

# Spreadsheets as Notational Environment for Paper Weaving

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# This talk is about



**Conviviality as Process** · computing as part of the communal, cultural, and spatial fabric.

**VisiWeave** · an environment for paper weaving design inspired by spreadsheets.

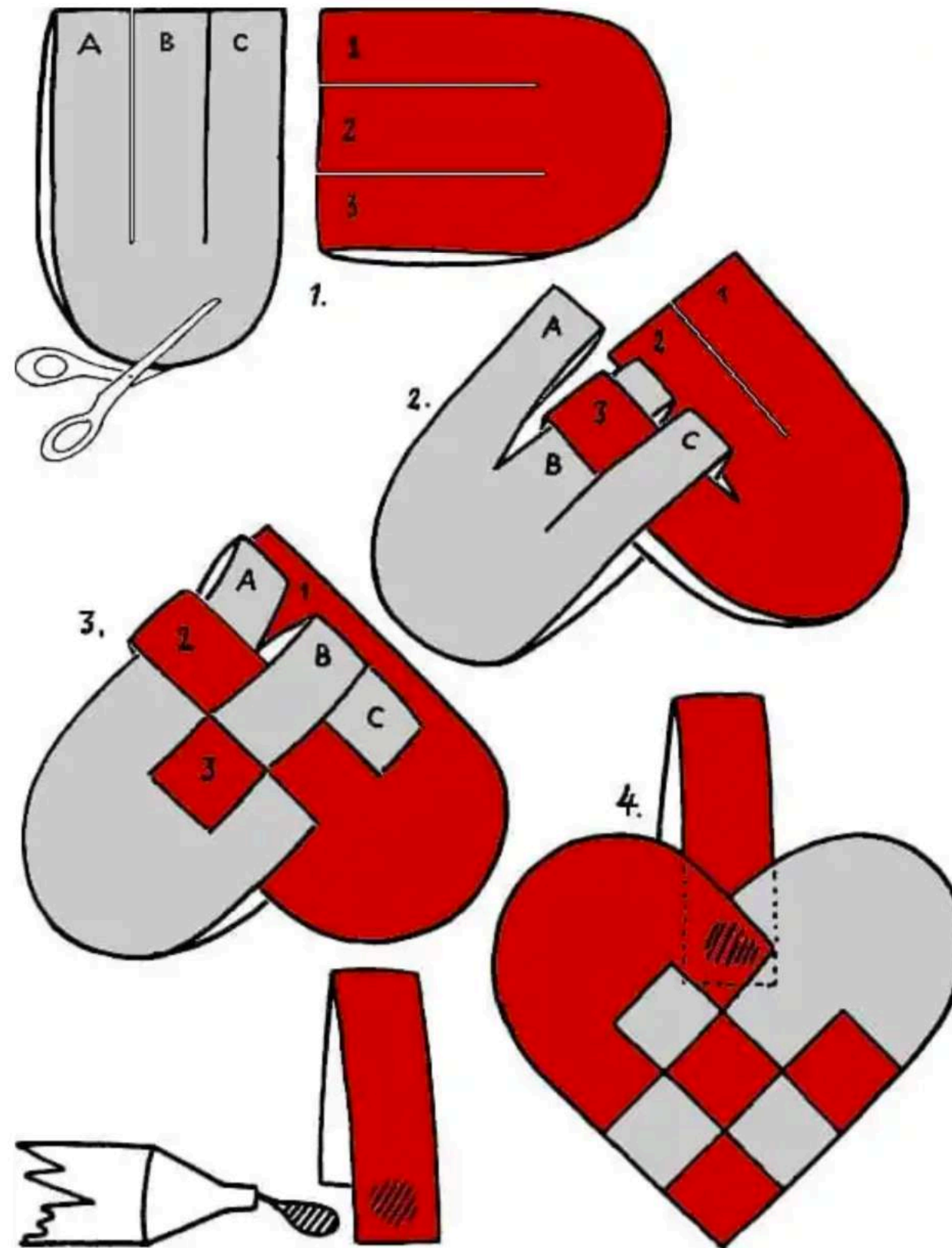


Where I am from people weave hearts out of paper during the winter

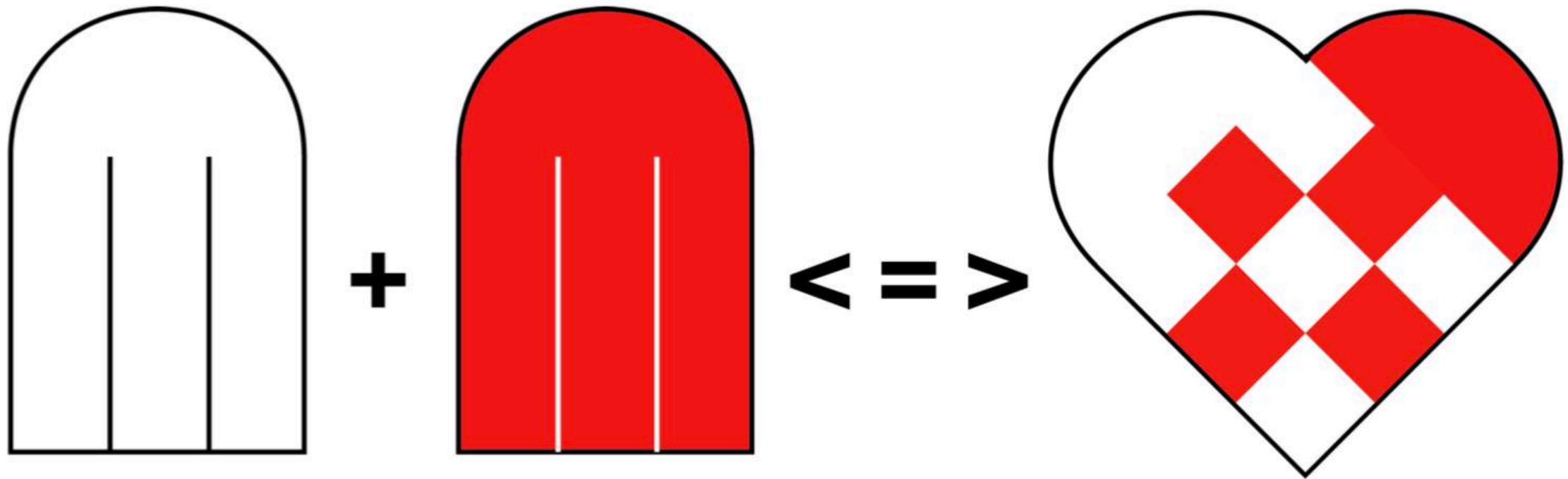




# The “hello world” of weaved hearts



Final design emerges from the combination of two unweaved forms



The process of weaving a heart . . .



is a social . . .



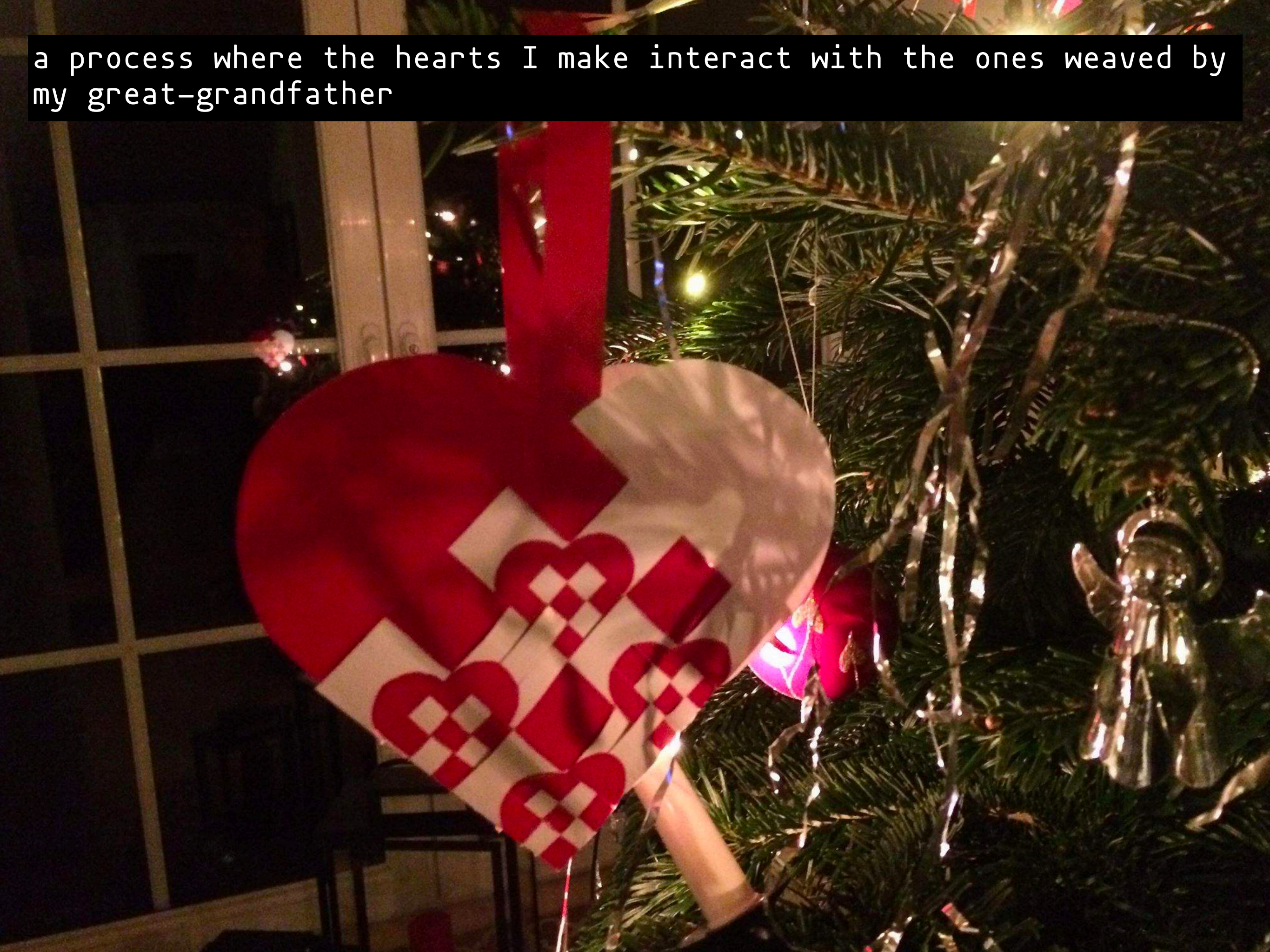


as well as a spatial affair . . .





a process where the hearts I make interact with the ones weaved by  
my great-grandfather





Now, why am I sharing these images?



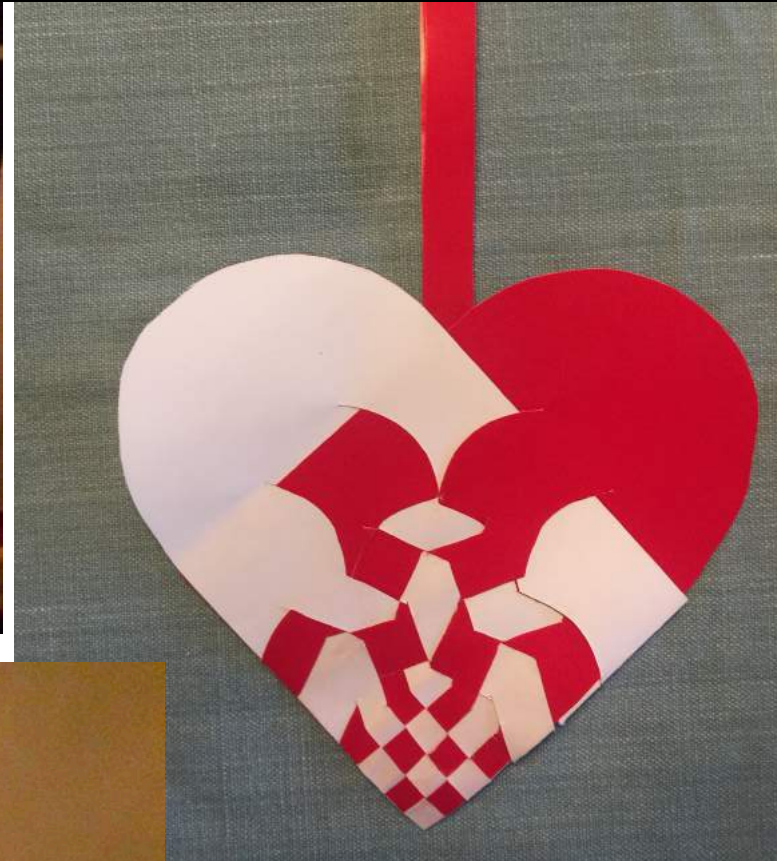
The environment I want to present resulted from a process situated in a cultural, communal, and historical context.

**Style is a materialization of the deep networks of culture and history within which a creative practice is embedded.**

Colin Clark, in response to Basman and Tchernavskij's "Escaping the Prison of Style"



paper heart weaving is one such materialisation resulting from  
“deep networks of culture and history”





The conviviality of the tool I have made is directly tied to my ability to articulate the space and community the tool is embedded in.



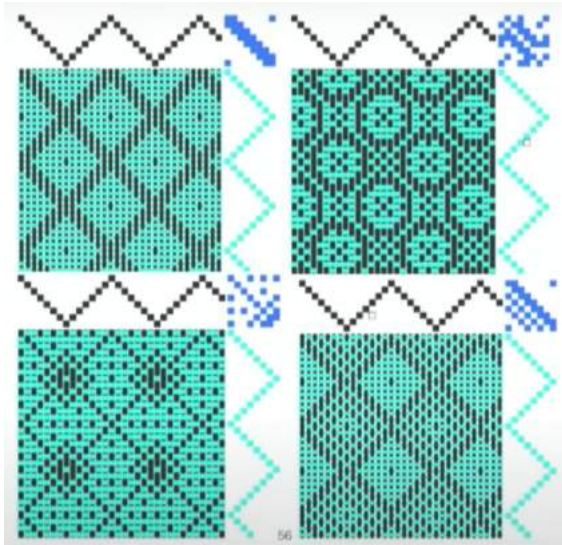
“I choose the term 'conviviality' to designate the . . . autonomous and creative intercourse among persons, and of persons with their environment.”

Ivan Illich (1926 – 2002)  
Tools for Conviviality (1973)



# embracing computational media can enrich the practice of paper weaving

## Computation and weaving



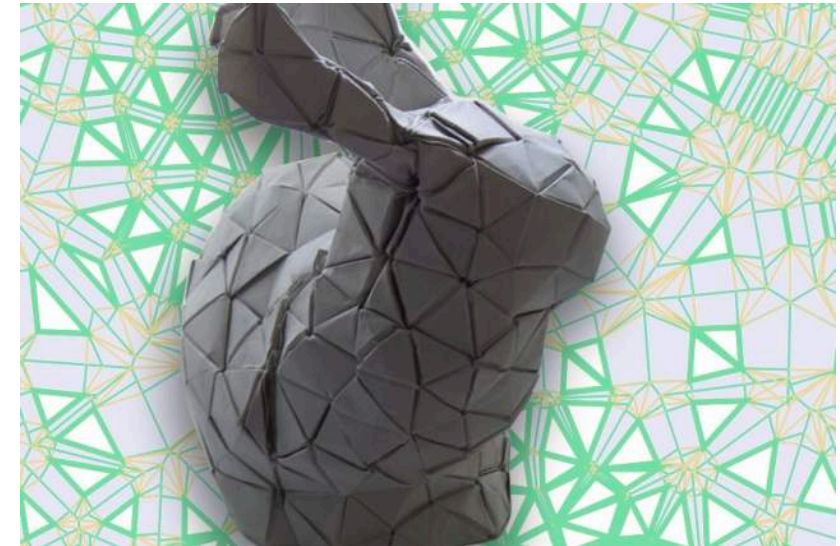
Lea Albaugh, 2018

## Paper Mechatronics



HyunJoo Oh & Mike Eisenberg, 2018

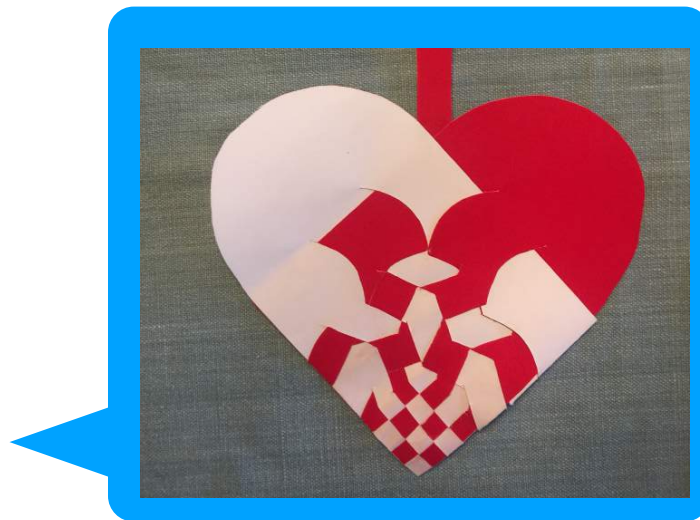
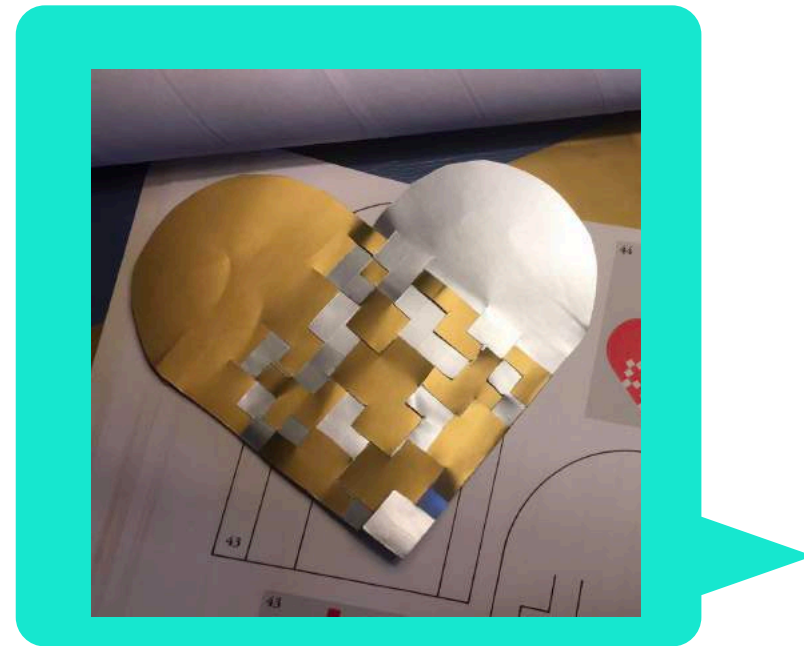
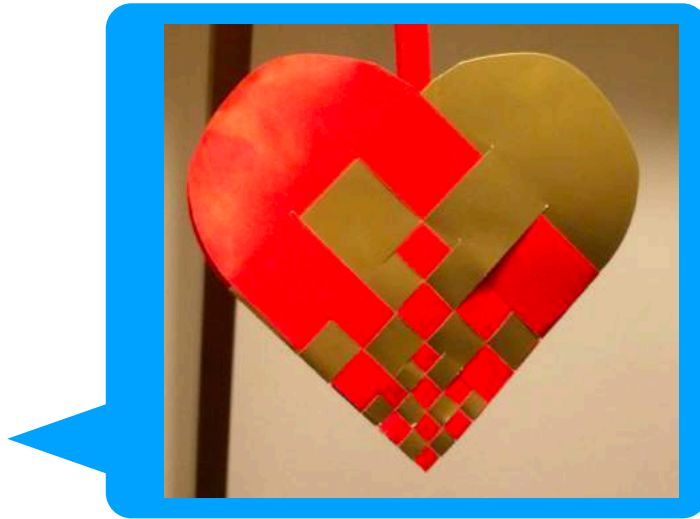
## Computational origami



Christine Daniloff, 2017

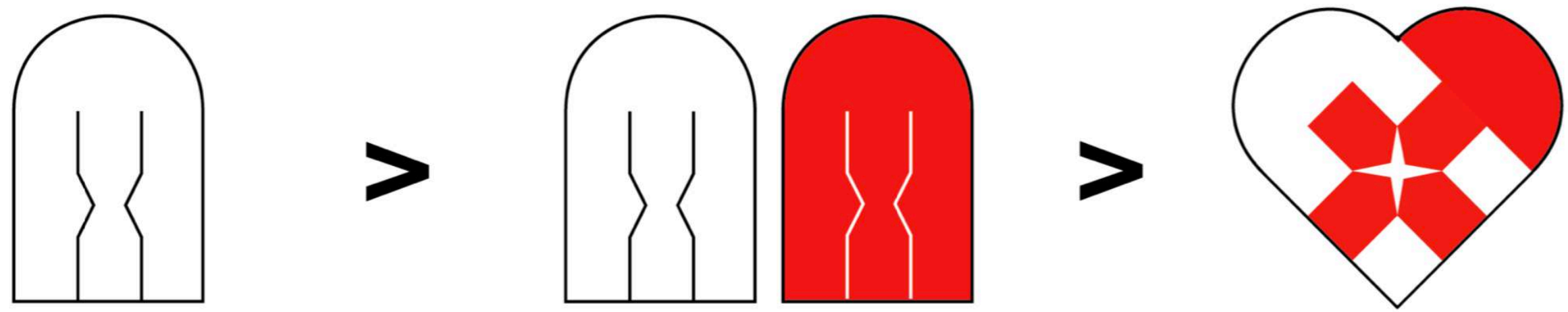
“a new interdisciplinary design medium combining traditional papercrafting with elements of mechanical design, electronic engineering, and computational thinking.” – HyunJoo Oh

designs manifest through a process of improvisation and conversation . . .

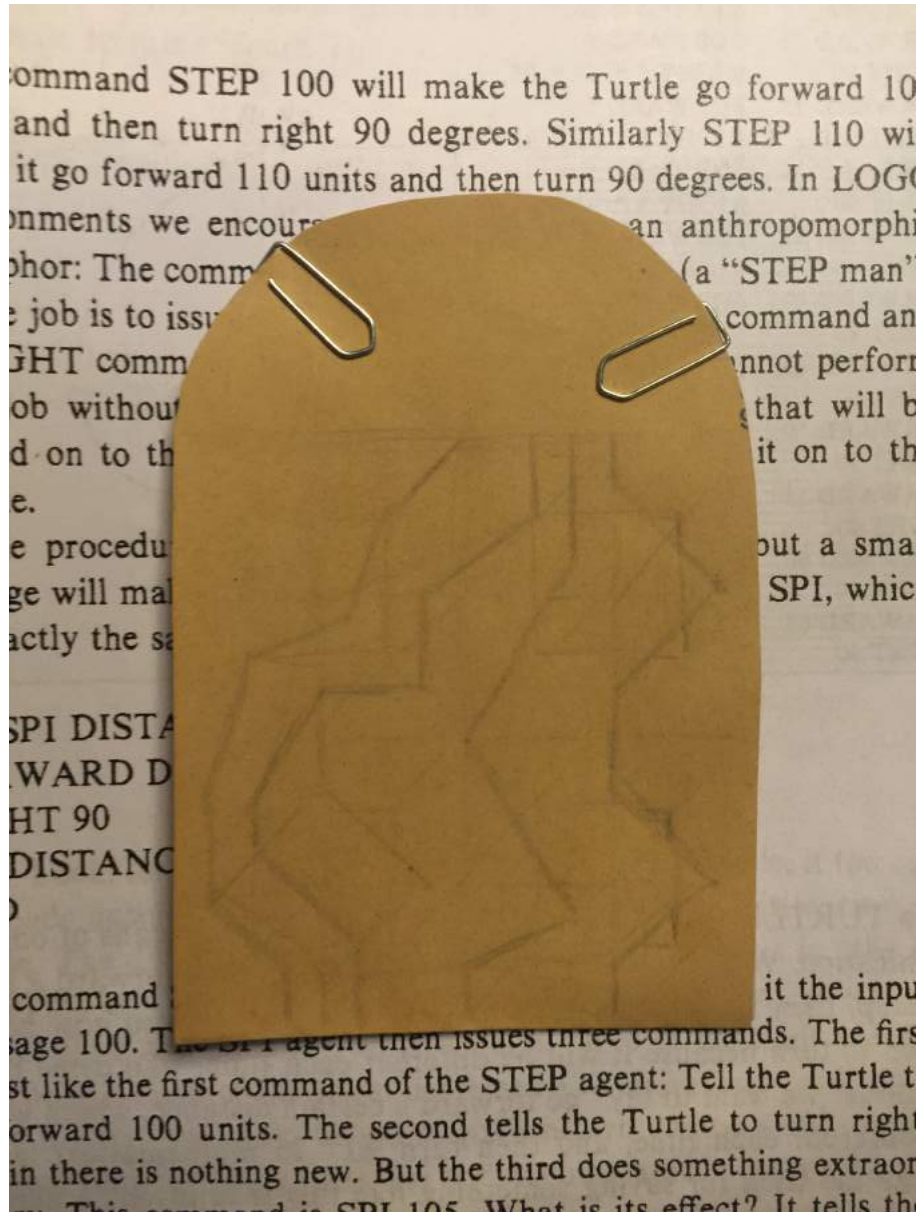




. . . It is often exciting to see the final form emerge . . .



. . . yet at other times it is frustrating. Even when much thought is put into the design you often don't get what you expect.

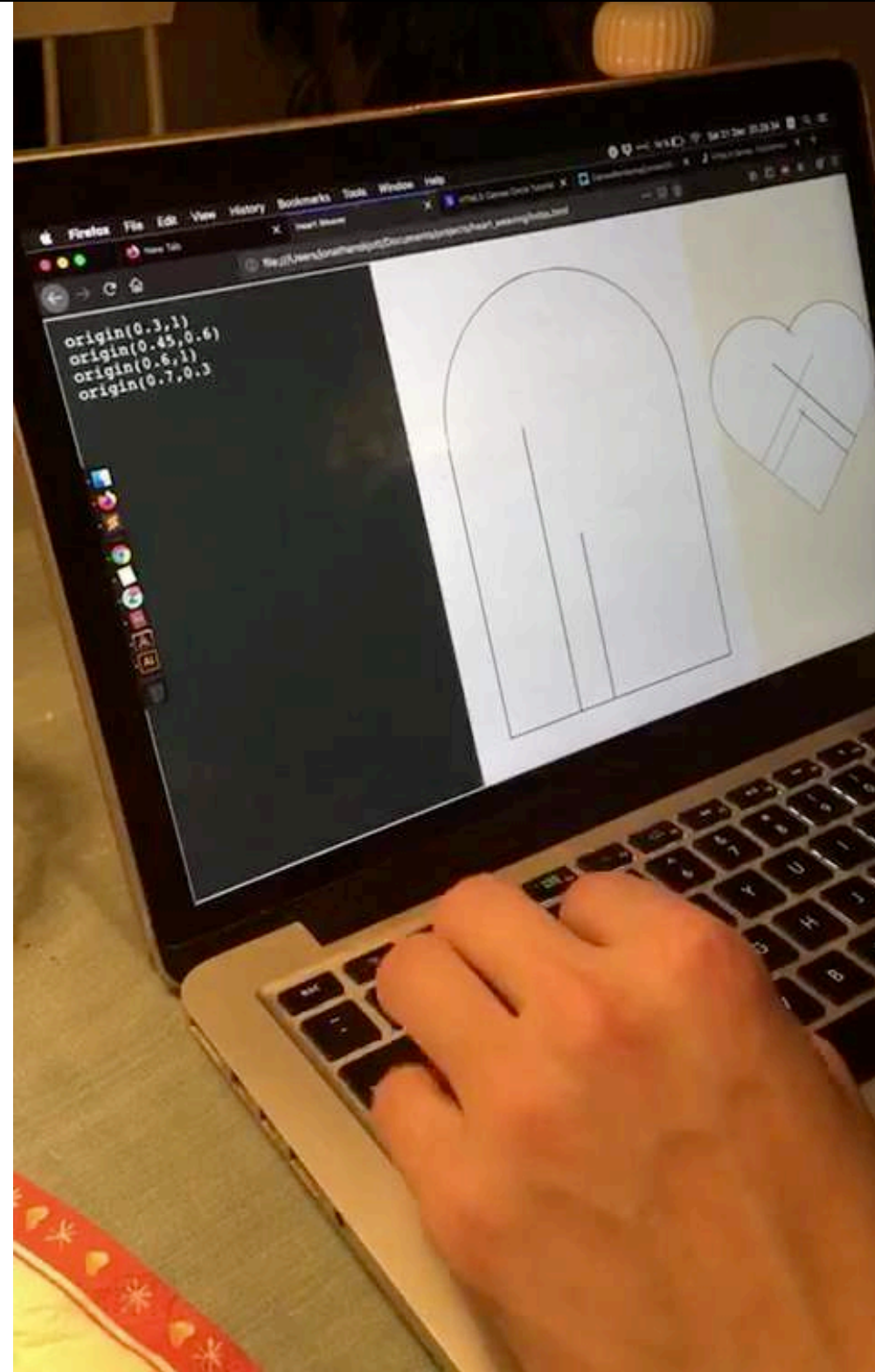


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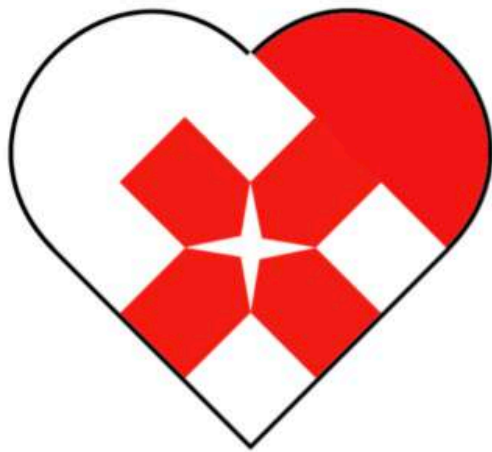
Embracing computational media can help us address the hardships associated with weaving pattern design



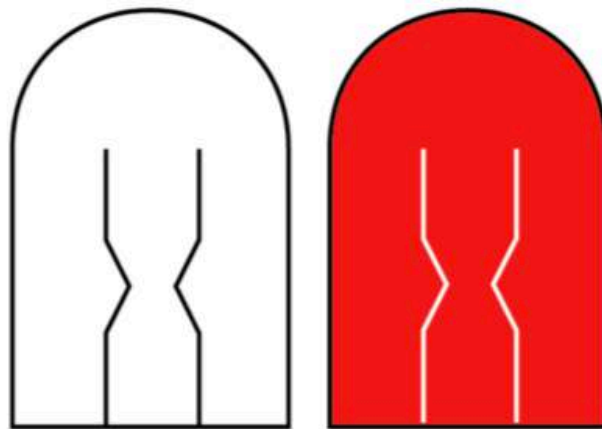
"weaving is a binary art" – Zemanek, H. 1991



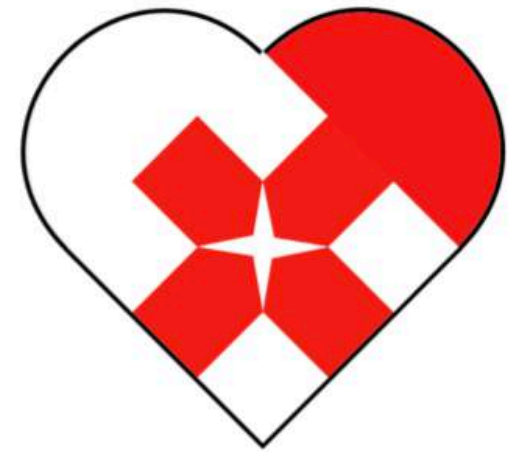
Our preferred design process.



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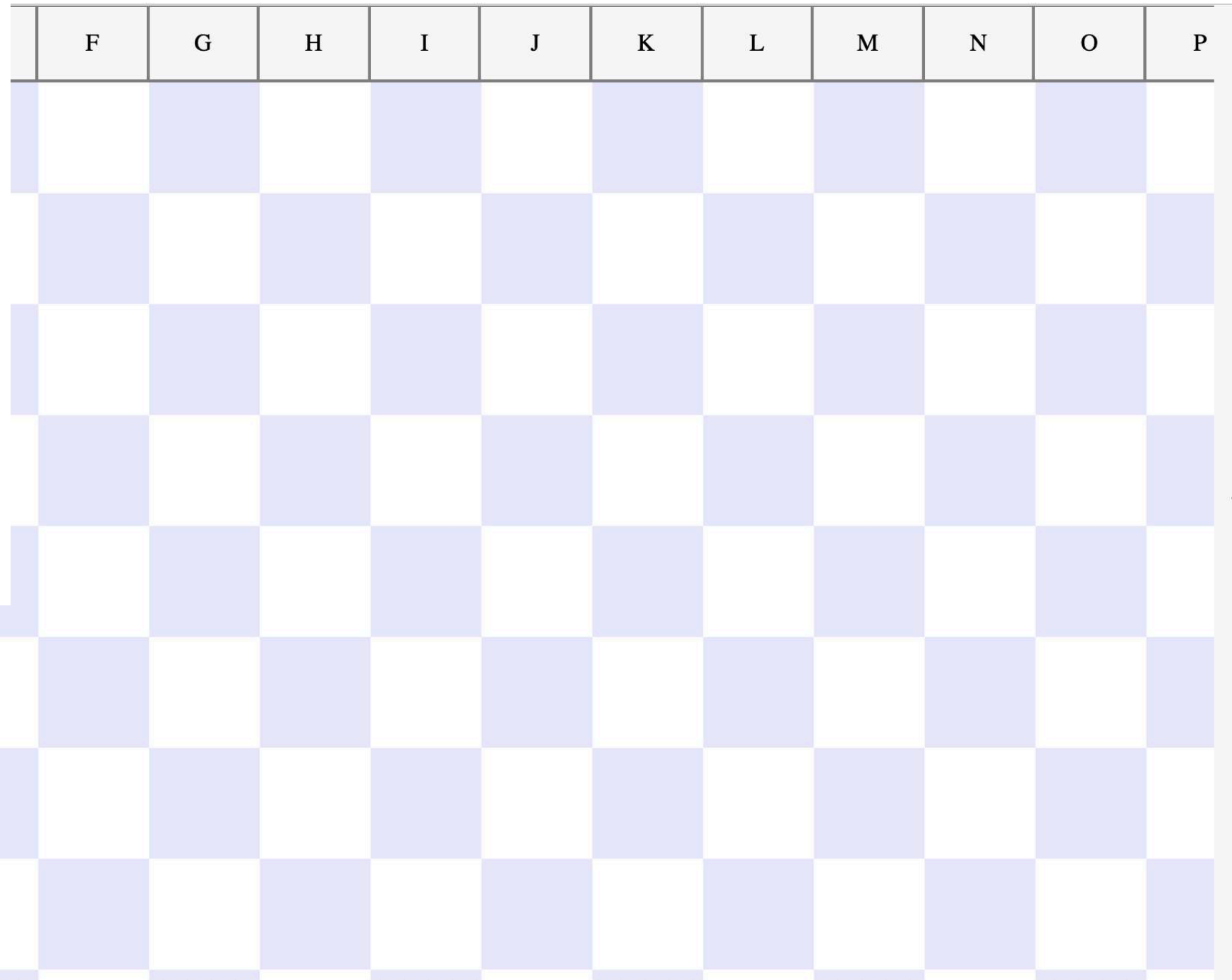
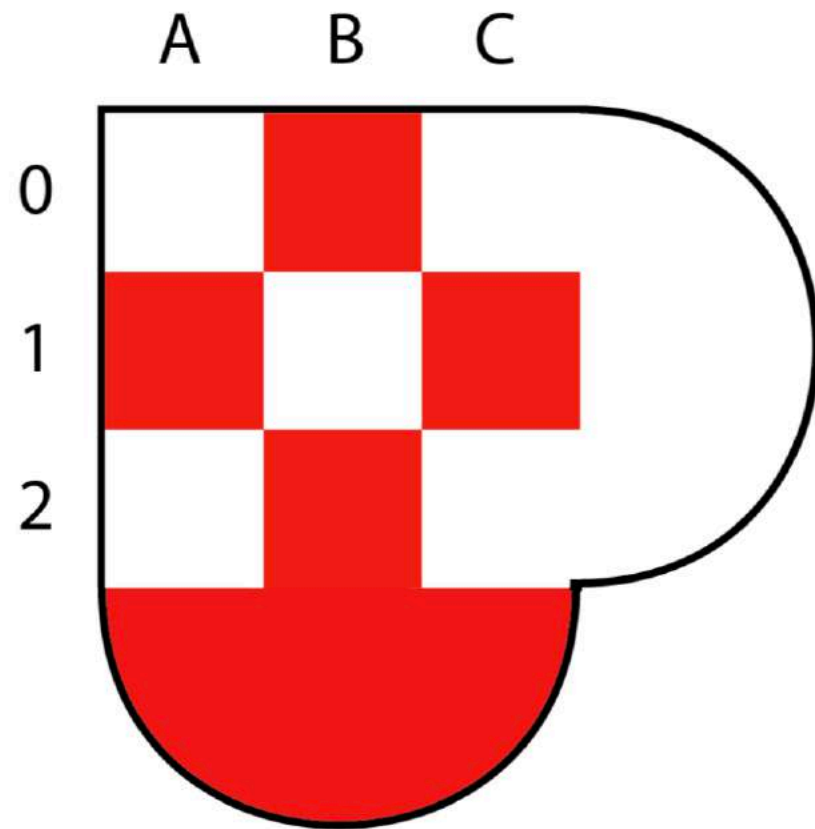


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It is possible to assign row and column coordinates to the cells of a weaved heart

(each(select "A0:C2") (lambda (a) ()))





The sheet is indexable

```
(each(select "A0:C2") (lambda (a) ()))
```

[illegible]

The value of a cell determines the cell's shape

```
(each(select "A0:Y24") (lambda (a) ()))
```

[illegible]



The value of a cell determines the cell's shape

```
(each(select "A0:Y24") (lambda (a) (anchor a "#S" ("#S" "#N" 0.25))))
```

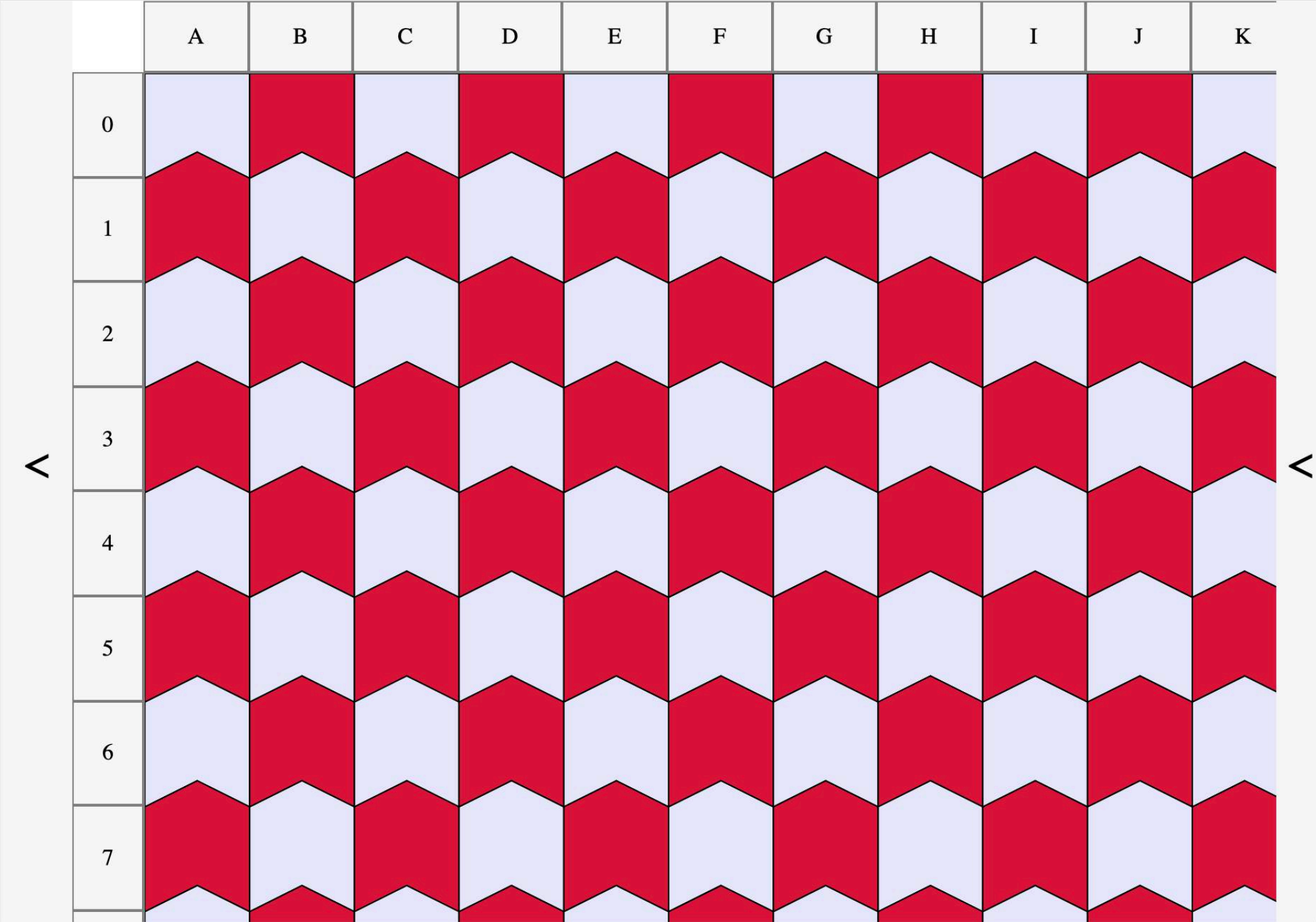
[illegible]

# What is this function?

(each(select "A0:Y24") (lambda (a) (pointyside a)))

```
1 (defn pointyside
2   (cell)
3   (anchor cell "#S" ("#S" "#N" 0.25))
4 )
5
```

(  
Functions and macros

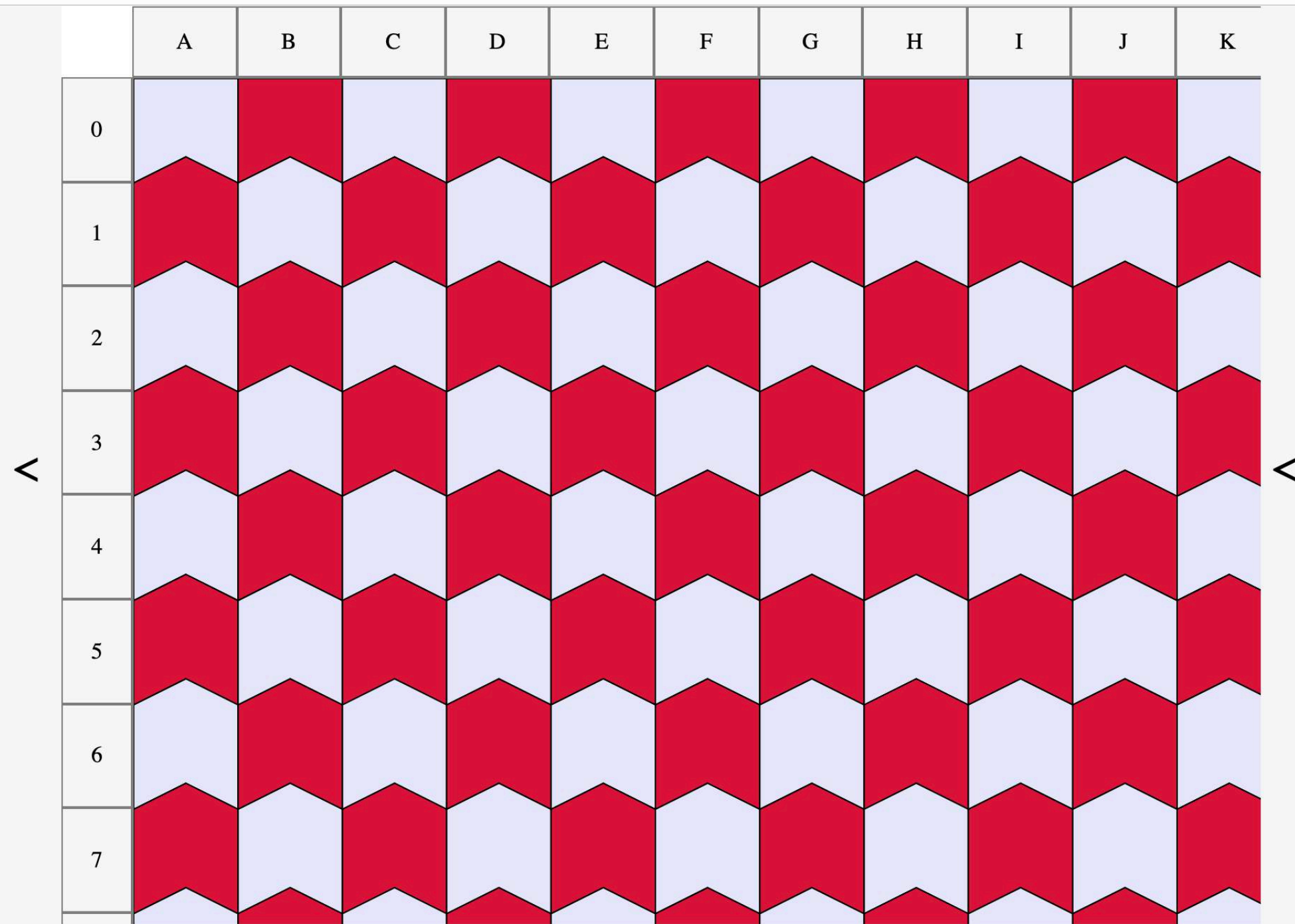




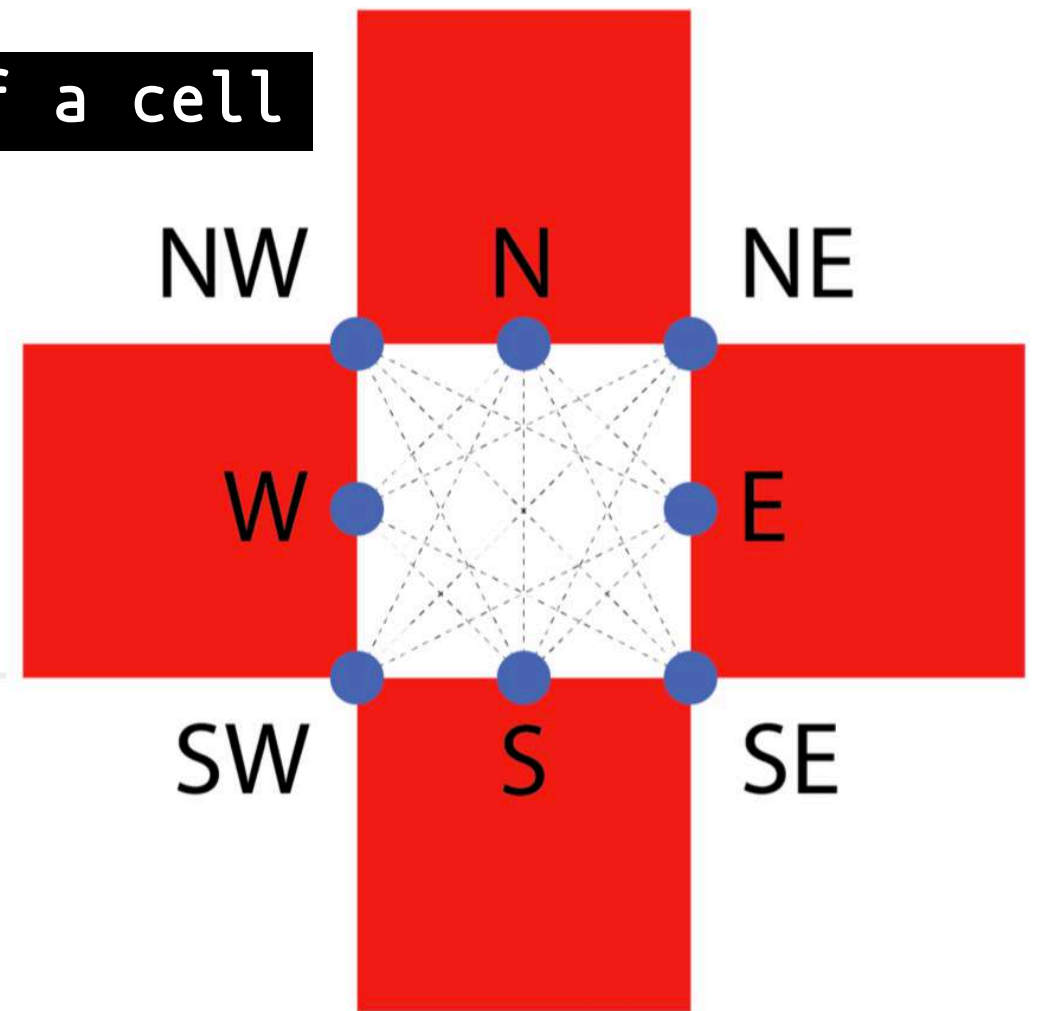
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1 (defn pointyside  
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4 )  
5
```



We had to try and define the ontology of a cell



```
1 (defn pointyside
2   (cell)
3   (anchor cell "#S" ("#S" "#N" 0.25)
4 )
5
```

place an anchor point at the southern side of this cell. . .

```
1 (defn pointyside
2   (cell)
3   (anchor cell "#S" ("#S" "#N" 0.25))
4 )
5
```

going 0.25 of the way from the southern to the northern side

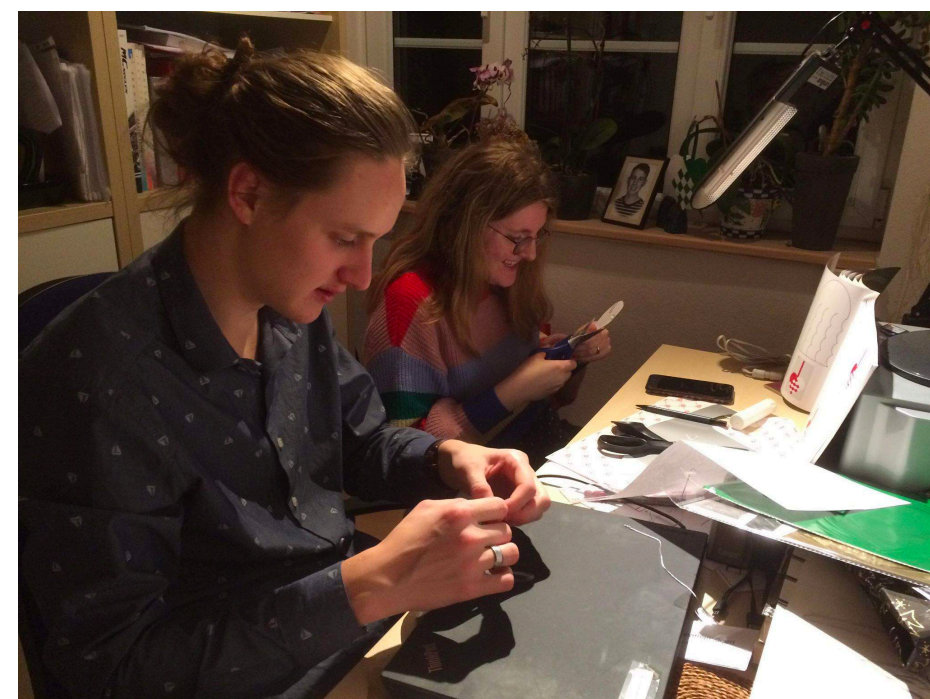
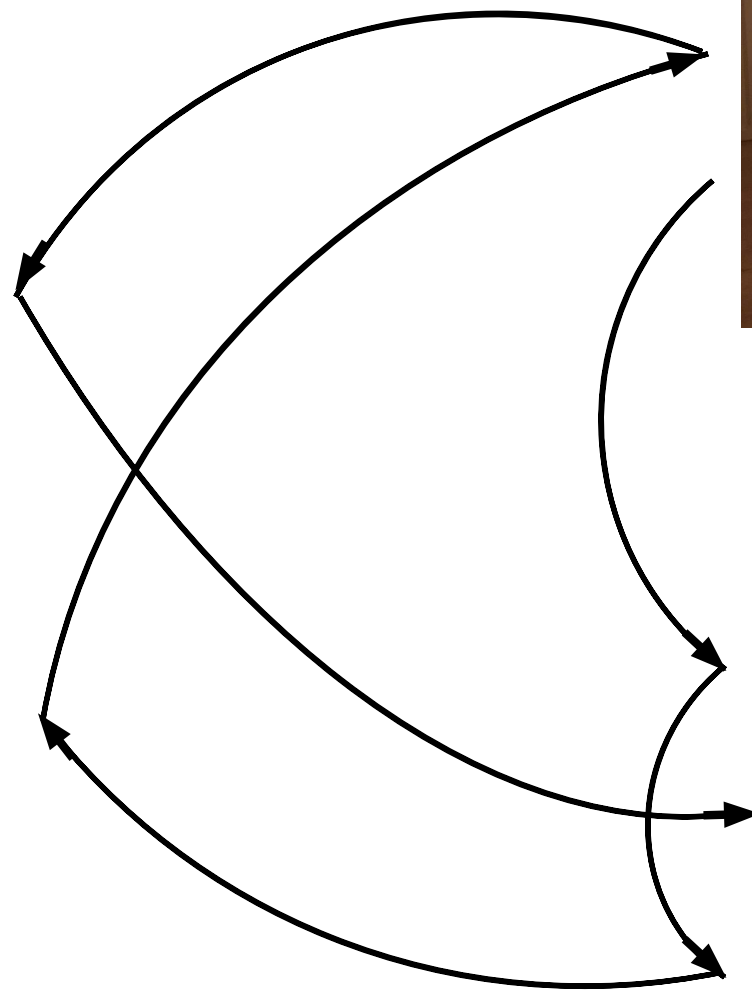
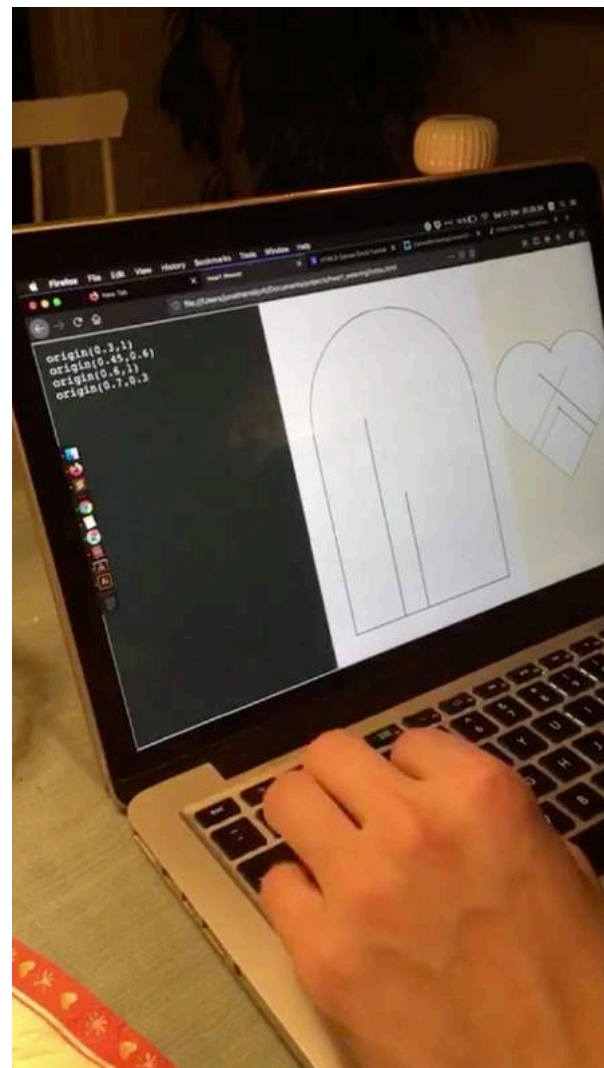


demo

the design of the tool grew out of a living cultural practice

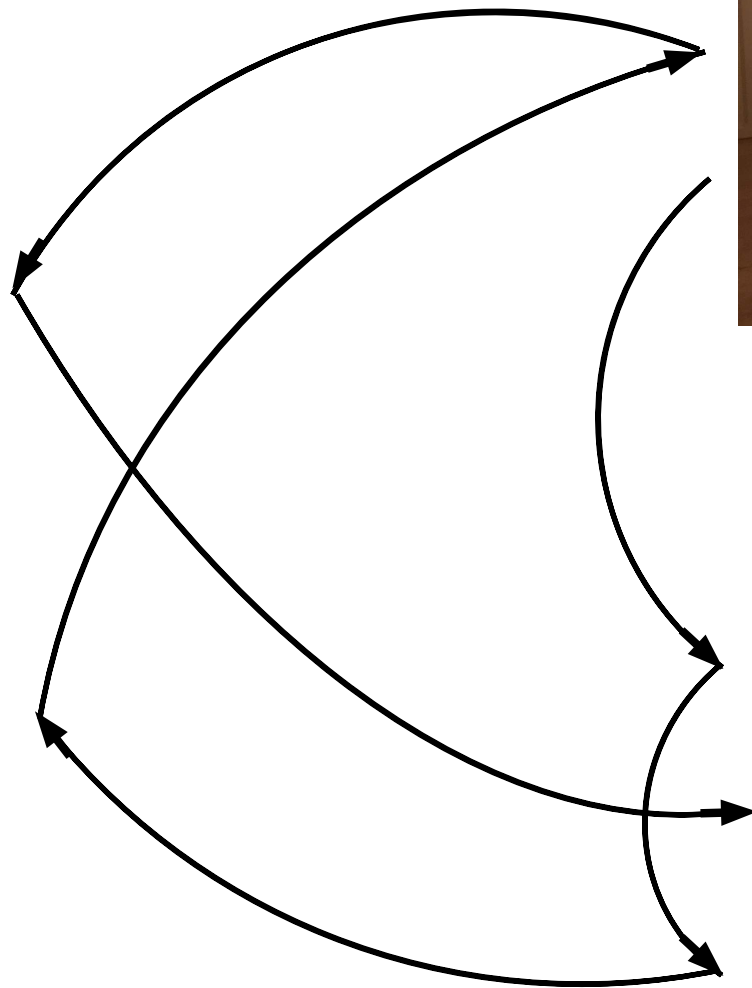
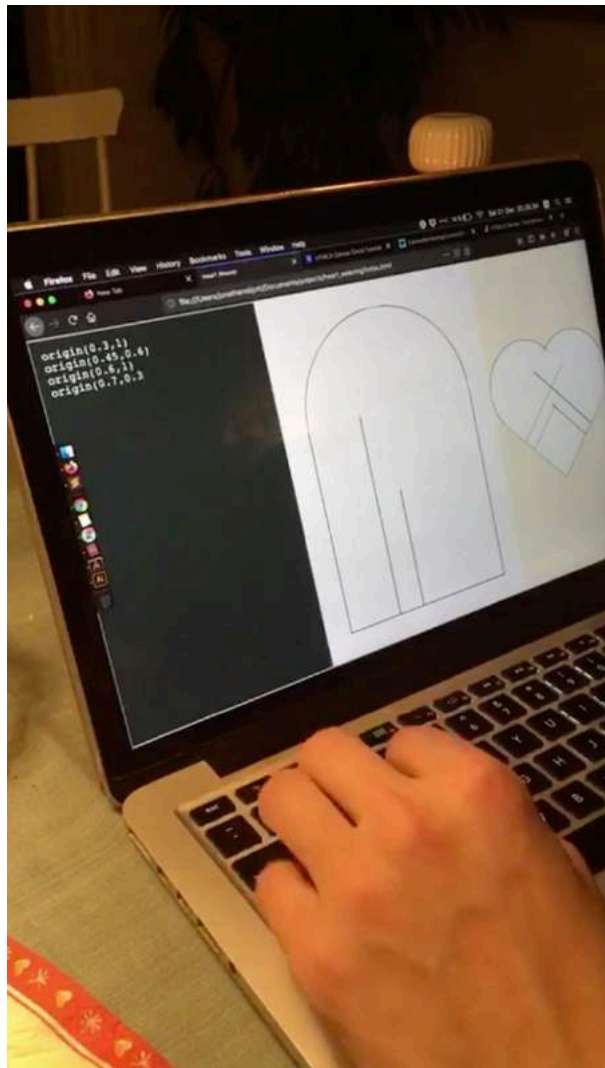


Conviviality is embedded in process . . .



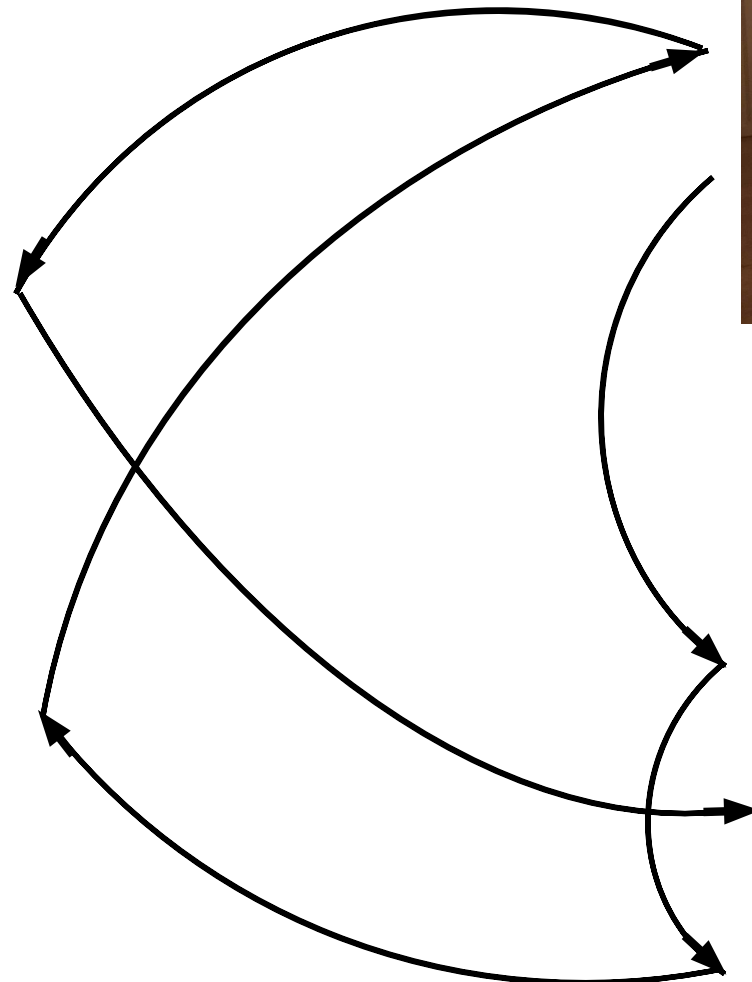
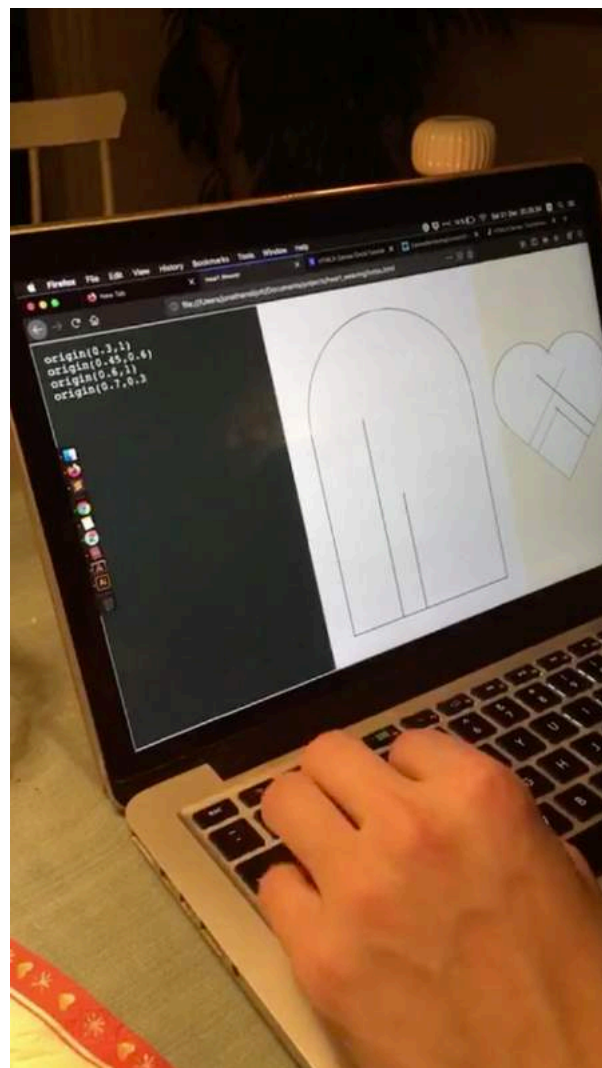


it is local and situated . . .





and represents a path forward where computational tools are created with a consciousness of the historical and cultural environment



It is experiential and grows out of a dynamic exchange

‘People need new tools to work **with** rather  
than tools that work **for** them’

Illich – Tools for Conviviality



One thread in this conference has been about world creation. To create worlds or not to create worlds?

In making my tool I created a small localised world with my community. A tool which is not meant for taking over the world.

This let me to reflecting on Illich's conception of scale when he says

“I choose the term “conviviality” to designate the **opposite of industrial productivity.**

Ivan Illich – Tools for Conviviality

There is not one opposite

There are many when we see tools as contingent upon communal, cultural, and historical experiences

“A pluralism of limited tools and of convivial commonwealth would of necessity encourage a **diversity of life styles.**”

Ivan Illich – Tools for Conviviality