# DESIGN THINKING

## AN INTRO COURSE

Design thinking is a problem-solving approach emphasising empathy, collaboration, and experimentation to drive innovation and address complex challenges.

It is human-centered ==> it prioritizes understanding and addressing the needs and desires of the people for whom a solution is being designed.



https://www.youtube.com/watch?v=_WI3B54m6SU

https://www.ideou.com/pages/design-thinking

D School Bootleg

# Design Thinking defined

✳ 1. **Human-Centered**: the user's perspective, needs, and challenges. *EMPATHY*

✳ 2. **Iterative Process**: Feedback.

✳ 3. **Collaborative**

✳ 4. **Emphasis on Prototyping**

✳ 5. **Problem Framing**: spending significant time framing and reframing the problem.

✳ 6. **Tolerance for Ambiguity**: problems can be messy and complex, clarity often emerges through the process.

✳ 7. **Focus on Desirability, Feasibility, and Viability**: A successful solution is not just about what users desire. It also needs to be technically feasible and economically viable. Design thinking ensures a balance between these three considerations.

✳ The design thinking process is often represented in various stages, most commonly being: **Empathize, Define, Ideate, Prototype, and Test**.

✳ However, it's essential to understand that these stages are not always sequential and can overlap or be revisited as insights are gained.

# DESIGN THINKING

**Empathize**
Understanding people

**Ideate**
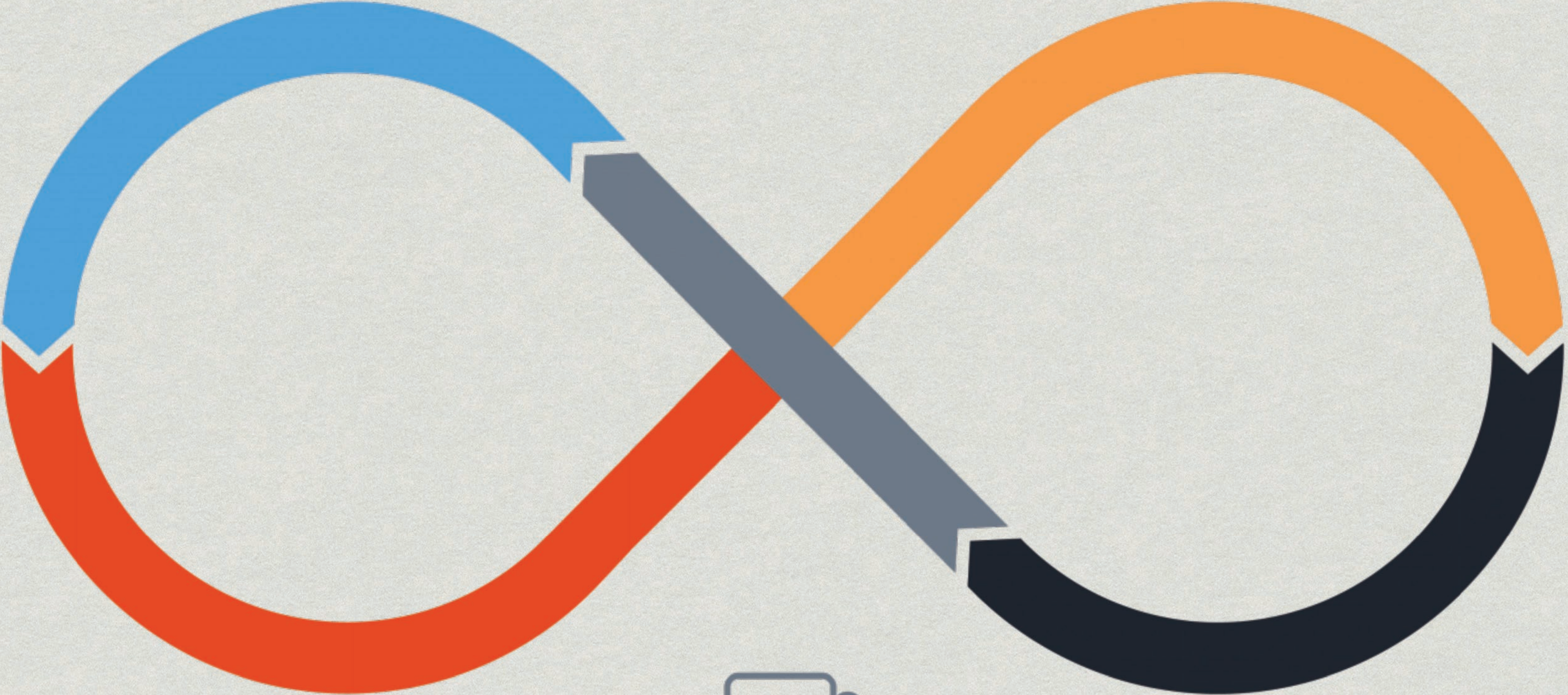Generating your ideas

**Define**
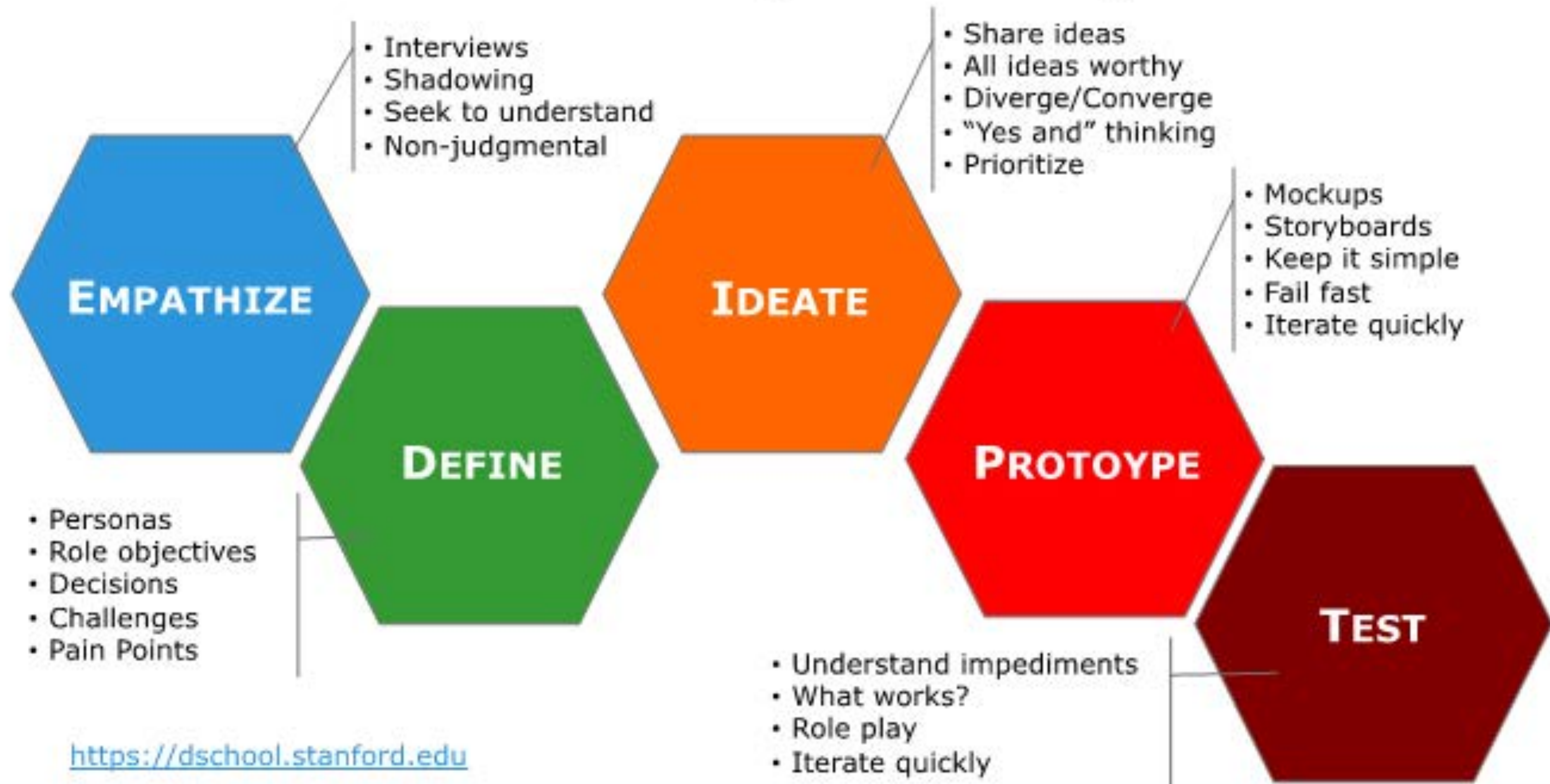Figuring out the problem

**Test**
Refining the product

**Prototype**
Creation and experimentation

# Stanford d.school Design Thinking Process



**EMPATHIZE**

- Interviews
- Shadowing
- Seek to understand
- Non-judgmental

**DEFINE**

- Personas
- Role objectives
- Decisions
- Challenges
- Pain Points

**IDEATE**

- Share ideas
- All ideas worthy
- Diverge/Converge
- "Yes and" thinking
- Prioritize

**PROTOYPE**

- Mockups
- Storyboards
- Keep it simple
- Fail fast
- Iterate quickly

**TEST**

- Understand impediments
- What works?
- Role play
- Iterate quickly

https://dschool.stanford.edu

# The Importance of Design Thinking in International Business

**1. Navigating Cultural Differences:**
   - Empathy at the Core

**2. Driving Innovation:**
   - Novel Solutions

**3. Enhancing Customer Experience:**
   - User-Centered Approach

**4. Risk Mitigation:**
   - Early Problem Identification

**5. Encouraging Collaborative Problem Solving:**
   - Diverse Perspectives:

**6. Adapting to Rapidly Changing Markets:**
   - Flexibility and Resilience

**7. Ethical and Sustainable Decision Making:**
   - Holistic Thinking

**8. Enhancing Competitive Advantage:**
   - Differentiation

**9. Building Stronger Brand Loyalty:**
   - Meeting Real Needs

# Design Thinking versus Traditional

|  | Design Thinking | Traditional |
|---|---|---|
| Definition | Human-Centered<br>Iterative Process | Solution-Centered<br>Linear Process |
| Principles | Empathy<br>Collaboration<br>Experimentation | Analysis<br>Efficiency<br>Risk Aversion |
| Outcomes | Innovative Solutions<br>User Satisfaction | Predictable Solutions<br>Business Efficiency |
| Risk and Failure | Embraces Failure | Avoids Failure |

# THE ARTFUL DESIGN

**GE WANG**
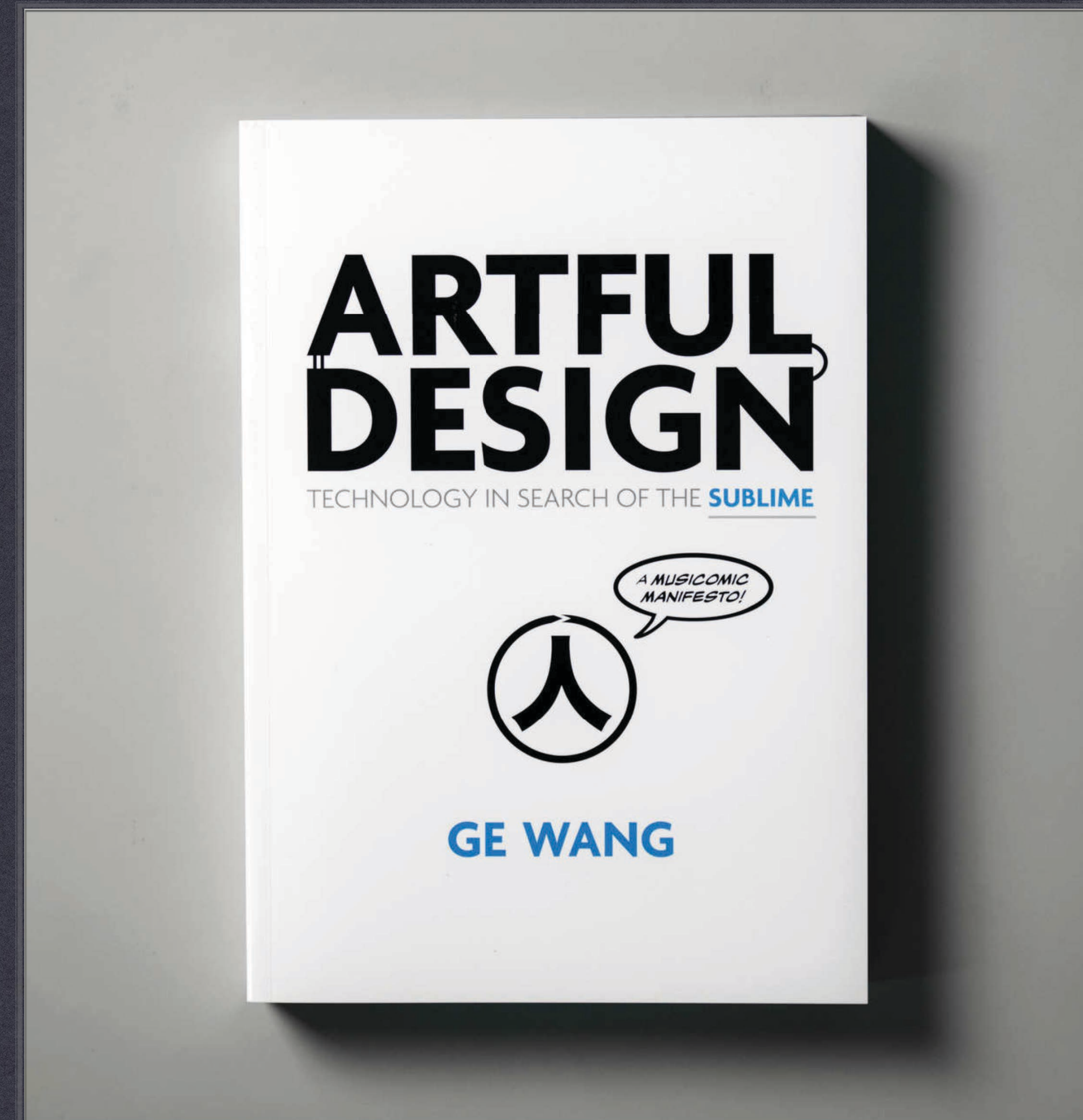
Intersection of
Technology, Art,
and Life

Design as a
Means to Express
Values and Ethics

# MANIFESTO

In our age of rapidly evolving technology and unyielding human restlessness and discord, design ought to be more than simply functional; it should be expressive, socially meaningful, and humanistic. Design should transcend the purely technological, encompass the human, and strive for the sublime.

Sublime design presents itself, first and last, as a useful thing, but nestled within that window of interaction lies the novel articulation of a thought, an idea, a reflection—an invisible truth that speaks to us, intimate yet universal, purposeful without necessity of purpose, that leaves us playful, understood, elevated. It is a transformation so subtle that it escapes our conscious grasp but that once experienced—like music—we would never want to be without again.

Design should be artful.

**ARTFUL DESIGN**
(Prelude)

**AESTHETIC LENS**

PHILOSOPHICAL, ARTISTIC, MORAL LENS THAT GIVES **BROADER MEANING** AND **CONTEXT** IN **BRIDGING** THE TWO LEGS!

π
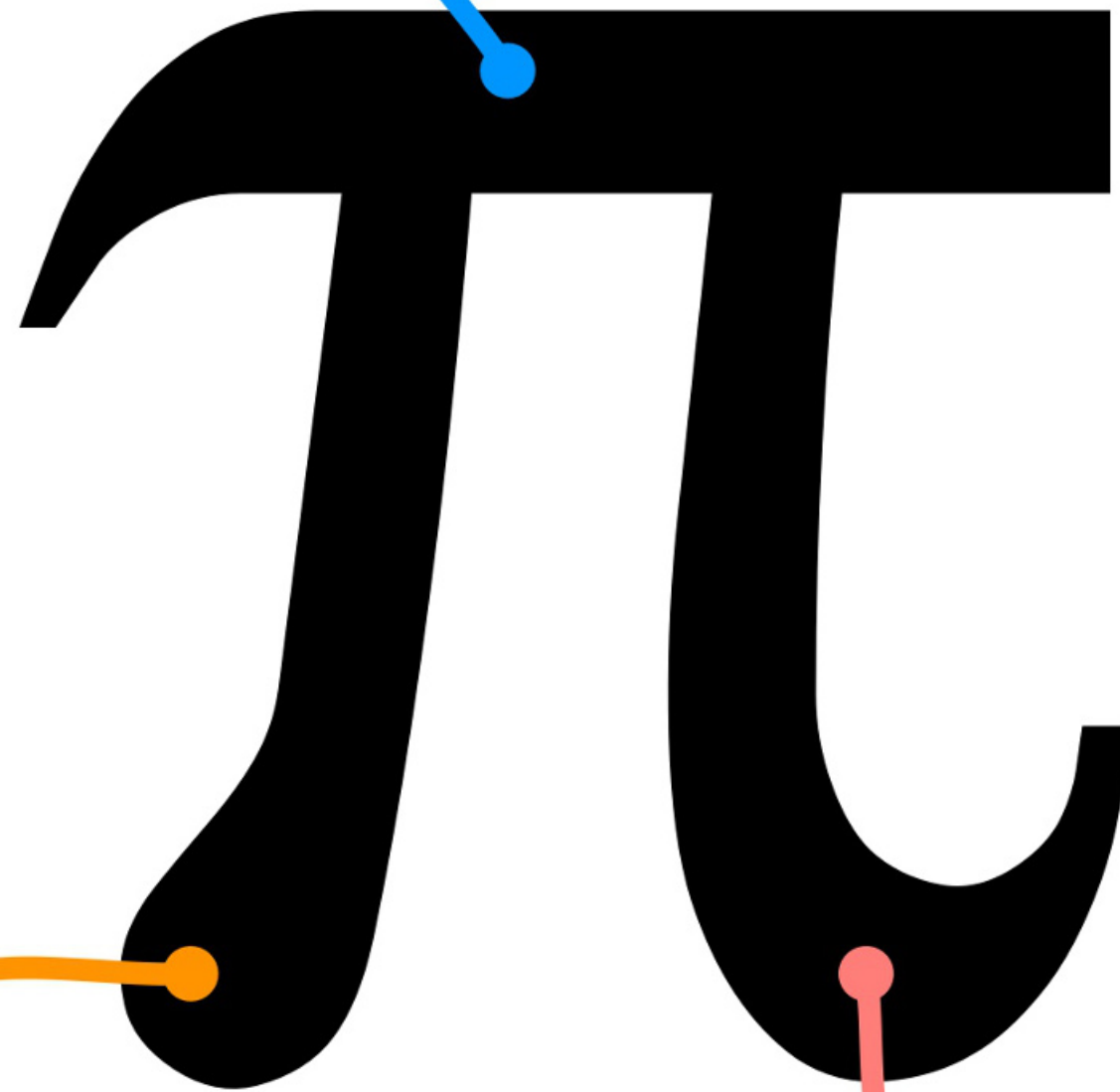
**DISCIPLINARY EXPERTISE**

E.G., COMPUTER SCIENCE

**DOMAIN EXPERTISE**

E.G., PUBLIC HEALTH OR MUSIC

*DEFINITION 8.14*

## THE π-SHAPED PERSON

THE **HUMANIST ENGINEER** IS AN INDIVIDUAL WHO IS ABLE TO INTEGRATE **DEEP ENGINEERING** KNOWLEDGE WITH A BROADER **HUMANISTIC CONTEXT** (AESTHETIC, MORAL-ETHICAL, PHILOSOPHICAL). MORE THAN A SPECIALIST, THIS IS SOMEONE WHO IS CAPABLE OF SHAPING THE WORLD FROM NOT ONLY PRACTICAL **NEEDS**, BUT ALSO FROM THE UNDERLYING **VALUES**.
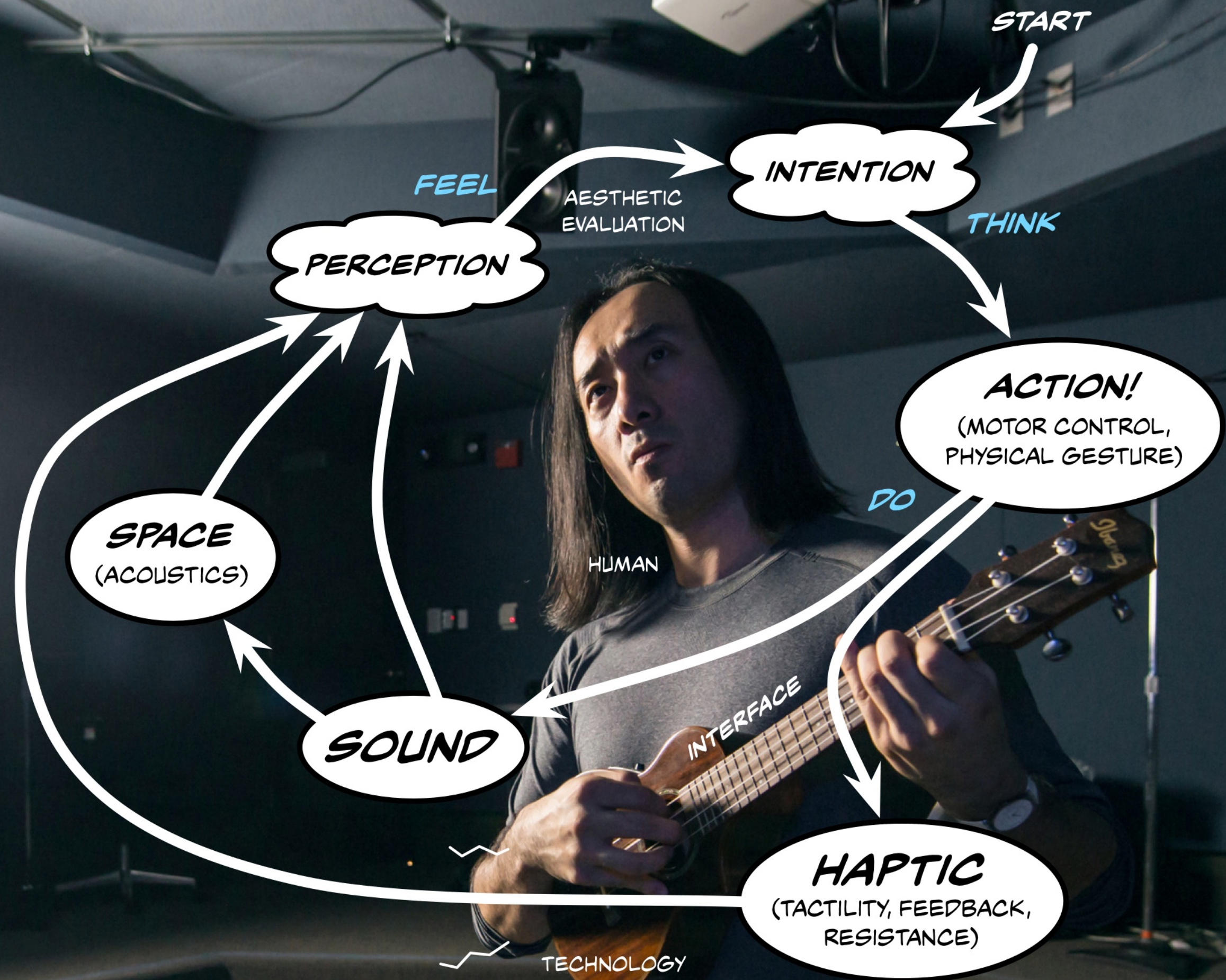
**ARTFUL DESIGN**

# COROLLARY: ANYTHING WORTH DESIGNING IS WORTH DESIGNING BEAUTIFULLY

DESIGN IS AN ACT OF **ALIGNMENT.** WE DESIGN TO BRING THE WORLD INTO **PRAGMATIC** ALIGNMENT WITH WHAT WE CONSIDER TO BE **USEFUL** AND INTO **AESTHETIC** ALIGNMENT WITH OUR NOTION OF WHAT'S **GOOD** AND **BEAUTIFUL,** OR "THE WAY THINGS OUGHT TO BE." WITHIN THIS **CREATIVE** ENDEAVOR ARE REAL, RICH, EXPRESSIVE OPPORTUNITIES TO SPEAK TO OUR **HUMAN DIMENSION.**
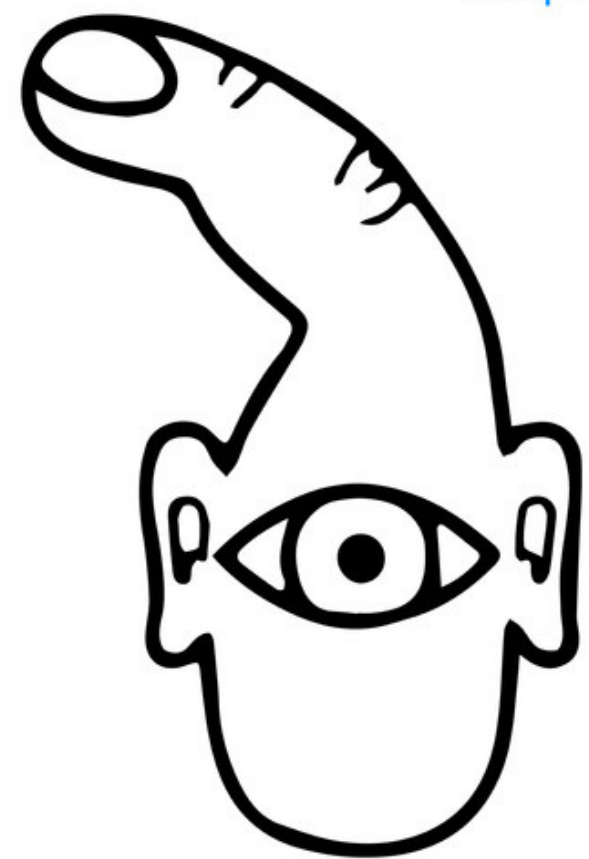
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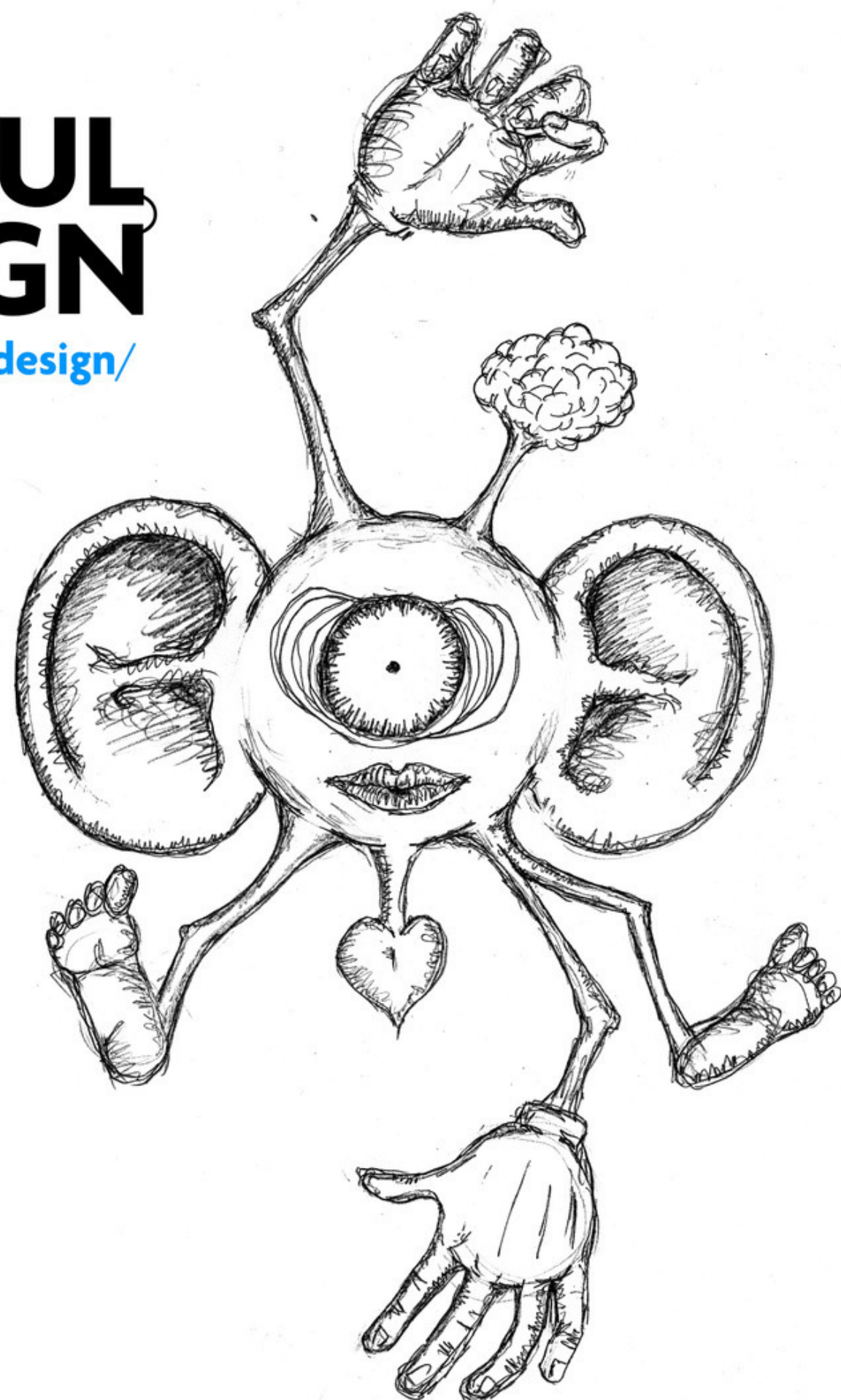
ARTFUL DESIGN

https://artful.design/
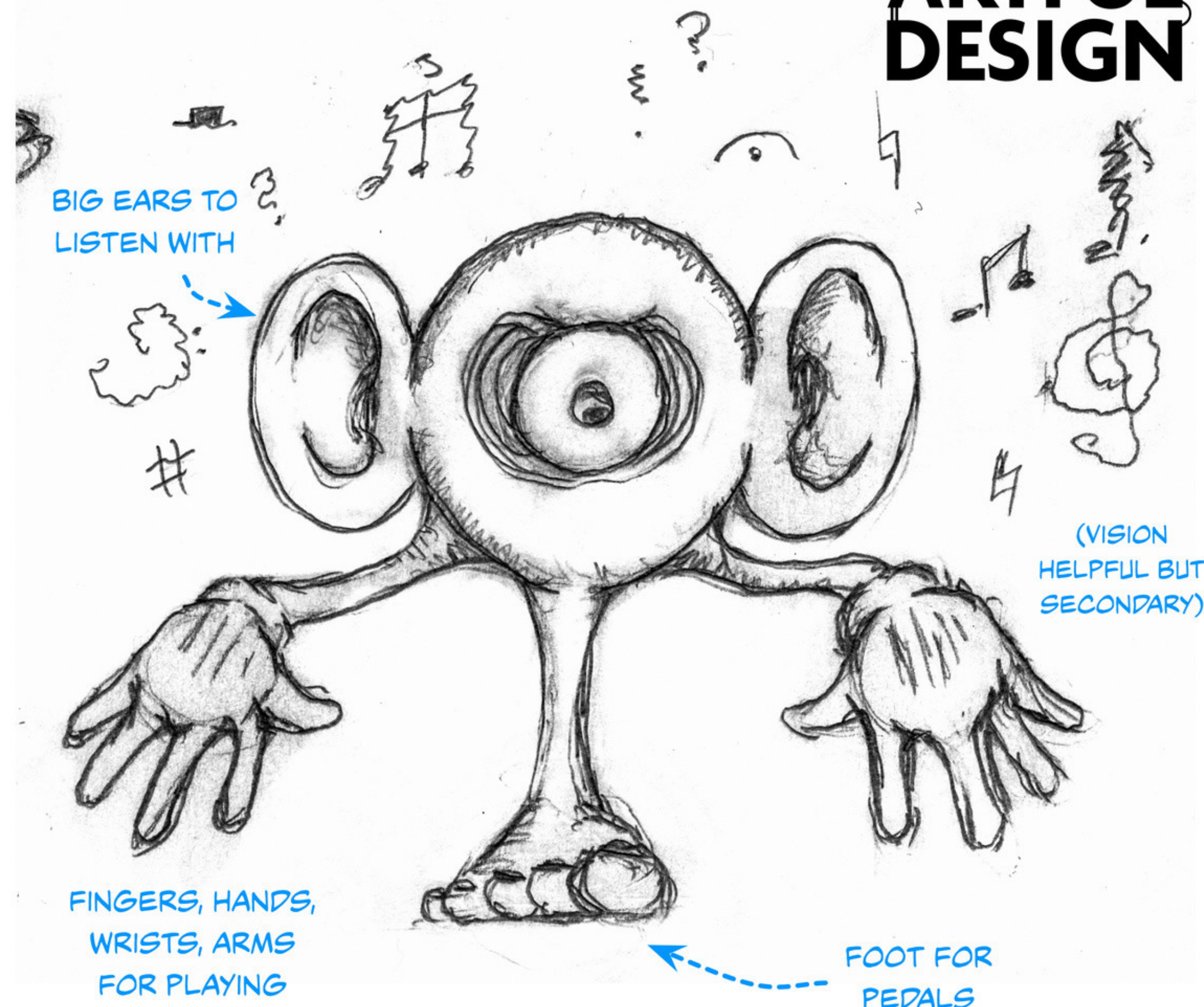
A GUI'S *MENTAL MODEL* OF A USER

FROM O'SULLIVAN AND IGOE'S *PHYSICAL COMPUTING* (2004)

A *FULLY EXPRESSED* INTERFACE'S MENTAL MODEL OF A HUMAN?

ARTFUL DESIGN

BIG EARS TO LISTEN WITH

(VISION HELPFUL BUT SECONDARY)

FINGERS, HANDS, WRISTS, ARMS FOR PLAYING

FOOT FOR PEDALS

A PIANO'S *MENTAL MODEL* OF A PIANIST

# HOW DO YOU THINK GOOGLE BARD OR CHATGPT 'SEES' YOU?

MENTAL MODELS

# MORAL-ETHICAL

*HUMANIST* DIMENSION ("DOES IT *DO GOOD?*"),
ETHOS, THE *CONSCIENCE* OF THE DESIGN

# SOCIAL

SPEAKING TO OUR SOCIAL INSTINCTS, OUR
IMPERATIVE TO PARTICIPATE, TO BELONG

# EMOTIONAL / PSYCHOLOGICAL

EMOTIONAL ENGAGEMENT, MEANING, POETRY, PATHOS;
SATISFACTION IN THE FULFILLMENT OF PURPOSE;
INTERFACE OF PERCEPTION AND REASON

*CONCEPTUAL,
INTANGIBLE,
INVISIBLE*

# INTERACTIVE

ACTION, RESULT, MAPPING, AGENCY;
MATERIALITY MEETS FUNCTIONALITY;
*HUMAN* MEETS *TECHNOLOGY*

*DIRECT,
PHYSICAL,
SENSORY*

# STRUCTURAL

HOW SOMETHING IS *PUT TOGETHER*;
THE RELATIONSHIP BETWEEN ITS PARTS

SONIC    VISUAL

TACTILE    OLFACTORY

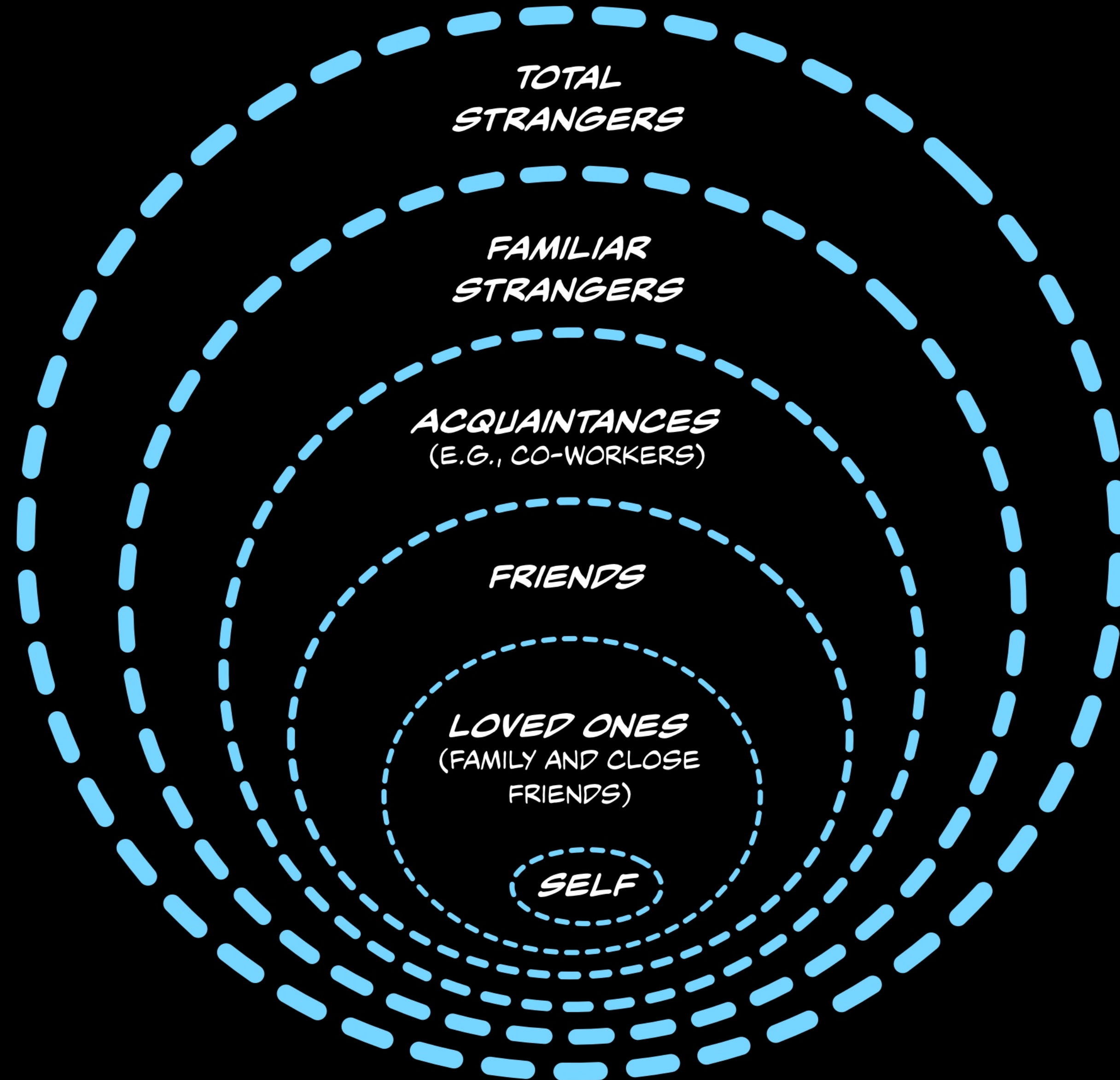# MATERIAL

THE DIRECTLY *PERCEIVED*

# ARTFUL DESIGN

pg. 32, 407

⚙ PRINCIPLE 1.3

# AESTHETICS OF ARTFUL DESIGN

THE *ABIDING ELEMENTS* OF
AESTHETICS IN ARTFUL DESIGN,
ROOTED IN AN INTERPLAY OF
*SENSE* AND *COGNITION*, OF
*REASON* AND *SENTIMENT*

TOTAL
STRANGERS

FAMILIAR
STRANGERS

ACQUAINTANCES
(E.G., CO-WORKERS)

FRIENDS

LOVED ONES
(FAMILY AND CLOSE
FRIENDS)

SELF

MODEL 7.2

RINGS OF FAMILIARITY
IN SOCIAL DESIGN

FROM ONE'S SELF OUTWARD TO THE
SUM OF HUMANITY, THERE IS A
CONTINUUM OF FAMILIARITY IN HOW
WE RELATE TO ANOTHER PERSON...

ARTFUL
DESIGN
pg. 357

WHAT **WE MAKE, MAKES US**

PRINCIPLE 8.1

WE ARE **HERE**, AND IT IS **NOW**.

WE FIND OURSELVES IN AN AGE OF RAPIDLY EVOLVING TECHNOLOGY AND UNYIELDING HUMAN DISCORD. INCREASINGLY, THE WORLD WE **INHABIT** IS THE ONE WE **MAKE**, WHERE **ENGINEERS** DIRECTLY AND INDIRECTLY SHAPE OUR LIVES. **NOW** MORE THAN EVER, **TECHNOLOGY** MUST FUNDAMENTALLY **CONFRONT** -- AND **BE CONFRONTED** BY -- THE **AESTHETIC** AND **HUMANIST** DIMENSIONS. BUT AS OUR **TOOLS** EVER PRECEDE OUR **UNDERSTANDING** OF THEIR IMPLICATIONS, AS OUR **INTELLIGENCE** EVER PRECEDES OUR **WISDOM**, WE ARE FACED WITH **DIFFICULT QUESTIONS**. WHAT **VALUES** GUIDE US IN THE CONSIDERATION OF NOT ONLY WHAT TECHNOLOGY **CAN** DO FOR US, BUT WHAT WE **OUGHT** TO DO WITH **IT?**

IN OUR ONGOING **RECKONING** WITH TECHNOLOGY, WE SEEM ILL-EQUIPPED TO ASK THE QUESTIONS THAT REALLY MATTER. MORE THAN "**HOW** DO WE ACHIEVE CHANGE?" WE OUGHT TO ASK OURSELVES "WHAT **SHOULD** WE CHANGE?" AND "WHAT MAKES US **WORTHY** OF CHANGE?" MORE THAN "HOW DO WE **DO NO EVIL** WITH TECHNOLOGY?" WE OUGHT TO CONSIDER, "HOW DO WE **DO GOOD?**" AND "WHAT **IS** GOOD FOR US, TO BEGIN WITH?" THESE ARE NOT **PRACTICAL** OR LOGICAL QUESTIONS BUT, AT THEIR HEART, **AESTHETIC** AND **MORAL** ONES...

...FOR WHAT IS **AT STAKE** IS NOT **INNOVATION** OR SPECIALIZATION, BUT SOMETHING MORE **TACITLY HUMAN**, IN HOW WE **SET** OUR **PRIORITIES** AND **ACCOUNT** FOR OUR **CHOICES**...

DESIGN **LIVES** WITH US, SHAPING OUR EVERYDAY LIVES AND, INDIRECTLY, OUR **DESIRE, DISPOSITION**, AND **CHARACTER**. IT HAS THE POTENTIAL NOT JUST TO CATER TO PEOPLE'S **WANTS** AND **NEEDS**, BUT TO **EVOLVE** US, AS CITIZENS AND **HUMAN BEINGS**. GOOD DESIGN NOT ONLY EXPRESSES UTILITY, BUT, LIKE ART, IT **ELEVATES** US, MAKING US MORE THOUGHTFUL, INTERESTING, WITTY, EMPATHIC, AND REFLECTIVE. **BANAL** DESIGN, ON THE OTHER HAND, MAKES US **ADDICTED** AND UNIMAGINATIVE. IT CAN BRING OUT THE ILL-SPIRITED, HATEFUL, AND SELFISH IN US. THE THINGS WE MAKE, OVER TIME, **MAKE US**. **TECHNOLOGY** MUST **NOT** PURELY BE AN AGENT OF SURVIVAL, CHANGE, OR HAPPINESS. THROUGH WHAT **WE DO WITH IT**, IT IS ALSO A **MIRROR** TO DEFINE OUR **HUMANNESS**.

**ARTFUL DESIGN**

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# BACK TO BORING SLIDES...

# The Economic Value of Good Design

* Differentiation

* Brand Loyalty

* Premium Pricing

# How Design Thinking Can Lead to Innovative Solutions in Economic Challenges

* Reframing Problems

* Collaborative Solutions

* Iterative Testing

# An example

**Design thinking at Netflix**

✳ https://youtu.be/6QzFOCi-pS4?si=cSkXgOmPyIBOnZG8

✳ https://youtu.be/XRd6Ddn4ZSY?si=JcHwMA_GdJ7U1rAU – product design at Netflix

# Another example

**The Human Centered Design Toolkit**

* https://www.ideo.com/journal/design-kit-the-human-centered-design-toolkit

# LET'S PLAY

IMAGE GENERATED WITH DALL-E

EXERCISE BY STANFORD AND AGILE ELEPHANT

# CHAPTER *6* *DESIGN ETUDE*

> DESIGN MUST EVER *ADAPT* TO ITS CONTEXT, FUNCTIONAL-AESTHETIC GOALS, AND *MEDIUM*. WE HAVE PRESENTED SOME *CONSIDERATIONS* FOR ARTFULLY CRAFTING PLAY AND GAMES, AND ARGUED FOR THEIR POTENTIAL TO CREATE *NEW FORMS* OF INTERACTIVE, *ARTFUL EXPERIENCES*. LET'S PUT SOME OF THAT INTO *PRACTICE*...

## • PART 1: **ANALYZE & ARTICULATE**

COMPILE A *LIST* OF YOUR *FAVORITE GAMES*, AS DIVERSE A LIST AS POSSIBLE. THEY CAN BE VIDEO GAMES OR ANYTHING ELSE! ANALYZE EACH OF THEM AND BREAK THEM INTO *MECHANICS*, *DYNAMICS*, AND *AESTHETICS*. IN OTHER WORDS, ARTICULATE THE UNDERLYING *RULES* DESIGNED INTO THE SYSTEM, THE *BEHAVIORS* THEY ENCOURAGE, AND THE *AESTHETIC* TAKEAWAY -- WHICH TYPES OF AESTHETICS WERE EXPERIENCED?

SOME EXAMPLES

- MINECRAFT
- BRAID
- MONUMENT VALLEY
- FIREWATCH
- EVERYTHING
- LEGEND OF ZELDA
- PAPERS, PLEASE
- WORLD OF WARCRAFT
- JOURNEY
- OVERWATCH
- GETTING OVER IT WITH BENNETT FODDY

> IN MY *MUSIC, COMPUTING, DESIGN* STUDIO COURSE, STUDENTS OFTEN ASK "WHAT SHOULD I DESIGN?" OR "WHERE SHOULD I GO FROM HERE?" I OFTEN FIND MYSELF SUGGESTING "ADD CONSTRAINTS, INVENT MECHANICS" AND DISCOVER HOW THEY CHANGE THE DYNAMICS. SO...

## • PART 2: **IMAGINE & SKETCH**

DESIGN A GAME FOR FUN. THINK ABOUT THE *AESTHETIC* AIMS -- WHAT DO YOU WANT YOUR PLAYERS TO FEEL? WORK *BACKWARD* AND INVENT THE *MECHANICS* -- TEST/IMAGINE/DEDUCE WHAT *DYNAMICS* MIGHT BE FOSTERED AND USE IT TO FURTHER REFINE THE MECHANICS!

## • PART 3: **GAMIFY**

TAKE SOMETHING IN YOUR DAILY LIFE OR WORK -- SOMETHING THAT IS OSTENSIBLY NOT A GAME. DESIGN RULES AROUND THAT TO CHANGE BEHAVIOR FOR YOU OR SOMEONE ELSE!

EXAMPLES

- ACHIEVEMENTS FOR HOUSEHOLD TASKS
- INCENTIVES FOR EXERCISING (E.G., DOING PULL-UPS)
- SEE "IF I CAN DO IT" OR "DO IT MORE EFFICIENTLY"
- GAMIFYING OFFICE BEHAVIOR

BYRON: "I PUT A PULL-UP BAR OUTSIDE MY BATHROOM AND DO 10 PULL-UPS BEFORE USING THE BATHROOM EACH TIME!"

## A FINAL *DESIGN ETUDE*

THE FINAL DESIGN ETUDE IS ONE OF *SELF-REFLECTION.* TAKE A MOMENT TO THINK ABOUT THE FOLLOWING:

1. THINGS THAT *MOVE* YOU
2. THINGS THAT MAKE YOU *STILL*

THEY COULD INCLUDE AN OBJECT, A PIECE OF MUSIC, A PLACE, A MOMENT, OR AN ACT IN EVERYDAY LIFE THAT STAYS WITH YOU. WHAT IS THE *DIFFERENCE* BETWEEN THAT WHICH MOVES VS. THAT WHICH MAKES ONE STILL? *IS* THERE A DIFFERENCE TO YOU?

IN CHAPTER 1, YOU WERE ASKED TO PERFORM A *MEANS VS. ENDS ANALYSIS* OF AN OBJECT OF DESIGN. NOW DO A MEANS VS. ENDS ANALYSIS, BUT OF *YOURSELF* AND YOUR EVERYDAY LIFE, OF THINGS THAT *MAKE UP* YOUR LIFE...

1. WHAT ARE THE THINGS YOU DO FOR ANOTHER PURPOSE? (MEANS-TO-ENDS)
2. WHAT ARE THE THINGS YOU DO FOR THEIR OWN SAKE? (ENDS-IN-THEMSELVES)

DO YOU *LIKE* THE *BALANCE* BETWEEN THEM?

LASTLY, THINK OF *ALL* THE THINGS YOU *DESIGN* IN YOUR LIFE -- FOR *WORK*, FOR *SCHOOL*, FOR *LIFE*, OR FOR ANY OTHER PURPOSE. *HOW* DO YOU DESIGN? CAN YOU SAY *FOR WHAT* YOU ARE DESIGNING, AT THE END OF THE CAUSAL CHAIN? WHAT WOULD MAKE THESE DESIGNS SOMETHING THAT YOU'D *LOVE* AND FIND *MEANINGFUL*, THAT MOVE YOU, AND PERHAPS EVEN MAKE YOU PAUSE IN WONDER?

# DESIGN THINKING

## AN INTRO COURSE