Technology is a catalyst that continually interacts with who we are and influences our evolving way of life. Design is the vehicle to craft the direction and nuance of that evolution.

And so we reach the end of Chapter 2. What begins as science fiction becomes technological reality, its implications no less fantastical.

**CHAPTER 2**
**DESIGN ETUDE**

**PART 1: INSIDE-OUT BRAINSTORM**

Apply the idea of inside-out design, and work backwards to conceive of a physical expressive toy. Do this by taking advantage of an existing everyday technology. Work rigorously with the constraints of available technology (no "if only we had X") and consider an aesthetic leap that justifies using the technology (something you couldn’t do without it). The toy should aim to invite the user to be creative or playfully expressive in some way. Sketch ideas, and articulate as much detail as possible.

**PART 2: (OPTIONAL) PROTOTYPE IT!**

However you are able, prototype your design. Build the minimal essential elements. This is where the proverbial rubber meets the road and where you will discover how well (or not) the technologies you plan to use lend themselves to the task. You may need to backtrack, and perhaps even start over with an entirely new concept if you get stuck. Do not try to solve hard technical problems unless absolutely necessary. Don’t fight the technology. Embrace its strengths and limitations.

**PART 3: ONE MORE THING...**

After you’ve described your concept in as much detail as possible, think of one feature to really push this over the edge! For example, the globe in ocarina was a simple but over-the-top design gesture. Similarly, you might think of a specific social feature or a collaborative use case for your design. Good luck and have fun!

**EXAMPLE**

Physical laptop + computer vision + visualization = "laptop accordion"*

(Somewhere between awful and awesome) Set laptop sideways on lap and play by opening and closing the screen (motion tracked by computer vision, using frontside onboard camera). Sound is synthesized on laptop; keyboard is mapped to pitch. The screen itself might visualize the physical opening and closing of the instrument. An over-the-top version: scrub a video recording (mapped to screen position) of someone’s face as if the person is trapped inside the laptop, as you play it! Let the bad ideas flow, for they are the seeds of good designs!

*We actually built one... coming in Chapter 5.