Collectively Mapping Borders:
*Syrian refugee border crossings*
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## VISUAL FIELDS

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I became fascinated with borders and all their peculiarities two years ago while simultaneously enrolled in a borders studies course and a cartography course. I began questioning the cartographic conventions and workflows that I had been exposed to. Typically, I download a shapefile of country outlines, generalize the line work, and assign homogenous symbolization—thin, solid, black strokes—across all units, sometimes adding a dash if the border is controversial. Throughout the semester, I quickly discovered that I was doing it all wrong. I had no clue what borders are or how to represent them.

Borders are dynamic and are continuously evolving. Borders are not homogenous as each border is geopolitically different. They often tighten and loosen border security allowing some to enter and not others. We conventionally represent borders in two dimensions: lines for the border itself and points for border crossings. In reality, borders are often areas and zones of transitions. Last—and most importantly—individuals experience borders in different ways. Men and women, the young and old, those alone and those in groups, often experience borders in different ways. These peculiarities became the center of my work as I choose the timely case study of Syria and Syrian refugee border experiences.

My research begged the question: How can the cartographic portrayal of Syrian borders be improved to better represent refugee experiences? I conducted a series interviews with Syrian refugees and humanitarian workers in the spring of 2015 and developed an alternative mapping technique to remap borders based on their experiences and perspectives. My technique, however, was just one solution for rethinking and remapping borders and so, I turned to the cartographic community to continue this exploration of border depictions.

In October 2015, I asked North American Cartographic Information Society (NACIS) attendees in Minneapolis, MN to collectively remap Syria's borders based on excerpts from my interviews with refugees and humanitarian workers. Participants were given one of six notebooks and various colored pens. Each page had a blank space for drawing, a locator map, and a quote from one of my interviewees—Adiba and Mohammed (Figure 1). My instructions asked participants to sketch a new symbol depicting the border described in the individual's quote. I specifically asked participates to:

1. Pick a notebook

2. Read the passage

3. Symbolize the border based on the experience described in the passage

4. Start again!
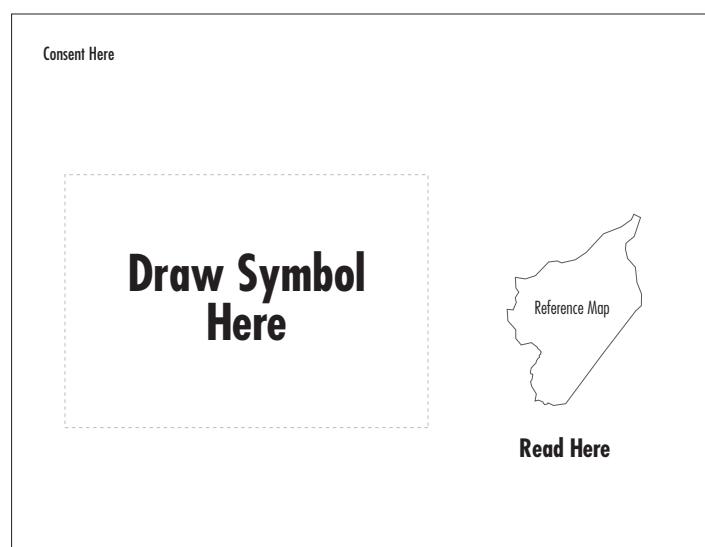


*Figure 1: The legend or schematic given to participants before sketching.*

Each passage was based on Adiba and Mohammed's description of Syria's borders through his or her experience. Their descriptions of the borders included:

Passage 1: "It's very difficult for young men, it's a high-risk age to be trying to leave" (Adiba, 2015).

Passage 2: "For women, I think it's been a bit easier to cross… if you want to come to Europe, make sure you have one of your children at least with you" (Adiba, 2015).

Passage 3: "I was lucky. They didn't have my name on the [Syrian] border" (Mohammed, 2015).

Passage 4: "The Jordanian-Syrian border is totally one hundred percent controlled by the Jordanian government. No one or nothing goes in and out" (Mohammed, 2015).

Passage 5: "You have to go through the mountains and take back roads through villages. It [the Lebanese border] is like walking through a mine field" (Mohammed, 2015).
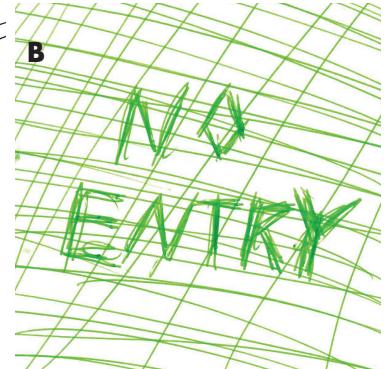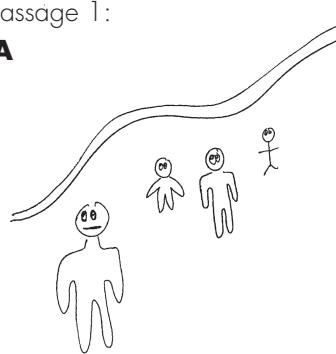
Passage 6: "The Turkish border [is] more fluid or porous, more equipped" (Adiba, 2015).

I collated and digitized my 50 collected sketches (Figure 2) and then developed a series of visual codes to analyze the visual variables and cartographic techniques used in each map. These visual codes included: dimensionality (point, line, polygon, other), visual variables (spacing, size, height, color, lightness, saturation, orientation, shape, arrangement), scale, extent, generalization, style, texture, form, type, iconicity, movement, visual complexity, time, perspective, voice, and character (gender and age). I then tallied each code to uncover consistent patterns amongst participants. Here, I briefly mention a few of these variables that I find most useful to reinvigorate our border symbolization. I also reference the example maps shown in Figure 2.
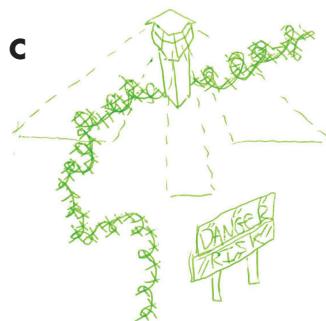
As expected, a majority of the maps (37 of 50) used lines to represent the borders. This make sense because lines are an obvious and often default choice when choosing border dimensionality. I was intrigued, however, to discover that half of the sketches used areas to depict the border. Polygons are an innovative dimension to explore border features. Eight sketches used points to represent that border, most often depicting a border crossing point. One map did not show the border any dimension, opting to use type and type only instead. It was common in over half the maps (nearly 60 percent) to use more than one dimensionality. For example, letter K in Figure 2 uses a doorway as a point to show a

Passage 1:
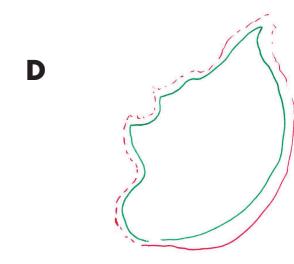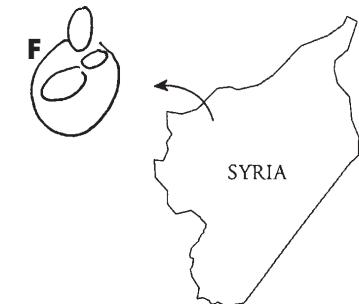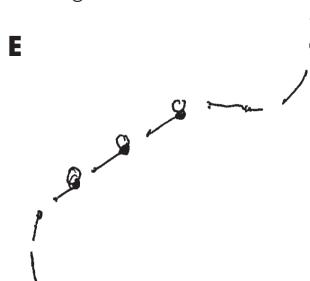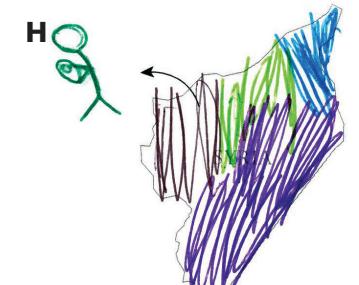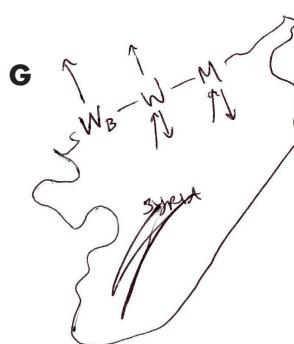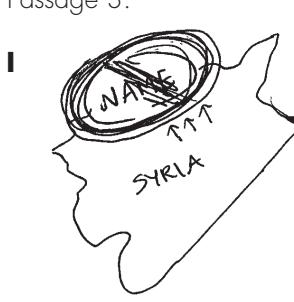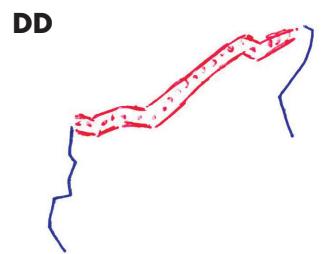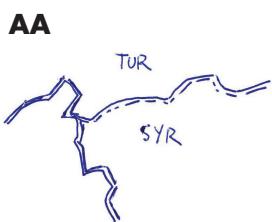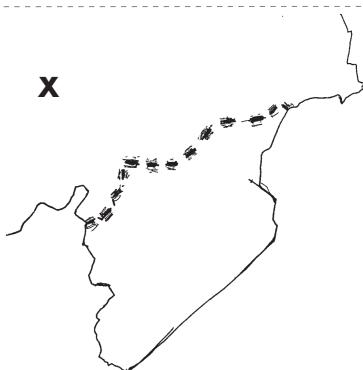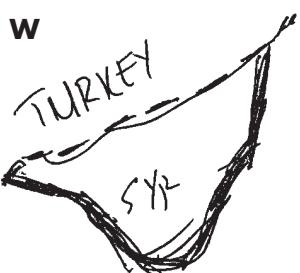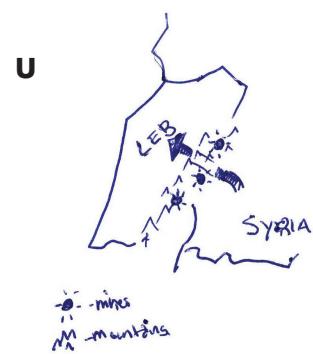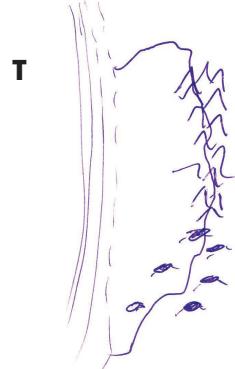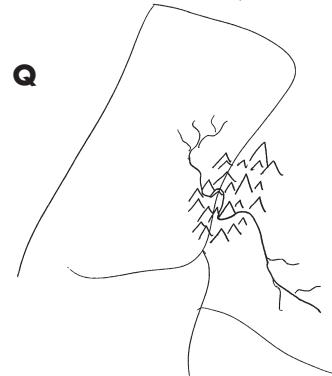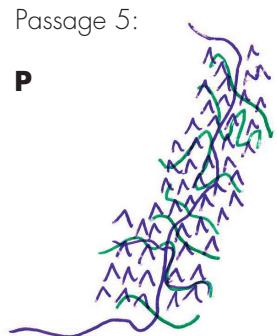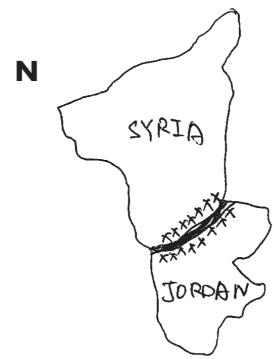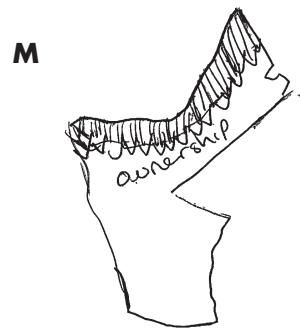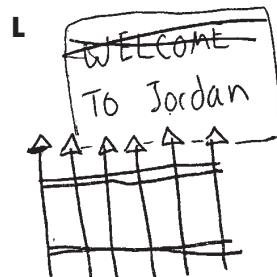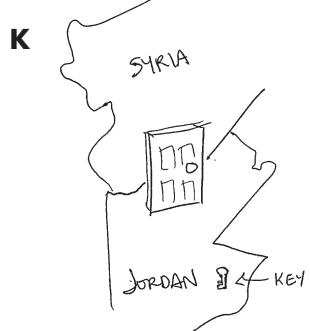
Passage 2:

Passage 3:



Figure 2: Sketch examples divided by passage.

Passage 4:

**K** SYRIA

JORDAN KEY

**L** WELCOME TO Jordan

**M** ownership

**N** SYRIA

JORDAN

**O** Syria Jordan

Passage 5:

**P**

**Q**

**R** LEBANON

SYRIA

**S**

**T**

**U** LEB

SYRIA

• - mines
M - mountains

Passage 3:

**V** TURKEY

SYRIA

**W** TURKEY

SYR

**X**

**Y** TURKEY

SYRIA

**Z** TURKEY

SYRIA

Passage 6:

**AA** TUR

SYR

**BB** SYRIA

**CC** X X X X X
16 17 18 19 20

SYRIA

**DD**

*Figure 2 continued: Sketch examples divided by passage.*

border crossing, but also uses solid, black lines to depict the remainder of the borders. Similarly, letter M in Figure 2 combines a polygon and a line, whereas letter V only uses a line. The combination and use of alternative feature dimensions expands the vocabulary of border features.

Sixty percent of the sketches used black and white and the remaining 40 percent used color. Of the maps that used colored pens, only six used color to differentiate between borders. For example, letters D, J, O, and DD used color to nominally separate two border types. In contrast, letters V and S used only one color. I expected color to be used more and to be used to show emotion. I expected red to be used more often because it elicits a sense of fear or negativity. Although red was only used four times, Letter J uses a combination of a red and green to show a "stop and go" effect similar to a stoplight. Hue is a visual variable that could be used more to explore border symbolization.

Type was an effective tool used in 29 sketches. Twenty-one of the sketches used type for labeling purposes only. Another 8 sketches used text for description purposes and legends. Letters C uses type to show "danger" and "risk" and letter M uses type to describe Jordanian control of its border. Letters D, K, and U use text in their legends to identify particular features. Letter B uses the words "NO ENTRY" to emphasize the border as inaccessible. Participants in this experiment explored type in interesting ways and these type techniques can be translated to other types of border depictions.

Visual variables such as spacing, size, height, color, lightness/saturation, orientation, and arrangement allow cartographers to customize, symbolize, and add meaning into map features. I evaluated each visual variable in Figure 3 and briefly expand on a few here. As expected, solid lines were the most prominently (40 sketches) used symbol choice falling underneath the visual variable arrangement. Yet, I was surprised to find that 18 sketches used dashes and 16 used both dashed and solid lines.

While arrangement is a visual variable commonly used in border depictions, I was excited to see that participants used a variety of visual variables and symbolization techniques. The visual variable shape was used in 31 sketches. These shapes included the icons (discussed

below in more detail). Letter Z, for example, uses circles along a line. I did not expect lightness and saturation to be used very efficiently because participants were using ink pens. While difficult to shade with pen, I was happy to see 15 sketches accomplish this task. One example includes, Letter X, which uses a combination of a dashes and lightness. Each dash illuminates a shaded gradient in either direction. Height was used in several maps, including letters K and L. Height was only used from oblique perspectives, which aids the perception of height. Height and the oblique perspective—used in 8 sketches—gives the viewer a more intimate viewing angle and are useful tools for showing on the ground experience. Thickness and particularly varying thickness is an effective tool for showing difficulty. Letter BB shows a gradient of thickness, which reflects the fluctuating border control and degree of difficulty for individuals to cross. Overall, the participants in this exploration expanded the use of visual variables beyond arrangement, solid and dashed lines. It is important to continue to reinvigorate these "other" visual variables to expand the representation of experience.

| Visual Variable | Number of Sketches |
|---|---|
| Arrangement | 50 |
|     Solid lines | 40 |
|     Dashed lines | 18 |
|     Both | 16 |
| Shape/Icon | 31 |
|     People | 11 |
|     Bombs | 4 |
|     Mountains | 4 |
|     Door | 2 |
|     Billboards | 3 |
|     Other | 7 |
| Hue | 20 |
|     Two hues | 6 |
| Lightness/Saturation | 15 |
| Height | 5 |
| Size/Thickness | 12 |
| Spacing | 28 |

*Figure 3: Table of visual variables and the number of sketches that used each visual variable.*

Icons or symbols were used in 31 sketches, 8 of which were used for border crossing points. Icons ranged in

iconicity or the level of abstraction. Mimetic symbols are immediately recognized, whereas abstract symbols usually need a legend to tell the viewer what that features represents. Participants used mimetic icons most often (18 of 20). These icons varied and included: people, bombs, mountains, doors, signs, and towers. Using people and faces was an effective cartographic choice to show the dire need of Syrians. In letter A, for example, the four figures are bleakly looking towards the borders and letter V shows happy and sad faces to convey a sense of joy and despair, respectively. Letter I uses a combination of type and icon to show restriction based on name. Icons are extremely helpful tools to quickly and effectively convey a message. As such, cartographers should continue to explore the use the mimetic icons in stories of border experiences.

After analyzing the cartographic techniques used by participants at NACIS, I created a composite representation of Syria the combines the techniques used by the NACIS community. This new alternative map nudges cartography forward by asking cartographers (professional and amateur alike) to collectively rethink borders and their symbolization. By focusing on border symbolization, participants—myself included—were able to expand our visualization and cartographic vocabulary to better reflect the experiences of those crossing each border. It is my hope that this map gives Syrians a geographic voice as yet unavailable to them through our convention techniques and homogenous border symbolization.

*Meghan Kelly is a cartographer and graduate student at the University of Wisconsin–Madison in the department of Geography. Her research intersects cartography and human geography. She is specifically interested (at the moment) in critical cartography, borders, and mapping experience. Her work is inspired by a range of past and present cartographers, including: Charles Minard, Kevin Lynch, and Margaret Pearce. Meghan's mapping philosophy is to explore classic techniques in a new way, always re-thinking our current cartographies. Please visit her online portfolio at http://meghankelly-cartography.github.io/.*

TURKEY

women w/ children
men

Syria

"resistor" =
thick lines for difficult,
the idea of "try"
or attempt

DANGER
RISK

Death LEB

mines

mountains

WELCOME
TO Jordan

No Entrance

NAME

JORDAN
ownership

KEY

NO
ENTRY

TURKEY

SYRIA

IRAQ

LEBANON

JORDAN