

## **Learning by watching**

### **Vernacular Iñupiaq-Inuit design learning as inspiration for design education**

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*In this article, I explore a single case of vernacular clothing design — the practice and learning of design for contemporary Iñupiaq-Inuit clothing made by women from Kaktovik in Northern Alaska — and I hope to contribute to a better understanding of design practice and learning in general. Design research has many unexplored areas, and one of these omissions is vernacular design, or folk design. In my opinion, professional and academic design may well have something to learn from vernacular design, although this research is about vernacular learning and about what, why and how the ‘making’ discipline of clothing design is learned. This study was based on observations of and interviews with seamstresses and research-by-design, which includes authorial participation in designing and sewing in adherence to Iñupiaq tradition. All of this was recorded on digital video film. The investigation of Iñupiaq-Inuit clothing design indicates that watching was the most common way of learning, a phenomenon I have chosen to call learning-by-watching, a concept that can be seen as a development of both Schön and Wenger’s theories of learning, as influenced by John Dewey’s theory of learning-by-doing. This study will be discussed in connection with design education, from kindergarten to professional studies in higher education, in the forthcoming research project, Design Literacy, the purpose of which is to develop theory to improve design education in both compulsory and academic design education. Consequently, to improve design education in general, a thorough focus on learning-by-watching in communities of practice would make for more reflective practitioners and more sustainable design practices in the long run.*

Keywords: Vernacular design, clothing design, design thinking, learning-by-watching, learning-by-doing.

#### **Vernacular design**

One of the first design theoreticians, Christopher Alexander (1964), writes about design in what he calls *unselfconscious cultures*, which in this article is termed *vernacular design* (Reitan, 2006, 2007). Interpretations of the vernacular clothing designers discussed here have been inspired by Schön’s (1983, 1987) theory of designers as conscious *reflective practitioners* — even though, in this case, the reflexivity happens to be only partially verbally articulated and for the most part, is expressed as actively functioning tacit knowledge. This is concept based on Thomas Kuhn (1970), who refers to Michael Polanyi’s (1983 [1966]) concept of tacit knowing. Moreover, this study also makes use of Wenger’s social learning theory (Lave & Wenger, 1991; Wenger, 1998), namely, Wenger’s conception of *communities-of-practice*, and provides a perspective on learning that differs from the conventional one, which is focused on learning in educational institutions. Thus informed, my interpretation of vernacular design and the production of vernacular Iñupiaq clothes demonstrates how the learning process can be viewed: 1) a collective rather than an individual process; 2) continuous,

with neither a beginning nor an end; 3) integrated into daily life and not a separate, discrete activity; 4) learned as a result of observation, in particular watching and visual learning; 5) not a result of oral or text-based teaching; 6) appraisal of the learning process is integrated into practice; 7) knowledge is demonstrated through specific practice, and not theorized, and 8) knowledge is always demonstrated in context. This view of vernacular design is then discussed related to formal design education and how watching of the design process influences young people in design education.

### **The origin of the word anorak**

The word '*Iñupiat*' means 'authentic' or 'special' human beings (Burch, 1998). *Iñupiaq* is the singular of *Iñupiat*, also used as an adjective, and name of their language – North Alaska Inuit (Eskimo). The Native language of the *Iñupiat* is the Inuit-*Iñupiaq*. Inuit peoples all the way from northwest Alaska, through Canada to Kalaallit Nunaat (Greenland) speak Inuit-*Iñupiaq* in different dialects (Woodbury, 1984). These dialects are as different as the Scandinavian languages Norwegian, Swedish, and Danish (Kaplan, 2011).

The letter written as *ġ* in the *Iñupiaq* language, as in *annuġaaq*, is pronounced as a kind of *r*. *Annugaaq* means clothing in general in the *Iñupiaq* language (Clothing, 2014). In the Kalaallisut dialect of the Inuit language in Greenland, the same word is spelled *annoraaq* (Clothing, 2014; Annugaaq, 2013). This word is the origin for the English word *anorak* (Parka, 2014), although this is a misspelling of the Inuit word, *anoraq*, with just a single *n* and a single *a*. In many languages, the word *anorak* is reduced to mean only the outer garment, not garments in general as in *Iñupiaq*. In the *Iñupiaq* language, the outer garment is called *atigi* (Fig. 1a) in the singular and *atigit* in plural; the inner garment is called *atikhuk* (Fig. 1b) in singular and *atikhukiit* in plural.



Figure 1a,b: Anguyak in her fabric *atigi* and *atikhuk*  
1a © Photo Galleri Galaaen, Roros

### The study of contemporary vernacular Iñupiaq clothing design and design learning

The Iñupiaq village of Kaktovik is located in the North Slope Borough (Fig. 2). Kaktovik is one of the most remote villages in Alaska. The nearest neighbouring settlement is the oil field of Prudhoe Bay about 200 km to the west. The nearest city from Kaktovik is Fairbanks in the middle of Alaska, 650 km away. The long distances and lack of road links to the outside world might indicate that the inhabitants of Kaktovik are very isolated; however, despite the remote location they travel a great deal. In earlier periods of their history, the Kaktovimiut travelled with dogsled teams and covered vast distances. Today they usually go by airplane. In 2010, Kaktovik residents numbered approximately 308; nearly 88 percent of residents were Iñupiat (North Slope Borough, 2014). The few non-Iñupiaq in the community live there mainly for short periods.



Figure 2: Map of Alaska with Kaktovik

This study was based on participant observations, interviews with seamstresses, and my own *research-by-design* (Nilsson & Dunin-Woyseth, 2011), which includes authorial participation in designing and sewing in adherence to Iñupiaq tradition. To observe the design process is difficult because it takes place inside the designer's head (Lawson, 2006), and perhaps body, as well as outside in the observable outer world. What is possible is to watch what the designer does, and listen to what she says. But this seldom, or rather, never, reveals everything that is 'going on in the designer's head'. To give a more well-rounded picture, I triangulated by adding interviews (Kvale, 1996) and also went to a similar design process myself. Everything was recorded on digital video film. The foundation for the study was a review of design research according to its vernacular aspects, as well as documentation of contemporary Iñupiaq clothing design. In addition to the design process, I also observed the use of *annuġaat*, which is an important feature to the design. The traditional Eskimo dance is an increasingly

important part of Iñupiaq culture, and this dance is also an important arena for wearing, displaying and evaluating of *annuġaat*.

Most of the Iñupiaq women of Kaktovik wear fabric *atigit* every day (Fig. 3a), in cold weather and even during shopping trips to the city of Fairbanks or fishing trips to the mountains. Men wear them at least for special Iñupiaq ceremonies, as Eskimo dance and celebrations of the whaling (Fig. 3b). It seems as if they regard the *atigi* as the most practical and functional garment and also the most beautiful clothing to wear. Without too much money or labour, they can change the appearance of the *atigi* often by just changing the thin outer cover — actually an *atikluk* — outside of the more expensive lining, which can be obtained from special stores that outfit clients for polar expeditions. The expensive lining lasts for many years.



*Figures 3a, b:* Different female and male Iñupiaq *atigit* in the village of Kaktovik

Pictures from the 1940s to the 1960s (Fig. 4) show Iñupiaq women dressed in clothing made of the same kind of fabric as Euro-American women, often striped or chequered patterns, but the shape was in the original Victorian style but shorter. The Iñupiat adopted the Victorian style of dress – more or less voluntary – and then adapted it to their peculiar Iñupiaq style of clothing, and this tradition remains. However, I hardly saw any striped or chequered clothing on my visits.



*Figure 4:* Women from Point Barrow, *atigit* with striped or chequered patterns.

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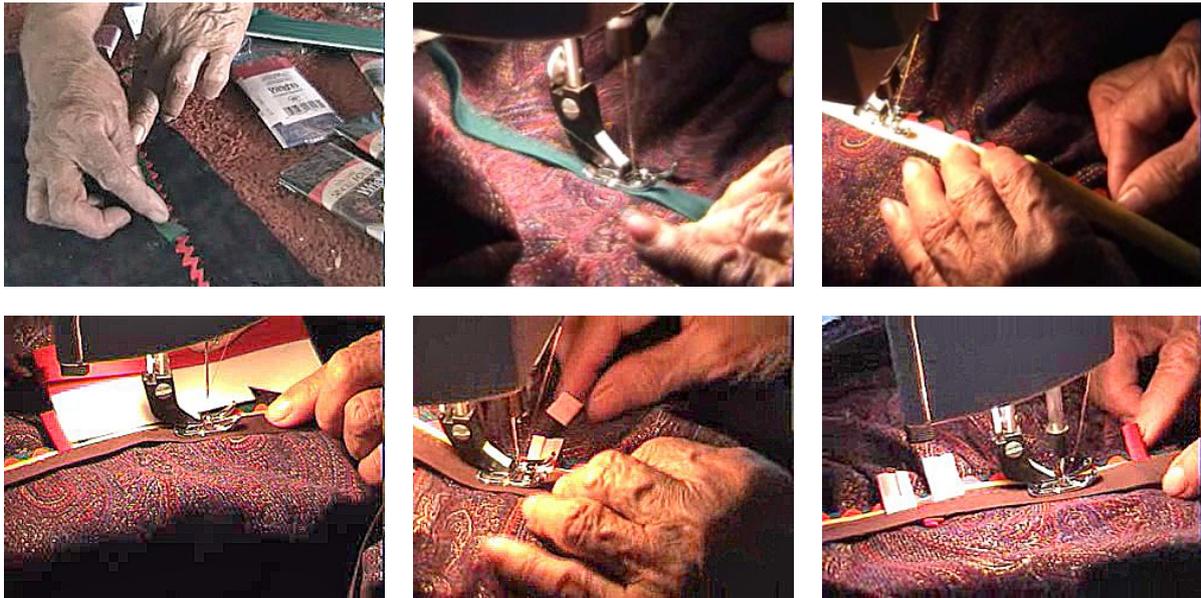
When I followed one of my informants, ‘Victoria’, as she purchased materials for new *atigit* and *atiklukiit* in Fairbanks, we went to the big fabric stores for patchwork (Fig. 5a-d), which is big business all over North America. Patchwork means to sew together small pieces of fabric in particular

patterns, often geometric, to make blankets, pillow covers, duvet and quilt covers or other items. In these fabric stores for patchwork there is a huge assortment of patterns, colours, and tapes, contrary to fabric for ordinary clothing, which is rare because White women do not make their own clothing anymore. If the Iñupiat women still were dependent on clothing materials they would be unable to continue to make their clothing. Thus they adopted the patchwork materials and adapted them to their peculiar style of *annuġaat*. In Fairbanks, the big city where most the women from Kaktovik went shopping, there were three or four big fabric stores. They displayed rolls of fabrics from wall to wall, floor to ceiling, in different colours, most of them floral-patterned in different sizes.



Figure 5a-d: Assortment of materials in a fabric store in Fairbanks.

The trim of the garment, called *qupak* in the singular and *qupaat* in plural – the special kind of trim on the *annuġaat* – were made of different kinds of fabric tapes. Although each single *qupak* (in the singular) was unique – no two garments were the same – they were all related, part of a common tradition. The *qupak* is usually built up by numerous rows of different colours of bias tape, in addition to one or several rows of rickrack (see Fig. 6a–f). Bits of bias tape, in colours that contrast with those of the bottom tapes, are intermixed by a special technique to compose this trim. The bits are placed upside down with the back surface protruding underneath the next row of bias tape in a horizontal direction. At the next row, these bits are folded up and the opposite ends are placed underneath the new row of horizontal tape. The bits for the following row are then added underneath the same horizontal row. In this manner, they continue to add bits for the whole composition, which is usually between five and nine rows deep, often more for male clothing. The *qupak*'s composition looks like a pattern unit of approximately 10–12 cm that is repeated all around the garment. Each pattern unit is composed of a symmetrical motif mirrored on both a vertical and a horizontal axis, like a diamond. A plain bias tape in a colour that unites the other colours in the composition is usually included. Some of the seamstresses add rickrack to the composition in a curved pattern (see Fig. 7). Commonly, the *qupak* was placed at the end of the trunk of the *annuġaaq*; on the female garments, that means just above the added flounce at the bottom.



*Figures 6 a-f: The process of qupak-making.*

To be able to observe and watch a design and making process of an *atigi* when I was in Alaska during summertime, I had to ask my informant ‘Victoria’ to make me an *atigi*, because they usually do not make *annuġaaq* outside the sewing season, which is between Thanksgiving at the end of November and Christmas at the end of December. I was especially interested in observing ‘Victoria’, because she is regarded as one of the very best seamstresses from Kaktovik. The *qupak* she designed for my *atigi* can be seen in Fig. 7.



*Figure 7: The finished qupak designed by ‘Victoria’ on my atigi.*

In the design process when the seamstresses chose colours for the qupak, they first looked at the colours of the pattern of the fabric and then picked colours of tapes that would match these colours. The not so skilled seamstresses chose colours that were as similar to the colours in the fabric as possible. However, the more skilled ones had a greater repertoire, and preferred colours that would match the colours in the fabric, but in different nuances from the ones in the fabric. The latter I regard as a more exciting expression in the design of the qupak on the *annuġaaq*. The *annuġaaq* usually were viewed from a certain distance, such as when people met on the road, at the store, or at an Eskimo dance in the community house. I said to ‘Victoria’ that she was like a painter and artist the way she mixed different colours, to fuse together, instead of just choosing fewer colours, as the less expert

seamstresses did. "Then you could see them better," she replied. Just as one often sees in paintings, the compositions of colours of the *qupak* on the *annuġaaq* made by the most skilled seamstresses, when viewed from a distance, gave the illusion of matching, but were richer in the nuances of colour-matching than were the more simple ones (Fig. 7).

### **Learning-by-watching Iñupiaq design**

I do not believe that the ability to make *annuġaat* was an intrinsic, born skill among the Iñupiat. There must have been a learning process for gaining design mastery and for gaining competence in the making of Iñupiaq garments. This learning did not occur in schools or courses but within the homes of the Iñupiat. I define the concept of *learning-by-watching* (Reitan, 2007) that I have developed as; learning through visual observation, while *learning-by-observation* (Bandura, 1971) is a more holistic and generic concept involving observation that uses all of the senses.

For analytical reasons I have divided the learning process of Inupiaq *annuġaat* into two phases. The first phase from birth to young adulthood, when the young women designed and made their first Inupiaq garment. The second phase of learning was as active practitioners as adult seamstresses. The first phase of the learning process, before Iñupiaq seamstresses make their debuts, is a long one; it stretches from infancy to the teenage years or young adulthood. Throughout these years, the children, usually girls and young women, gradually but consistently focus on the different aspects of the processes for between 20 and 100 different garments, which are made by various other seamstresses. In the first phase, they learn only by observation, without practicing or trying to sew fabric Iñupiaq garments. This first phase of learning-by-watching (Fig. 8a,b) seems to take into consideration young children's undeveloped dexterity, as dexterity is needed to sew the narrow rows of tapes to make a good *qupak* (Fig. 6a-f). Although the children do not practice the making of Iñupiaq clothing, the tradition does not die out. Through observing practice in this way, the children from Kaktovik learned to a greater or lesser degree, depending on how interested or engaged they are. One of the *atigit* sewn by 'Joanna' was for a grown-up daughter who was home for her holidays. The daughter herself tried to sew parts of the *annuġaaq*, and learned by practicing — learning-by-doing. The younger children learned only by watching and by listening to the general chat among the grown-ups or when a seamstress talked to herself about her work. Apart from this, however, they were never taught through explicit instruction, as far as I know.



*Figures 8a, b:* Children, a girl and a boy, learning-by-watching their grandmothers.

Sometimes even boys and men, who would never themselves become full participants in the community of practice of Inuit seamstresses, gained a certain amount of knowledge about the important features in good products. This meant that even boys and men were sometimes present during *annuġaaq* production, appraised Iñupiaq clothes, and occasionally gave advice to the

seamstresses, especially to novices such as myself. Still, men are never legitimate full participants within the community of Iñupiat seamstresses in Kaktovik.

The evaluation of the first *annuġaaq* a newcomer makes is strict. The beginner has to make an entire decorated *annuġaaq* without any form of help or guidance from the older seamstresses. I was told similar stories from several of my informants about the making of their first Iñupiaq garment. If the experienced seamstresses present at the event — the grandmother, the mother or an aunt — did not accept the newcomer's handiwork, the newcomer was told to 'Do it over!' The community of practice expects that a beginner design and make a complete and worthy *annuġaaq* on her first attempt.

Another important arena for the evaluation of Iñupiaq clothes is Iñupiaq ceremonies, such as Eskimo dancing (Fig. 9) that occur over the course of a year. These were occasions on which they usually wore *annuġaat* and provided an opportunity to show off the new *annuġaaq*. If the seamstresses liked what they saw on these occasions, they expressed it — if not, they usually looked but said nothing. In a society as close-knit as that of Kaktovik, it is not the custom to criticise others directly. The use of humour or the withholding of a response are both noticeable inputs in the learning processes of this community of practice. If the person who comments on the quality of an *annuġaaq* is regarded as a particularly important seamstress, the comments are regarded by others as having particular weight. Through these evaluations, the community of practice, both novices and experts, develop a collective repertoire and knowledge of how the garments should be designed and sewn.



*Figures 9a–f.* Adults and children displaying, learning and evaluating Iñupiaq clothing design at the Eskimo dance.

Learning-by-watching was also important when they learned to sew in skins; that is, in addition to learning-by-doing, as exemplified by the following exchange.

Janne: Did you think sewing was fun when you were a kid?

'Victoria': Yeah, ever since I started learning I helped my mum to thread her needles. Because we had seal lamp, and I could help her to thread her needles. That's why I helped her; to learn. As soon as I know how, that to do, I start helping and sewing.

‘Victoria’ helped her mum to thread needles to be allowed to be present and have the opportunity to watch her mother sewing. Learning-by-watching has also been confirmed by statements from other elders, such as Rachael Sakeak, whose Iñupiaq name is Nanginaaq: "When we were growing up, we watched our mothers make clothing, and tried to follow their footsteps" (Edwardsen, 1983, p. 24). Learning-by-watching is also important for learning-by-doing — to watch what you are doing yourself, to experience what you do and to reflect on it. ‘Lynn’ tells about this below.

‘Lynn’: Just from experience, when I got started my work wasn’t as even or measured like, I maybe like some work like this. I did start out a little uneven here and there. And also with the gathering that happens when you begin to sew at first. But with time you’ll learn that...you’ll discipline yourself in *watching* (my emphasis) how much time you spend and trying to making everything more even. After you have sewn awhile you’ll get better at piecing things together.

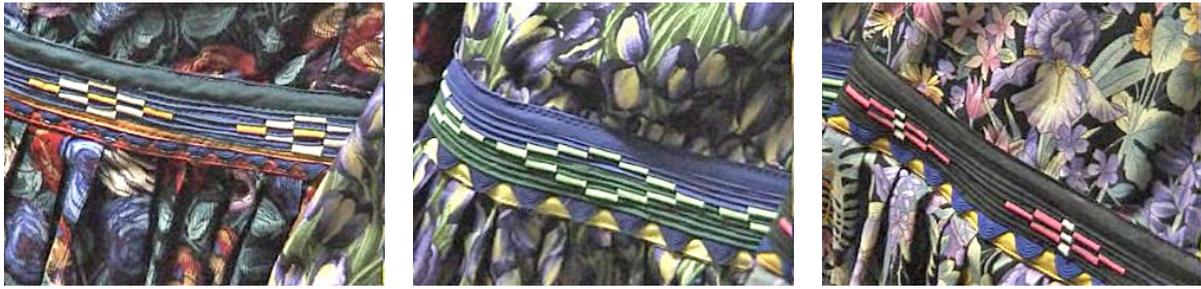
This shows that the learning-by-watching process even continues as they start to design and sew by themselves as adult women. In the second phase of learning, after their debuts, adult seamstresses constantly develop their knowledge of how to make Iñupiaq clothes as they continue to take part in the community of practice.

‘Joanna’, who was a skilled seamstress, also learned by watching. The sample or pattern for her work was a prototype made by one of her very skilled sisters (Fig. 10a). She did not copy the prototype, but used it as an example of good composition for trim work on the *qupak*. She changed the composition and shape of the trim very little.



*Figures 10a–f: Reflection-in-action when designing the qupak.*

She actually made three different *atigit* simultaneously, using the same sample as inspiration (Fig. 11a–c). The different garments show variations in shape, although they do not vary greatly; this I have chosen to call improvisation in tradition (Reitan, 2007). However, the colours of the compositions are very different because they are adapted to the colours of the fabric for each *atigi* according to the traditional rules of colour contrast and matching. ‘Joanna’ followed the rules of composition by not deviating much from her sister’s sample.



*Figures 11a–c: Three different qupak on atigit made in parallel by ‘Joanna’, based on the prototype borrowed from her skilled sister (Figure 10a)*

By making a composition of colours that were adjusted according to the fabric, she improvised within a traditional framework. The fabric of one of the *atigit* cover ‘Joanna’ was making was a floral pattern in green, blue and some yellow hues (Fig. 10a–f). I watched ‘Joanna’ pick up a dark green bias tape and put it on the fabric to see how it looked; then she put it back again, talking to herself. Then she picked up another lighter green one, looked at it on the fabric and put this one back too. After a while, she found a third bias tape, close in colour to the last one, but narrower. She put this one together with the yellow bias tape she had already sewn on, but finally putting that one back too. It seemed as though she was looking for something special, maybe a colour she could not find. Her visiting baby grandson was screaming in the background, and all of the family was present, talking and laughing. She found some dark blue rickrack. “Let me see...which?“, ‘Joanna’ said, and chose a darker yellow bias tape. Then she picked a dark blue bias tape and tested it in relation to the fabric and the yellow bias tape she had already chosen, along with a dark green bias tape like the first one. Finally, ‘Joanna’ chose the dark blue rickrack and the dark green bias tape. The members of her family who were present, including her grandchildren, observed her designing and making work, mainly by watching, but they also listened to her talk to herself. But as far as I know, she never talked directly or consciously to them to teach them. This shows that the learning process is, to a considerable extent, a result of close observation; in other words, a result of learning-by-watching and not of teaching.

### **Learning-by-watching reflective practitioners**

It is difficult to explicitly articulate the rules involved in designing; it is much easier to describe deviations from the norm. Schön also links reflection-in-action to John Dewey’s concept of learning-by-doing by arguing that “...we can think about doing something while doing it”(Schön, 1983, p. 54). Schön considers the term practice to be ambiguous. Practice refers to “performance in a range of professional situations” as in what a lawyer does, and as “preparation for performance” (Schön 1983, p. 60), such as the repetitive or experimental activity of a piano player. A professional practitioner does both, Schön says; “he is able to ‘practice’ his practice” (Schön 1983, p. 60). Through this, the practitioner develops “a repertoire of expectations, images, and techniques” (Schön 1983, p. 60). From this repertoire, the designer can compose new variations (Schön 1983, p. 140). Schön, a jazz musician himself (Waks, 2001), states that improvisation — “varying, combining, and recombining a set of figures within the schema” (Schön, 1983, p. 55) — is a typical example of reflection-in-action. The schema is known to all musicians, and each of them has an individual repertoire to pick from when improvising. To make this even clearer, he also mentions verbal conversation as a kind of collective improvisation (Schön, 1987, p. 30).

One key concept that emerges from Schön's theory of design practice is *dialogue*. In his most quoted book, *The Reflective Practitioner*, he talks about "design as a reflective conversation with the situation" (Schön, 1983, p. 76). In both his 1983 and 1987 books, he uses the term *conversation*, which I perceive to be synonymous with his sense of dialogue. Schön confirms this conversational interpretation in an article, although he explicitly used the term dialogue. "In a designer's dialogue with a situation, types can function both to transform the situation and to be transformed by it" (Schön, 1988, p. 183). Dialogue is employed here in a broad sense and refers to the designer's connection to the materials of the design situation and the body of design principles s/he carries with him/her, principles acquired from either experience or training and that may be either consciously or unconsciously held. The term conversation, if utilised here according to Schön's sense of it, could lead to the misunderstanding that the connection between a designer and materials is exclusively verbal — that is, oral — in a kind of mystical or supernatural connection. Dialogue, on the other hand, is usually applied in a broader and often more metaphorical context, denoting a meaningful, but not necessarily verbally expressed, exchange between a person and something else. In this instance, this something else is both the materials used in the design and the socially constructed aesthetic values of the local community that are included in the design. This corresponds to Schön's interpretation of conversation in a metaphorical sense (1983, 1987).

The empirical material on which Schön based his theory of the practice of the reflective practitioner was actually *learning*, not the practice of the architectural profession itself, as I see it. Schön's investigation was a protocol analysis of an architecture teacher as a senior practitioner coaching an architect student who was a junior practitioner in a design studio (1983, p. viii). Such detours, as observing a teaching/learning process to actually get hold of what is going on in a design process, are sometimes necessary methodologically to understand what is actually going on in a particular situation. The detour I made in Kaktovik involved becoming a learner and a seamstress myself and asking one of the expert seamstress to make me an *atigi*. Architects usually apply tacit knowledge; they do not frequently verbalise what they are thinking while designing. In a teaching or coaching situation, verbal articulation of thoughts concurrent with related actions are more common. When the teacher or senior architect ("Quist") in the design studio coached the student or junior architect ("Petra"), he explicitly verbalized points in the design process that architects often keep tacit. Because of this, Schön was able to recognise the senior architect's thoughts while designing — the reflection-in-action. Based on this protocol analysis of Quist and Petra, Schön says, "Drawing and talking are parallel ways of designing..." (Schön, 1987, p. 45) which, considered together, he regards as the language of design.

I do not doubt that architects occasionally talk while designing, in particular as a means for communication in collaborative design. However, in the empirical case of the experienced architect Quist as a teacher to the architect student Petra, one finds that most of the talking is actually coaching in the teaching situation in the studio; it is not primarily Quist's talking during the practice of designing' (Schön, 1983, 50). Nevertheless, Quist's talking when coaching gives Schön, as well as the readers of his books (Schön, 1983, 1987) a glimpse into Quist's thinking while designing — i.e., his reflection-in-action. In Schön's (1983) terms, this is an artistic-like situation, which means that the situation is uncertain, unstable, unique and often involves values in conflict. The designer sees this unique, unfamiliar situation both as something already present in, but different from, his familiar repertoire of previous experiences; he sees his previous experience metaphorically as a precedent (Schön, 1987). The problem is ill-defined, and thus different from other problems. The problem and the solution develop in a reciprocal process. To explain the design process, it is necessary to show a design and simultaneously present a discursive, verbal explanation. Schön further mentions language about design, a meta-language, in which the supervisor describes some features of the design process (Schön, 1983). However, I think Schön fails to see *learning-by-watching* in the learning situation

between the student, Petra, and the architect teacher, Quist – although he has included Petra's and Quist's drawings in his books (1983, 1987). Schön's emphasis on the auditory sense, which was in play in the coaching activity, perhaps arose from his own experience as a jazz musician; for similar reasons, his inability to see the importance of the *visual* sense in learning-by-watching might be due to his lack of experience in visual arts and design. To me, with an inside knowledge of all that is visual in design, the learning-by-watching component was obvious, because I am trained as an art and design teacher, not as a jazz musician, as Schön was.

Schön's theory on reflective practitioners does not seem to have been exposed to extensive criticism; perhaps this is because those who do not agree with him have rather chosen to neglect rather than critique his ideas. However, parts of his theory have been criticised by some of his adherents, in particular within teacher education. One of them, Newman (1999), has reinterpreted Schön's epistemology of reflective practice through Wittgenstein's later work (Wittgenstein, 2001 [1953]), and in particular, the concept of language games, in the context of teacher education. Newman states that Schön's theory lacks the essential requirements of a new epistemology, something that Schön ought to have taken into account because he describes his theory in epistemological terms: 'a theory of meaning and an account of language' (Newman, 1999, p. 183). Schön claims to build on Wittgenstein's work, but Newman asserts that Schön did not extend Wittgenstein's theory. Newman sees Schön's notion of reflection-in-action as redundant. Rather than supporting Schön's theory, Newman's reinterpretations of Schön's empirical investigations show that these case studies actually support Wittgenstein's view in his later work that meaning in language is determined by use and rules that depend on the social — that is, the taken-for-granted — practices or customs of society. In my opinion, Newman is right in suggesting that Schön has fallen short of his ambition to create a new epistemology of practice, but for the present investigation, his ideas remain highly interesting, especially with regard to reflection-in-action. I do not see the concept of learning-by-watching as contradicting Schön's emphasis on coaching. My contribution is to extend the concepts of practice and learning within the theory of the reflective practitioner. In addition to coaching, learning-by-watching is important. In my interpretations inspired by Schön's theory of reflective practitioners (Schön, 1983, 1987), I experienced that the social aspects of the learning and practice of designing Iñupiaq clothing are underestimated. This is something that I regard as crucial for understanding the learning process in Kaktovik. In the next section, which is devoted to interpretation, I extend discussion of the social aspects of the design process for Iñupiaq clothing.

In Kaktovik, where most of the learning and practice of Iñupiaq clothing design was *tacit*, visual learning was conspicuous to me. The practitioners learned by observing the design process, including reflection-in-action or reflection-on-action — reflections were tacit when the seamstresses puzzled the tapes together in different ways or when they talked to themselves while puzzling with the tapes. The numerous examples of reflection in and on action in this empirical material indicates that the vernacular design process related to Iñupiaq clothing creation is a conscious process, despite the limited degree to which it is articulated in words.

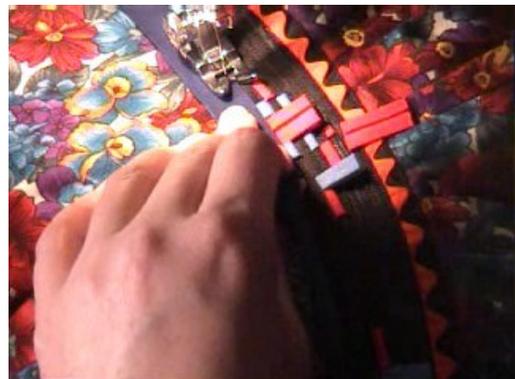
### **Learning-by-watching in a community of practice**

In this section, I will focus on the context of interpretation, the community of practice (Lave & Wenger, 1991; Wenger 1998), which I think is particularly relevant to an enquiry into vernacular design practices and design learning because this social learning theory fits the social practice of vernacular design, although the approach of Lave and Wenger deals with a general theory of learning rather than design learning.

Wenger characterises the conventional view of learning thus:

Our institutions, to the extent that they address issues of learning explicitly, are largely based on the assumption that learning is an individual process, that it has a beginning and an end, that it is best separated from the rest of our activities, and that it is the result of teaching... To assess learning we use tests with which students struggle in one-on-one combat, where knowledge must be demonstrated out of context, and where collaborating is considered cheating (Wenger 1998:3).

How do the women of Kaktovik learn and practice the design of contemporary Iñupiaq clothing as a community of practice? When I asked my informants about who taught them to sew, I often received no answer at first; only after a while did they come up with an answer. One reason could be that they really did not know how they learned to design and sew because nobody explicitly taught them. Some of them remembered who showed them how to sew skin, but they rarely remembered who showed them how to sew fabric clothing. Because the learning process was so integrated with everyday life, they were not even aware of it. It seems that learning-by-observation, and in particular learning-by-watching, is a traditional method of learning among the Iñupiat. Before the school teachers and missionaries came to Northern Alaska, the children learned through continual observation, mixed with regular instruction and tempered by practical experience (Murdoch, 1988 [1892]). The first phase of learning-by-watching of modern-day Iñupiaq clothing design seems to take into consideration young children's lack of motor skills and their inability to technically manage the sewing of the narrow rows of tapes that are necessary to make a good *qupak*. What characterises a novice seamstress is rows of tape that are too wide, as was the case with my first sample (Fig. 12a). However, there were different levels of quality for novices and experts, as I experienced when they evaluated the *atikluk* and *qupak* I made (Fig. 12b,c). In my case, the result was satisfactory for a novice, they remarked. Similar comments were expressed regarding the very first sample I made, where the rows of vertical bias-tapes were really wide (Fig. 12a).



*Figures 12a-c: My first qupak sample and me doing research-by-design when sewing my own atikluk.*

However, young girls often did some skin sewing, such as making yoyos or small seal figures (Fig. 13a b). When I expressed my astonishment that they did not practice on parts before they actually made an entire Iñupiaq garment, one of the informants told me that she had received a sewing machine for children when she was about seven years old. She practiced on this, and she also sewed some Western-style clothing before she made her first Iñupiaq garment at about the age of sixteen. However, I did not find out whether this was a common experience.



*Figures 13a, b: Samples of skin-sewn figures*

I see learning-by-watching as a broadening of Wenger's learning theory about communities of practice. Wenger did not mention how members of a community of practice actually learn. I regard learning-by-watching as a crucial method of learning within a community of practice, in particular, within the visual field of design. In a more auditory field such as music, I regard learning-by-listening as the most crucial. Both watching and listening can be gathered within the generic term I will call observation — learning-by-observation (Bandura, 1971). I have tried to extend the community of practice theory by investigating the social process of learning; this is learning-by-watching, a highly visual process in the design of Iñupiaq clothing. In a broader sense, I see learning-by-watching as the visual aspect of learning-by-observation within a community of practice. However, I do not see learning-by-observation as the only mechanism of learning (Lave, 1997), but rather as an important but underestimated part. Because the learning process was integrated within the community of Iñupiaq seamstresses, it was continual and had no beginning or end. The first phase took place before the newcomers made their debuts as seamstresses of Iñupiaq clothes. The first phase of learning started in infancy, when for the first time, the prospective seamstresses were able to recognise what was going on around them by watching and listening. This was true for each individual who grew up in the community. They had access to this community of practice as legitimate peripheral participants just by being at home and absorbing the everyday life of their families. This first phase ended when, as young women, they made their debuts as participating seamstresses, usually in their late teenage years or as young adults starting their own families. The older seamstresses often made Iñupiaq clothing for many members of their extended family, and even for friends, but usually the young wives and mothers made Iñupiaq clothing for their own husbands and children. This first phase is a long learning period of about twenty years in which the girls gradually but consistently focus on the different aspects of the processes involved in designing and making many different garments; they observed how they were made by various seamstresses. However, they did not attempt to sew fabric Iñupiaq garments in this phase; they learned only through observation. This first phase of learning-by-watching seemed to take into consideration the young children's lack of motor skills and their inability to technically manage the sewing of the narrow rows of tapes that are important components of a good qupak. Although the children did not practice making Iñupiaq clothing, the seamstresses did not think the tradition was dying out.

The knowledge was demonstrated within the context of practice. Usually, the designing and making of Iñupiaq clothing was, to a large extent, the result of tacit knowledge expressed through practice rather than through words. This was particularly true with regard to design, as design is different from technical matters, which are typically easier to verbalise. However, the theory about matching and contrasting was expressed verbally by several of the informants, independent of each other. This indicates that the designers are, at least partly, verbally conscious of the conditions at play when they are composing the design of a *qupak*. Often, the same Iñupiaq seamstress is both the designer and the maker, and sometimes even the user, of the garment in question; thus, so she seldom needs to explicitly verbalise questions about the *annuḡaaq*'s design. Because learning happens non-verbally—in particular through learning-by-watching—the community of practice for the design of Iñupiaq clothing recognises no great need to verbalise this knowledge.

### **Schön and Wenger versus Dewey**

Schön and Wenger's both focus on practical learning, which is explicitly inspired by Dewey's concept of learning-by-doing. Both of them refer to Dewey (Schön, 1983, 1997; Lave & Wenger, 1991; Wenger, 1998). The present investigation of Iñupiaq clothing design indicates that learning-by-watching, rather than doing, is the most common way of learning. I see this concept of learning-by-watching as the development of both Schön and Wenger's theories of learning. I think that Schön's theory of how to educate reflective practitioners misses the crucial component of visual learning, which is particularly important in fields of visual design, such as architecture or industrial design. Nor does Wenger mention the *visual* aspect of learning. He stresses that learning is conducted in the community of practice, but does not indicate how learning actually takes place in the community. The focus in this article is on how the learner learns, not on how the teacher teaches, whereas the latter is often the major focus in learning theories.

Learning-by-watching is actually a new term for an old phenomenon, a parallel to Wenger and Lave's (1991) communities of practice: "Although the term may be new, the experience is not" (Wenger 1998, p. 7). As explorers and missionaries and other *taniit* (white people) reported, watching their elders was a common Iñupiaq way of learning and was observed as early as the late 1800s (Chance, 1990; Jenness, 1962; Murdoch, 1988 [1892]). When the scientist John Murdoch investigating the Iñupiat in 1881-82, he recognized the Iñupiat's use of fabric clothing. Concerning materials, Murdoch, like Nelson, mentions that 'The clothing of these people is as a rule made entirely of skins, though of late years drilling and calico are used for some parts of the dress which will be afterwards described' (Murdoch, 1988 [1892], p. 109). He adds that a surprisingly high proportion wore ready-made clothing, in particular in summer when it is not too cold. These were often cast-off clothing obtained from ship crews, but they usually preferred their skin clothing, except in "rare instances in the summer" (Murdoch, 1988 [1892], p. 109). Murdoch also mentions what we can regard as a precursor of the contemporary *atigi* and *atikluk*: "Of late years both sexes have adopted the habit of wearing over their clothes a loose hoodless frock of cotton cloth, usually bright-colored calico, especially in blustery weather, when it is useful in keeping the drifting snow out of their furs" (Murdoch, 1988 [1892], p. 111). Murdoch even mentions how the children learned. He seems impressed by the extreme affection of parents for their children and also how the older children took care of the smaller ones (Murdoch, 1988 [1892], p. 417). About learning he says 'The young children appear to receive little or no instruction except what they pick up in their play or from watching their elders' (Murdoch, 1988 [1892], p. 417). After explaining how the boys learn hunting and whaling from early age, he continues by remarking that the girls learn to sew by imitating their mothers.

This indicates that observation was a common learning method in their traditional society before Euro-American teachers came to Northern Alaska. My intention is to extend the meaning of learning-by-doing to include learning-by-watching, not to deny the importance of doing. As a matter of fact,

Dewey himself criticised the misuse of the concept of learning-by-doing whenever he saw it being reduced merely to activity (Dewey, 1979 [1915], p. 255). He includes reading in the concept of doing, although as far as I know, he does not mention observation processes as part of the learning-by-doing concept. I regard learning-by-watching as a crucial way of learning within a community of reflective practitioners, in particular within the visual field of design. In the more auditory field of music, I would regard learning-by-listening as the most crucial feature. Both watching and listening can be highly important aspects of learning-by-doing. I would encompass them both within the generic term observation — learning-by-observation.

### **Possible consequences of Learning-by-watching in formal education**

I will now link learning-by-watching in vernacular design education to learning-by-watching in formal design education. What traditionally has been regarded as *learning* (Kvale, 2003) is a student or students listening to a teacher who is verbally explaining a phenomenon, supplemented perhaps by the teacher writing on a board or drawing a sketch or map. These activities are all intended to have a pedagogical purpose; they are not done for their own sake. From my experiences even these activities from the teachers have been rare in previous art and crafts education in Norway, named *Forming* from 1960 to 1997 – which included both drawing, textiles and woodwork (in Norwegian: *tegning, håndarbeid og sløyd*) (Nielsen 2000). In *Forming*, learning-by-doing was often the ideal, and the misunderstanding of the concept went even further than that because in my opinion, it often just meant ‘doing’ without any learning at all. In the lessons giving in *Forming*, the students were encouraged to express their inner feelings, but not to learn anything. The philosophy was that there was nothing to learn, even by doing; the students just needed opportunities and materials to express themselves. One result of this doctrine was that teachers rarely demonstrated or instructed, and the students were rarely allowed to watch any samples, models, patterns, artefacts or processes. In my opinion, the importance of and possibilities in learning-by-watching — in this mainly visual subject — has indeed been overlooked for a long time, although the subjects has been developed to include more knowledge since the subject changed name to Arts and Craft (in Norwegian: *Kunst og håndverk*) since 1997. However, the great potential of learning-by-watching is still not developed.

Perhaps further research will show that learning-by-watching is a more important part of professional design learning than design educators are aware of today. If it transpired that such an idea were shown to be valid, this would probably lead to pressure to change the way in which design is taught in design schools. One suggestion might be to introduce students to actual design work in the real world of design practice at professional design firms; this would allow them the opportunity to participate in the community of design practice. Perhaps this should become a regular part of the curriculum. The main purpose would not be the students’ contribution to the work of the design firm, but rather that the students would benefit from observing — with their eyes and minds — more experienced designers. Gradually, the students would also learn by doing, of course, but learning would also be the main purpose of observing. The Institute of Product design at Oslo and Akershus University College has practiced this kind of training for a while, with good results. To make this kind of practice possible, professional design firms could be paid to accept students for learning, parallel to the common practice in teacher training, at least in Norway. This kind of practice would also contribute to solving the kind of problems that Lawson indicates arise when design education is entirely conducted in studios at colleges or universities — students lack the challenge of “clients with real problems, doubts, budgets and time constraints” (Lawson, 2006, p. 7).

Another suggestion would be to make a virtual paradigm for learning-by-watching using videos of actual design processes, conducted by professional designers, to help teach the design students. This would make it possible to watch a process, or particular parts of a process, over and over again, which would provide an instant version of the long-learning process of the children of Kaktovik. For

example, when I was preparing for the research-by-design aspect of this project, I actually watched videos of the seamstresses designing for instant learning. Students at all levels of education report that they watch videos on online video platforms such as YouTube and Vimeo about how to design, draw and make things. I thus suggest that these opportunities could be more systematically developed in art and design education. If we could develop better-educated design students in compulsory schools, they would perhaps become more skilled novice students in design schools, which would improve their potential as up-and-coming professional designers. Therefore, to improve design education in both compulsory and academic design education, more use of learning-by-watching in communities of practice would help to create reflective practitioners and more sustainable design in the long run.

I regard learning-by-watching as one aspect of learning-by-doing, which in interpreting Dewey (2007 [1938]), can be understood as practical learning. Another important research theme would be to more deeply explore Dewey's theory of learning-by-doing — a concept that is interpreted in different ways in different contexts — with an emphasis on design learning. I regard the concept of tacit knowledge as important to this connection. Since the 1980s, there has been a great development of theory connected to this concept, or 'knowledge in action' (Molander, 1993), in the Scandinavian countries (e.g., Johannessen, Danbolt, & Nordenstam 1979; Johannessen & Rolf, 1989; Göranson & Florin, 1991; Molander, 1993). The concept has been interpreted in contradictory ways and discussed in different research studies within different professions, including nursing (Josefson, 1991). There was also an interesting discussion about tacit knowledge and visualisation in the middle of the first decade after 2000 (Gamble, 2004; Daly, 2009). To explore these research projects and discuss the consequences with regard to design learning would be of great value in developing the field, both in terms of research and practice. My ambition for the present research project was never to build a grand theory. Rather, I hope these interpretations of vernacular Inupiaq clothing design, inspired by Schön's theory of the reflective practitioner and Wenger's theory on communities of practice, can contribute to an adaptive theory about the practice and learning of vernacular design. A focus on learning-by-watching in a reflective community of practice develops a more comprehensive understanding of how design is learned and practiced in general, i.e., design thinking (Cross, 2011). To fill the current, rather vast holes in the patchwork of design research, I have suggested some research 'patches', some stitch work, that I regard as particularly important for strengthening and developing the future fabric of design learning.

The neglect of learning-by-watching that engages the participants of communities of practice constitutes a shortcoming in both design and art education; therefore, over time, it will represent a shortcoming in art and design practice itself. When learners do not build on the experience and knowledge of master craftspeople, the results will often be poorer quality. This could be improved if the learners are included in a community of design practice and learn-by-watching. I believe this is comparable to the research custom of building on previous research. Here, art and design education has something to learn from research. It is difficult to imagine interesting research results from a researcher who does not build on previous experience and theory. If a researcher does not create new knowledge in a particular field, the research is merely an uninteresting exercise in the reinvention of the wheel. For this reason, focusing on a collective repertoire through learning-by-watching (both processes and products) and learning-by-observation is of vital importance for the improvement of both design education and design practice. The main purpose for this study is to further develop knowledge of design education. Design has a wide impact on society as seen from a consumer perspective in light of sustainability issues. Design education — from primary to university levels — is in this project regarded as a key issue for developing a sustainable society because the choices the general public makes when it comes to design touches the core of consumerism.

Worldwide environmental problems are closely linked to an increasing amount of waste and pollution related to the production, transportation and consumption of artefacts. Designers, decision makers, investors and consumers hold different positions in the design process, but they all make choices that influence our future environment. To solve some of the crucial global challenges, professional designers and lay people must cooperate; for this purpose, awareness of design quality from a sustainable perspective is necessary. We include such an awareness of quality, longevity and sustainability in the design process of artefacts and solutions in our understanding of design literacy. This type of literacy refers to concerns and practices that include democratic participation in design processes, developing and using ethical responsibility, and understanding and supporting sustainable aspects of production and consumption.

This research has been a pilot project for a larger future research project about design knowledge in kindergarten to PhD education; it demonstrates that watching plays an important role in various contexts. The importance of watching in design education deserves more future research.

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