CONVERSATIONAL DESIGN

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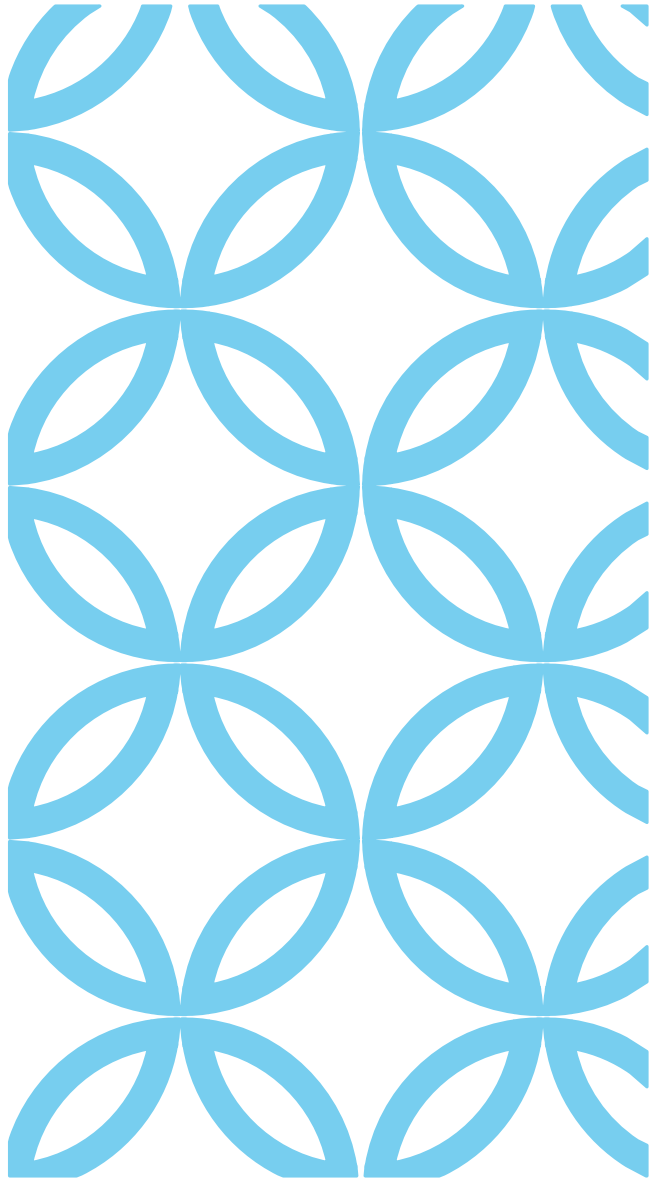
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1. What do you associate with Speech / Language / Conversation Design?

2. What interests you about it?

3. What do you think the hardest part is likely to be?

4. What do you think the easiest part is likely to be?

5. Write a quick script. The scene? Customer ordering a coffee from a barista.

STARTING ASSUMPTIONS + QUICK DESIGN EXERCISE
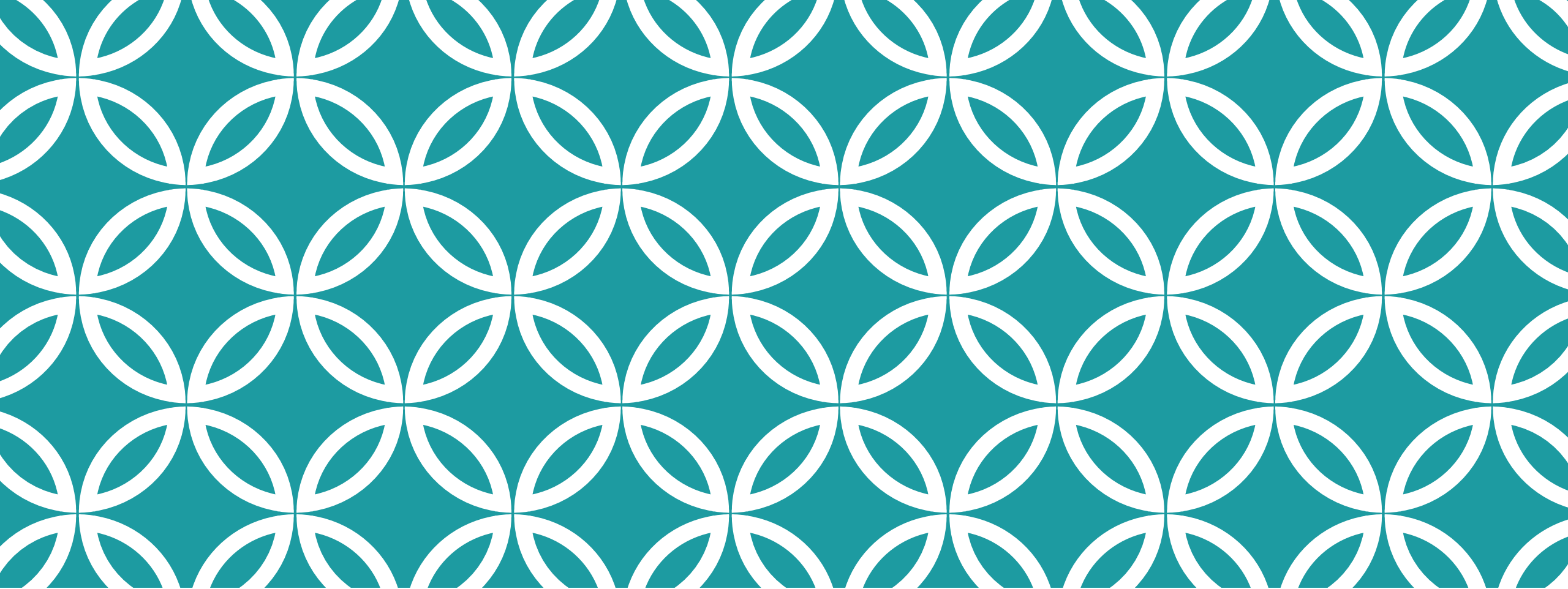
INTRO TO A BASIC DESIGN EXERCISE

BASIC CONVERSATION FLOW DESIGN STEPS

1) Identify the Objective:
   What does the user need to do?

2) Humanize the Objective:
   How would the user ask / what would the user say to start the task?

3) Define Steps/Puzzle Pieces/Semantic Chunks:
   What do those examples tell you about the information you'll need?

4) Define the shortest conversational path.
   What would an interaction look like for someone who told us the most possible information?

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6) Add conversational knowledge checks.
   Where should the user be able to bypass a question from the system because of what they've already provided?

7) Humanize the Basic Conversation Flow.
   Are all the paths covered? What's a rough example of what each one of those interactions would look like?

IDENTIFY THE OBJECTIVE
WHAT DOES THE USER NEED TO DO?

A mid-range restaurant wants to allow their patrons to make reservations using an in-home personal assistant.

Starting constraints/assumptions:

- The Restaurant is only open Wednesdays – Sundays, 11am – 9pm.

OBJECTIVE: Book a reservation

HUMANIZE THE OBJECTIVE
WHAT WOULD THE USER SAY TO START THE TASK?

"I want to make a reservation"

"I want to make a reservation at <Restaurant>"

"I want to make a <brunch/lunch/dinner> reservation [at <Restaurant>]"

"I need a [brunch/lunch/dinner] reservation [for <party size>] [at <Restaurant>]"

"I need a reservation for <party size> [at <specific time>] [at <Restaurant>]"

"I need to make a reservation for <next Wednesday/March 5th/tomorrow/Sunday> [for <party size>] [at <specific time>] [at <Restaurant>]

Human language is INFINITELY PRODUCT AND CREATIVE. Unlike in visual design, you can't pre-emptively constrain their input!

DEFINE STEPS/PUZZLE PIECES/SEMANTIC CHUNKS

WHAT DO THOSE EXAMPLES TELL YOU ABOUT THE INFORMATION YOU'LL NEED TO COLLECT?

Restaurant

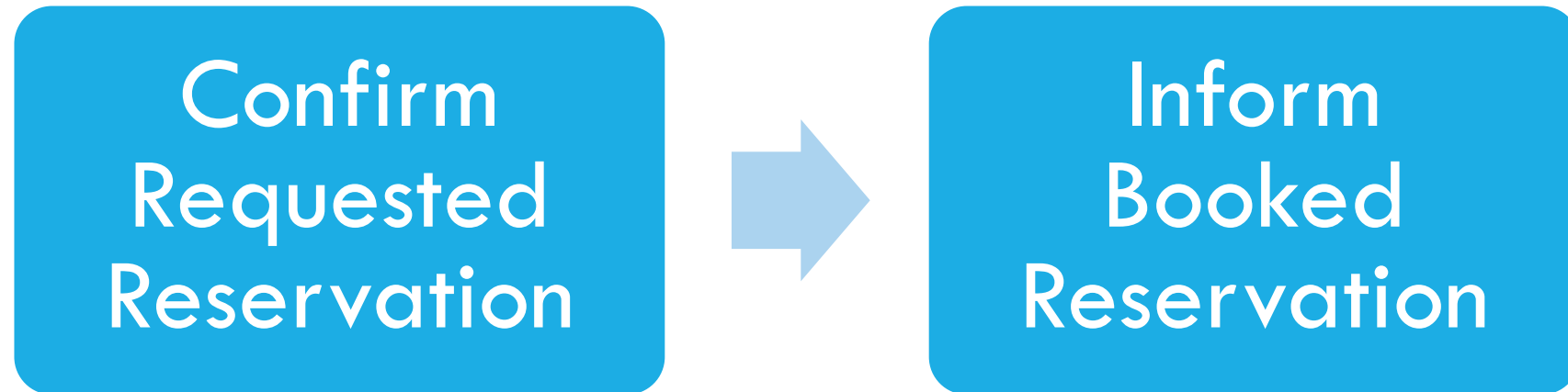Party Size

Reservation date

- Next Wednesday
- Tomorrow/Today/Day after tomorrow
- March 5th
- Next March 5th

Reservation time
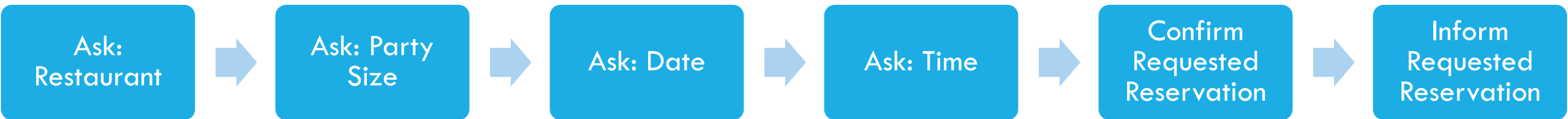
- Meal time (brunch/lunch/dinner)
- Exact time

DEFINE SHORTEST CONVERSATIONAL PATH

"MAKE A <RESTAURANT> RESERVATION FOR 5 PEOPLE AT 4 PM ON SUNDAY."

Confirm Requested Reservation → Inform Booked Reservation

DEFINE LONGEST CONVERSATIONAL PATH

"MAKE A RESERVATION"

Ask: Restaurant → Ask: Party Size → Ask: Date → Ask: Time → Confirm Requested Reservation → Inform Requested Reservation
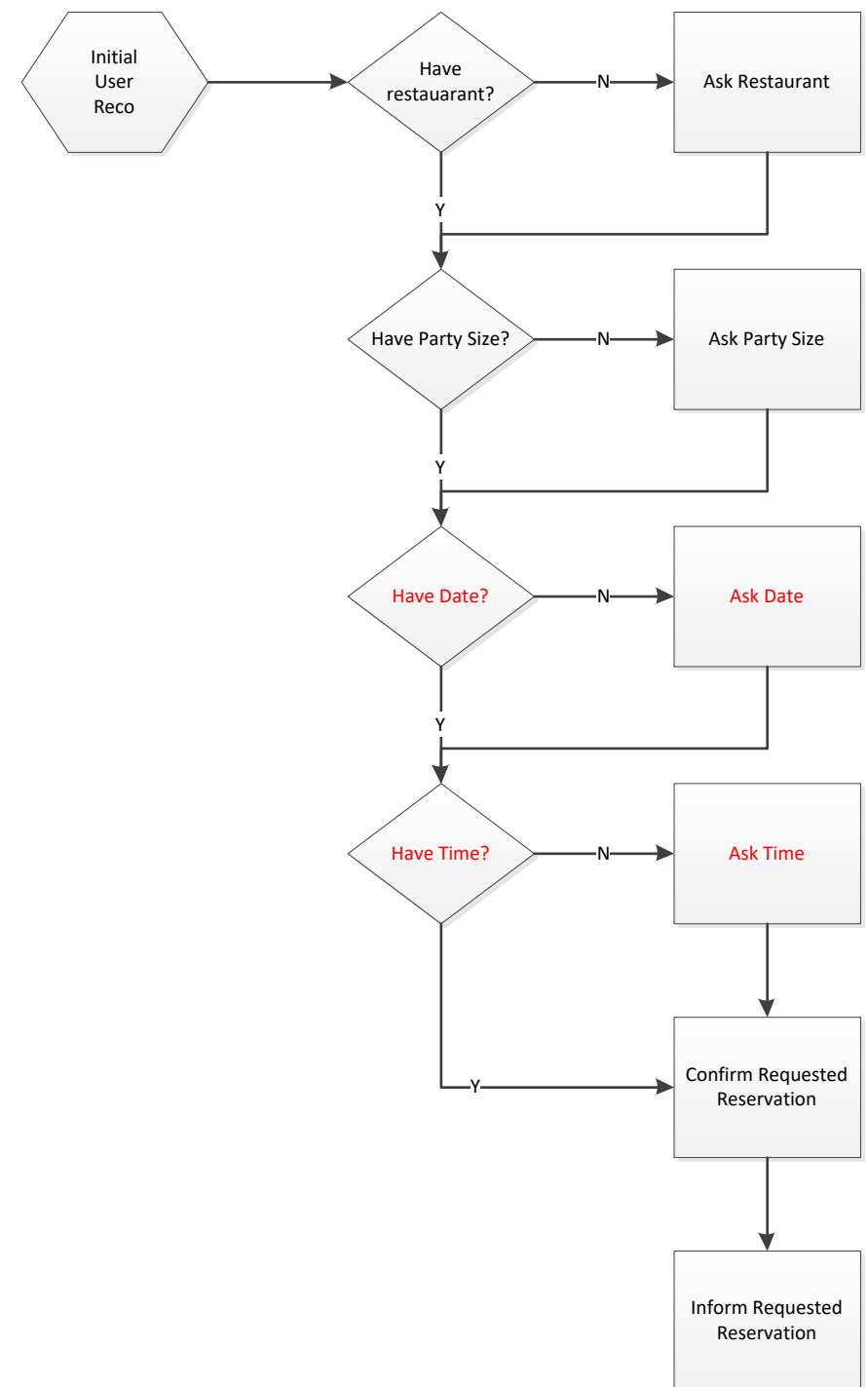
ADD CONVERSATIONAL KNOWLEDGE CHECKS

There are a **minimum of 16** unique interactions that need to be scripted for this simple call flow.

Potentially **more** if responses are customized if the user says "Wednesday" versus "January 10" as an example.

Additionally, **even more** interactions are possible when we start talking about *availability* of the user's request.

HUMANIZE THE BASIC CONVERSATION FLOW
SHORTEST PATH

USER: "Make an Aqua reservation for 5 people at 4 pm on Sunday."

SYSTEM: "That was a table for 5 at 4pm this Sunday at Aqua, right?"

USER: "You got it."

SYSTEM: "Booked!"

HUMANIZE THE BASIC CONVERSATION FLOW
LONGEST PATH

USER: "I want to make a reservation"

SYSTEM: "Of course! Which restaurant?"

USER: "Aqua"

SYSTEM: "How many in your party?"

USER: "Three."

SYSTEM: "And the date?"

USER: "Wednesday"

SYSTEM: "What time on Wednesday?"

USER: "12:30".

SYSTEM: "Alright, I've booked you a table for three people this Wednesday at Aqua for 12:30pm. Need anything else?"
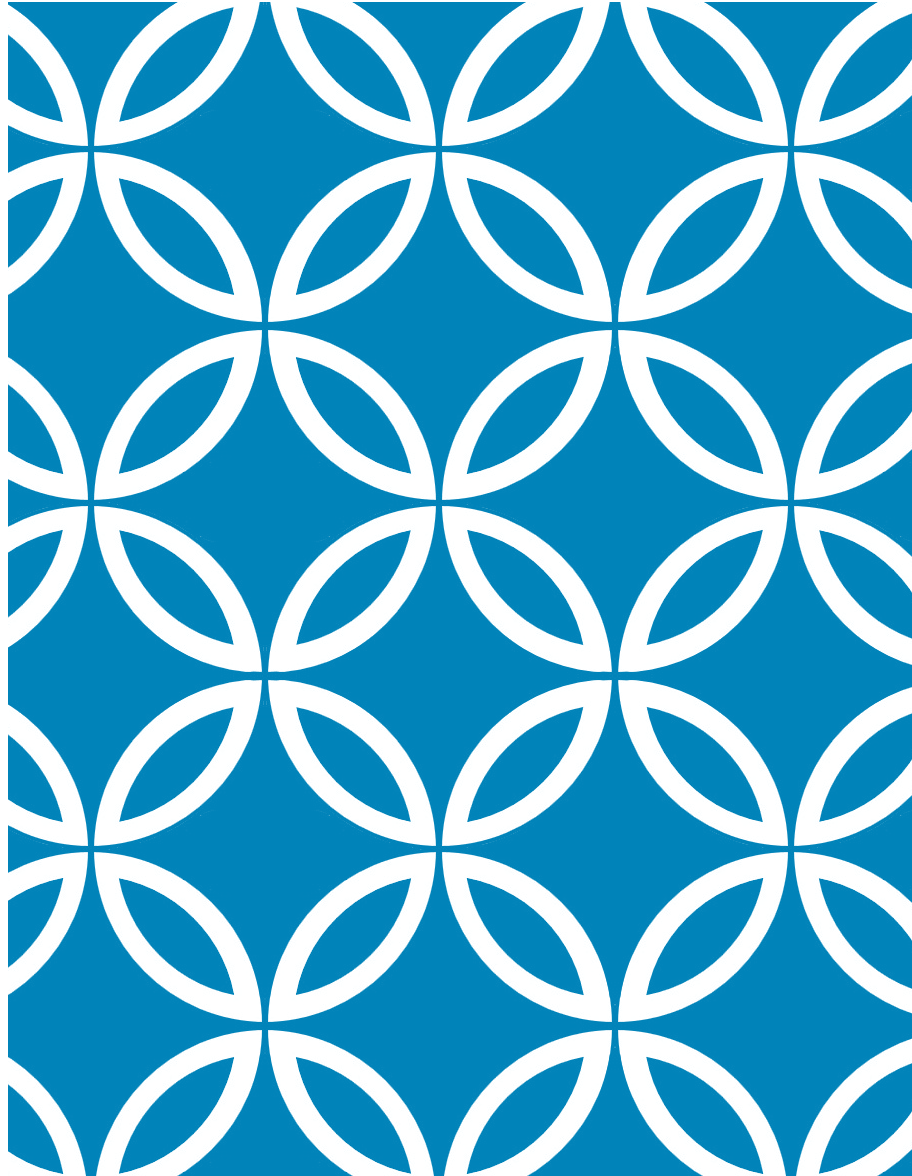
Enterprise Automated Customer Service

Consumer Personal Assistants

Phone Trees, Chatbots, Mobile Apps

Alexa, Siri, Google Home, Cortana, Jibo

WHAT DO VUI DESIGNERS WORK ON TODAY?

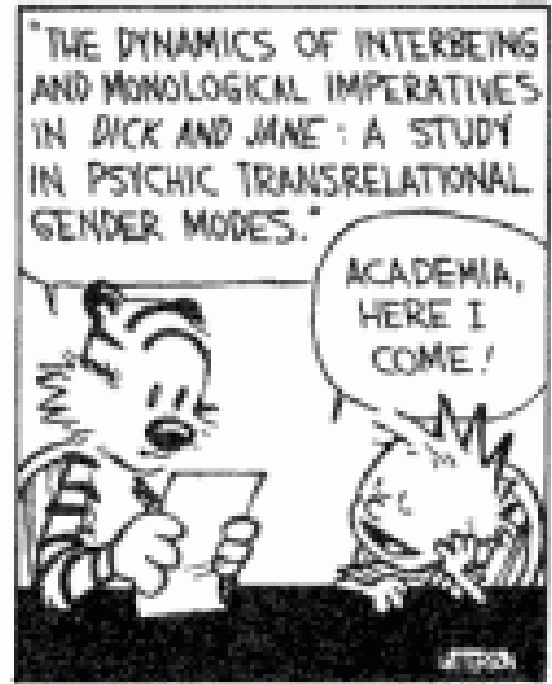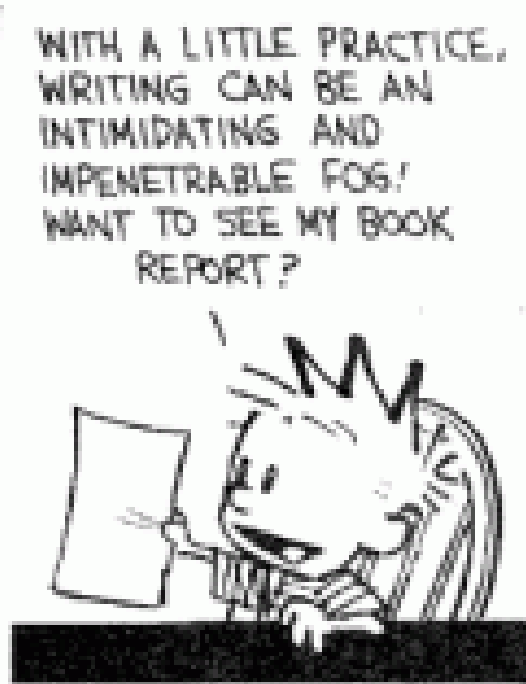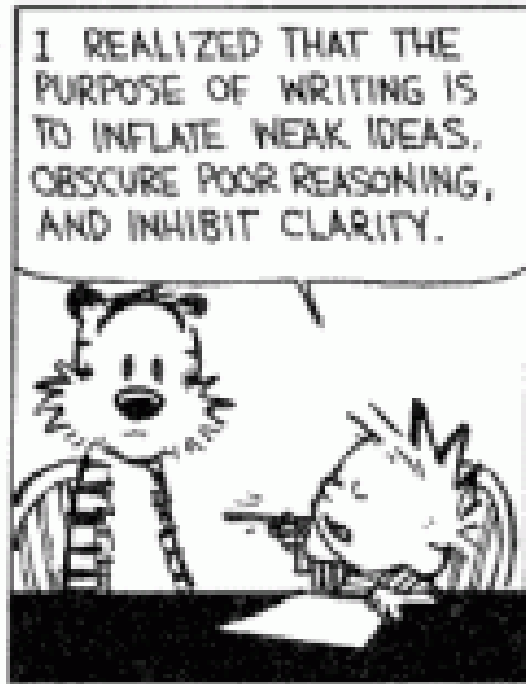# ARRIVAL

COMMUNICATING WITH ALIENS

https://www.amazon.com/gp/video/detail/B01M2C4NP8/ref=atv_dp_pb_core?autoplay=1&t=974

THE BASIC HUMAN ASSUMPTION IS:

SINCE WE ALL SPEAK OR SIGN AT LEAST ONE LANGUAGE WITH NATIVE FLUENCY,

WE ARE AN EXPERT IN THAT LANGUAGE.

Expertise
(theory - critic)

Mastery

Artistry
(usage - talent)
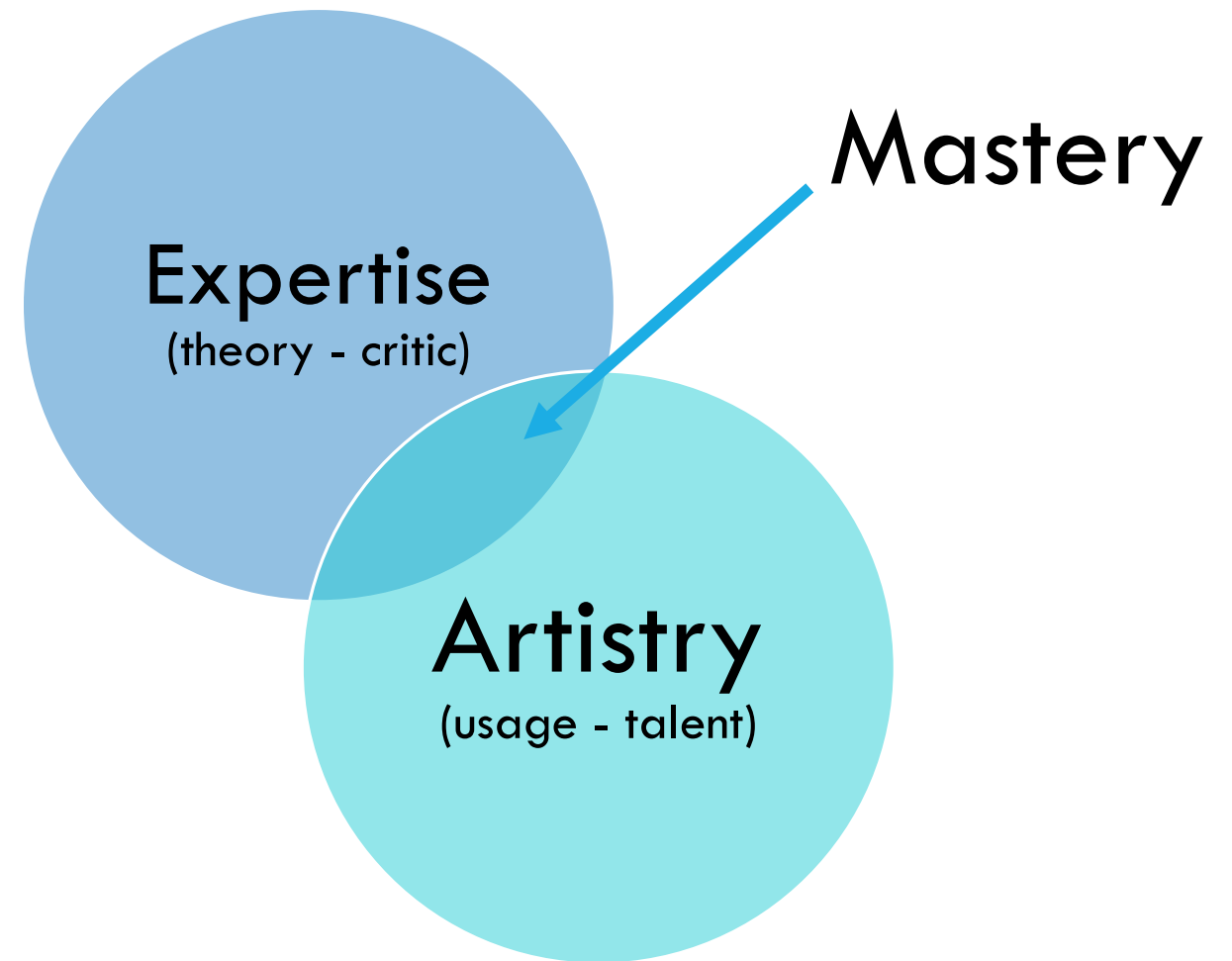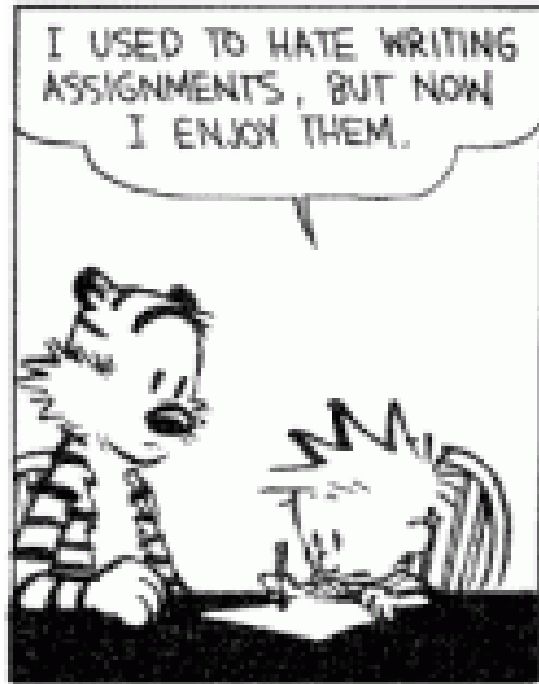
THE
'CURSE OF KNOWLEDGE'

The more we know about something, the less able we are to imagine what it feels like to not know it

Thanks Steven Pinker!

VUI DESIGN == CONVERSATIONAL DESIGN

IMAGINE THESE CONVERSATIONS …

With your best friend

With a server at a restaurant

With a colleague solving a shared problem

With a stranger next to you on the bus

Your regular barista taking your coffee order

A high school student discussing theoretical physics with their uncle the researching professor

Shared context & expectations

Shared Language

Shared knowledge & experience

WHAT MAKES FOR A SUCCESSFUL CONVERSATION?

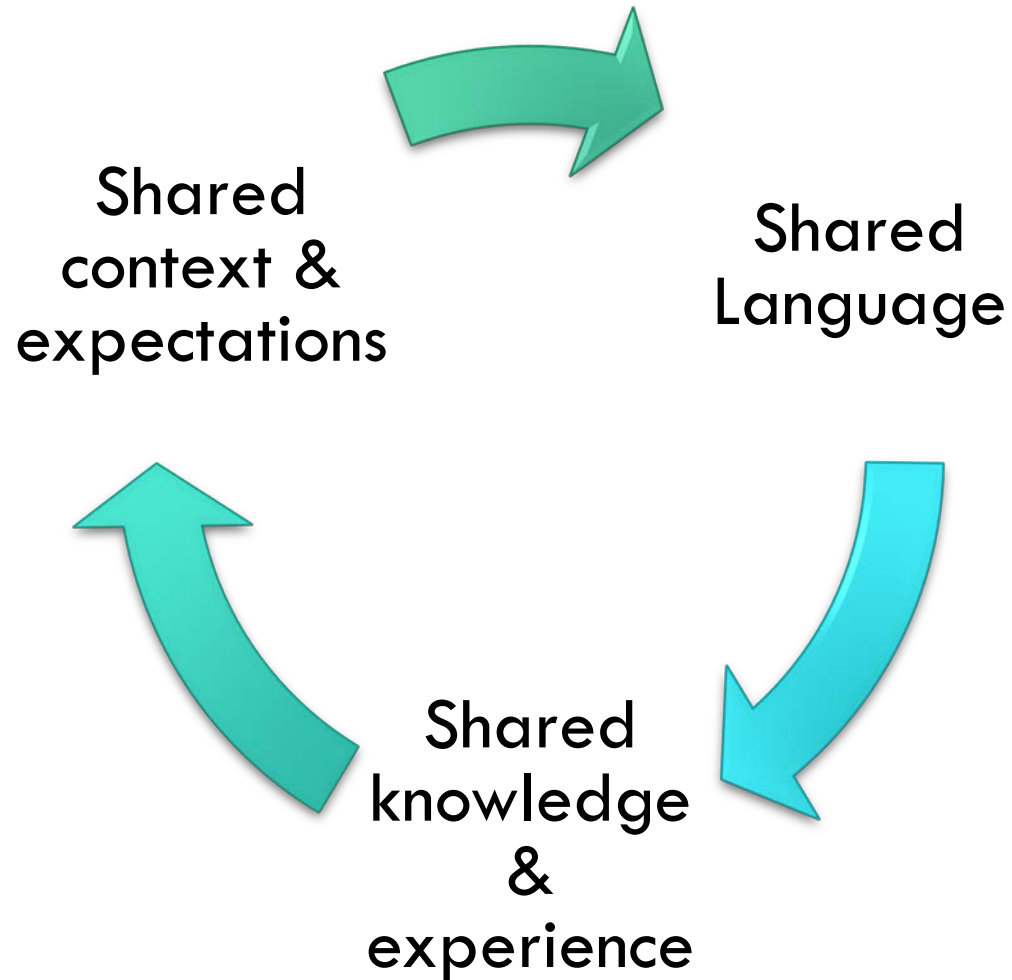*Mutually intelligible* by the group of people using it to communicate, a language is a **regularized, systematic** use of all of the following:

1. **Arbitrary, discrete sounds or signs** *(phonetics)* that together create

2. a **system of pronunciation rules** *(phonology)* which come together to form

3. a **shared lexicon** *(morphology)* in which each word represents a mutually understood neural map *referent* so that we can order them using

4. a **system of grammatical rules** *(syntax)* which illustrate the relationship between ideas so that we can ultimately

5. **derive meaning** *(semantics & pragmatics)*.

WHAT IS A LANGUAGE?

HOW MANY LANGUAGES DO *YOU* KNOW?

For broad communication:	• Standard American English (news) • Academic American English (UW)
Regional / Identity communication:	• PNW American English? • African American Vernacular / Ebonics? • Bostonian English?
Interpersonal communication:	• Family / families • Different friend cliques • Internet / memes / texting / IM'ing
Professional communication:	• HCDE • Art • Linguistics • Computer Science

Shared context & expectations

Shared Language

Shared knowledge & experience

WHAT MAKES FOR A SUCCESSFUL CONVERSATION?

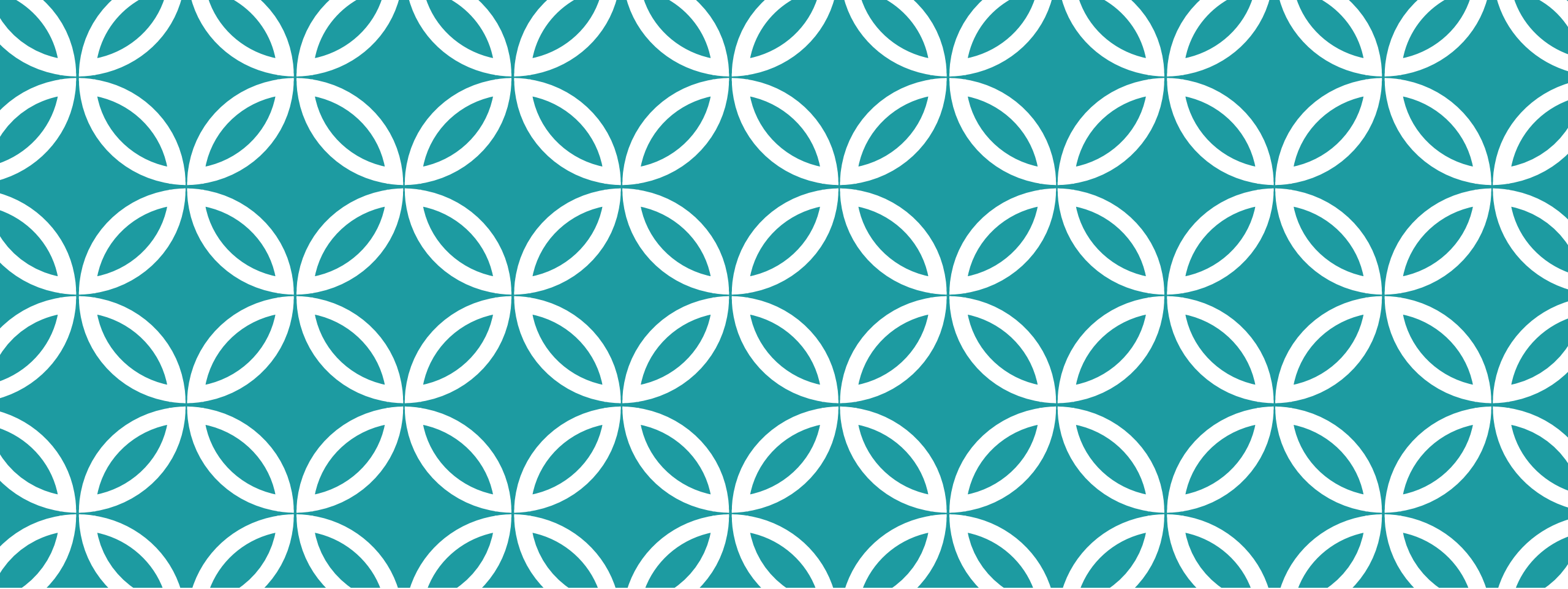# CONVERSATIONAL DESIGN IS APPLIED LINGUISTICS

https://www.amazon.com/gp/video/detail/B01M2C4NP8/ref=atv_dp_pb_core?autoplay=1&t=2517

"WHAT IS YOUR PURPOSE ON EARTH?"

Today's language systems will recognize WHAT you said with HIGH ACCURACY.

But they won't know WHAT IT *MEANS*, or *HOW TO RESPOND AT ALL*, much less, *EFFECTIVELY*.

That's where VUI design comes in.

CONSUMER VS. ENTERPRISE PROBLEM SPACES

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Enterprise (Utility)
- Pay my bill
- Report an outage
- (Dis)connect service
- Dispute my bill

Consumer (Personal Assistant)
- Virtually anything

IDENTIFY THE OBJECTIVE

Enterprise

- Requirements based on:
  - Call center data (user research)
  - Previous IVR
  - Business processes
- Refinement based on:
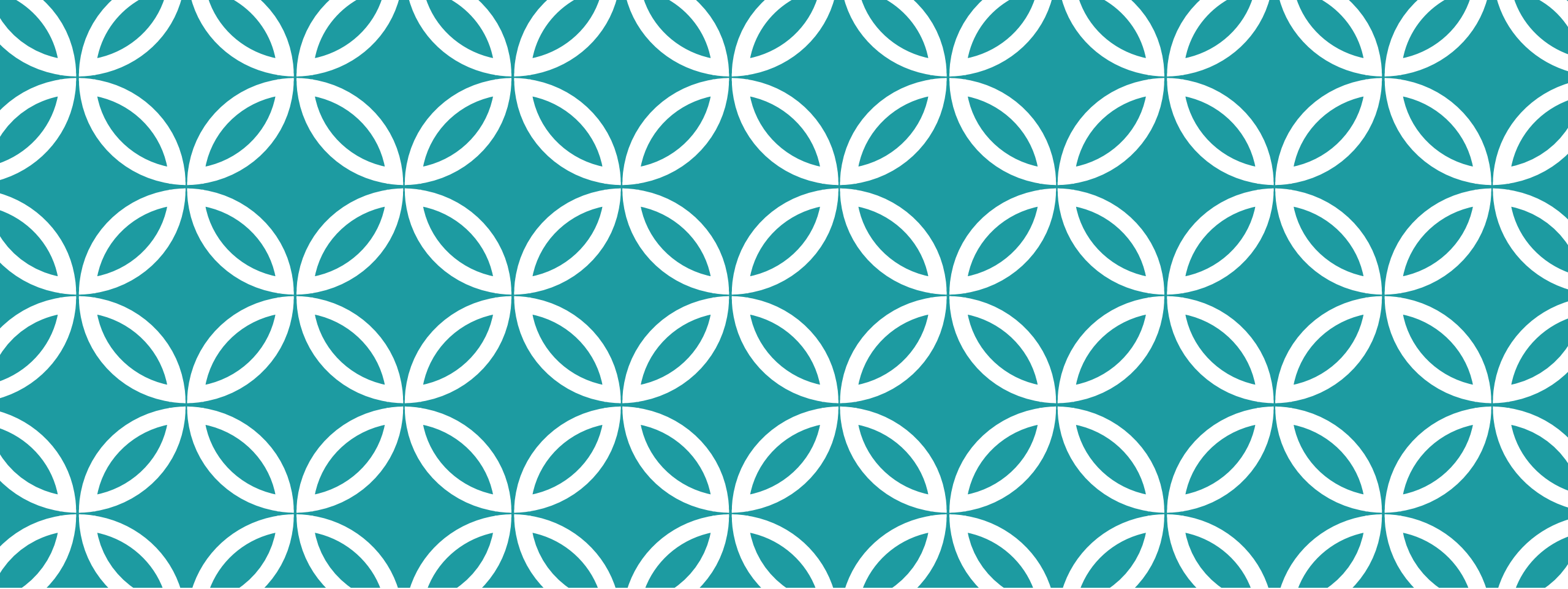 - Tuning performance data

Consumer

- Intuition?
- Competitive Analysis?
- Previous experience?
- User Research?

IDENTIFY THE OBJECTIVE: INITIAL SCOPE

CONVERSATIONAL KNOWLEDGE CHECKS

1. **Internal conversation**
   - Enterprise vs. Consumer Context

2. **External information**
   - Enterprise vs. Consumer Sourcing

PROMPTING CONSIDERATIONS

CONFIRMATION STRATEGIES: EXPLICIT V. IMPLICIT

Shortest Path (Explicit)

USER: "Make an Aqua reservation for 5 people at 4 pm on Sunday."

SYSTEM: "That was a table for 5 at 4pm this Sunday at Aqua, right?"

USER: "You got it."

SYSTEM: "Booked!"

Longest Path (Implicit)

USER: "I want to make a reservation"

SYSTEM: "Of course! Which restaurant?"

USER: "Aqua".

SYSTEM: "How many in your party?"

USER: "Three."

SYSTEM: "And the date?"

USER: "Wednesday"

SYSTEM: "What time on Wednesday?"

USER: "12:30".

SYSTEM: "Alright, I've booked you a table for three people this Wednesday at Aqua for 12:30pm. Need anything else?"

GRICE'S MAXIMS

1. **The maxim of quantity,** where one tries to be as informative as one possibly can, and gives as much information as is needed, and no more.

2. **The maxim of quality,** where one tries to be truthful, and does not give information that is false or that is not supported by evidence.

3. **The maxim of relation,** where one tries to be relevant, and says things that are pertinent to the discussion.

4. **The maxim of manner,** when one tries to be as clear, as brief, and as orderly as one can in what one says, and where one avoids obscurity and ambiguity.

MAXIM OF QUANTITY & RELATION

– "We have not received an identification form for this account. We encourage you to complete this form prior to April 12th to prevent your account from being temporarily suspended from use at that time. If you would like to request an additional copy of the form sent to your home address, please press 1."

  – "I'm sorry, but we haven't received an ID form from you yet. You can avoid having your account blocked if you send it in by April 12th."

  – "Do you need a new copy of the form?"

Keep it natural!

Simplify the information

Just ask the question!

MAXIM OF QUALITY & RELATION

- If error was due to unknown problem or connectivity issue (e.g. timeout), play transition prompt and transfer (if available) for further assistance
  - E.g. Sorry, there was a problem. Just a moment while I find someone to help you.

- If error was due to incorrect customer data, play transition prompt and try to re-collect information
  - E.g. Sorry, I couldn't find your account. Please say or enter your account number again.

- If error was due to recognition, play transition prompt and try to re-collect information
  - E.g. Sorry, can you say your account number again?
  - Consider using an audio tone that indicates misreco – a phonetic feature that personal assistants have helped normalize.

MAXIM OF MANNER

- "Would you like to get more information about the policies or requirements for health certificates or carrier sizes?"
    - Is the user meant to answer this as yes/no? Or can they say anything? AMBIGUOUS.
    - Try: "Which would you like? Policies, health requirements, or carrier sizes?"

- "Welcome to the ABC Company Branch Locator. In order to locate an ABC Branch nearest to you, I will need to know your zip code and which ABC Company Brand you're interested in. Let's get started. Using the keys on your touchtone phone, please enter your 5-digit zip code. Or if you prefer speech, or do not have a touch-tone phone, please tell me your 5-digit zip code now."
    - "<earcon> ABC Company Branch Locator. What's your zip code?"
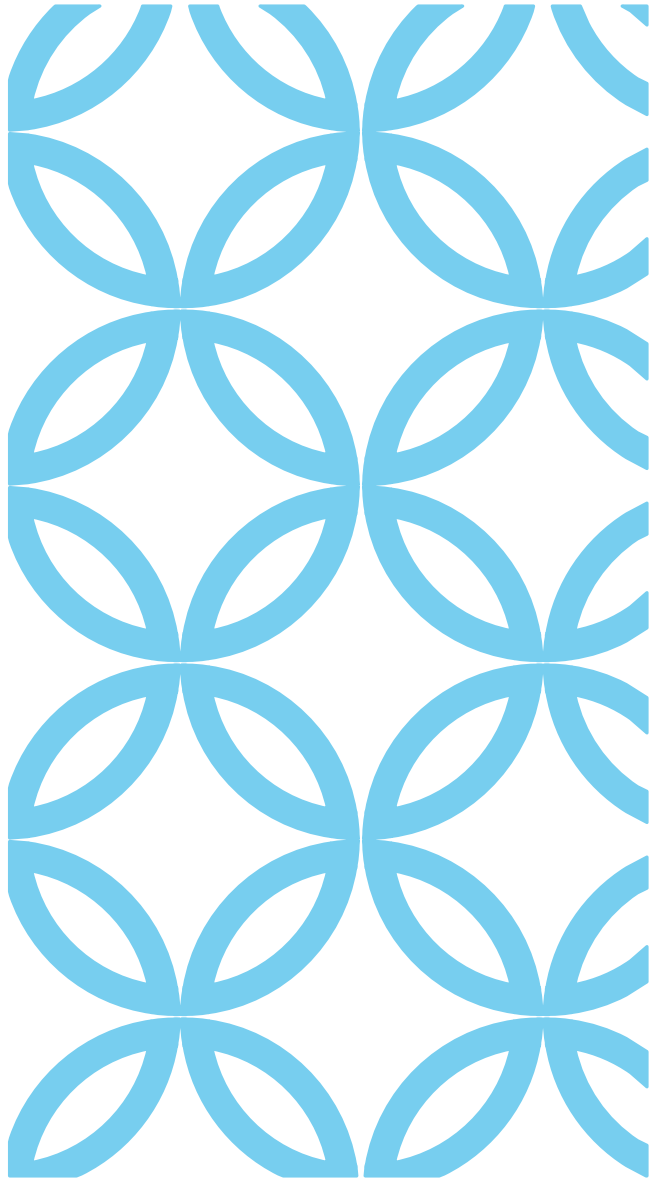
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STARTING ASSUMPTIONS + QUICK DESIGN REVIEW