

# Affects and Emergent Learning

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# Teleological and Emergent Learning

## The “Case of Benny”

- In sixth grade Benny was regarded as one of the best students in his mathematics class. Since second-grade Benny had been using “Individually Prescribed Instruction” (IPI): a structured sequence of exercises punctuated by multiple-choice tests, such that 80% of the answers were required to be correct in order to advance in the sequence. Benny “was making much better than average progress through the IPI program” (p. 7),
- Benny was computing answers to problems by applying a multitude of self-generated rules many of which were incorrect, even though in particular cases they would lead to answers consistent with the key (e.g. the result of  $.7 \times .5$  is .35 because, on the left side, “there’s two points in front of each number” (p. 8) then Benny used the same rule to evaluate:  $.3 + .4 = .07$ )
- The rules, Benny thought, were invented “by a man or someone who was very smart.” This was an enormous task because, “it must have took this guy a long time ... about 50 years ... because to get the rules he had to work all of the problems out” (p.12)
- Applying diverse rules Benny was able to obtain different answers to the same problem, all of which he deemed to be true ones, although the IPI key accepted only one of them. Erlangwer asked Benny why the teachers would mark as wrong all these other true answers: “They mark it wrong because they just go by the key. They don’t go by if the answer is true or not” (p. 12).
- Teleological Learning may succeed or fail; in the Case of Benny it was achieved to a certain degree, as he made more than average progress through the IPI program. On the other hand, emergent learning is always going on in ways that are underdetermined and open to the unanticipated, such as the difference between truth and key selection.

# Affects

## Affects vs. Cognition

The ongoing burst of literature on “non-cognitive factors” in education (Farrington et al., 2012; Khine & Areepattamannil, 2016) suggests the need for theoretical work on affects, such that they can be thought of without the misleading shadow of their not-being-cognitive.

## Ongoing “Affective Turn”

“The turn to affect cannot be taken without at the same time being a turn away from something else. Importantly it is a turn away from the rationalist traditions of philosophy which are often characterized simply as “Cartesian” to signify cognitive or reason-based approaches. So the “turn” is constructed as a turn away from minds, towards bodies.” (La Caze & Lloyd, 2011 p.6)

Farrington, C. A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T. S., Johnson, D. W., & Beechum, N. O. (2012). Teaching adolescents to become learners. The role of noncognitive factors in shaping school performance: A critical literature review. Chicago: University of Chicago Consortium on Chicago School Research.

Khine, M. S., & Areepattamannil, S. (Eds.). (2016). Non-Cognitive Skills and Factors in Educational Attainment Rotterdam: Sense Publishers.

La Caze, M., & Lloyd, H. M. (2011). Philosophy and the 'affective turn' *Parrhesia*, 13, 1-13

# Affects

1. Affects do not originate from individuals; rather, they circulate through individuals and pervade the worlds they inhabit. Individuals undergo circulating affects in ways that sometimes deflect and reflect them.
2. Affects propagate not only across present surroundings but also through a complex past, or memory, brought forth by the people, things, and sounds inhabiting them. Memory is not just a matter of individual recollections but of bringing to bear traditions and performances whose origins are, for the most part, unbeknown to the participants.
3. Affects as qualitative multiplicities
4. As affects circulate, they animate bodily and material expressions of feelings and interpretations.
5. Things and discrete entities become in the midst of flowing affects

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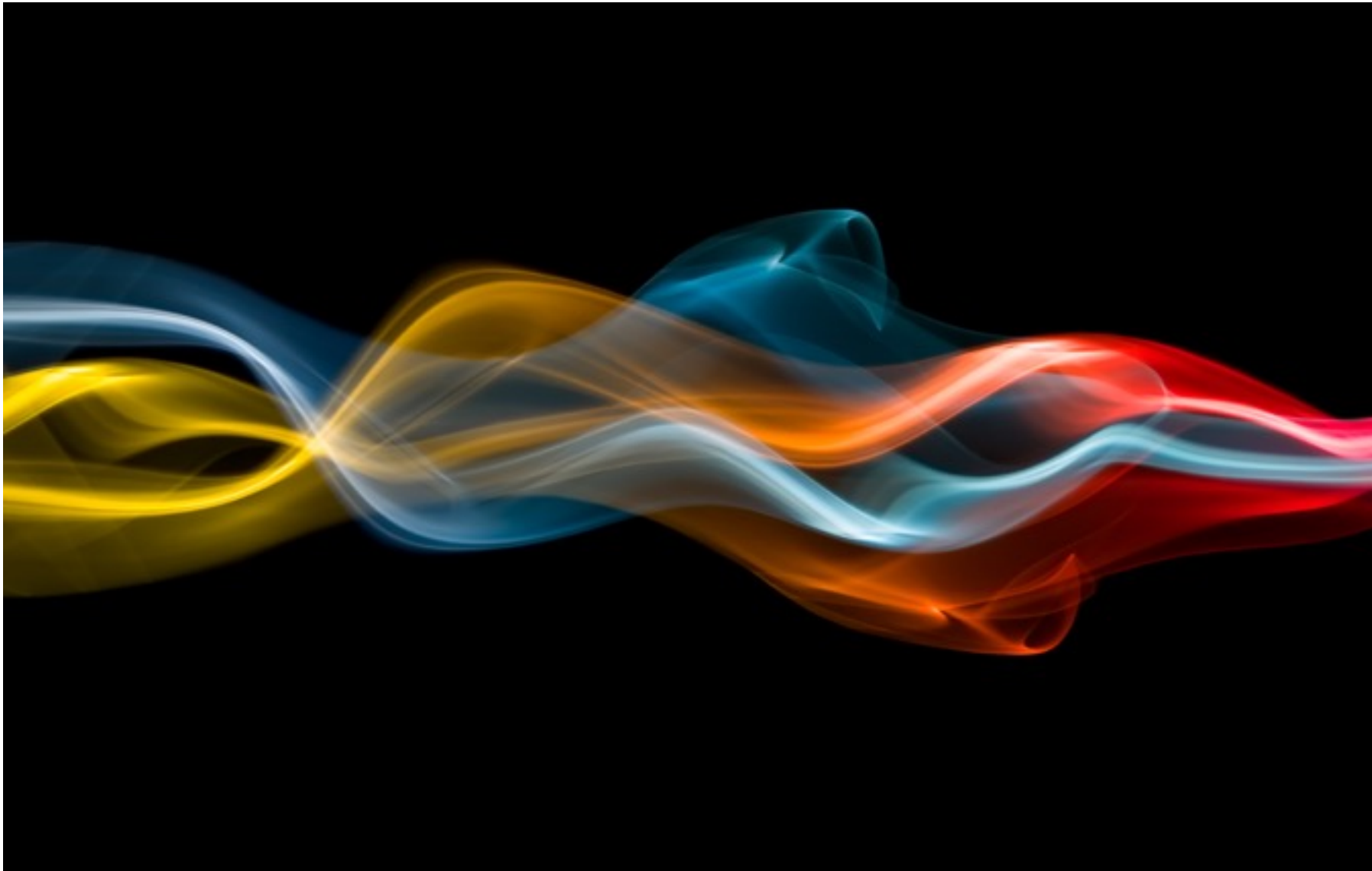
# Affects

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# Affects

## 3. Affects as qualitative multiplicities





# Affects

4. As affects circulate, they animate bodily and material expressions of feelings and interpretations.





# Affects

5. Things and discrete entities become in the midst of flowing affects



# Affects

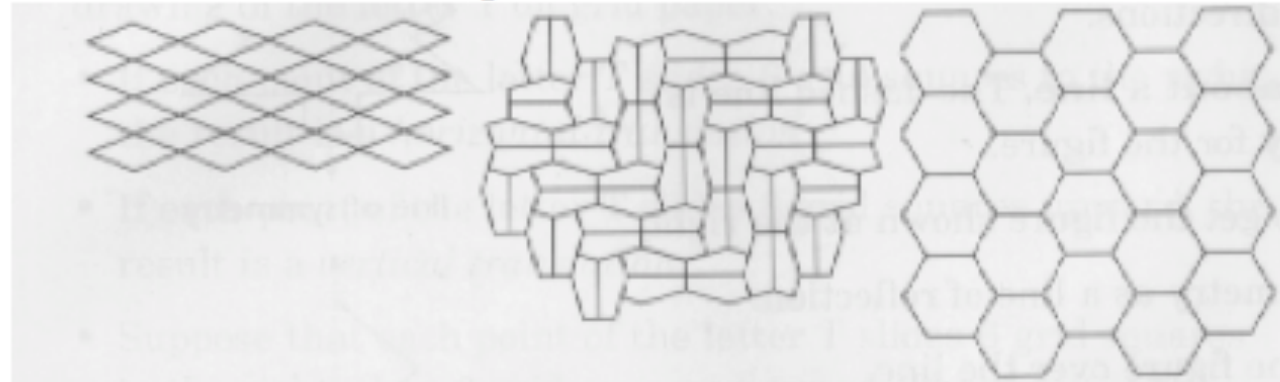
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# Part II: The Field Trip to the Science Museum

A special kind of repeated pattern is a tessellation.

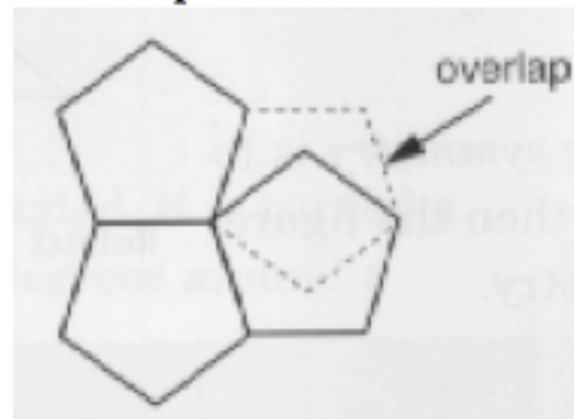
Tessellation is a math term. It is a pattern of closed shapes that completely cover a surface.

**Examples of Tessellation:**

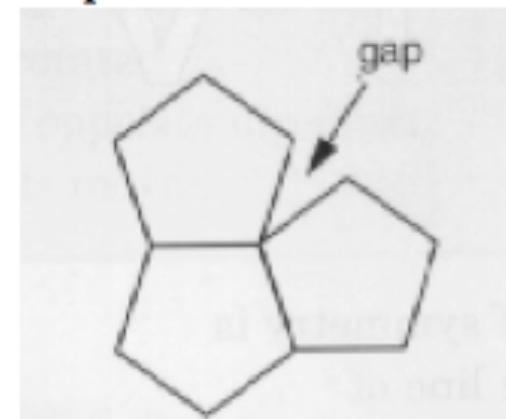


There are no overlaps or gaps in a tessellation.

**Overlaps**



**Gaps**





In this example the tessellation shape is a triangle (outlined in black). The triangle is reflected in many directions covering the entire space.

**TO DO**

- (1) Read the plastic covered sheet.
- (2) Find an object that has a tessellation pattern on it in the *Collections* gallery.
- (3) Draw a section of the pattern with the colored pencils in the box below.
- (4) **OUTLINE** the tessellation shape with a black line, like the examples on the plastic covered sheet.
- (5) Take a close look at your object, what shapes do you see? (circle ones you see)

**Circle****Rectangle****Square****Pentagon**(five sides)**Hexagon** (six sides)**Parallelogram**—(2 pairs of parallel sides)**Rhombus**—(4 equal sides)**Trapezoid**—(1 pair of parallel sides)**Kite**—(2 pairs of equal sides)



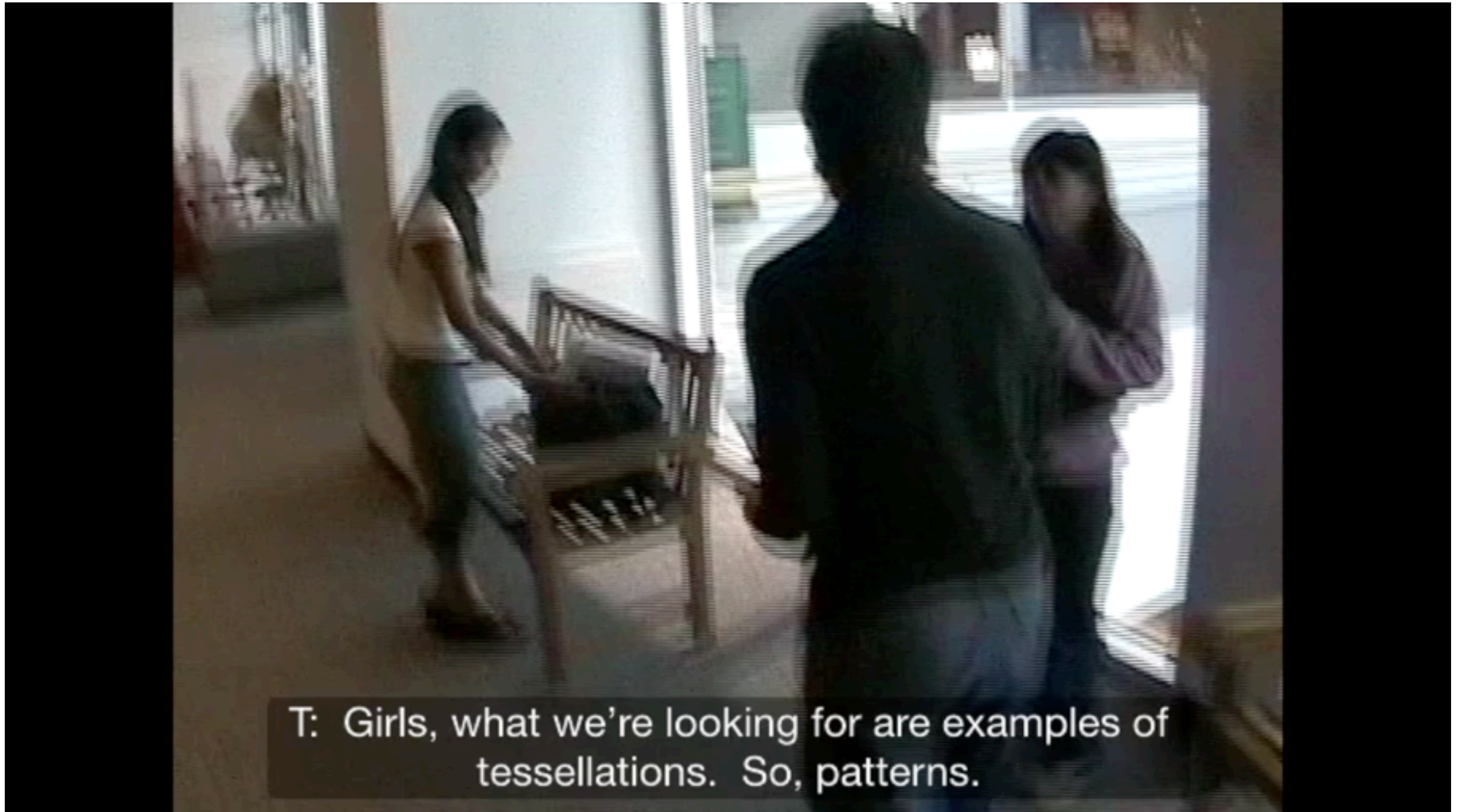


T: (Holding a worksheet up so the two girls can see).  
Look at your object and what shapes do you see?



# Becoming Ruth, Evelyn, and Sylvia

Affects as qualitative multiplicities. For the most part, people, things, and events undergo affects that circulate through individuals and pervade the worlds they inhabit. Individuals undergo circulating affects in ways that sometimes deflect and reflect them.



T: Girls, what we're looking for are examples of tessellations. So, patterns.



# The Affective Continuum

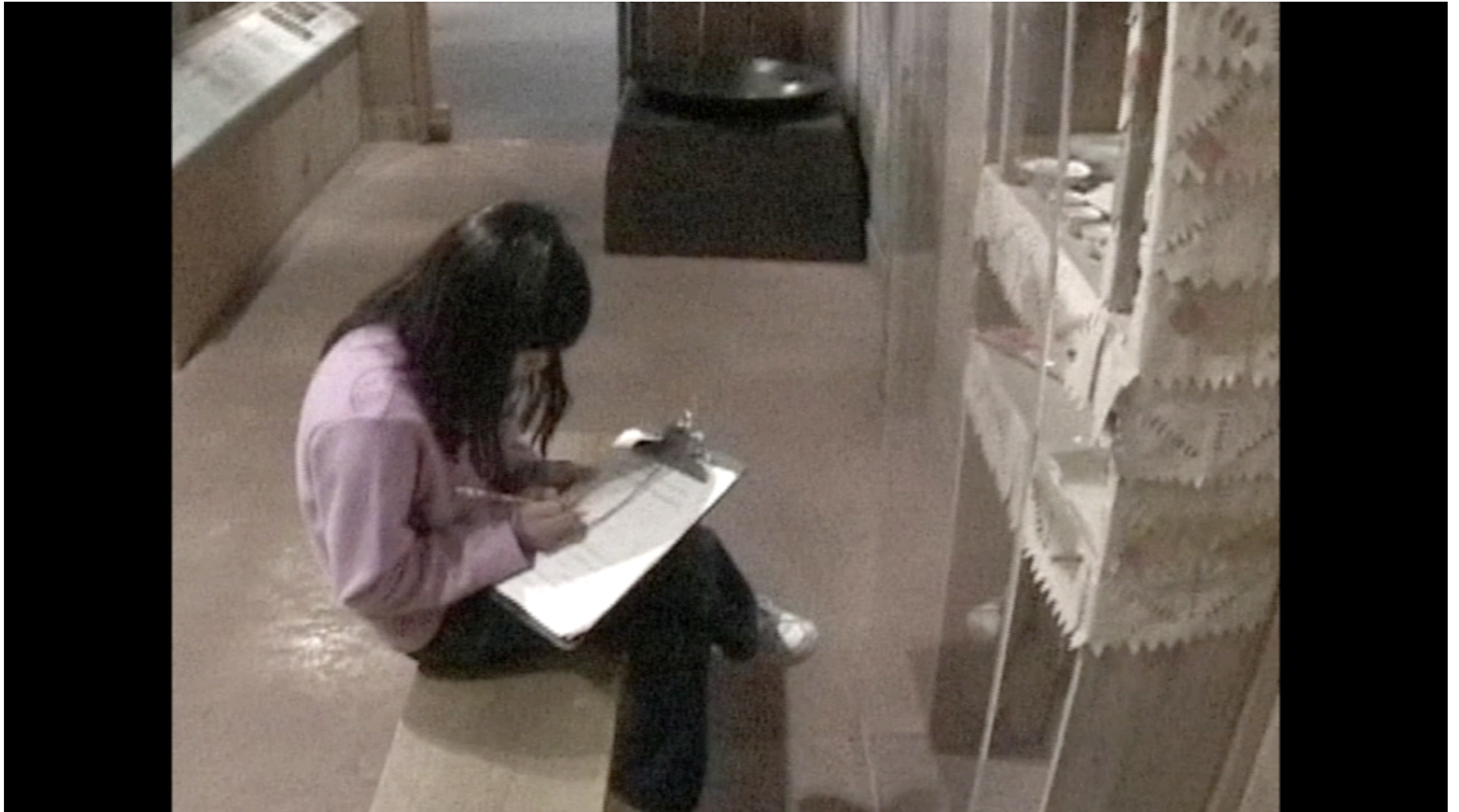
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# Becoming Hmong People

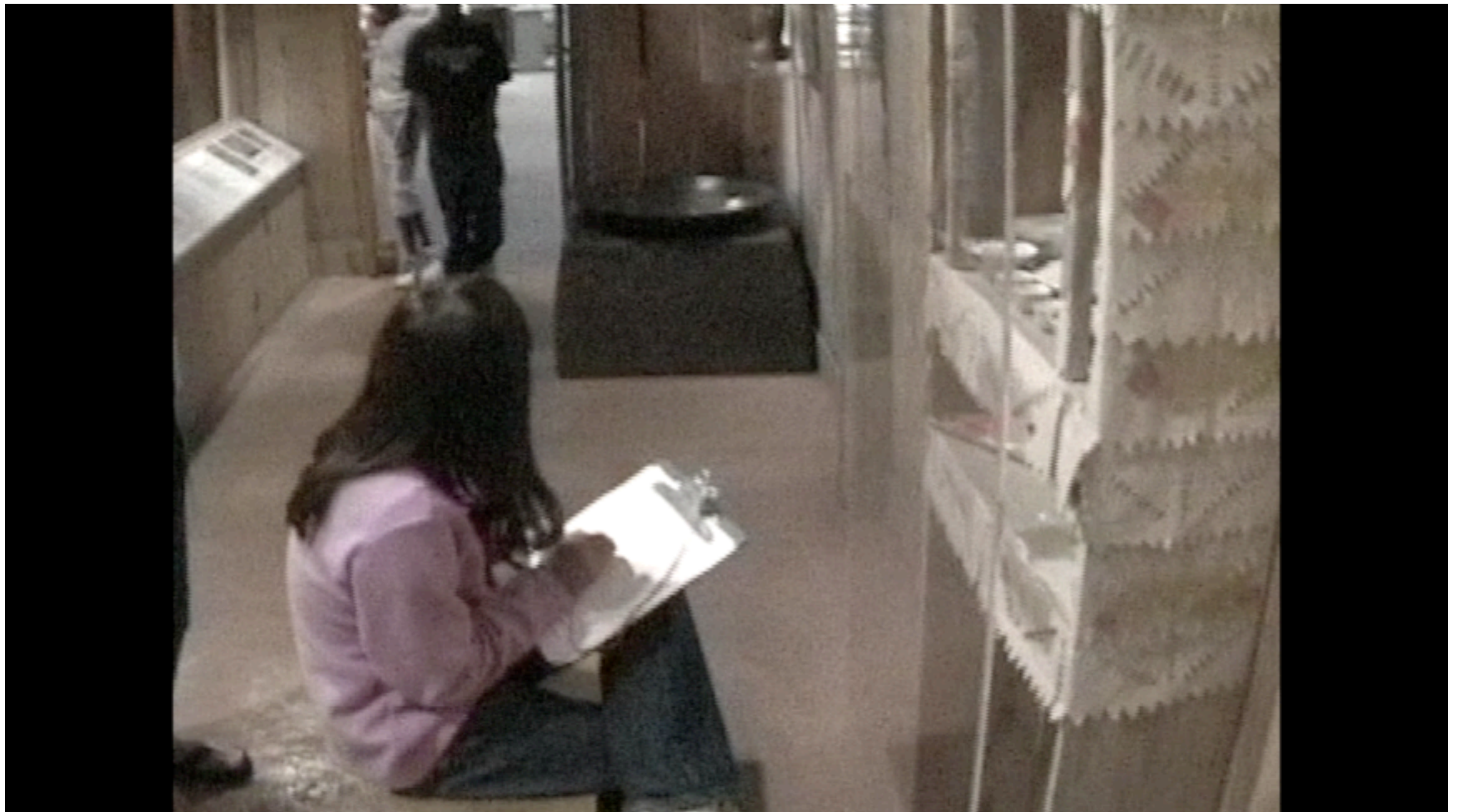
For the most part, people, things, and events undergo affects. As affects circulate, they animate bodily and material expressions of feelings and interpretations.





# A Shelving Unit Becoming Shamanic Altar

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# Place Becoming



T: You mean, like somebody else and then they would come to your grandma and grandpa to  
Boy: I know how to do this.

- Emergent learning involves getting engaged in events and places and participating in the circulation of affects imbuing them. As we do so, affects intermingle, pervading not only the circumstances of the present but also the past that we all (living beings, things, weather, symbolic expressions, luminosity, and so forth) bring to the event or place. What emerges from each of these engagements is a qualitatively **distinct affective continuum**, intermingling the past and present of the surroundings.

- Emergent learning is gradually shaped by the growth of affective continua

- The unpredictability of emergent learning is a result of the vast scope and diversity of the affects circulating through the past and present of the surroundings - any of which may, in principle, be embraced or let go by a certain affective continuum



- I started this talk by distinguishing between teleological and emergent learning.
- In a couple of occasions in which we showed the video to diverse museum staff, the specter of teleological learning surfaced in some of the subsequent remarks, like pointing out that the activity “had failed” because the children were “off-task,” or that no success or failure could be ascertained unless the children were tested for their understanding of tessellation.
- The theory of emergent learning we outline here inspires us to argue that the genesis of an affective continuum blending tessellation and shamanism had a potential much more significant than what a specialized post-test could reveal, such as undergoing the sense that Hmong altars incorporate mathematical patterns, that having grandparents shamans can be something to be proud of, that Hmong children can teach others, or that this science museum cares about mathematics and Hmong culture.

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