

# Smart Home Ambient Intelligence: voice assistants

a new limit for our freedom?

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# Presentation Outline

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

## ① Introduction

- Technological Mediation
- Definitions

## ② Case Study: Google Home - Google Assistant Actions

- Applied concepts of Technological Mediation limiting our freedom
- Ethical concerns arising from loss of freedom

## ③ Possible Remedies

# 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)*

- ▶ 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**
- ▶ Two perspectives of mediation:
  - ▶ Perception
  - ▶ **Action**: I will focus on **human freedom**

# Definitions I

## Ambient Intelligence

***Ambient Intelligence** is an approach that combines two major technologies: Ubiquitous Computing and Intelligent User Interfaces (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 focus on this

- ▶ mastery over your own life
- ▶ **think freely, make your own decisions** to act

# Case Study: Google Home - Google Assistant Actions



# Google Assistant Actions

Actions on Google

HOME GUIDES REFERENCE SAMPLES COMMUNITY PROGRAM SUPPORT

Transactions ▾

Identity ▾

Localization ▾

Tools ▴  
Overview  
Actions Simulator  
gactions CLI  
Analytics and Monitoring

START WITH A SOLUTION

Templates ▾

Smart Home ▾

PUBLISHING

Overview ▾

Developer Console ▾

Apps for Families ▾

### Node.js client library

We provide both an Actions SDK and Dialogflow variant of the Node.js client library to help you build fulfillment logic conforms to the [conversation webhook](#).

### Actions Simulator

Type or speak to the simulator to test out your actions and hear the responses the same way you would on a hardware device. The tool gives you debugging information to diagnose issues and lets you test your experiences before deploying them.

### gactions CLI

For those of you using the Actions SDK, `gactions` is a self-updating command line interface that lets you test and deploy your actions to production.

### Action building tools

Some of the leading development tools for conversational end points are fully integrated with Actions on Google:

Dialogflow

Converse

PullString

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

1. **Applied concepts** of Technological Mediation limiting our 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)*

Interactions can be built in two ways (Google 2017):

- ▶ **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 and what aren't

- ▶ **Without templates**

- ▶ **Dialogflow**

- ▶ machine learning
- ▶ natural language understanding
- ▶ extract parameters (data) from the user input
- ▶ developers can decide the whole conversational interaction

# Script: make your own decisions

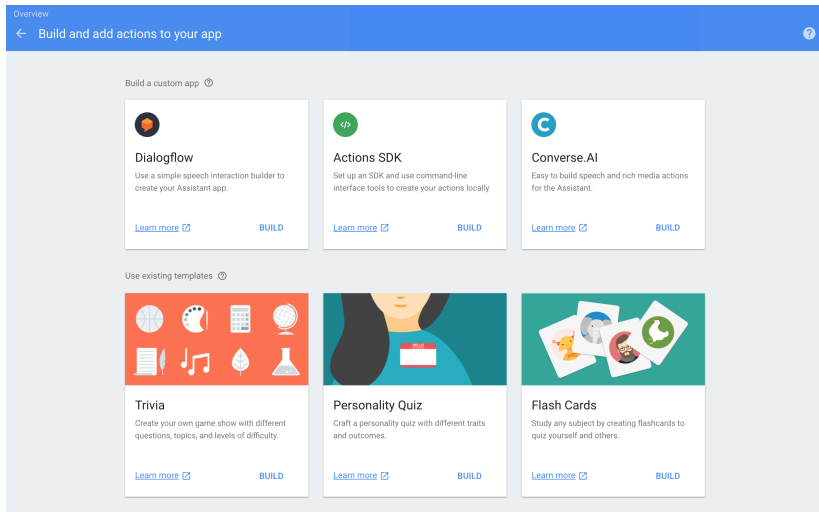


Figure: Actions On Google Console

# Invitation/Inhibition: make your own decisions

## Invitation/Inhibition

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

- ▶ Developers while creating the application logic (*fulfillment*) **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

● make\_name

SAVE

⋮

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Contexts ▼

User says Search in user says 🔍 ^

” Add user expression

” the luckiest number i have is 12

” 23

” My lucky number is 23

” My lucky number is 23

PARAMETER NAME	ENTITY	RESOLVED VALUE	
number	@sys.number	23	×

Figure: DialogFlow interactions

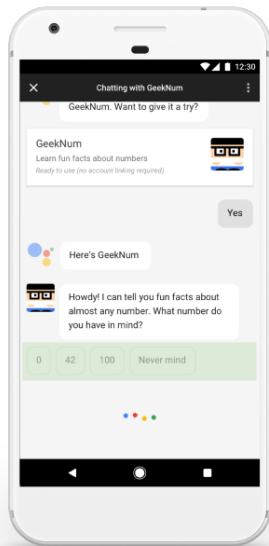
# Behaviour Steering: think freely I

## Suggestion Chips

*Use suggestion chips to **hint at responses to continue or pivot the conversation.***

*If during the conversation there is a primary call for action, consider listing that as the first suggestion chip (Google 2017)*

This happens in vocal interactions but can be easily visualized also on mobile phones



# Behaviour Steering: think freely II

## Advertisements

*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)

- ▶ Google Assistant advertises "*Beauty and the Beast*" film:
  - ▶ in the middle of a normal answer to a user
  - ▶ Google claimed it was not an ad (AndroidPolice 2017)
- ▶ In future Google Assistant will include ADS
  - ▶ Google's vice president of ads division stated that **Google Assistant will make money by promoting e-commerce from partners**
  - ▶ Forecasted ad-spend of nearly 19 billion globally by 2022

# Behaviour Steering: think freely III

Implicit Invocation

content...



# Where is Technological Mediation?

1) Google Actions Policies and terms: designed towards privacy, content, branding, ... : what about technological mediation?

Ethical concerns arising from loss of freedom

# Technocracy

+ we may have the opposite problem: non technical people designing actions without having enough background!!!

# Moral Laziness

commodification of morality

# Moral responsibility of designers

What if in the future developers will shape morality???

Responsibility vacuum

# What about behaviour change?

what if we want to change our behaviour towards what we think is good to us and not towards what is good for the designers?

## Possible Remedies

## Possible Remedies



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