

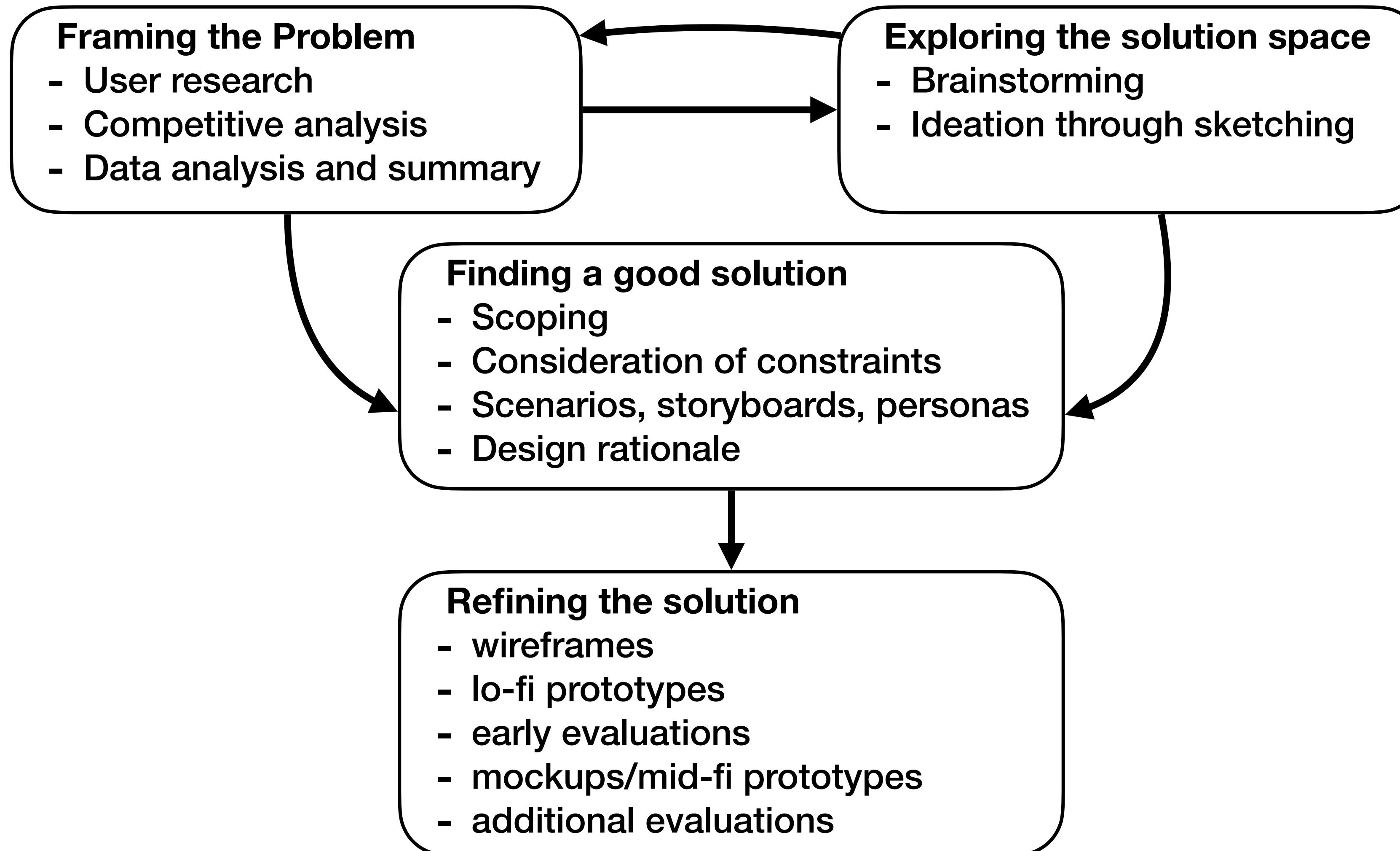
# Design Process & Design Diamond

## Harley Eades

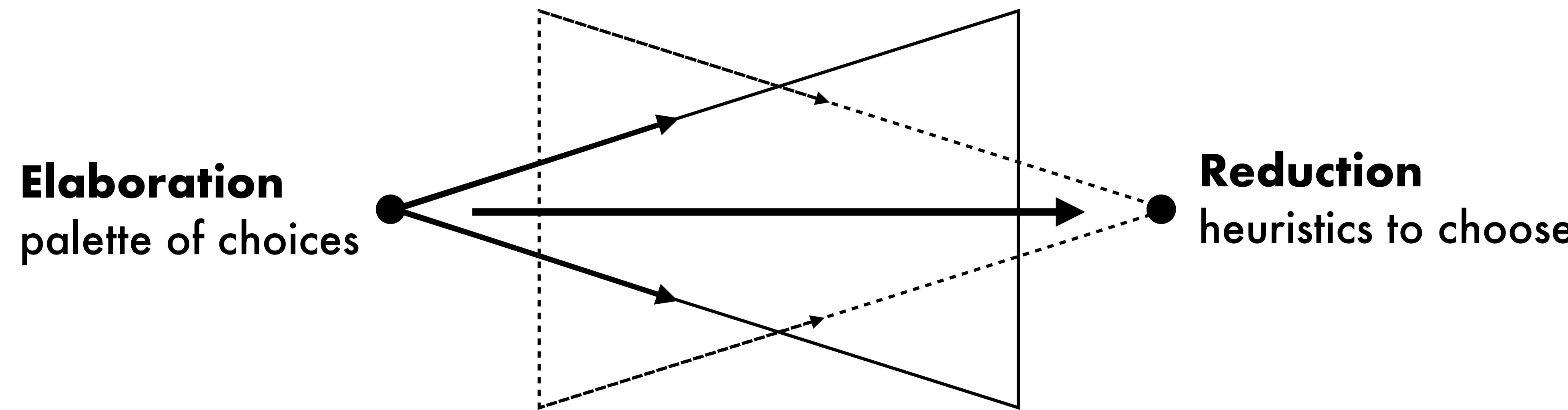


# **Design Process & Design Diamond**

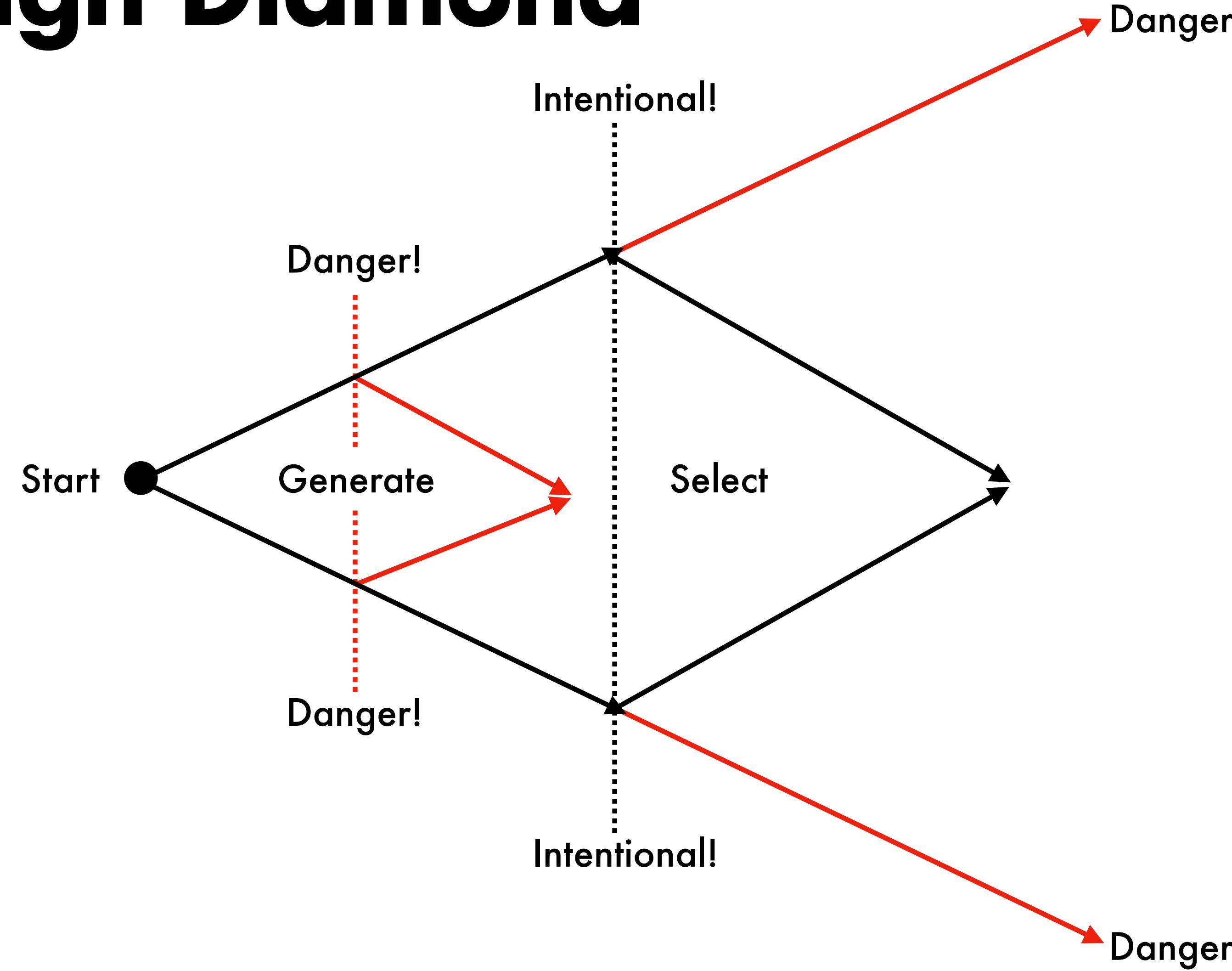
# Design Process in a Nutshell



# Design as a Choice



# The Design Diamond



# Critiquing design ideas is important

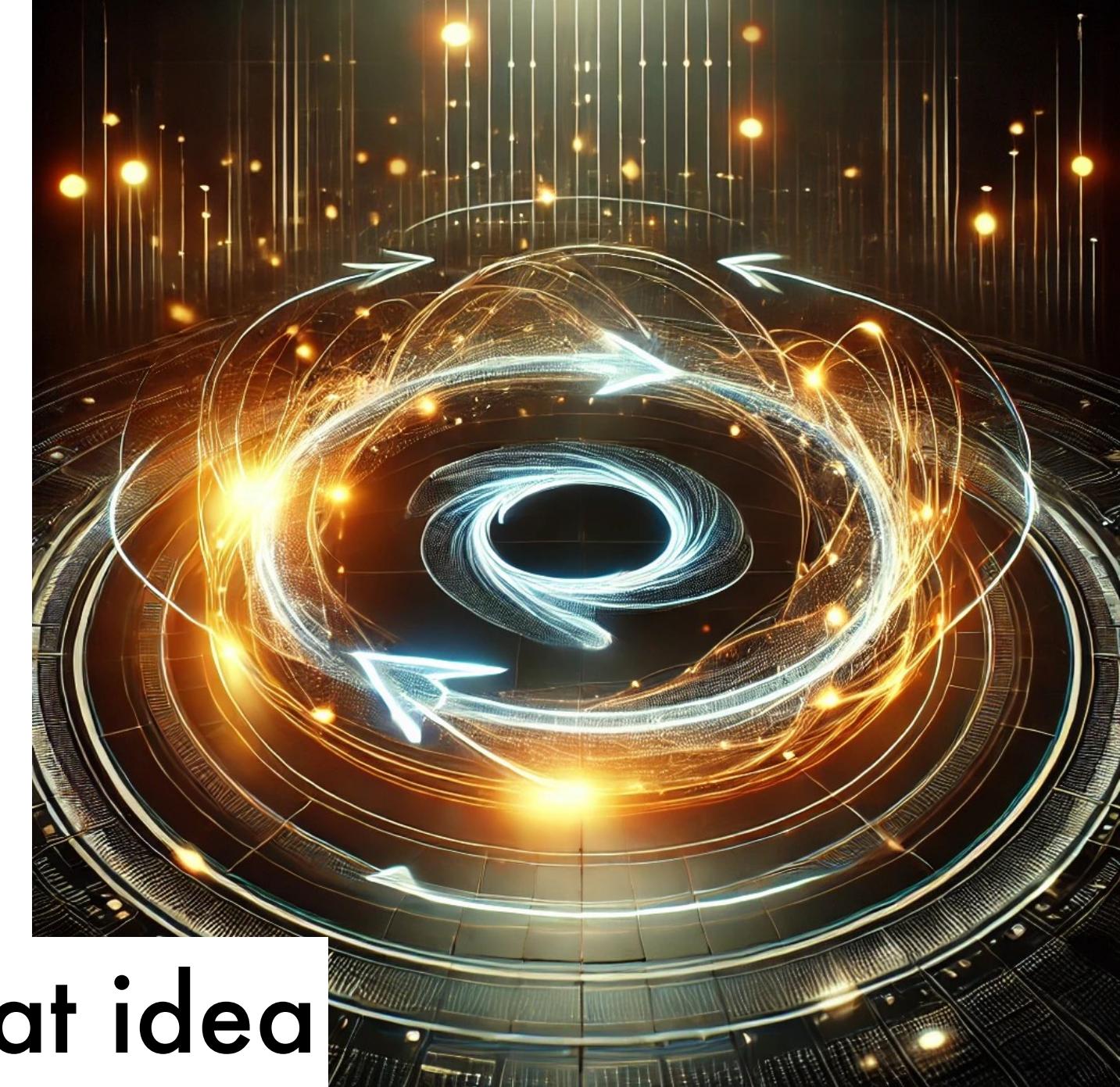
Ideas are both good and bad

- both are useful in design
- by making clear what is a bad design, we can avoid actually implementing it
- bad ideas help you justify your good ideas

# Critiquing design ideas is important

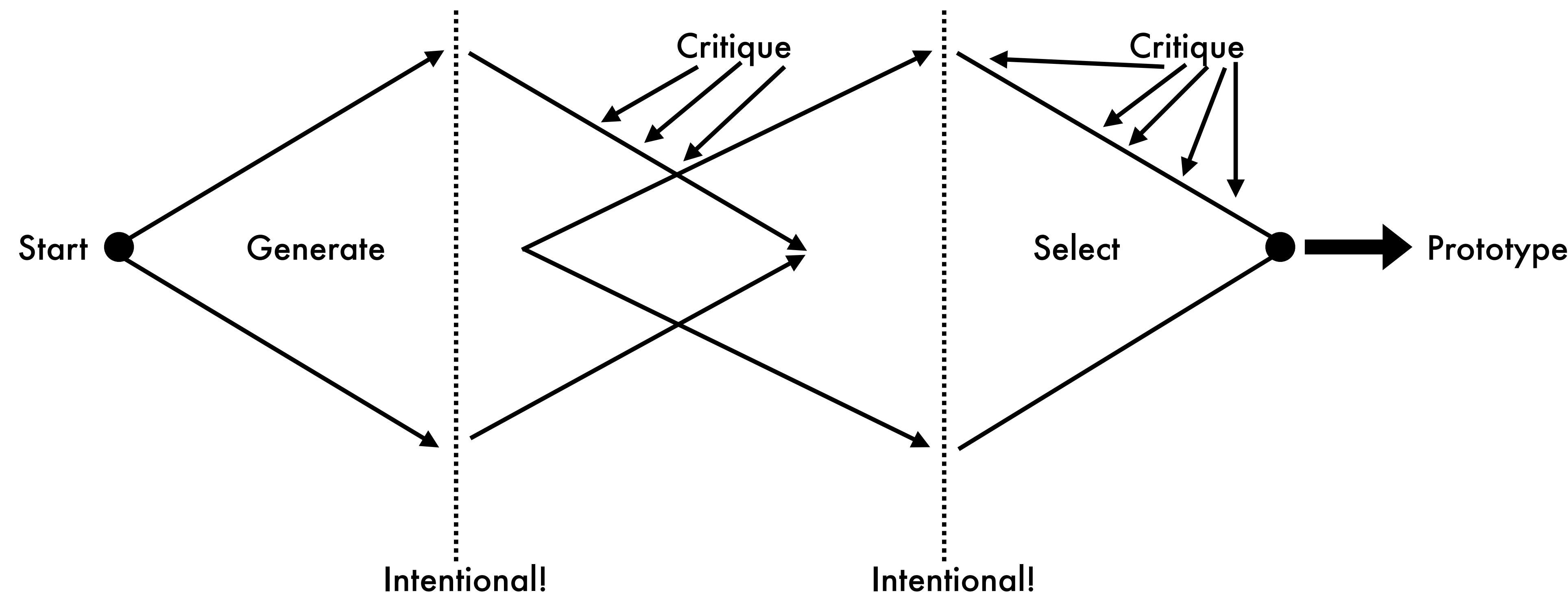
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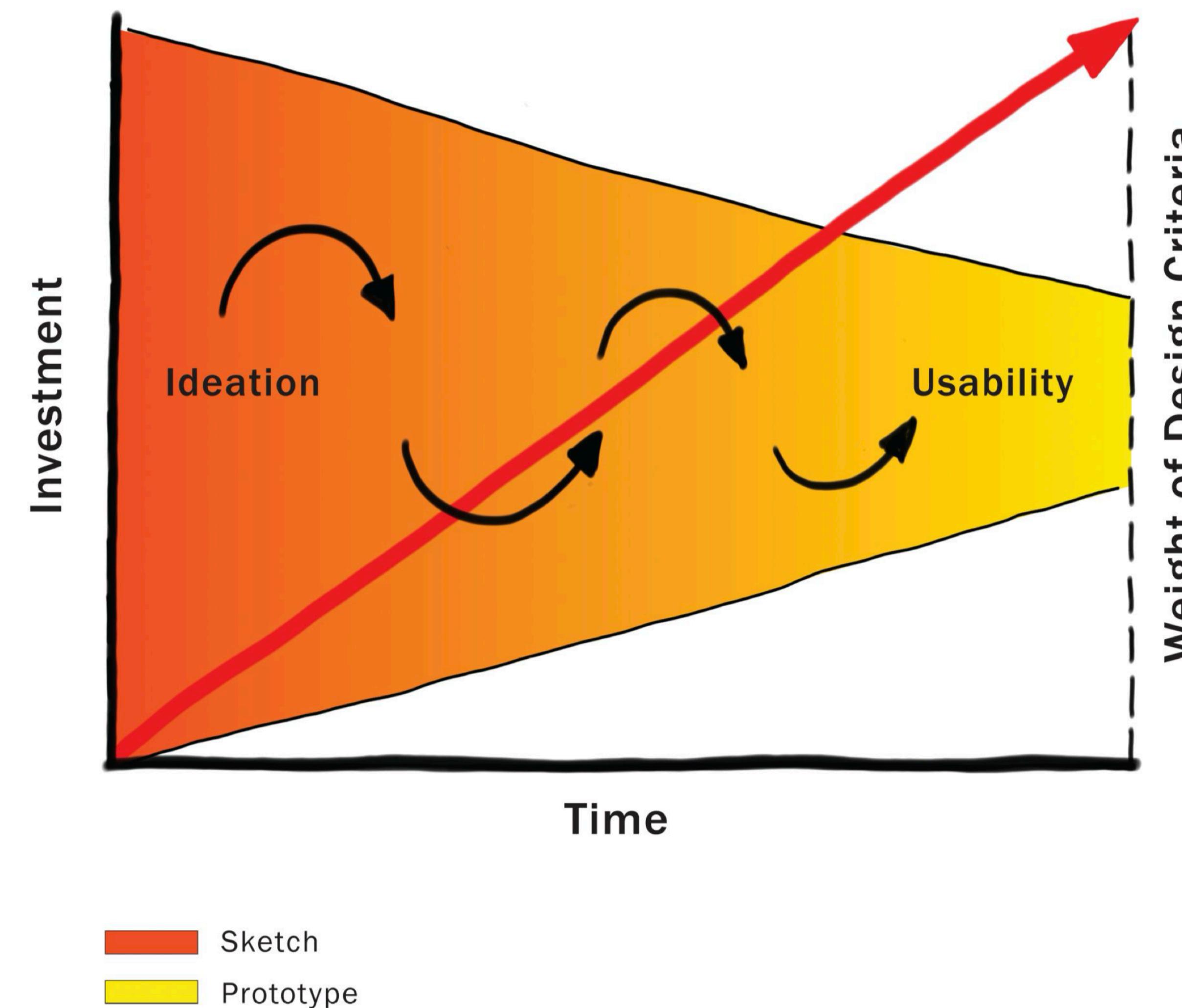


Feedback can turn a good idea into a great idea

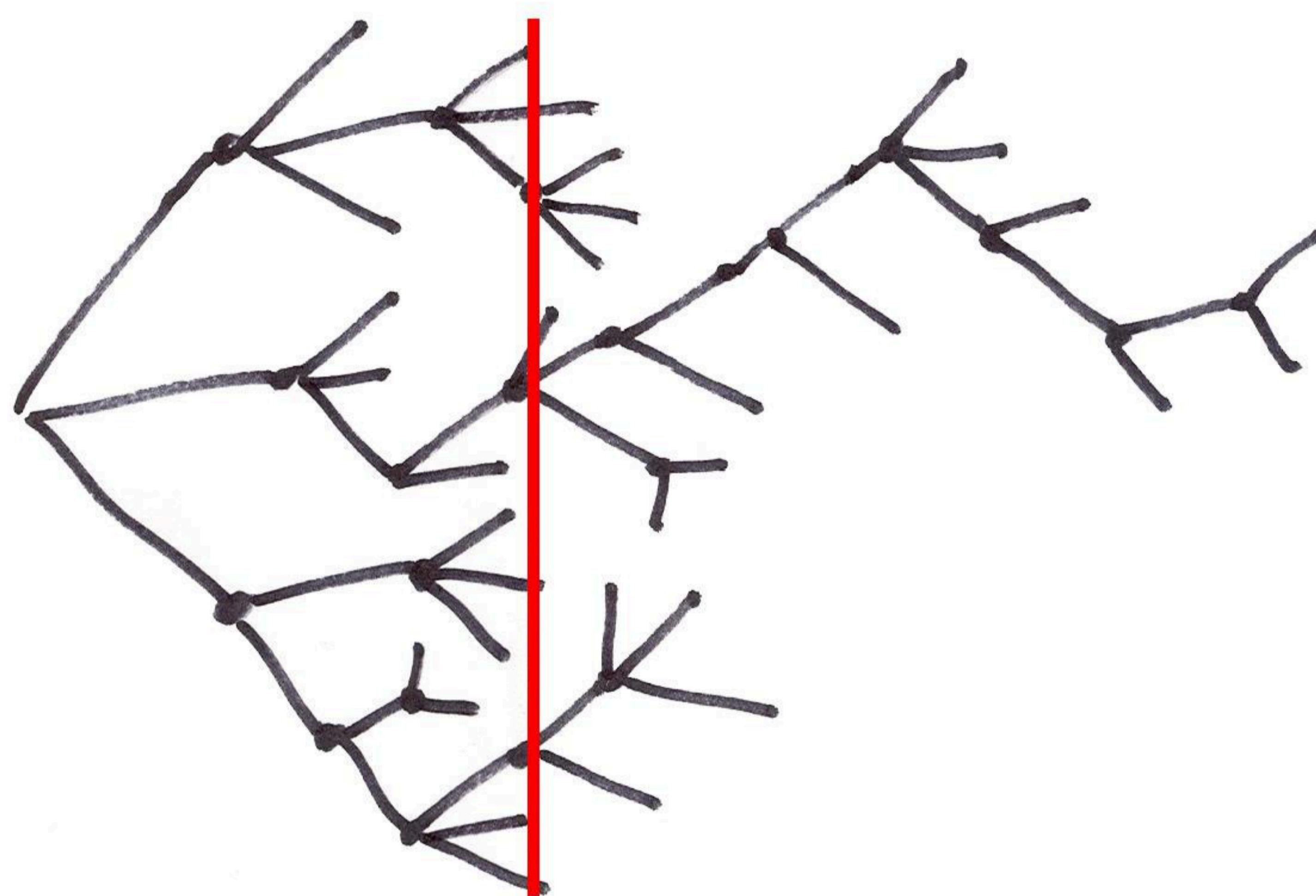
# Idea Oscillation



# Iteration toward a design



# Exploration of alternatives



# Let ideas oscillate...

The 4th generation of  
the iPod was successful



# Sketching

# Sketching: A way to boot creativity

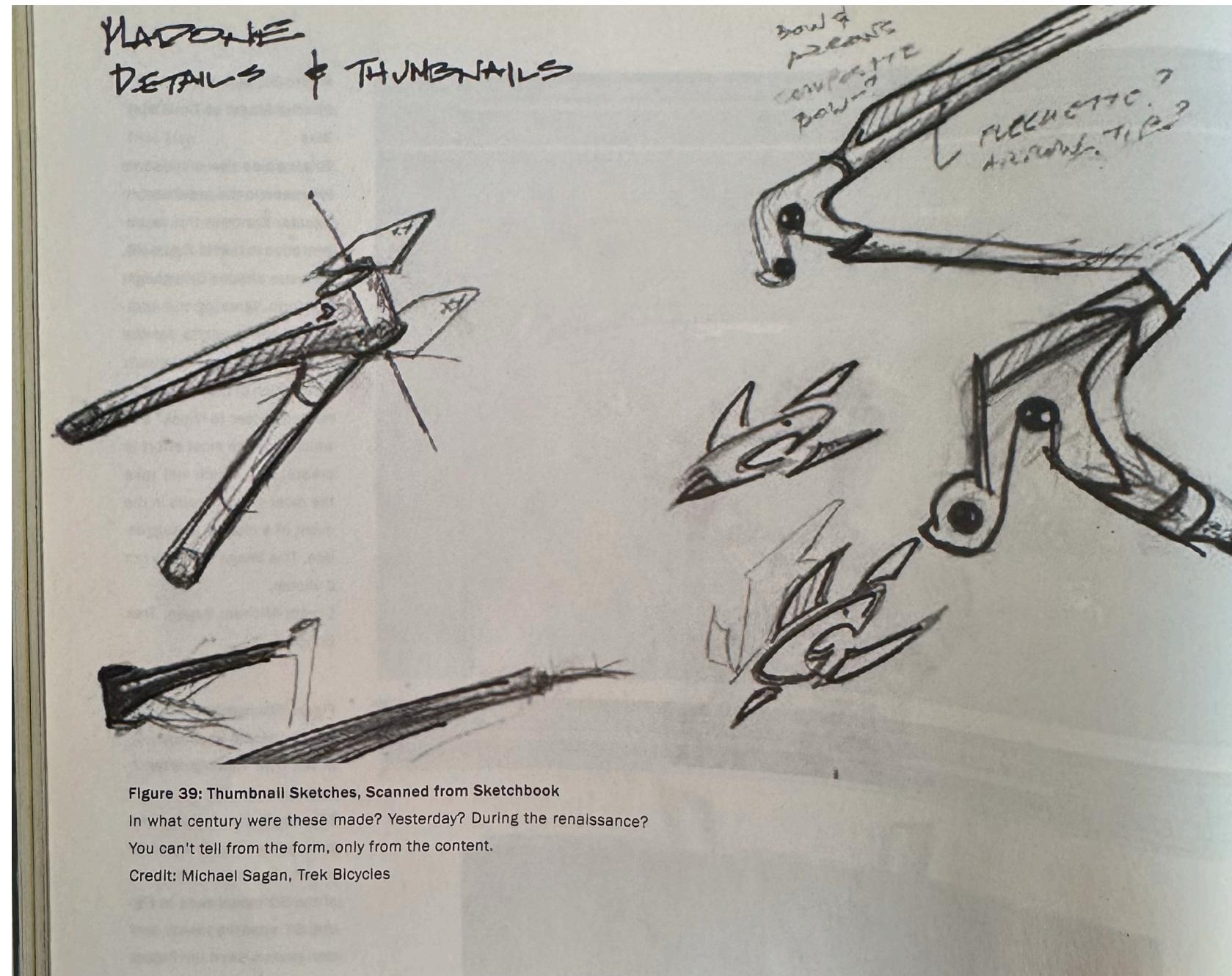


Figure 39: Thumbnail Sketches, Scanned from Sketchbook

In what century were these made? Yesterday? During the renaissance?

You can't tell from the form, only from the content.

Credit: Michael Sagan, Trek Bicycles

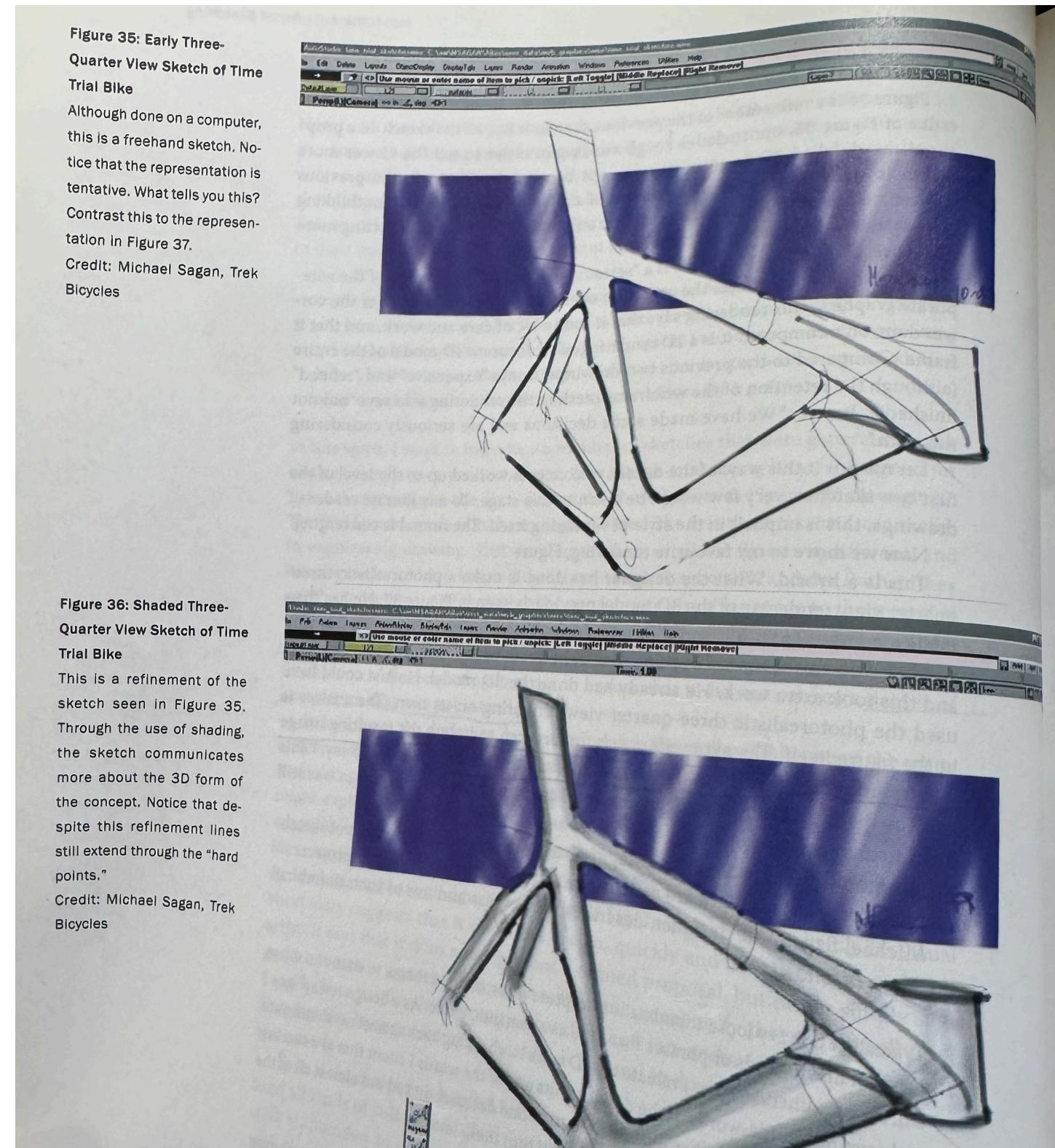


Figure 35: Early Three-Quarter View Sketch of Time Trial Bike

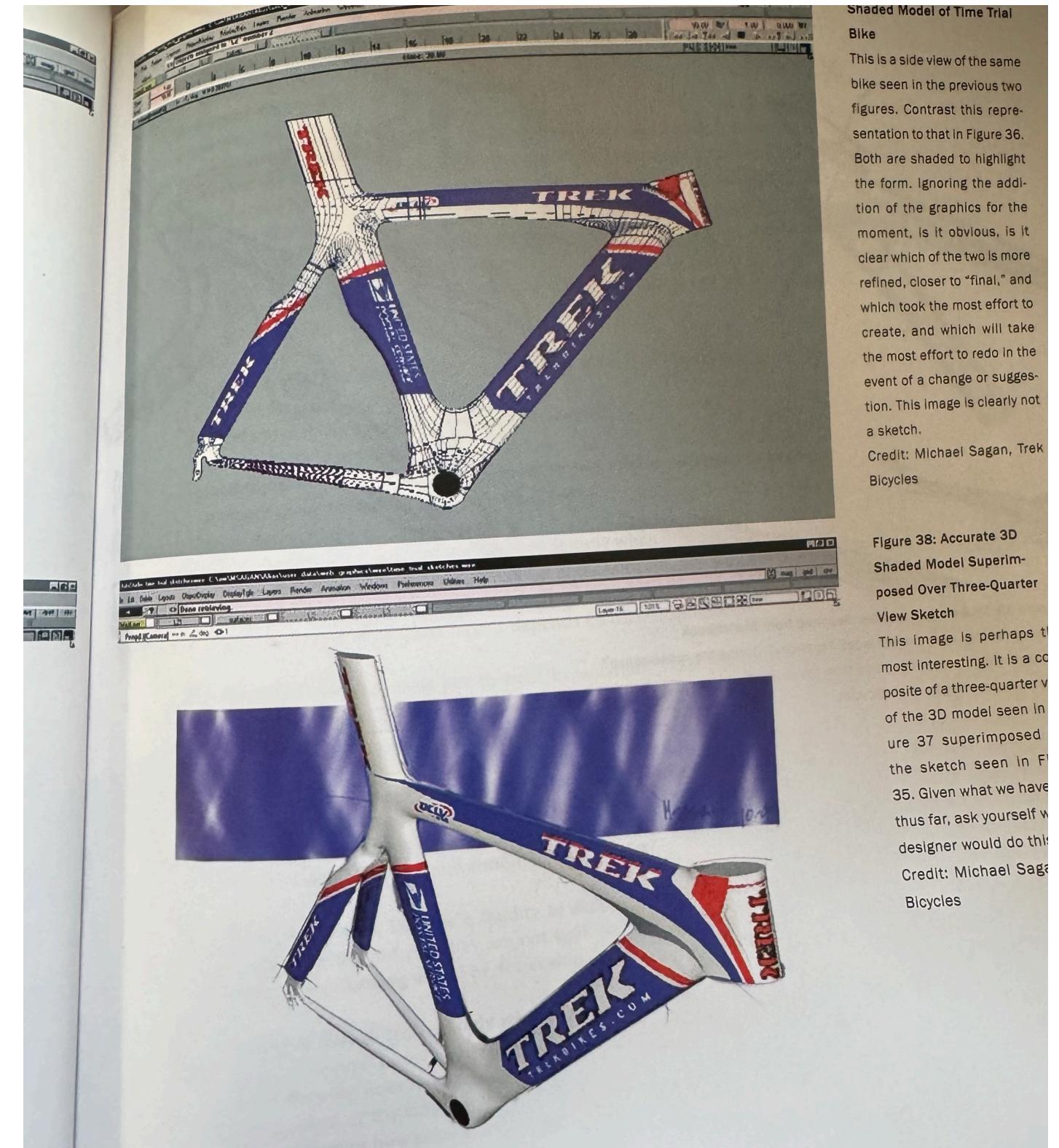
Although done on a computer, this is a freehand sketch. Notice that the representation is tentative. What tells you this? Contrast this to the representation in Figure 37.

Credit: Michael Sagan, Trek Bicycles

Figure 36: Shaded Three-Quarter View Sketch of Time Trial Bike

This is a refinement of the sketch seen in Figure 35. Through the use of shading, the sketch communicates more about the 3D form of the concept. Notice that despite this refinement lines still extend through the "hard points."

Credit: Michael Sagan, Trek Bicycles



Shaded Model of Time Trial Bike

This is a side view of the same bike seen in the previous two figures. Contrast this representation to that in Figure 36. Both are shaded to highlight the form. Ignoring the addition of the graphics for the moment, is it obvious, is it clear which of the two is more refined, closer to "final," and which took the most effort to create, and which will take the most effort to redo in the event of a change or suggestion. This image is clearly not a sketch.

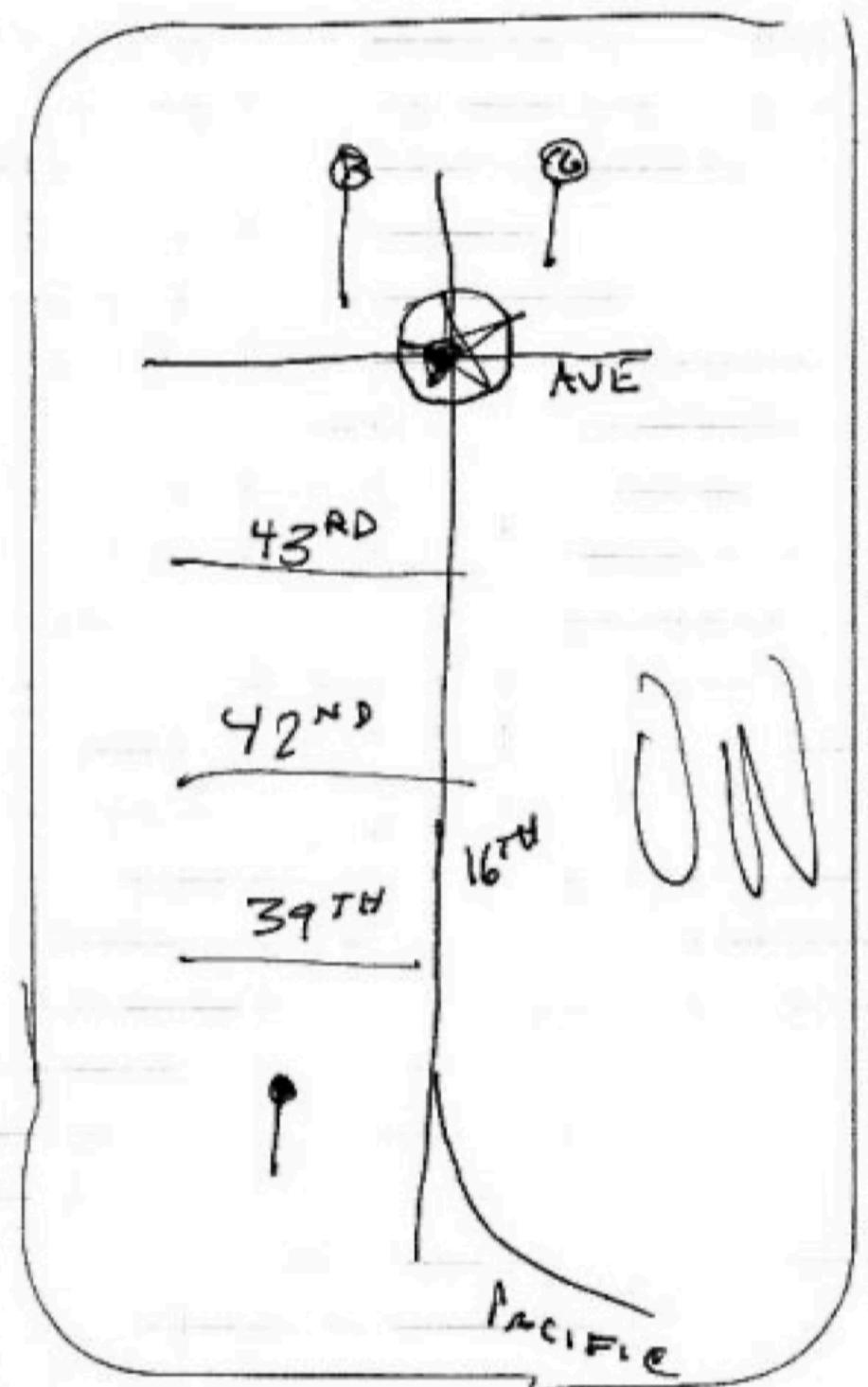
Credit: Michael Sagan, Trek Bicycles

Figure 38: Accurate 3D Shaded Model Superimposed Over Three-Quarter View Sketch

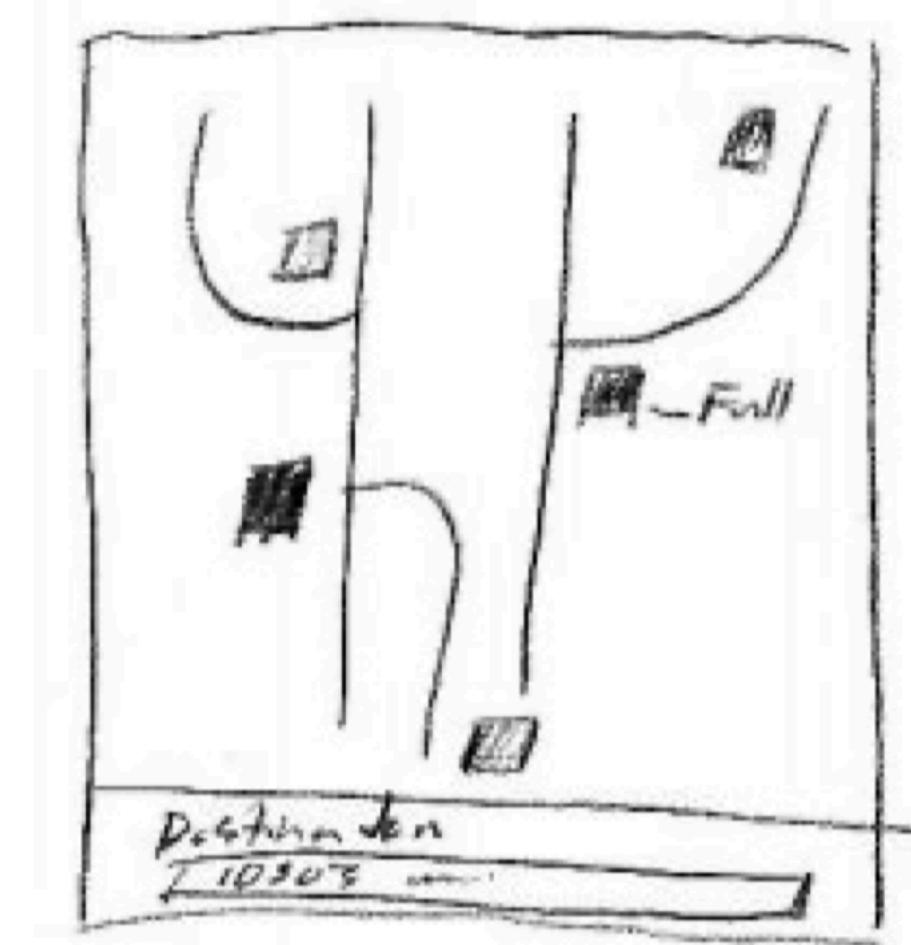
This image is perhaps the most interesting. It is a composite of a three-quarter view of the 3D model seen in Figure 37 superimposed on the sketch seen in Figure 35. Given what we have thus far, ask yourself what a designer would do this.

Credit: Michael Sagan, Trek Bicycles

# Sketching: A way to boot creativity

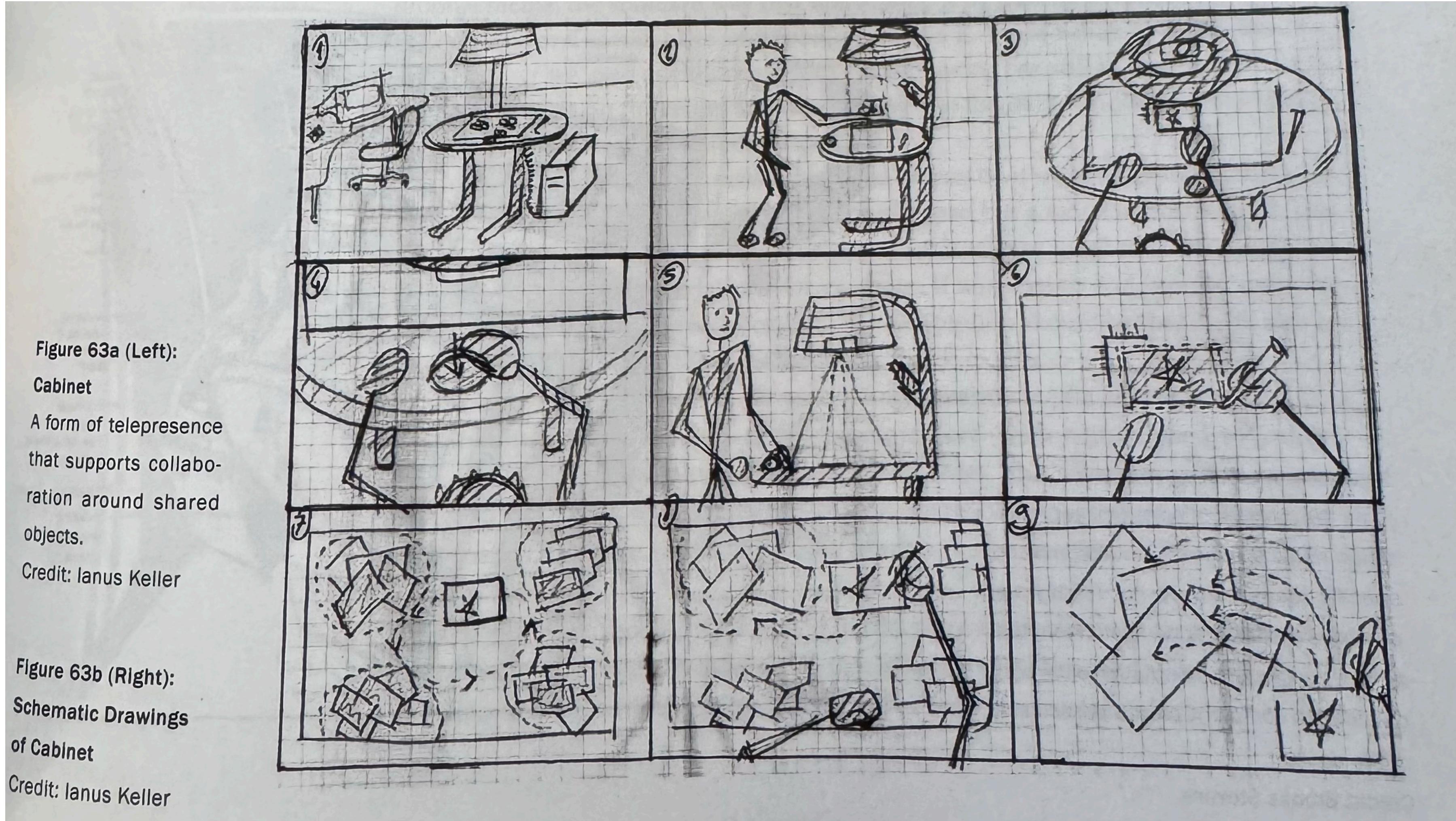


MAP SHOWING PARKING  
AVAILABILITY BASED ON IMPORTED  
DATA, INPUTTED ON MAP



- different colors
- highlights availability
-

# Sketching: A way to boot creativity



# Sketching: A way to boot creativity

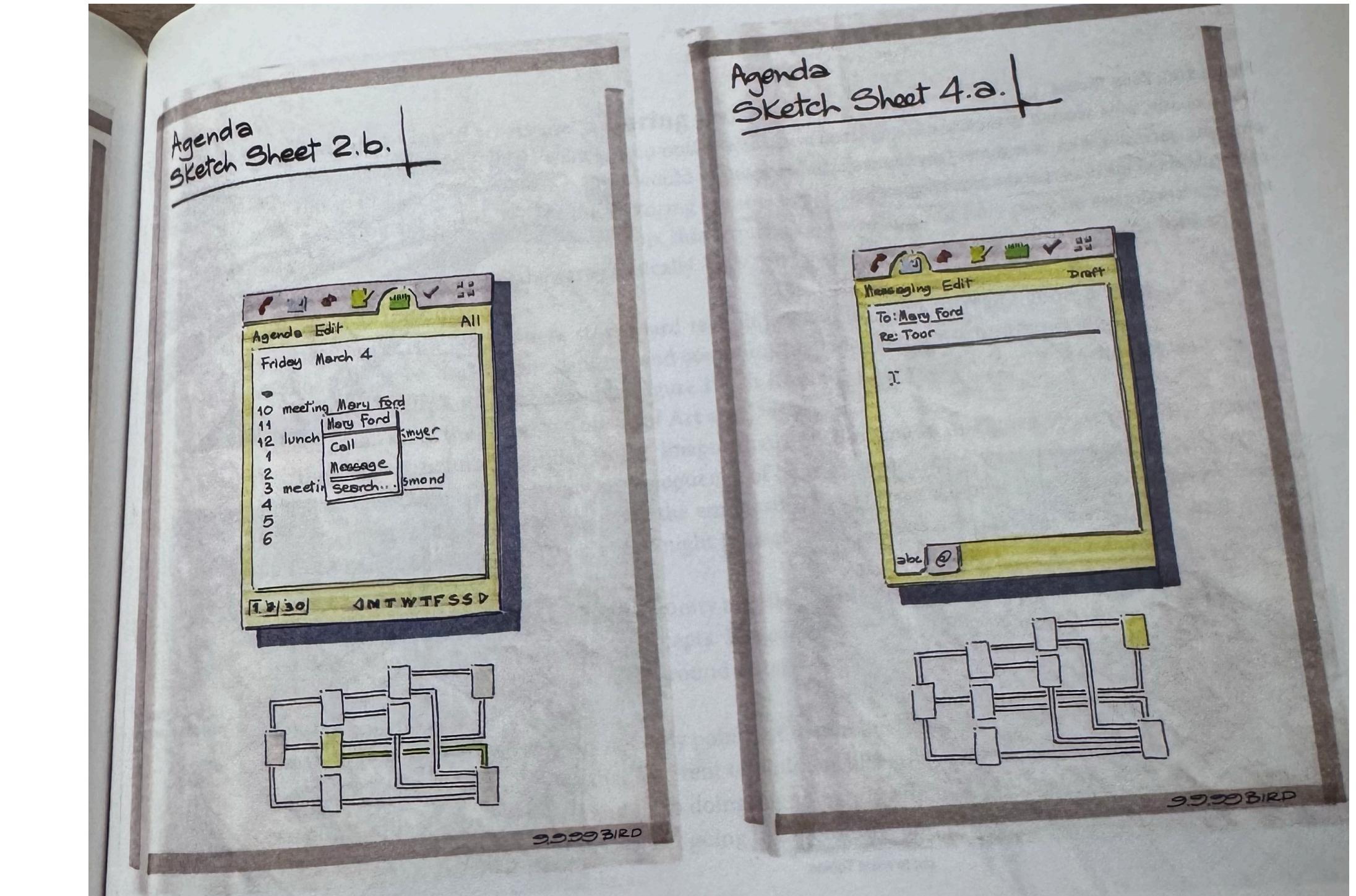
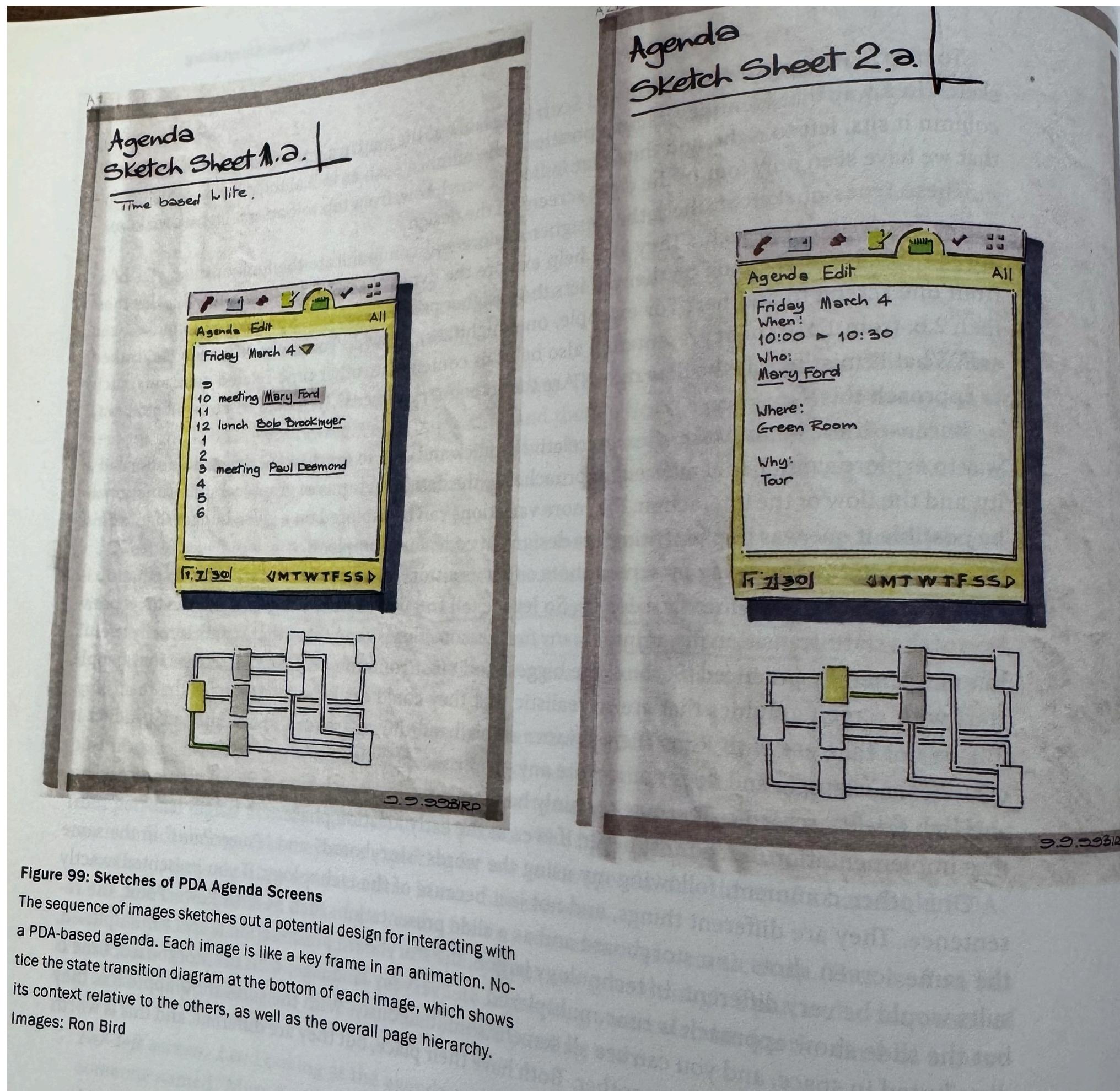


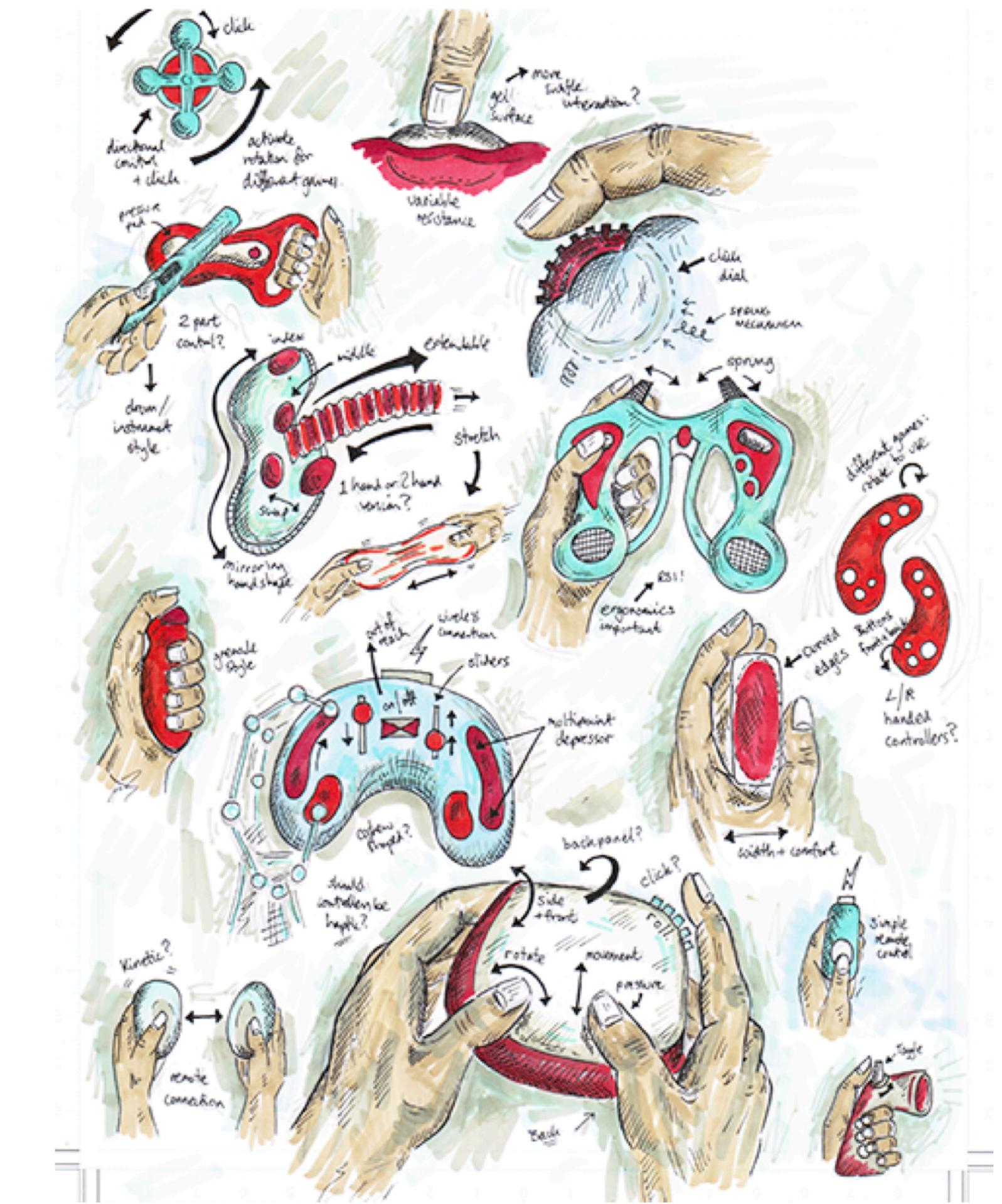
Figure 99: Sketches of PDA Agenda Screens

The sequence of images sketches out a potential design for interacting with a PDA-based agenda. Each image is like a key frame in an animation. Notice the state transition diagram at the bottom of each image, which shows its context relative to the others, as well as the overall page hierarchy.  
Images: Ron Bird

# **Sketching is...**

a process that enables you to think through ideas and convey design ideas to others very early in the design phase

**Sketching is the quintessential activity of design**



**Figure 1: An example of subjective sketching and ideation of prototypes for a console game controller.** The initial sketch (bottom middle) serves as a springboard for further iterations and tangents. The final image is coloured to highlight different areas and interactions. By keeping all images on the same sheet quick comparisons can be made and the story of design followed.

From: Sketching in HCI: Research Practice & Publication (Advanced)  
(click to read)

# Properties of Sketches

- Quick
- Timely
- Inexpensive
- Disposable
- Plentiful
- Clear Vocabulary
- Distinct Gesture
- Minimal Detail
- Appropriate
- Refinement
- Suggest and Explore
- Ambiguous

# Properties of Sketches

## Quick

A sketch is quick to make, or at least gives that impression.

# Properties of Sketches

**Timely**

A sketch can be provided when needed.

# Properties of Sketches

## Inexpensive

A sketch is cheap. Cost must not inhibit the ability to explore a concept, especially early in the design process.

# Properties of Sketches

## Disposable

If you can't afford to throw it away when done, it is probably not a sketch. The investment with a sketch is in the concept, not the execution. By the way, this doesn't mean that they have no value, or that you always dispose of them. Rather, their value largely depends on their disposability.

# Properties of Sketches

## Plentiful

Sketches tend not to exist in isolation. Their meaning or relevance is generally in the context of a collection or series, not as an isolated rendering.

# Properties of Sketches

## Clear vocabulary

The style in which a sketch is rendered follows certain conventions that distinguish it from other types of renderings.

The style, or form, signals that it is a sketch. The way that lines extend through endpoints is an example of such a convention, or style.

# Properties of Sketches

## Distinct Gesture

There is a fluidity to sketches that gives them a sense of openness and freedom. They are not tight and precise, in the sense that an engineering drawing would be, for example.

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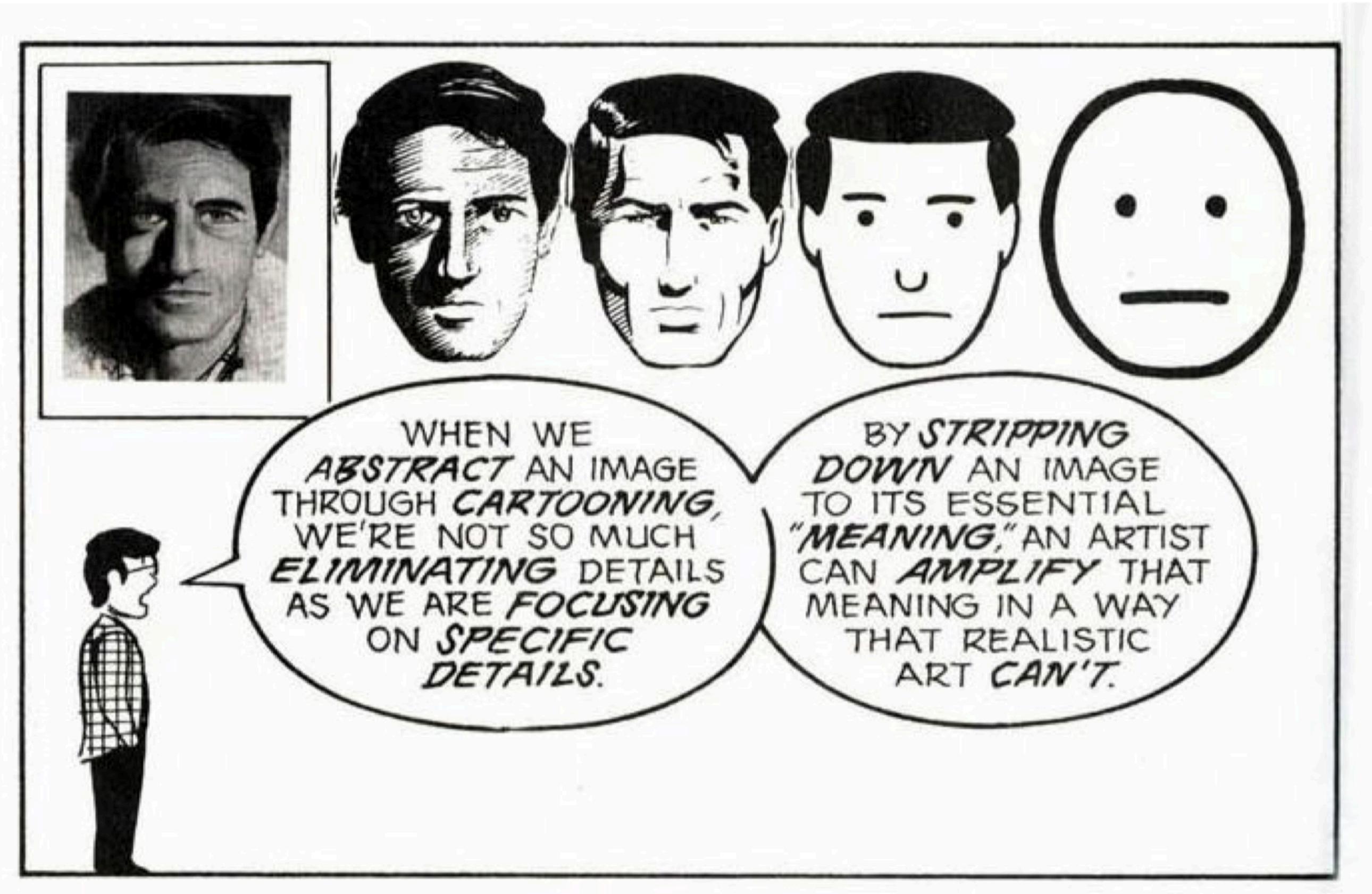
## Minimal Detail

Include only what is required to render the intended purpose or concept. Lawson (1997, p. 242) puts it this way, “... it is usually helpful if the drawing does not show or suggest answers to questions which are not being asked at the time.”

Superfluous detail is almost always distracting, at best, no matter how attractive or well rendered. Going beyond “good enough” is a negative, not a positive.

# Properties of Sketches

## Minimal Detail



# Properties of Sketches

## Appropriate Degree of Refinement

By its resolution or style, a sketch should not suggest a level of refinement beyond that of the project being depicted. As Lawson expresses it, “... it seems helpful if the drawing suggests only a level of precision which corresponds to the level of certainty in the designer’s mind at the time.”

# Properties of Sketches

## Suggest and explore rather than confirm

More on this later, but sketches don't "tell," they "suggest." Their value lies not in the artifact of the sketch itself, but in its ability to provide a catalyst to the desired and appropriate behaviours, conversations, and interactions.

# Properties of Sketches

## Ambiguity

Sketches are intentionally ambiguous, and much of their value derives from their being able to be interpreted in different ways, and new relationships seen within them, even by the person who drew them.

# Properties of Sketches

... a sketch is incomplete, somewhat vague, a low-fidelity representation. The degree of fidelity needs to match its purpose, a sketch should have “just enough” fidelity for the current stage in argument building.... Too little fidelity and the argument is unclear. Too much fidelity and the argument appears to be over-done; decided; completely worked out....

(Hugh Dubberly of Dubberly Design Office; private communication)

# Properties of Sketches

Some of the most serious problems occur if various parties—managers and/or customers and/or marketing—begin to view the early prototypes [read sketches] they see as the final product.

(Hix and Hartson 1993; p. 260)

# In class activity....

Pick two core activities of a user using your project.  
Sketch each idea as a series of three sketches.  
In the end, you should have six sketches.

# Creativity