The Design of Personalities and Natural Language UX

Solid Conference
Hardware, Software & the Internet of Things
June 23–25, 2015 • San Francisco, CA

Mark Stephen Meadows
President, BOTanic
<mark@botanic.io>
Timeline:
- 1994: Virtual Reality
- 2001: NLP & Artificial Intelligence
- 2010: Robotics
- 2011: Blockchain & Crypto

Books:
- Pause & Effect (2002)
- I, Avatar (2008)
- We, Robot (2010)

Patents:
- Natural Language Processing
- Autonomous Avatar Driver
- Persistent Avatar Identity
- Avatar Authentication
- NLP Cinematic Animation methods
- Voice-Driven Blockchain Transactions
• Computers can now talk, listen, emote and have faces.
• Personality, like a brand, builds trust

• Personality is the UX
• Personality comes from tropes & archetypes
• Personality comes from individual quirks

• Some notes on designing a personality
• Ethical implications
Computers now talk

IBM Watson
“Cognitive computing” system utilized for NLP and other datamining applications. Watson became famous in 2011, ecosystem deployed in 2013. IBM Watson’s business chief Manoj Saxena says that 90% of nurses in the field who use Watson for clinical support now follow its guidance.

Apple Siri
Set reminders, recognize natural voice input, answer questions, recognize music, drive operating system features. Based on internal technology plus Nuance.

Microsoft Cortana
Set reminders, recognize natural voice input, answer questions, recognize music, drive operating system features. Based on Bing. Note: Correctly predicted winners of the 1st 14 matches of the 2014 FIFA World Cup (+ semis).
Computers now talk

Amazon Echo
Answers questions, makes purchases, play music, set alarms, look up answers to questions, and add things to your shopping lists. But there's some questions here..

Nuance Nina
General LUI platform, speaks 38 languages, works in Mobile, Web, and IVR. Conversational dialogue functionality includes voice biometrics, slag recognition, etc

Google Now
Answers questions, makes recommendations, and delegates requests to web services. User activity prediction based on search habits. $75m development budget - part of Google KnowledgeGraph project.

Amazon Echo
Answers questions, makes purchases, play music, set alarms, look up answers to questions, and add things to your shopping lists. But there's some questions here..
In 2008 Ariana Del Vecchio was using Amazon to buy pet-care products. A few months later she began receiving snail-mail from pet-care companies with whom she hadn't done business. A few years later she joined in filing a class-action lawsuit, Del Vecchio et al vs. Amazon, claiming that Amazon had circumvented users' privacy settings and sent cookies, even when cookies collecting personal information had been manually blocked in the browser.

July of 2014 the Federal Trade Commission filed their second case against Amazon in federal court. According to the FTC, Amazon had billed account holders for millions of dollars in unauthorized in-app charges mostly made by kids without their parent’s approval.
Computers now talk (and are brands)

Is Siri a secretary? or.. What?

“There were many conversations within the team about whether it should be gender neutral” or “should have an ‘attitude,’ “ said Mr. Winarsky, who didn't go to Apple, and still works at SRI. The result, before the software was bought by Apple, was “occasionally a light attitude,” he said. (via NYT)
But personality design is a lot more than voice.

Many studies (cf. Mehrabian) claim that a minority of our communication is conveyed via words.

Messages are conveyed multimodally:
- 7% via words
- 38% via vocal elements
- 55% via nonverbal elements
Computers now talk (listen, monitor, and emote)

- Multi modal data capture (video, text, audio, images, etc)
- Natural Language interface for conversation
- Graphical User interface for assessments
- Support for multi-avatar interaction model
- Emotion recognition via camera, microphone, other sensors
- Avatars designed to build relationships through empathy and trust
- Real-time data integration from WWW
- Analytics of semantic and biometric data
Computers now talk (listen, monitor, and emote)

- Voice Recognition (Turning sound into text)
- Natural language Processing (Parsing language)
- Artificial Intelligence (Deductive inference)
- Animation and VR (Making the character move)
- Character design (Appearance, sound & personality)
- Scene composition (Camera, colors, etc)
- Mobile Technologies (Client-side functionality)

NLP is the de-facto interface for IoT
Personality is the User Experience
(Psychologists now have the job Graphic Designers had)
Personality is the UX

- UX Ensures the user understands the value of the product

Restaurant
- Hostess
- Server
- Chef
- Sous-chef
- Dishwasher

Hospital
- Receptionist
- Nurse
- Doctor
- Assistant
- Janitor
Personality is the UX

- UX Ensures the user understands the value of the product
Personality is the UX

- Personality design is based on archetypes & expectations
- Personality design in robots and avatars is a cinematic art
- We can find good examples of design in cinema & TV

Note that almost all of these robots are shown as learning. This makes them imperfect and interesting.

Roughly following from the 1960s - today
Examples: Rosey & JARVIS (Servants)

- Backstory: Jane buys Rosey from “U-Rent-A-Maid”
  - note that she’s used and therefore imperfect
- First appearance: September 23, 1962
- Projected Year: 2062 (Incepted 2017)
- Based on: NBC’s “Hazel” (Played by Shirley Booth)

- Backstory: Tony Stark’s AI butler
- First Appearance: November 1964 (As a human butler in Tales of Suspense #59)
- Projected Year: Various.
- Based on: Reginald Jeeves (Jeeves & Wooster, 1915. Tony Stark's based on Howard Hughes)
Examples: C-3PO & R2-D2 (Comedians)

- Backstory: Comedy duo that serve as foils, also “used” models that add to imperfect personalities
- First Appearance: May 25, 1977 (USA)
- Projected Year: “A long time ago...”
- Based on: Laurel & Hardy / Matashichi & Tahei (Hidden Fortress, 1958)
  - George Lucas & Ralph McQuarrie.
  - Based on Maschinenmensch (Fritz Lang)
  - Fussy, uptight, self-conscious, obsequious
  - Lucas, McQuarrie, Stears & Dyson
  - Designed as a contrast to C-3PO
  - Mischievous, self-effacing, stubborn, heroic
Examples: Roy & Pris (Lovable Villains)

- Backstory: Nexus 6 Combat model, used off-world for military service.
- First Appearance: January 8, 2016
- Projected Year: 2019
- Based on: Visuals: Philip K. Dick & Ridley Scott

- Backstory: “Basic pleasure model” (incepted on Valentine’s Day)
- First Appearance: February 14, 2016
- Projected Year: 2019
- Based on: Visuals: Philip K. Dick & Ridley Scott

Billy Idol & Debbie Harry (1980s)
Marlene Dietrich & Number 6 (Tricia Helfer)
Examples: Terminator & Ex Machina (Frankensteins)

- Backstory: The time-traveling and understated killing machine is learning how best to murder.
- First Appearance: October 26, 1984
- Projected Year: 1984 (Incepted 2029)
- Based on: Mad Max, Frankenstein, Others.

- Backstory: Ava is learning (do we see a theme?) and this makes her imperfect. But she’s devious.
- First Appearance: 21 January 2015
- Projected Year: Today (?)
- Based on: HAL9000, Frankenstein, ‘Embodiment and the Inner Life,’ (by Murray Shanahan).

[Images of Terminator and Ex Machina]
Examples: CHAPPiE & Her (Children)

- Backstory: AI inventor makes battle robot with learning capabilities. He's learning, and imperfect.
- First appearance: March 6, 2015
- Projected Year: Today (?)
- Based on: Previous robot designs / short films (TempBot & Tetra Vaal)

- Backstory: Popular AI OS / Virtual Ass’t and owner fall into forbidden love. She's learning, and imperfect, too.
- First Appearance: October 13, 2013
- Projected Year: Unclear
- Based on: Oughts ChatBot tech, “I’m Here” (Jonze film), “Synecdoche, New York” (Kaufman film)
Personality comes from tropes & archetypes

Mashall McLuhan: “A characteristic of every medium is that its content is always another (previous) medium.”

- Smart Pets
- Smart-Ass Truth-Sayers
- Vengeful Victims (Fathers & Women)
- Outcasts with Magic Powers
- Community Rebuilders & Connectors

We are mining our sediment.
Personality comes from quirks

“Be Right Back” (Black Mirror)
BBC’s Channel 4 - 11 February, 2013
Written by Charlie Brooker

“That guy acts like a robot,”
... is not a personality compliment.
Notes on designing a personality

Graphic Design:
- Camera angle
- User Interface,
- Character’s shape & color
- Character’s movement & animation
- Character’s environment & accessories

Audio Design
- Character Personality
- Vocal tone, pitch, etc.
- Sounds / music
- Response to the user
There are **many** Uncanny Valleys

- Appearance: Shape & Color (facial features, skin color, body proportions, posture, etc)
- Appearance: Movement (posture, head position, eye contact, facial expression, gestures, etc)
- Voice: Tone & pitch
- Voice: Cadence of words & phrases
- Response: Speed & pacing
- Psychology: Contextual relevance
- Culture: Politeness & power dynamics
- And many others we are starting to discover.
# Notes on designing a personality

## The DOs

<table>
<thead>
<tr>
<th>The DOs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individualize:</strong> Add imperfections, little habits, proclivities, and repeat unique jokes.</td>
</tr>
<tr>
<td><strong>Balance The Uncanny Valley:</strong> Keep various elements equally uncanny (i.e., voice + face).</td>
</tr>
<tr>
<td><strong>Consistency:</strong> Keep your metaphors aligned in order to preserve expectations.</td>
</tr>
<tr>
<td><strong>Tropes:</strong> Consider past archetypes and famous personalities. Watch movies.</td>
</tr>
<tr>
<td><strong>Contextualize:</strong> Lead with a “Gambit,” have follow-up volleys contain expected content.</td>
</tr>
</tbody>
</table>

## The DO NOTs

<table>
<thead>
<tr>
<th>The DO NOTs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collaboratively Author:</strong> Build your design specification, then stick to it as a team.</td>
</tr>
<tr>
<td><strong>Go Photorealistic:</strong> Make the character a bit imperfect, work within the technical limits.</td>
</tr>
<tr>
<td><strong>Fake Realism:</strong> Your user will know this is a robot. Don’t try to convince them otherwise.</td>
</tr>
<tr>
<td><strong>Generalize:</strong> No one can talk about anything, at any time, with anyone. Nor can a bot.</td>
</tr>
<tr>
<td><strong>Try To Replace People:</strong> Bots are there to do the repetitive, boring work. Amplify people!</td>
</tr>
</tbody>
</table>
Notes on designing a personality

And please . . . don’t roboticise your user.

... a story about my French wife’s greencard process.
Ethical Implications

Replacing &/or Amplifying People

- **Jobs are at risk:** Machines will replace 33% of US jobs by 2025 (Gartner Research), or 47% (Frey/Osbourne).
- **Jobs are at benefit:** Robots will create tens of millions of new jobs in the next twenty years, others say +10% GDP.
- Most agree that there will be a workforce polarization.

Privacy & Personal Information

- **We think avatars respect privacy:** About 75% of us think avatars keep secrets. But VoiceRec has been used as a surveillance system by the NSA for years.
- **Private data = Valuable data:** HIPPA and COPPA exist for good reasons. VoiceRec contains hundreds of vectors.

Power Dynamics

- **We do what we’re told:** Conversational systems have the ability to control people.
- **We believe avatars to be people:** See Reeves and Nass’ theory of “The Media Equation.”

Social & Monetary Values

- **Social Value:** “…the promiscuity of data with the capacity to do physical harm” (Calo).
- **Monetary Value:** NLP Market Worth $13.4 Billion by 2020 (MarketsandMarkets)
The Design of Personalities and Natural Language UX

Thank you.

Mark Stephen Meadows
President, BOTanic
<mark@botanic.io>