell Glacier, a land-terminating outlet of the West Greenland ice sheet. To the north and south the plain is flanked by highlands (elevations up to about 600 m above sea level) underlain by pre-Cambrian igneous, metamorphic, and migmatic rock. Numerous freshwater and a few saline glacial lakes dot the region.



**Fig. 2.** The Russell Glacier approximately 25 km east of Kangerlussuaq

Source: Photograph by the author

The climate of the Kangerlussuaq region is classified as ET (polar tundra) in the Köppen system of climates. As the site is almost 200 kilometers from the sea, the climate here is very continental with a July mean temperature of 11–12°C and a January mean of minus 20°C. Winter is long and summer is ephemeral. This is the land of the ‘midnight sun’ with almost 4 months of continuous daylight and over two months of total darkness (Willemse, 2002). Continuous permafrost is found throughout the area because of the latitude and the proximity to the inland ice. Fog and heavily overcast skies are exceptional events with the airport experiencing fog only 10.7 days a year (Nielsen, 2010). Precipitation is low, averaging 13 cm each year. The ground tends to have some measure of snowcover from early October to early May with depth being greatest usually in early January (median depth 11 cm). Winter blizzards do occur, but with much less frequency than in other parts of Greenland. Surface winds tend to blow with an easterly component off the inland ice and, with the exception of an occasionally strong katabatic wind, general velocities are low (Hedgegaard, 1982). Because of topographic barriers such as the highlands flanking the fjord strong winds are uncommon and less intense at Kangerlussuaq than in other parts of the island (Nielsen, 2010).

With the short growing season, sparse precipitation, and generally nutrient-deficient soils, vegetative groundcover is discontinuous in many places. Most plants are of short stature. The most common vegetation types are dwarf-shrub heath, willow-copse, fen, steppe, fell-field and saxicolous (adapted to living on and amongst rocks) plant communities (Böcher, 1954).

#### 4. The beginning of a cultural landscape

Historically, the inland ice and its environs were generally avoided by the indigenous Inuit who viewed the inland ice as extremely dangerous as it was haunted by *qivittut* (human outcasts), ghosts, and a number of other potentially hazardous creatures (Grønnow, 2009). Despite the real or imagined peril, in the warm season some coastal dwellers of west Greenland would make forays to the tundra plains and plateaus near the ice to hunt reindeer

and to fish the lakes and rivers for arctic char, but no permanent settlements were established. Gretel Ehrlich relates part of a conversation with an old Inuit woman who told her ‘Every summer we went to Kangerlussuaq...It was good hunting...So many reindeer...’ (Ehrlich, 2001: 13). It was estimated in March of 2000 that over 50,000 reindeer resided within a 26,000 square-kilometer region which included Kangerlussuaq and environs (Cuyler et al., 2002) and an earlier survey reported that  $\frac{3}{4}$  of all observed reindeer were within 30 kilometers of the inland Ice Cap (Strandgaard et al., 1983).

From their cultural perspectives, the physical environment of the area between the head of Kangerlussuaq Fjord and the inland ice held little promise for the Inuit and the Scandinavian colonists of Greenland. Reindeer and the occasional arctic fox and seasonal runs of fish are not the kinds of resources that inspire permanent settlement. It would take another culture to see value in the environment of this site. During the Second World War, after Denmark fell to Germany, responsibility for the security of Greenland was taken up by the United States which constructed several air bases in Greenland, one of which was Bluie West Eight at the head of Kangerlussuaq Fjord. This location was selected by the American military because meteorological conditions in the area were, despite the cold temperatures, exceptionally good for aviation. With the opening of the base a cultural landscape was born on October 20, 1941. The *Doctrine of First Effective Settlement* states that ‘Whenever an empty territory undergoes settlement... the specific characteristics of the first group able to effect a viable, self-perpetuating society are of crucial significance for the later social and cultural geography of the area’ (Zelinsky, 1973: 13–14) In simpler terms, the initial colonisers can have a profound and lasting impact on the culture and cultural landscape of a place, and in some ways that has been true for Kangerlussuaq as relics from the American air base continue to impact not only the regional landscape but the local culture as well.

The new cultural landscape was largely utilitarian—runways and fuel storage and a number of mostly stark prefabricated buildings to house personnel and store equipment (Fig. 3). The intent had been to use the base as stopover point in ferrying aircraft to Europe, but in practice few aircraft were ferried to

Europe through Bluie West 8. Instead, the base was used primarily as an alternate landing field to the bases at Thule and Narsarsuaq, a radio and weather station, and a center for search-and-rescue operations in Greenland. It is estimated that during the war there may have been at times 2,000-3,000 personnel at the base (Hansen, 1994), more people than have ever been in the area since. In 1950, Bluie West 8 was given over to Danish authority, but then in April, 1951 the base reverted to American hands when Denmark and the USA signed a new defense agreement in light of Cold War fears. Bluie West 8 was then renamed Sondrestrom Air Base. It would serve as a Distant Early Warning Line base and supply station for other such facilities. Construction activity increased and the areal extent of the base grew. Buildings were often hastily put together. As can be seen in Figure 3, most buildings appear to have been haphazardly placed between the runway and the river. The building sites were probably selected because of the ease of hasty construction, so there is a lack of symmetry. In the years following the war, the base and 'town' layout would become a little more regular (Fig. 4). A USAF airman stationed at the base in 1962 described the architecture of the base: 'Our quarters were World War II quick-construction chic but the

base steam plant kept them warm. Built on permafrost, the hallways had developed up and down spots over the years and the walls weren't exactly plumb...?' (Trail, 2012). Amenities at the American base increased over time with the provision of a gymnasium, swimming pool, and bowling alley. Parts of the base were beginning to look a little more like a settlement than a military installation. The succeeding decades saw expansion of the base and settlement for several reasons: (a) in November of 1954 SAS (Scandinavian Airlines System) started using the base for a stopover and refueling station for its flights between Copenhagen and Los Angeles. With regular civilian flights more scientists could access the inland ice just a handful of kilometers away; (b) in 1960 the Danes built a steel-grey transit hotel at the airport terminal and this facility has been expanded over the years. The base/airport was becoming the gateway to Greenland, but the local population was largely transient and the cultural landscape still reflected that. Besides the airport hotel, there was another new edifice that perhaps also signaled some permanence – a single-purpose church building was erected on base in 1959. During the airbase time, religious services from various denominations were held in the church. Today it serves Lutheran Christians.



**Fig. 3.** Aerial view of Bluie West 8 in 1943

Source: From author's personal collection



**Fig. 4.** Danish hotel in 1956

*Source:* Photograph by author of a wall-hanging at the Kangerlussuaq Museum



**Fig. 5.** Willie the musk ox ambles down the street at Sondrestrom Air Base in 1969

*Source:* Photograph courtesy of Lars Malmquist. Used by permission

Sondrestrom Air Base was abandoned by the United States in 1992 as by that time most of the American military activities in Greenland were being concentrated at Thule base located approxi-

mately 1,200 kilometers north of Kangerlussuaq. As a consequence, the population of the settlement dropped from 473 in 1990 to 285 in 1995 as the need for civilian labour diminished. The property

was given to the Greenland government and with an increase in Air Greenland activity in Kangerlussuaq the population began to increase (to 446 by the year 2000).

Typically it is culture that brings about adjustments in the natural setting, but in Kangerlussuaq a natural addition from the outside, the musk ox, has impacted the regional cultural landscape. The large woolly sheep-like tundra denizens are not native to the Kangerlussuaq region, but in 1962 and 1965, a small herd of 27 were brought in from northeast Greenland. The habitat around Kangerlussuaq was very accommodating and the musk oxen proliferated. Soon some animals became part of the local scene. One bull in particular frequented the base with regularity around 1969 (Fig. 5). Locals named him ‘Willie’ and on occasion he napped on the runway and confronted airmen and vehicles. For several years he was a fixture on base and the USAF Firebirds squadron even had Willie as their unofficial mascot (Bailey, 2012).

## 5. The cultural landscape in 2013

It has been noted that the physical characteristics of the built environment can facilitate the development of a sense of community (Plas, Lewis, 1996). Even

though much of Kangerlussuaq’s physical plant today was erected during the airbase era, the uses of many structures have been changed to accommodate a largely civilian settlement in which many persons see themselves as permanent residents. Also, new construction has had little, if any, military purpose. With these transformations, a new sense of community has emerged that is perhaps an indication of a maturing cultural landscape.

The cultural landscape of Kangerlussuaq is dominated by the airport which is partly a relic of the former American airbase. There is still a military presence, albeit a small one; the garrison Luftgruppe Vest, Royal Danish Air Force Detachment Grønland is stationed here. It could be stated that the ‘town’ has two ‘sides’. To the north of the airport runway are the airport and hotel/conference facilities, tourist offices, the post office, a sizeable supermarket, the police station, and several residences (Fig. 6). None of the buildings in this section are derived from the former air base. Most were constructed on behalf of the Danish Royal Greenland Trade Department. The ‘real’ settlement where most people live today and where the school, church, and several industries are located occupies the land south of the runway to the north bank of the Watson River (Fig. 7). This was the area where most of the air base had been situated. Regular bus service connects the two parts of the settlement during the business day.



**Fig. 6.** North ‘side’ of Kangerlussuaq in 2013. 1. supermarket, Meteorological Institute and Flight Information Center are all housed in this building; 2 post office; 3. electricity generation plant; 4. apartments; 5. airport terminal; 6. airport hotel

Source: Photograph by the author



**Fig. 7.** Kangerlussuaq. View of a portion of the settlement between the airport and river in 2013. 1. Royal Danish Air Force garrison; 2. Hotel Tuttu; 3. Kangerlussuaq International Science Support; 4. Ami Butik; 5. school and library; 6. apartments; 7. city office; 8. Kindergarten; 9. sports complex; 10. Arctic Green Food musk ox processing; 11. apartments; 12. cinema; 13. church; 14. apartments; 15. museum

*Source:* Photograph by the author

Today Kangerlussuaq has approximately 550 residents, the great majority of whom are employed in airport, tourist, and ancillary activities. Because of the brief tenure of the settlement and because the vast majority of residents (mainly Inuit or Danish) have their roots in other places in Greenland or Denmark, the settlement has just recently begun to develop a cultural identity. For example, most institutional, industrial, and commercial buildings in the settlement are pre-fabricated buildings typical of arctic towns in both Greenland and Nunavut (Canada), but most single-family homes (see Fig. 8a) tend to be of wooden construction and colorfully painted (bright blues, greens, reds, and purples) in the style brought from Scandinavia by Lutheran missionary Hans Egede in the 1600s. This gives parts of the settlement a true Greenlandic appearance. Of course, construction must make concessions to nature. Because of permafrost, almost all local buildings are set on pylons driven deep into the ground below the active layer in order to minimize shifting during the seasonal freeze-thaw process.

The former American presence in Kangerlussuaq can still be seen in several areas. Near the settlement are wreckages of several T-33 Shooting Star train-

er aircraft that went down in a white-out back in 1968. Debris from these aircraft lies virtually intact because of the dry and cold polar tundra climate which inhibits rust and decay. The most accessible site is located several kilometers east of Kangerlussuaq along the road that leads to the inland ice and another, slightly more remote, is found along the shores of the saline lake Little Saltse several kilometers southwest of town (Fig. 8b).

An iconic throwback to the American era is seen west of the settlement near the road that leads toward the Sondrestrom Upper Atmosphere Research Facility and the harbour. Two granitic outcrops are painted white with their peaks colored red (Fig. 8c). The practice was started in the 1950s by U.S. airmen and the exact reason is not documented (Source: interviews/correspondence with airport workers and former U.S.A.F. personnel). Speculation is that the painting was done as a navigational marker for the runway approach or as a hazing ritual for recently arrived airmen. The peaks are locally called either 'the tits of Marilyn Monroe' or 'the grave of Marilyn Monroe'. The painted monoliths today have become a tourist attraction and the paint is maintained by Mittarfeqarfiit (Greenland Airport Authority) at



Kangerlussuaq. Figure 8d shows the harbor at the head of Kangerlussuaq Fjord 10 km northwest of the airport which is also partly a remnant of the American presence during the Second World War (At that time it was called Camp Llyod). This was where materials and workers were off-loaded during the early phase of air base construction. Today container ships delivering goods and a few cruise ships call during the summer months. Because the water depth is shallow nearshore, ships must anchor some distance away. Cargo is off-loaded onto one of the har-

bour's flat-bottomed barges (former U.S. Navy LCM or 'Mike' boats) to be brought to the wharf. Similarly, passengers from cruise vessels are taken to the wharf in small craft. The names of some visiting ships have been painted on the rock faces on the north side of the fjord. The Sondrestrom radar facility which studies the ionosphere is situated in a small community known as Kellyville nestled in the ridges a few kilometers north of the harbour. Its radar dish is easily seen and can be taken to be an indicator of the past and present scientific function of Kangerlussuaq.



**Fig. 8** (a) Residences along the Watson River; (b) Wreckage of American trainer jet on the shore of Little Saltse; (c) The 'tits' of Marilyn Monroe; (d) Kangerlussuaq harbor

Source: All photographs by the author

With regard to American culture, a pizza restaurant has been part of the scene since the 1950s. Originally located in a small shack behind the officers' quarters, today the pizza restaurant Moskus Pizza is located on the main street south of the runway and occupies part of a complex (Fig. 9a) that includes a Thai restaurant and a butik (small grocery store). The complex serves both townsfolk and tourists.

Tourism, while still in its infancy in Greenland, is a significant part of the economy and cultural landscape of Kangerlussuaq. The relative abundance of land-based wildlife and the proximity to the inland ice are the major attractions. In the 1990's Volkswagen Motors of Germany constructed a 30 kilometer gravel road to the ice sheet where they established approving ground for automobile performance in

extreme cold and conditions of near-zero friction. In 2005 the car company abandoned the facility and Sisimiut Municipality (of which Kangerlussuaq is a part) has taken responsibility for maintenance of the road. A local operator, World of Greenland-Arctic Circle and its predecessors, has regularly offered tours to the inland ice and other natural attractions in the region for several decades.

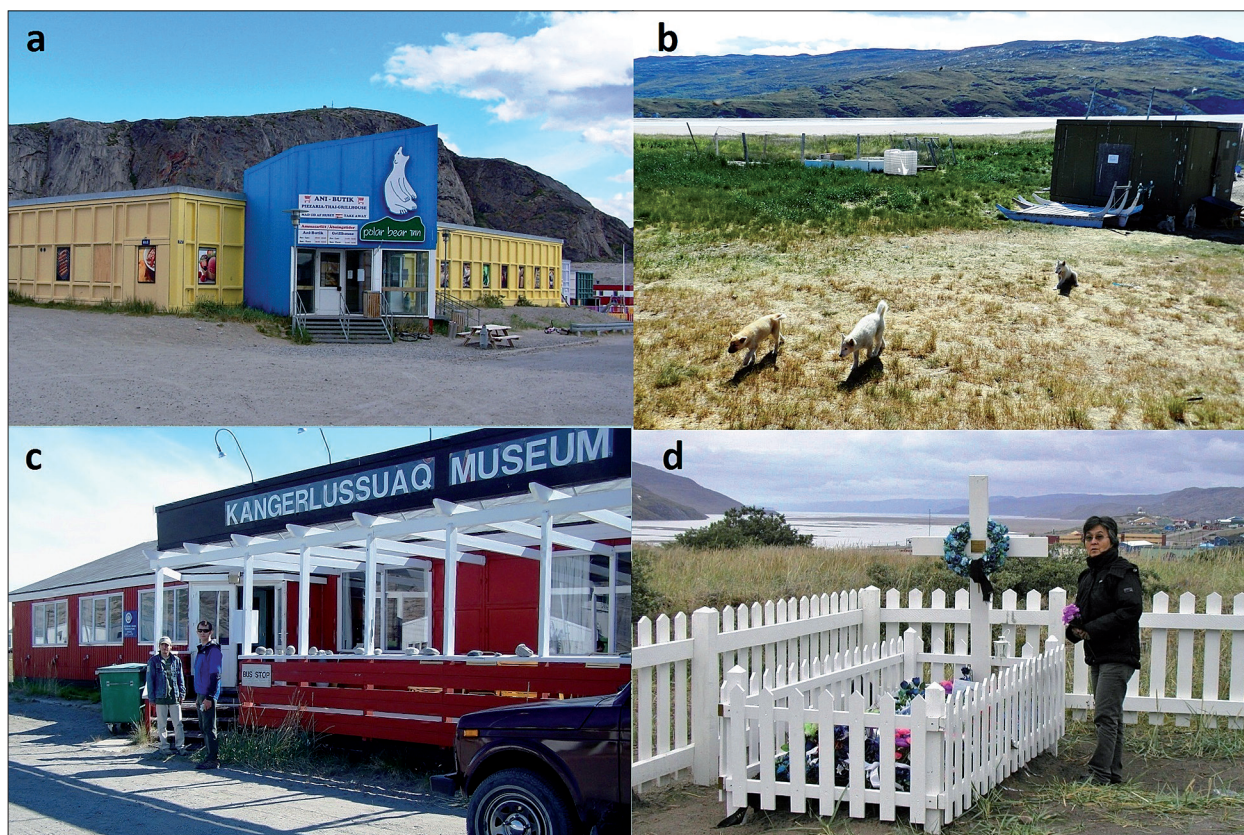
There are in Kangerlussuaq a few small reminders of traditional lifestyles. In the winter, some locals still travel on sledges pulled by Greenlandic dogs. The dogs of the settlement live in a kennel complex a few kilometers west of town (Fig. 9b). Of course some of these dogs' jobs are to take tourists on winter dog-sled adventures. Another traditional remnant is the hunting of reindeer and musk oxen. In the case of the musk ox, the introduced herd of 27 yearlings grew to 3,000 by 1990 (Olesen, 1991: 112). Today the animal numbers between 10,000-25,000 in the region (Greenland Institute of Natural Resources, 2012). Controlled hunting is allowed in order to keep a proper ecological balance. The musk ox is hunted only during the winter because there are few roads in the region except near the settlement. Hunters access the herds and bring their kills back to town using snowmobiles or dog-sledges. While many of the carcasses are processed by the hunters themselves for personal consumption, a small cottage industry revolving around the musk ox developed and there is a 'factory' where musk ox carcasses are processed and the meat and by-products packaged and distributed locally and in towns on Greenland's west coast. The 'factory' is located a city block or so from the Moskus Pizza (where one can get a pizza topped with slices of musk ox). Like so many other older buildings in Kangerlussuaq, the 'factory' building had served a different purpose during the air base days when it housed a bakery and plant where powdered milk was liquefied. The processing plant normally operates during the winter hunt in February, but may not operate in winter 2014 due to financial exigencies at Arctic Green Food that operates the plant (correspondence from Laust Højbjerg, October 2013). There is also a workshop and sewing room (just north of the Danish Air Force building) where qiviut (Greenlandic for musk ox wool, in Danish 'muskusuld') is processed commercially.

If the maturing of a cultural landscape starts when the people begin to develop a sense of common heritage and collective identity, then it is in the early 1990's when Kangerlussuaq begins the process. It was during that time when the Kangerlussuaq Museum (Fig. 9c) was established in a building that had previously been the Danish hotel (1950s) and later the American base headquarters (1960-1992). It displays military memorabilia, the preserved base commander's office, some items of nature, and other relics that depict that the settlement

evolved through the contributions of three cultures, i.e., American, Danish, and Inuit/Greenlandic.

Another indicator of a maturing cultural landscape is the establishment of a local cemetery (Fig. 9d). As stated before in this paper, most of the people living in the area have their roots elsewhere in Greenland or Denmark and the few who have died in Kangerlussuaq have had their remains shipped to their home locale. This changed in 2012 when the first burial in Kangerlussuaq took place and a cemetery was established. Jordan (1982) suggests that cemeteries 'are not primarily for the dead, but for the living' and the graveyard has become a point of pride for some residents who eagerly point out the site to visitors and tourists. There appears to be a growing sense of permanence in the community and recently one of the unused buildings near the kindergarten has become a home for neglected children from throughout Greenland.

Place attachments are emotional bonds that form between people and the physical environment. Location by itself is not the basis for place attachment – instead it is the interaction between people and place that generates the attachment (Altman, Low, 1992; Kyle et al., 2004). Conversations with current and former Kangerlussuaq residents indicated that place attachment is a growing phenomenon within the community. No matter what person's age, ethnicity, current or former occupation, or tenure in Kangerlussuaq, most expressed: (a) a sense of wonderment and respect for the tundra, glaciers, and wildlife; (b) a measure of pride in living in what outsiders may perceive to be a harsh climate; (c) some knowledge of the settlement's history; and (d) a positive, but cautious, vision for the community's future. Such sentiments may reflect a maturing cultural landscape.



**Fig. 9.** (a) Ami Butik and pizza restaurant; (b) part of the Greenlandic dog kennel complex; (c) Kangerlussuaq Museum; (d) the cemetery and its lone grave

*Source:* All photographs by the author except d which is courtesy of Erling Dahl, used by permission

The story of Kangerlussuaq is not finished. In the last several decades two discussions have been initiated and each proposal would have significant ramifications for the settlement.

There have been dialogues about and geological/environmental assessments made regarding a proposal to construct a 170 km road between Kangerlussuaq and Sisimiut, a settlement of 5,500 people on the Atlantic Coast (Villumsen, et al, 2007). Sisimiut, the island's second largest town after Nuuk, is a significant fish-processing center and is the headquarters for Pilersuisoq, a chain of all-purpose general stores in Greenland. If constructed, the road would be the longest in Greenland and the only one that would connect two distant settlements. At present, land-based transport is only available for a few months in winter when snowmobiles and dog-sledges can be used to traverse the distance. A year-around alternative is the regular, but expensive, Air Greenland service with flights that take less than one hour. A road would facilitate access

and most likely increase commerce and tourism between Greenland's northernmost ice-free port and Kangerlussuaq. The export of fresh fish by air and the import of tourists, scientists, and others would give central Greenland with its huge catchment area an economic enhancement. It has been suggested that musk ox farming be attempted because the entire animal could be then commercially utilized (Petersen, 2010: 444). The region around Kangerlussuaq would be ideal for such enterprise and a road connection to Sisimiut would assist in export.

At various times since the late 1980's, the government in Nuuk and Air Greenland have held controversial discussions about constructing a new airport at Nuuk to serve as the island's hub of operations. If a new airport capable of handling large aircraft would be put in the area of the capital, the airport at Kangerlussuaq would be closed (Kristensen, 2011). Interviews with local residents indicated that the closure of the airport would have devastating economic and cultural consequences for the settlement as

many of the people have developed an attachment to the town and consider it their permanent home.

## 6. Conclusion

The evolution of a cultural landscape from its origin as a military installation through its civilian transition to its maturation into a community has been demonstrated. The combined influences of the natural setting, the strategic situation, and cultural values upon the process have been summarised and it has been demonstrated as Naveh (1995, 48) relates that (a) 'the interaction of culture with a landscape is a reciprocal, and even cybernetic relation' and (b) cultural impacts also mold the landscape, but a person's view of that landscape is also a product of culture. With regard to Kangerlussuaq, Naveh's first point is easily seen in the economic activities in the settlement and region. The second point about environmental perception is evident in the establishment of a museum and the development of a cemetery as both institutions reflect local belief that the settlement's status has changed from transient to permanent. The growing sense of place attachment also points to the maturation of the cultural landscape. But as cultural landscapes are dynamic, questions arise as to the future direction of Kangerlussuaq.

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