Smart Home Ambient Intelligence: voice assistants

a new limit for our freedom

Stefano Brandoli

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Presentation Outline

Smart Home Ambient Intelligence: voice assistants
a new limit for our freedom

Introduction

Technological Mediation

*While fulfilling their function, technologies do much more: they **give shape to what we do** and how we experience the world. And in doing so they **contribute actively** to the ways we live our lives (Verbeek 2011, 12)*

- Technologies are not **neutral intermediaries**
- Technologies play an **actively mediating role**

- Artifacts are **bearers of morality** (Latour 1992)
- Morality is a matter of **human-technology associations** (Verbeek 2011)

- Two perspectives of **technological mediation**:
    - Perception
    - **Action**: I will consider **human freedom**

Definitions I

Ambient Intelligence

> **Ambient Intelligence** is an approach that combines two major technologies: **Ubiquitous Computing** and **Intelligent User Interfaces (IUIs)** (Brey 2005, 158)

Intelligent User Interface (IUI)

> Interfaces that allow combining mixed and **possibly ambiguous or imprecise input** (Brey 2005)

Voice Assistant

> A **voice assistant** is a digital assistant that uses **voice recognition**, **natural language processing** and speech synthesis to provide aid to users through phones and voice recognition applications (WhatIs 2017)

Definitions II

Freedom

Two forms (Brey 2005, 2006):

- Negative Freedom:
  - act without obstruction or interference by others
  - absence of limits and **external constraints**

  example: artifact refusing to perform an action

- **Positive Freedom (Human Autonomy)**: I will consider this
  - mastery over your own life
  - **think freely**, **make your own decisions** to act

Case Study: Google Home - Google Assistant Actions

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Examples

- Order a pizza
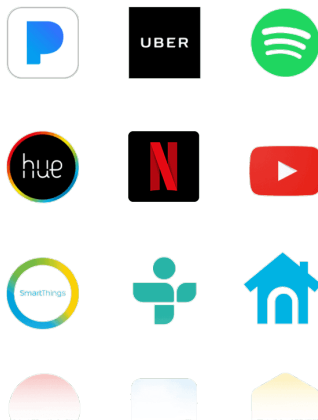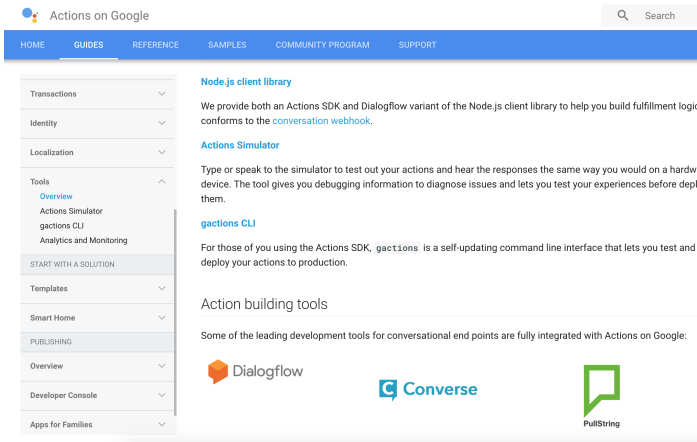- Control devices in your home
- Many others . . .

Figure: Google Assistant Actions

Google Assistant Actions

Starting from the **Actions on Google documentation** I will show:

1. **Applied concepts** of Technological Mediation **limiting freedom**

2. **Ethical concerns** arising from **loss of freedom**

Applied concepts of Technological Mediation limiting our freedom

Script: make your own decisions

Script

> A **script** is a **prescription of how to act** when using the artifact (Verbeek 2011)

Assistant Actions can be built in two ways (Google 2017):

1. **With templates**
   - build apps **without writing a single line of code**
   - build apps quickly **without worrying about designing conversations**
   - **Google decides** which interactions are good

2. **Without templates**
   - **Dialogflow**
     - machine learning
     - natural language understanding
     - extract parameters (data) from the user vocal input
   - **developers can decide** the whole conversational interaction

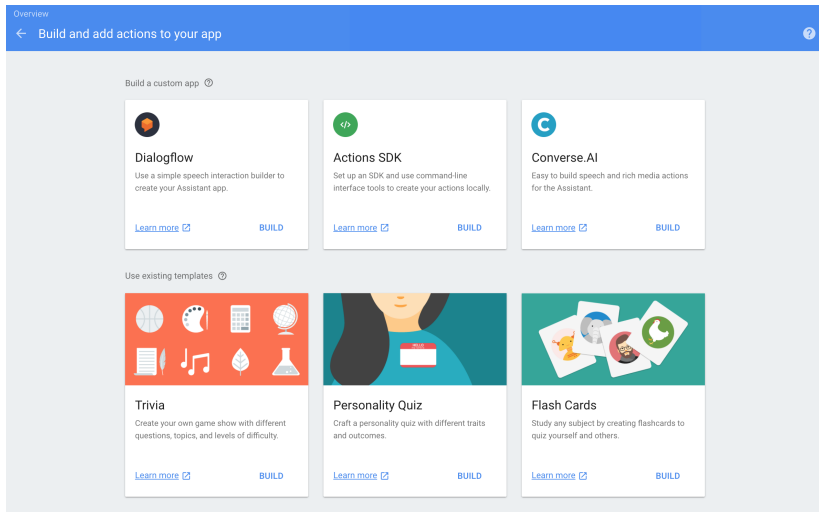# Script: make your own decisions

Figure: Actions On Google Console

Invitation/Inhibition: make your own decisions

Invitation/Inhibition

*The scripts of artifacts **suggest specific actions** and **discourage others** (Verbeek 2011, 21)*

For the **Google Assistant Actions**:

► Developers while creating the application logic **enable some actions** and **disable some others**

► The **conversational interaction doesn't go on** if the user hasn't answered with **all the required parameters**

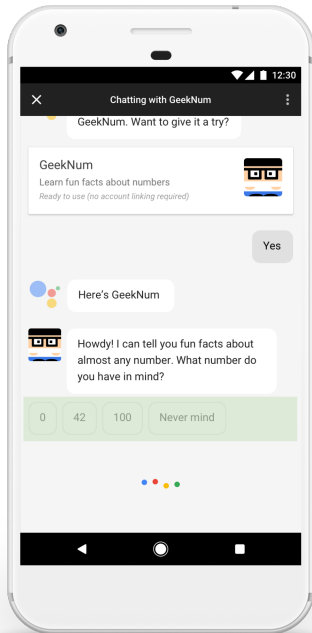# Invitation/Inhibition: make your own decisions

Figure: DialogFlow interactions

Behaviour Steering: think freely I

Suggestion Chips

*Use suggestion chips to **hint at responses** to continue or **pivot the conversation*** (Google 2017)

▶ This happens in vocal interactions

▶ **Can be more easily visualized on mobile phones**

Behaviour Steering: think freely II

> *Smart objects could become **intermediaries between businesses and consumers**, using their intelligence to **persuade customers to buy products** . . . Such influence could already be **exerted at the design stage** . . .*
> *(Brey 2005, 163)*

Advertisements

- Google Assistant **advertised "*Beauty and the Beast*"** film, but Google claimed it was not an ad (AndroidPolice 2017)

- In future **Google Assistant will include ads**
  - make money by **promoting e-commerce from partners** (Recode 2017)
  - forecasted ad-spend of **19 billions globally by 2022** (Juniper 2017)
  - what if developers shape mediations based on **ads analytics**?

Behaviour Steering: think freely III

Agent-based dialogue systems *can be included in IUI's to monitor users and* **make assumptions about their intentions and the task they are trying to perform** *(Brey 2005, 159)*

Implicit Invocation

The Assistant opts to invoke an app because it can fulfill the user's intent, **without users calling it by name** *(Google 2017)*

"i need to book a flight"

"ok, for that, try saying let me talk to flight booker"

What about Technological Mediation?

Google Actions Policies are designed towards: privacy, content, branding ...

▶ following the **Guidance For Conversation Design** is enough?

Ethical concerns arising from loss of freedom

Fear of Technocracy

- **Experts** will shape our mediations
  - **Antidemocratic**
    - How to make it more democratic?
  - **Unforeseen mediations**
    - Not humans but **technologies are in control** (Verbeek 2011, 102)

- **Opposite problem**: people without enough technical background may design **Google Assistant Actions** and publish them
  - today are very limited mediations
  - **what about the future?**

Moral Laziness

- Immorality or **amorality**

- People may **delegate all moral decisions to machines**
  (Verbeek 2011, 134)

- **Commodification of morality** (Borgmann 1984)
  - Things that used to **require effort** to acquire have become
    available with the push of a button
  - today we don't even need buttons . . .
  - **voice assistants** are a new step in this process of
    commodification?

Moral Responsibility

- Designing is **"materializing morality"** (Verbeek 2011, 101)

- To what extent **can designers be held morally responsible for undesirable forms of mediation**?

    - The responsibility should not be left to designers alone (Verbeek 2011)

    - Google Actions Policies: **developers are the solely responsible for determining the legality** of their Actions

        - What about their **moral responsibility**?

Possible Remedies

Possible Remedies

- Make the **design process more democratic** (Verbeek 2011)
  - Anticipate Mediation
  - Assess Mediation
  - Design Mediation

- Teach voice assistants' developers to **think about Technological Mediation** and the limits to our autonomy

- Re-think the **moral responsibility of designers**

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