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How video platforms strive for your attention



GROUP 6

Are you still watching?  
*How video platforms strive  
for your attention.*

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## Introduction

The streaming world has dramatically expanded over the past few years. Competition among video streaming platforms has become more and more fierce, as they long for users' attention. Meeting everyone's needs and tastes seems to be the right way to maintain dominance, and personalization has proven to be a valid way to narrow the array of possible choices and make users' life easier. "Decision fatigue" is indeed one of the worst threats to these services' success: the task of choosing something to watch can be a tortuous process. It can overwhelm users and discourage them if they are unable to find something interesting within a short time. In response to this challenge, streaming platforms have been implementing their interfaces with various strategies, ranging from autoplaying video trailers to providing user-tailored recommendations.

This report aims at defining a taxonomy of these strategies, which are ultimately meant to limit the amount of time users spend choosing which content to watch and to prevent them from "leaving too early". Two separate moments were identified for describing the user's interaction with the platform: the process of choosing among the titles presented and the actual fruition of content which is followed by further content selection.

For the scope of this analysis, the investigation has been conducted on four main video streaming platforms: Netflix, Prime Video, YouTube and Twitch. These four were selected because they represent various types of video providers that, when compared, present differences and similarities in terms of content fruition. For coherence and completeness reasons, all platforms were analysed only on their desktop version. Three questions of interest are researched & analysed and findings are presented with the help of visualisations. The results are highly dependent on the particular situation in which every analysis was conducted; slight differences related to device screen size, web browser, personal account, etc. must be taken into account when consulting this report.

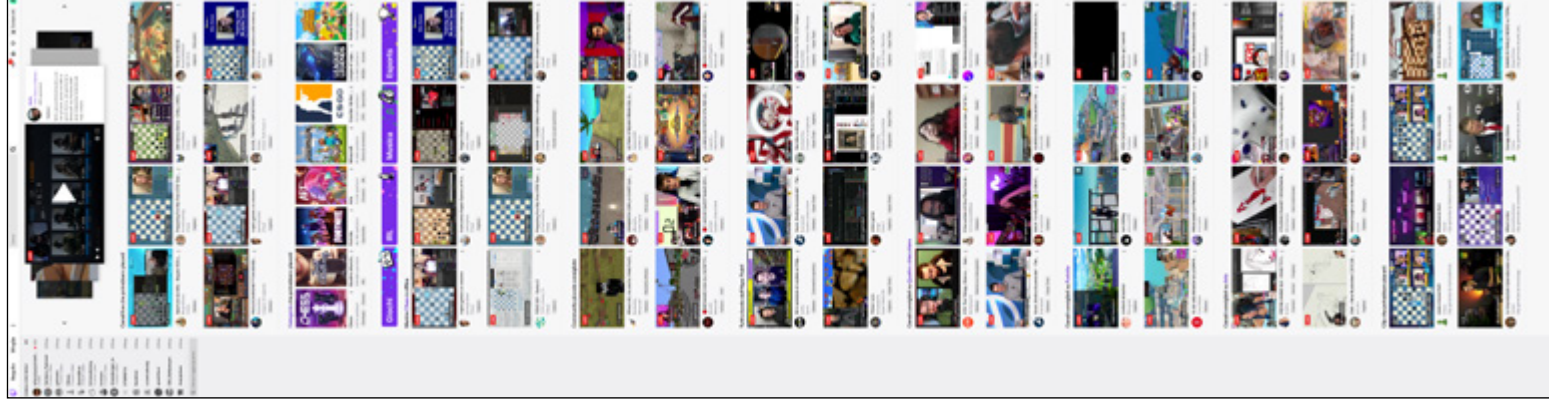
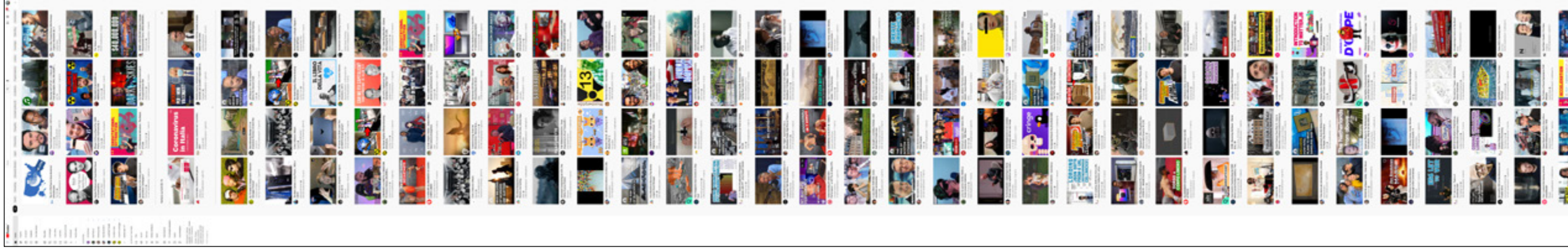
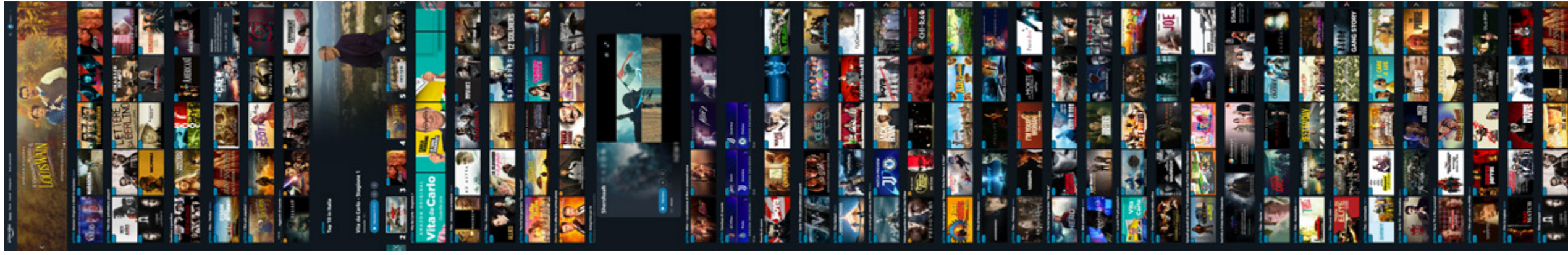
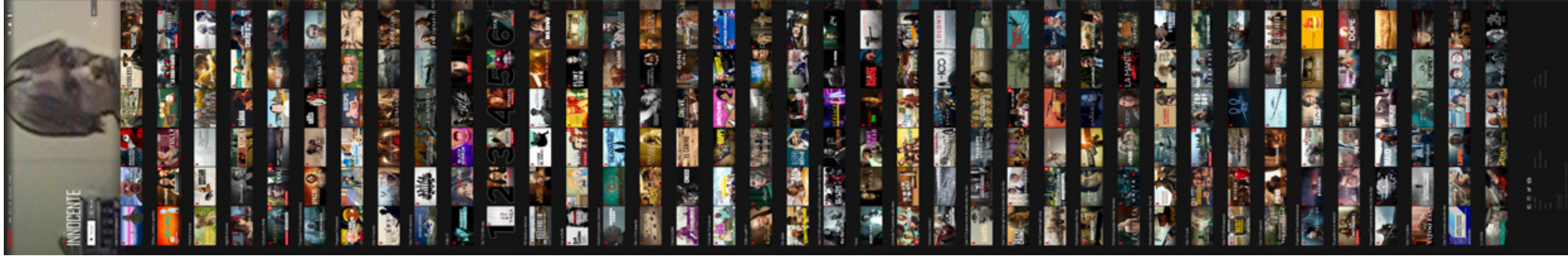
- Q1: HOW DO STREAMING PLATFORMS' INTERFACES LEAD YOU IN FINDING SOMETHING TO WATCH? (11)**
- Q2: WHICH STRATEGIES DO STREAMING PLATFORMS USE TO KEEP YOU WATCHING? (39)**
- Q3: HOW DID THE YOUTUBE HOMEPAGE EVOLVE OVER THE YEARS? (55)**

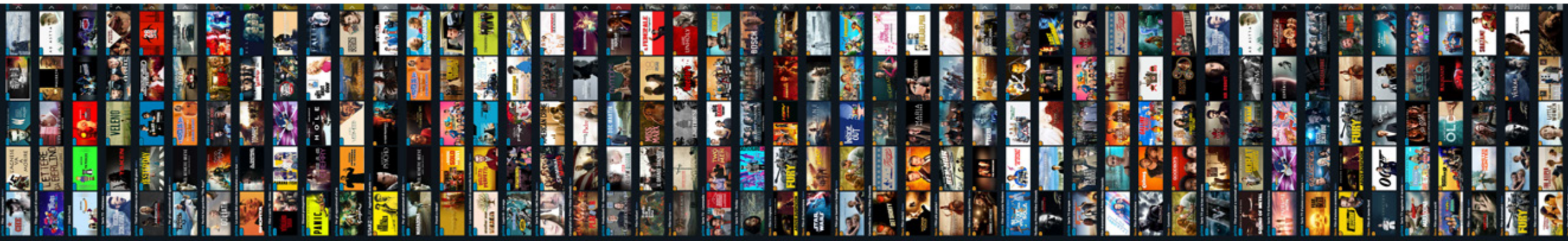
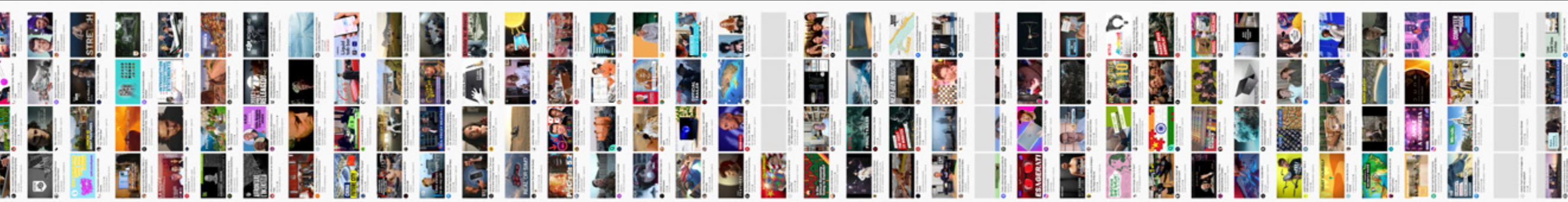
## Q1: HOW DO STREAMING PLATFORMS' INTERFACES LEAD YOU IN FINDING SOMETHING TO WATCH?

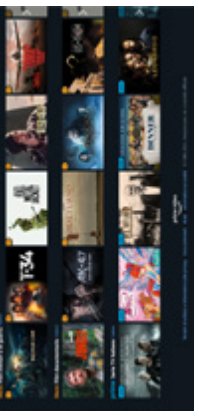
Every video streaming platform's success lies in its interface. While marketing strategies make users visit the site and good contents make them watch all the way through, the interface's key task is to intervene – and in a way, take control – along the path that leads them to actually start watching. When users enter the platform, they either do it to actively look for a content that they already have in mind, or they do not know what to watch yet, so they passively let the interface guide them as they browse the catalogue. The goal, when it comes to designing the interface, is to present the library of contents in the most efficient and effective way – the way that makes users play something.

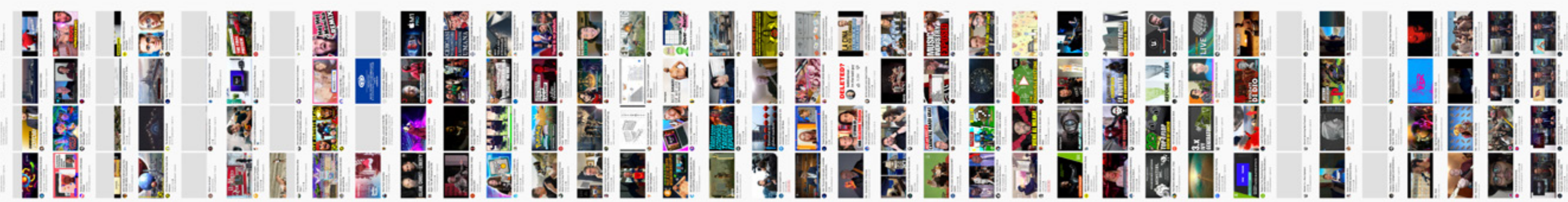
This first part of the report aims at finding out how platforms' interfaces reach this goal: how they present the library, which strategic or manipulative measures they use, and whether they have a way of dealing with decision fatigue, the phenomenon users face when offered too many options. The research is focused on both of the users' intentions, active and passive research of content, so the homepage and the search bar (and related results) were the subjects of this investigation.

- F1: Establishing a ranking criteria based on layout and interaction is a recurring way to present content (25)
- F2: Content metadata is strategically layered on multiple levels of interaction (31)
- F3: Algorithms play an active role in how your search results are presented (33)
- F4: Visual dominance: images take up most of the homepage interface (35)



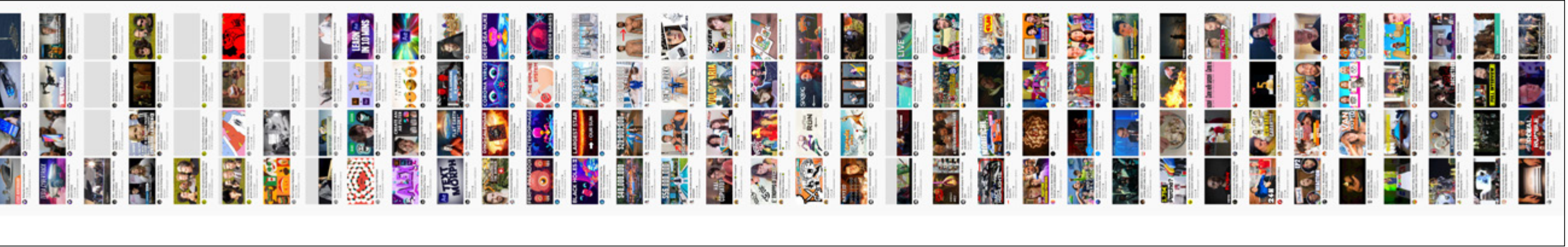










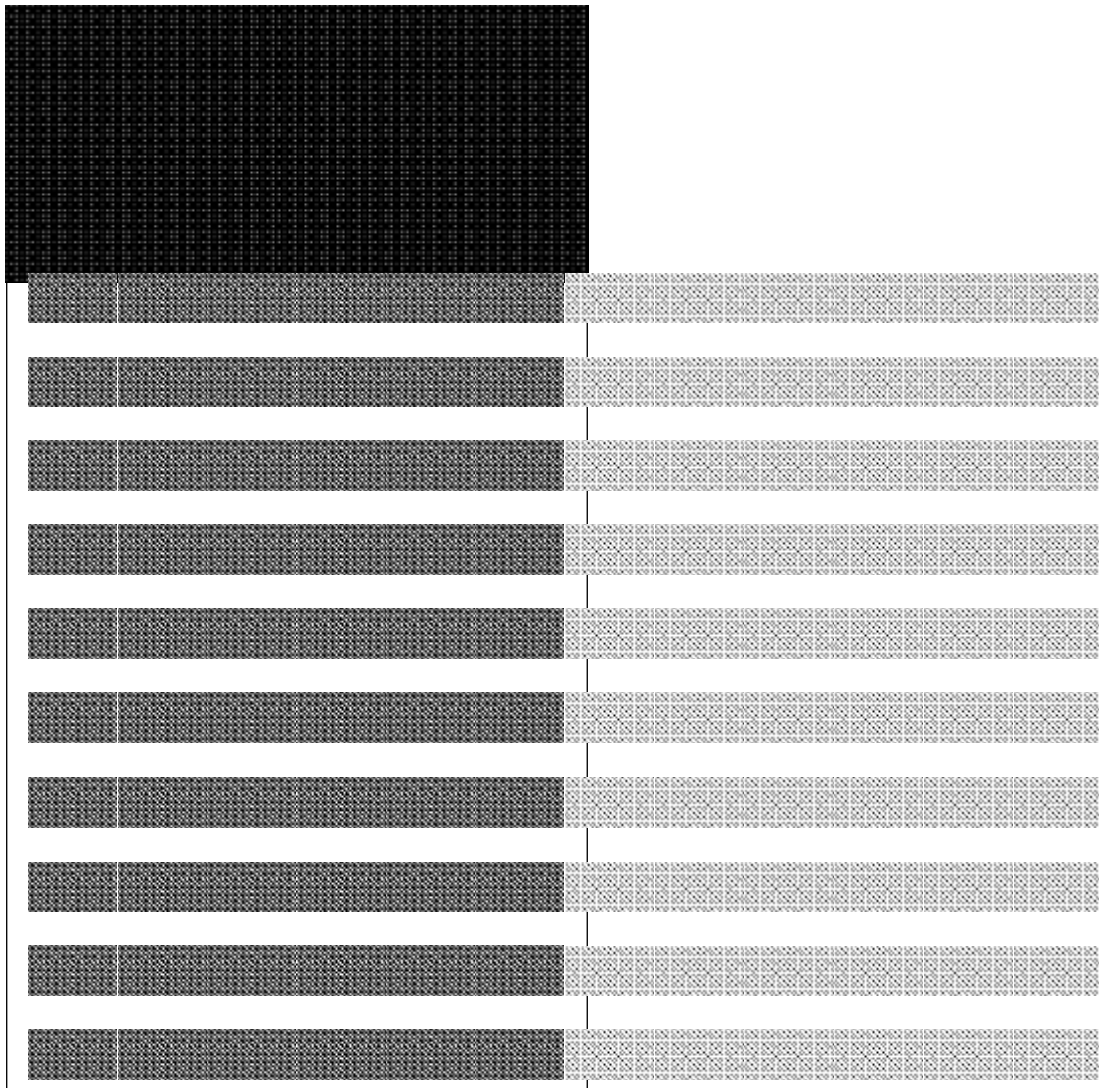


## F1: Establishing a ranking criteria based on layout and interaction is a recurring way to present content

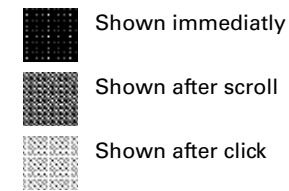
↓ Contents distribution layout on the platforms' homepage.

The psychologist Barry Schwartz calls it “the paradox of choice” – the fact that having many options to choose from, rather than making people happy and satisfied, can cause stress and hinder decision-making. So, while too much choice produces decision paralysis, too little choice produces dissatisfaction. To find out if and how video services manage to efficiently balance the amount of titles displayed, the investigation was based on the number of contents recommended on each platform's homepage and how they're presented (note: for convenience reasons, the scrolling area inspected was up to twice the size of the viewport and content rows were expanded with just one click).

### Netflix

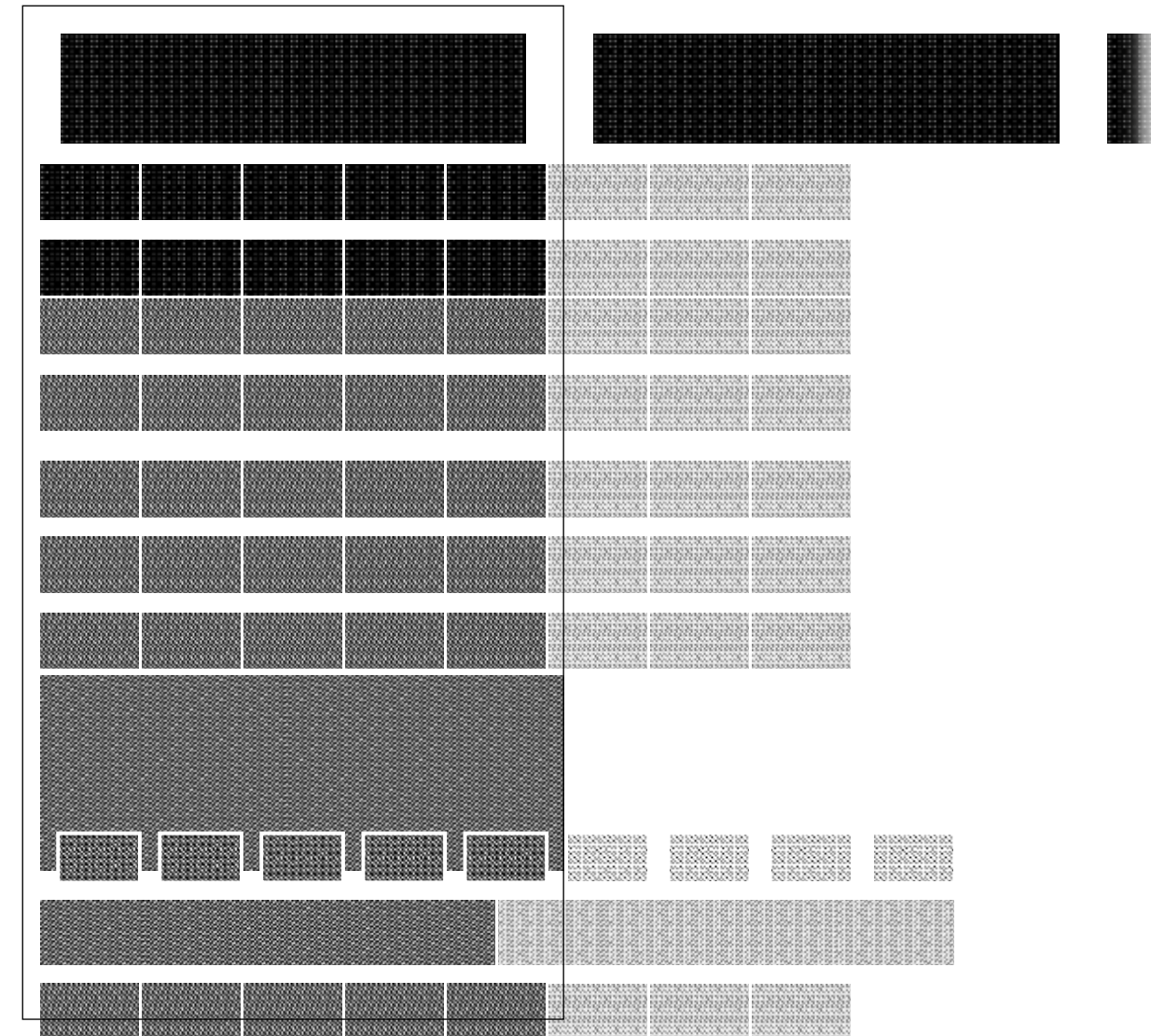


### LEGEND:

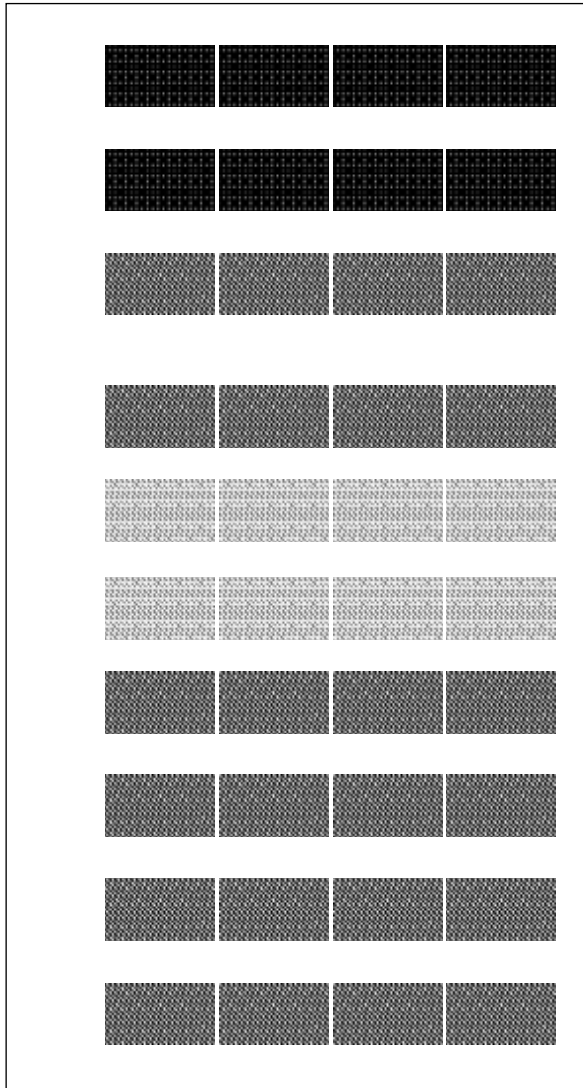


The analysis showed that platforms tend to use different approaches depending on the proximity to the user: if we consider the landing viewport to be a first level of proximity (since it's the first thing the user sees) and the scrolling area underneath to be a second level, contents are presented differently. While YouTube does not take advantage of hierarchy principles and shows most recommendations straight away in a consistent layout, Netflix seems to use various methods to distribute the library's offerings: by putting only one highlighted content on the landing viewport, taking over the whole screen as the user logs in, Netflix tries to eliminate the decision process and convince the user of what to watch right away. If they are not convinced, they will access more choices by scrolling through the rows underneath, but they will also have to scroll horizontally through each of them to see more. Prime Video and Twitch take similar approaches but in a more moderate position. So, if we consider the apparent commitment to avoiding induced decision fatigue through the interface, Netflix and YouTube would be at opposite sides of the spectrum.




### Prime Video



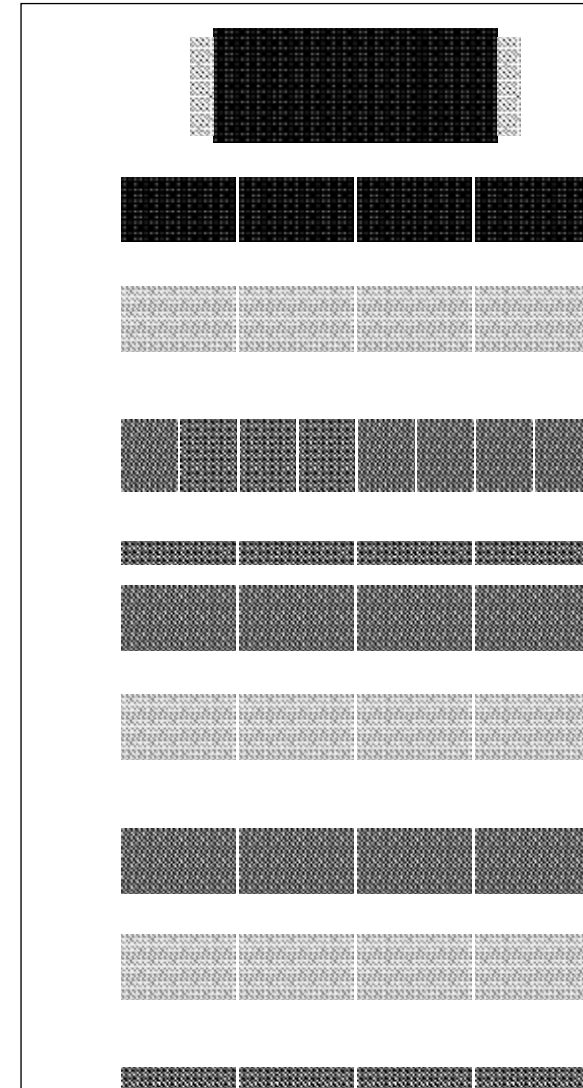
YouTube






LEGEND:

-  Shown immediatly
-  Shown after scroll
-  Shown after click

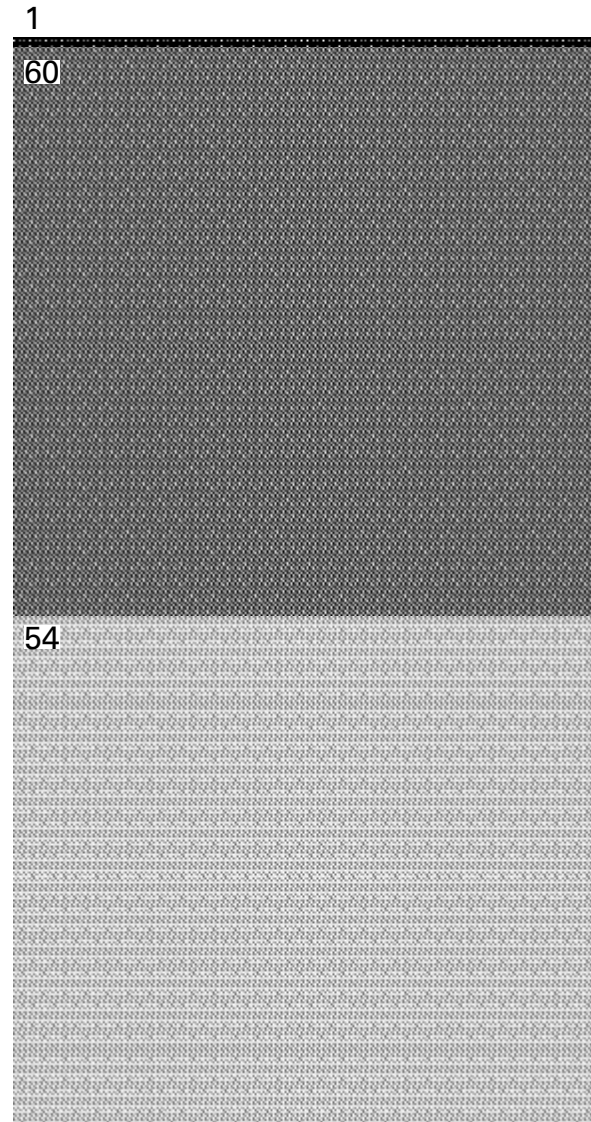
Twitch



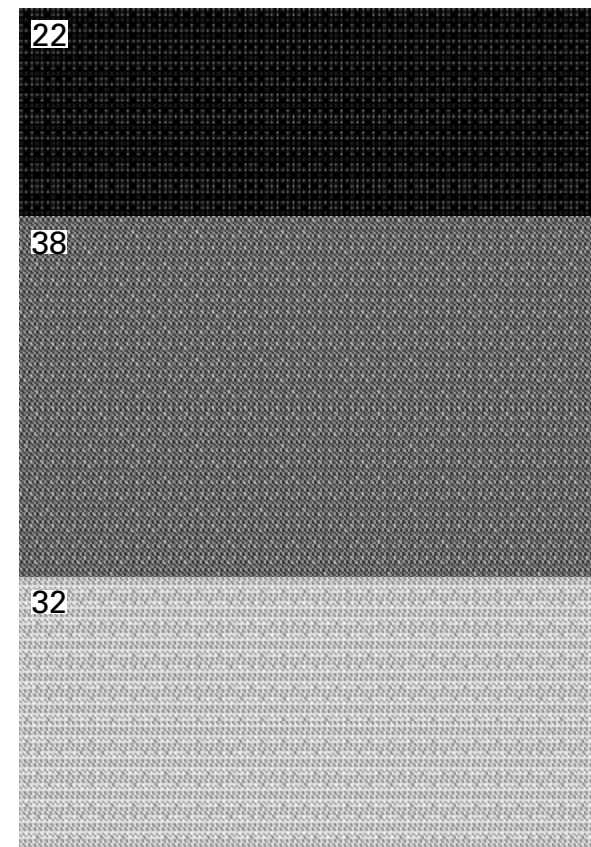
LEGEND:

-  Shown immediatly
-  Shown after scroll
-  Shown after click

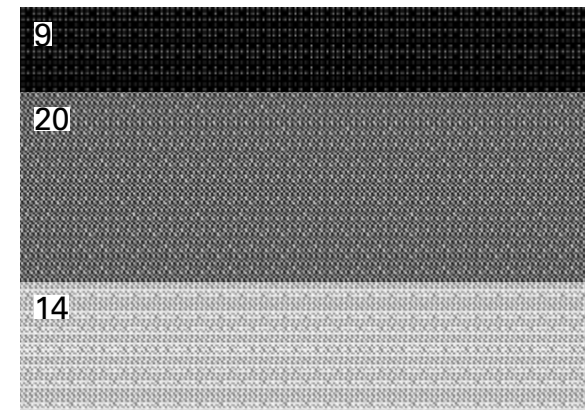
Netflix



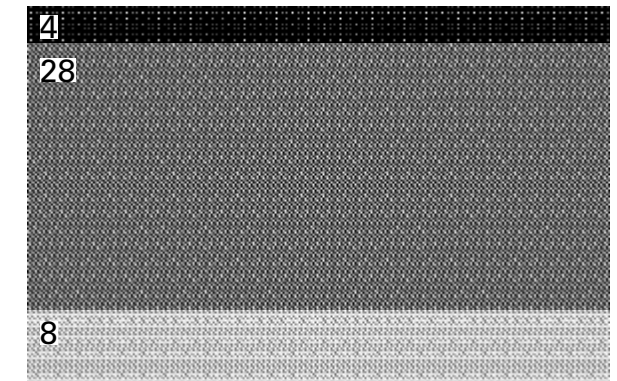
Prime Video



YouTube



Twitch



## F2: Content metadata is strategically layered on multiple levels of interaction

↓ List of metadata provided, relative to contents on the homepage and how users can find them.

Decision fatigue heavily depends on the amount and type of information we are provided. The more information we are given on the options, the more time we will spend confronting and thinking of what to choose: “This movie is way too long”, “Five seasons? That’s a big commitment to make”, “The ratings are not that great”.

The investigation proceeded by collecting the metadata that users can encounter when browsing the catalogue to find something to watch. As YouTube and Twitch are fast-paced platforms, meaning contents are typically short and/or chosen without putting too much thought on it, they tend to limit the amount of information provided but showing it all right away, so that comparison between choices is immediate.

### Netflix

Thumbnail  
Title  
Netflix Original Content  
Preview  
Maturity rating  
Match score  
Year  
Tags  
Cast  
Seasons  
Episodes list  
Audio description availability  
Genres  
Creators

### Prime Video

Thumbnail  
Title  
Amazon Original Content  
Pay-per-view  
Preview  
Included with Prime  
Description  
Duration  
Year  
Subtitles  
Maturity rating  
IMDB rating  
X-Ray feature  
Resolution  
Direction  
Cast  
Genre  
Seasons  
Languages  
Recommendations

LEGEND:

Immediately visible

Visible on hover

Visible on click

On the other side, Netflix and Prime Video are slow-paced, meaning contents are fairly long and are a bigger commitment, so users make decisions less lightly and tend to look deeper into the details to make their choice. To assist them in the process, the two platforms distribute metadata in multiple levels of interaction: (1) no interaction, (2) on hover, (3) on click. So, the interface first takes the initiative of selecting and showing the user the bare minimum information that they need to possibly choose a title, and only if they are not satisfied with this selection will they find out more by digging deeper into it, first by hovering on a title and then by clicking on “More info” buttons and such.

(Note 1: content types differ among platforms, therefore the analysis centers on the number of metadata rather than on the type, which is not comparable)

(Note 2: to allow a valid comparison, metadata given just for the highlighted top recommendation was not considered)

### YouTube

Thumbnail  
Title  
Duration  
Channel  
Views  
Publication period  
Preview

### Twitch

Thumbnail  
Title  
Live indicator  
Channel  
Viewers  
Topic  
Language

## F3: Visual dominance: images take up most of the homepage interface

↓ (Row 1) Images' presence on the interfaces' homepage is highlighted; (Row 2) Ratio between the space occupied by images and the one occupied by other UI elements.

In 2014, Netflix conducted a study on what their users focus more while scrolling their service, finding out that 82% of the focus gets captured by movie images and thumbnails. A platform usually needs to catch our attention in the first 90 seconds, otherwise we're most likely to lose interest in the activity; that's where images become a really powerful attraction tool, since our brain can process them in an astonishing 13 milliseconds.

To understand how streaming platforms utilize this tool, the homepages of each one were analysed in an area corresponding to two viewports in height, to focus only on the first visual impact when landing on the page. The area occupied by images was blocked in order to calculate

LEGEND:



Images

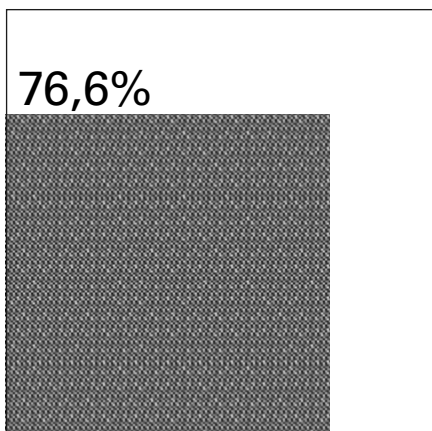
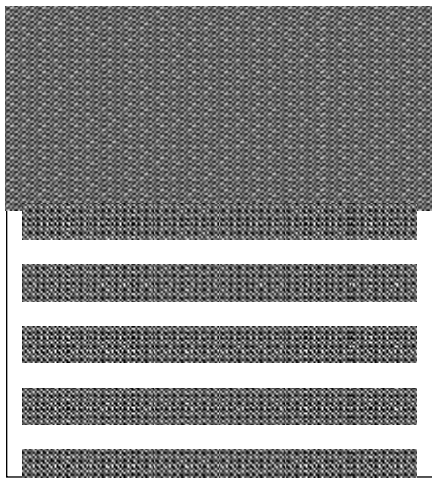


Platform UI

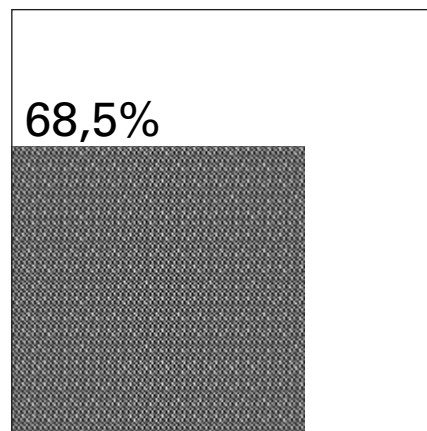
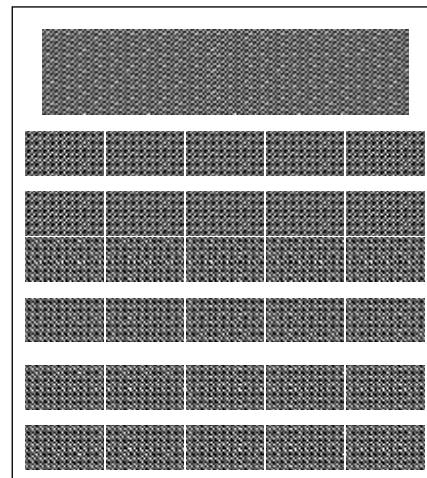
their ratio opposed to the total platform area, to later confront them and analyse the layout of each page and how the images are sized and distributed on the screen.

It was found that platforms that rely on user-generated content (Twitch and Youtube), dedicate a significantly lower amount of screen space to images and thumbnails; this space is distributed in a way that allows more textual information and further tabs and features.

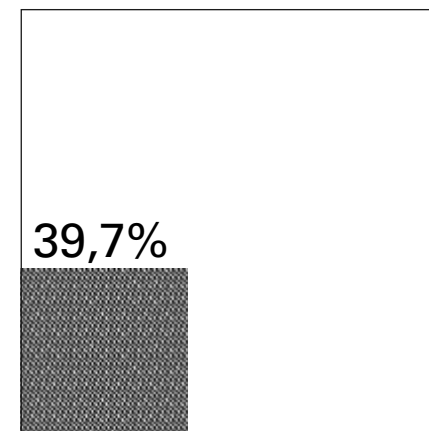
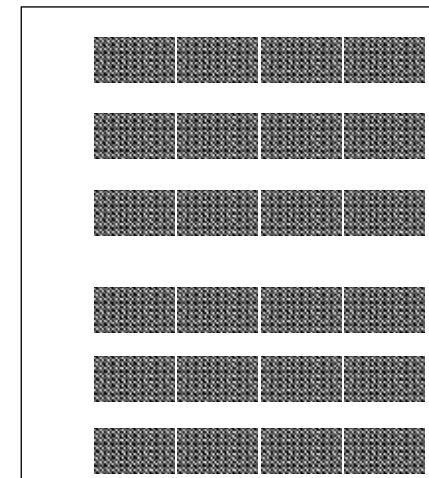
Netflix



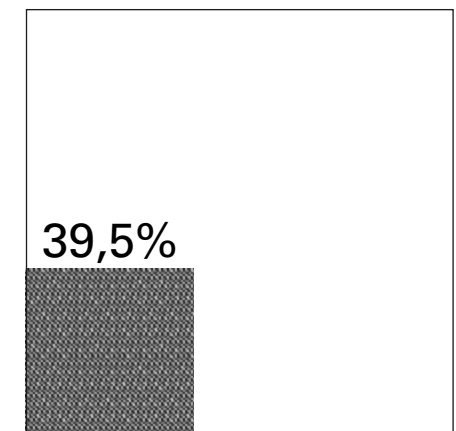
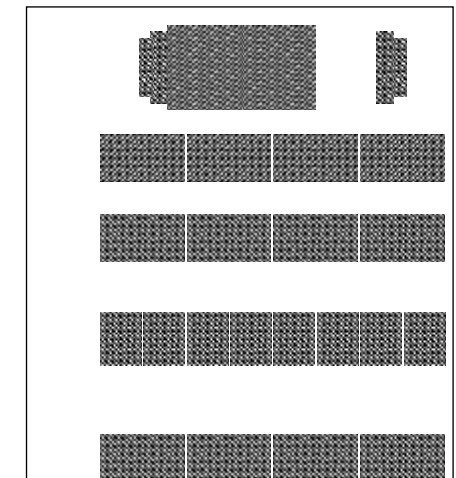
Prime Video



YouTube



Twitch



## F4: Algorithms play an active role in how your search results are presented

↓ Search results shown in order of appearance, resulting from two different search queries and user roles (visitor and logged-in user).

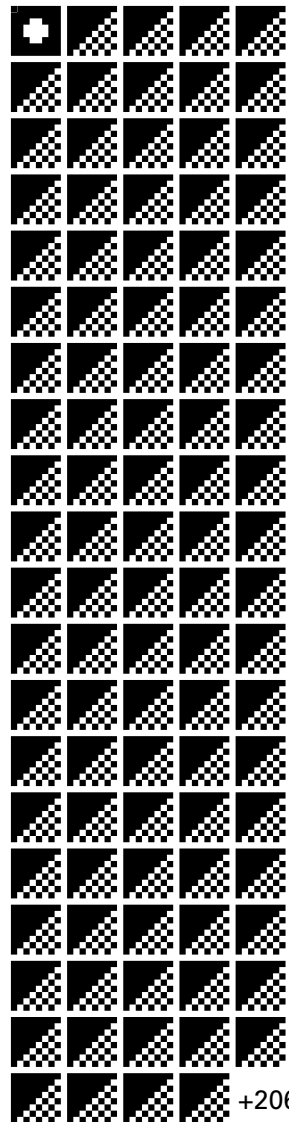
In 2014, Netflix conducted a study on what their users focus more on while scrolling through their platform, finding out that 82% of the focus is directed to movie images and thumbnails. A platform usually needs to catch our attention in the first 90 seconds, otherwise we're most likely to lose interest in the activity; that's where images become a really powerful attraction tool, since our brain can process them in an astonishing 13 milliseconds.

To understand how streaming platforms take advantage of this perception phenomenon, the homepages of each of them were analysed,

### Logged-in

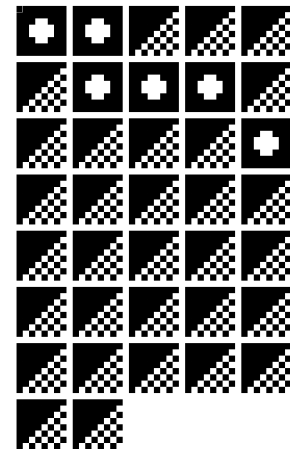
#### Search: Akira

##### Netflix

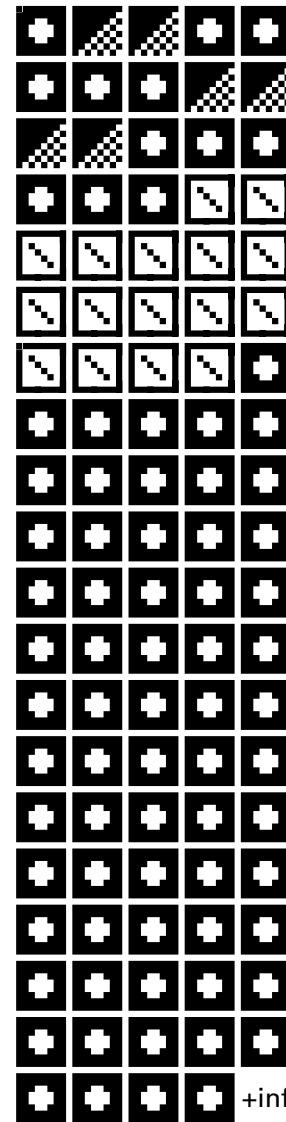


+206

##### Prime Video

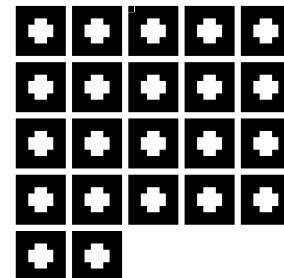


##### Youtube







+infinite

##### Twitch



### LEGEND:

-  Keyword related results
-  Algorithmic results related to search
-  Algorithmic results unrelated to search
-  Previously watched suggestions

and this was done in a limited scrolling area corresponding to two viewports in height so as to investigate the first visual impact to which the user is subject right when landing on the page.

The area occupied by images was captured in order to calculate their ratio opposed to the total interface area, to later confront them and analyse the layout of each page and how the images are sized and distributed on the screen. It was found that platforms that rely on user-generated content (Twitch and Youtube) dedicate a significantly narrower portion of screen space to images and thumbnails; this space is distributed in a way that allows for more textual information and further tabs and features to be shown.

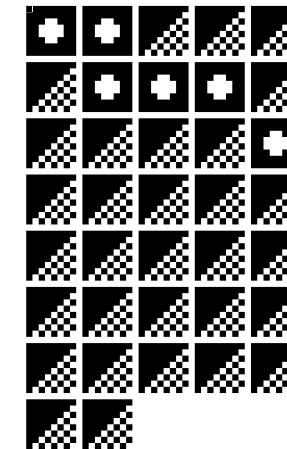
### Logged-out

#### Search: Akira

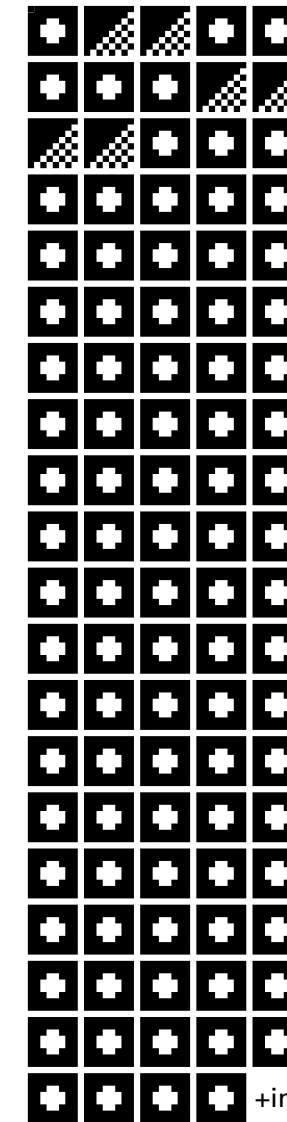
##### Netflix



##### Prime Video

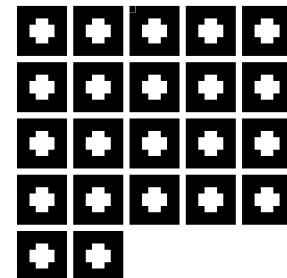


##### Youtube



+infinite

##### Twitch





Logged-in

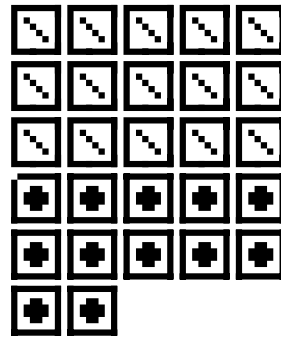
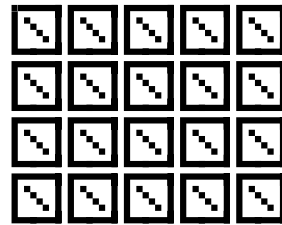
Search: udnkunsdfuns

Netflix

Prime Video

Youtube

Twitch



Logged-out

Search: udnkunsdfuns

Netflix





Prime Video

Youtube

Twitch



LEGEND:

-  Keyword related results
-  Algorithmic results related to search
-  Algorithmic results unrelated to search
-  Previously watched suggestions

## Q2: WHICH STRATEGIES DO STREAMING PLATFORMS USE TO KEEP YOU WATCHING?

Guiding users through the process of finding something to watch is just the first step in a streaming platform's job. Once the video has ended, how do platforms make sure that users stay? Anticipating your next interest is fundamental to prevent users from leaving the service. Streaming services rush to quickly offer new interesting content to consume, and oftentimes they do it even before you watch the one that is playing all the way through. This is not generated randomly but rather, on the contrary, the algorithm tries its best to understand the user and their needs, proposing similar videos or content that suits specific interests in specific times. That is why the algorithm's role is not limited to reducing the amount of time you spend browsing the platform's catalogue for the first time in a day: tailored recommendations need to be elaborated and presented to the user even as a video is playing and right after it's finished, in order to ensure that the user is offered a virtually never-ending watchlist of well-selected content.

This section of the report aims at finding out more about specific functionalities and design choices for the structure and layout of interface that seem to be used strategically to try and convince users into keeping on watching, whether in a subtle or in a more visually aggressive way. "Just one more episode", they say.

- F1: Autoplay triggering timing is shorter on platforms that require longer viewing time and bigger commitment (41)
- F2: Disabling the autoplay can imply a dark pattern (43)
- F3: YouTube intensively shows recommendations even as a video is playing (51)
- F4: Netflix doesn't want you to leave after you're done watching (53)

# F1: Autoplay triggering timing is shorter on platforms that require longer viewing time and bigger commitment

→ Movie plots are visualized but only parts of them are readable – the first part represents the number of words in a plot that one would actually be able to read during the autoplay triggering time, while the latter represents a missed opportunity to get the time to make a decision for oneself on whether or not to watch the next content, attributed to the autoplay's action.

Different kinds of video content imply different commitment and time usage. YouTube's videos have an average length of 11.7 minutes (Source: Statista), while TV shows' average duration is around 45 minutes (Source: Statista). Autoplaying the "next" content aims at deter you to leave by not providing you time to make a decision, but the kind of content you're watching determines the time you'll spend on the platform.

By analysing in first person the autoplay trigger time, for each platform that uses this function - YouTube, Netflix and Amazon Prime Video - it was found that while YouTube has a timing of 8 seconds, the two streaming platforms have variable timing for different TV shows, with Netflix oscillating between 4 and 8 seconds and Amazon Prime video with a way bigger range, from around 2 seconds to almost 1 minute.

Comparing the autoplay trigger time to the average video duration for each platform showed that YouTube, that on average provides short videos, has a shorter autoplay trigger time than platforms like Amazon Prime Video and Netflix that imply a bigger commitment in terms of content fruition.

Meet Einstein, an African grey parrot at the Knoxville Zoo. He turned 30 last week and celebrated by showing off some of his amazing ~~impressions~~.

Reading time  
8 s

Average YouTube video length  
11.7 min

A missing child sets four families on a frantic hunt for answers as they unearth ~~some disturbing mystery that~~

Reading time  
4.52 s

Average episode length  
60 min

Life is a difficult challenge for Mr. Bean, ~~and although~~  
~~the show is a comedy but it is not just a~~  
~~simple comedy show but it is a~~  
~~series of sketches that he finds~~  
~~in his television~~  
~~show that he finds~~  
~~with~~

Reading time  
2,43 s

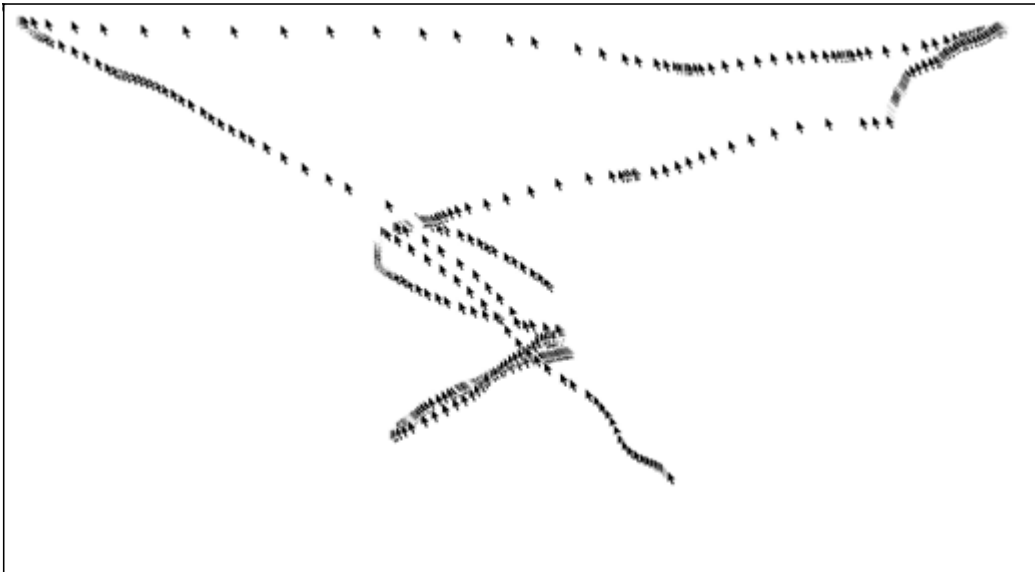
Average episode length  
25 min

## F2: Disabling the autoplay can imply a dark pattern

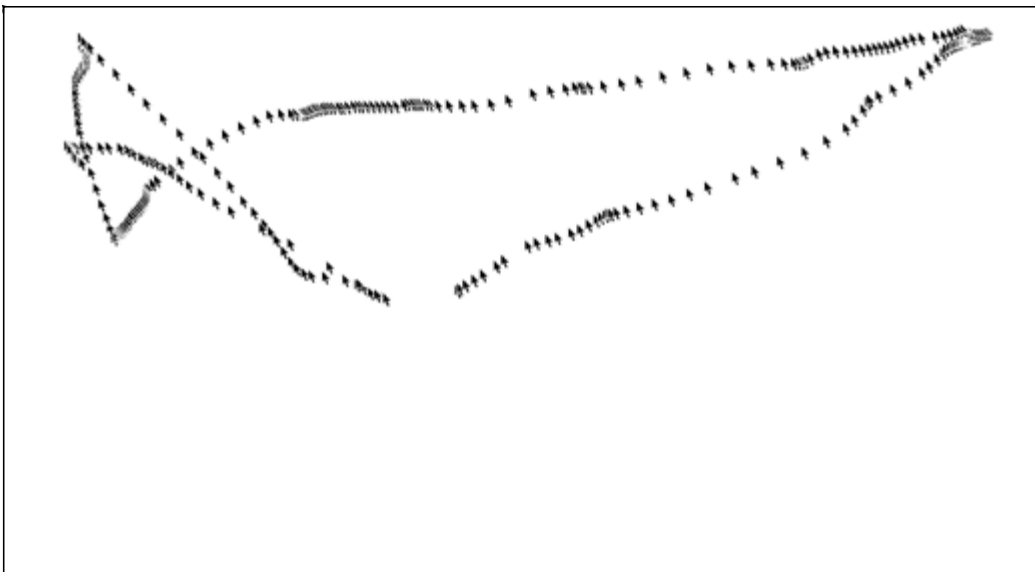
↓ Autoplay disabling cursor paths comparison. The path starts on the center of the screen as content is being played, and ends once the user can keep on watching after disabling the autoplay setting.

After finishing a TV show episode on Netflix or Prime Video or a video on Youtube, if the autoplaying function is not disabled, you will be automatically redirected to another recommended content. This feature is usually triggered after just a few seconds, tricking the user into watching some more. But how easy is it to opt out of automatically playing the “next” video? Having this question in mind, the journey to disable the autoplay setting on these platforms was tracked and visualized, while also monitoring the number and type of necessary interactions with the interface to get there.

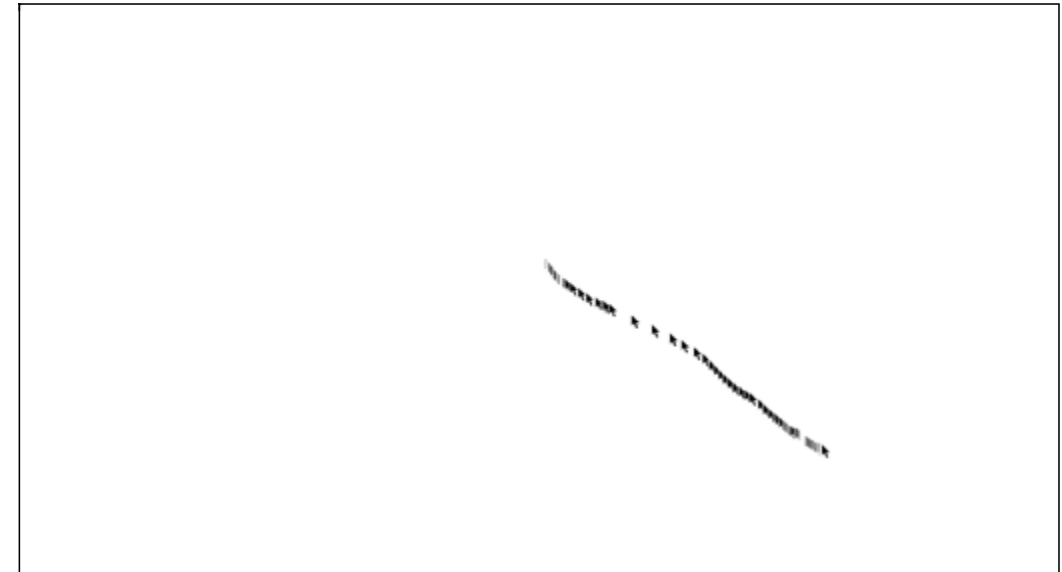
### Netflix



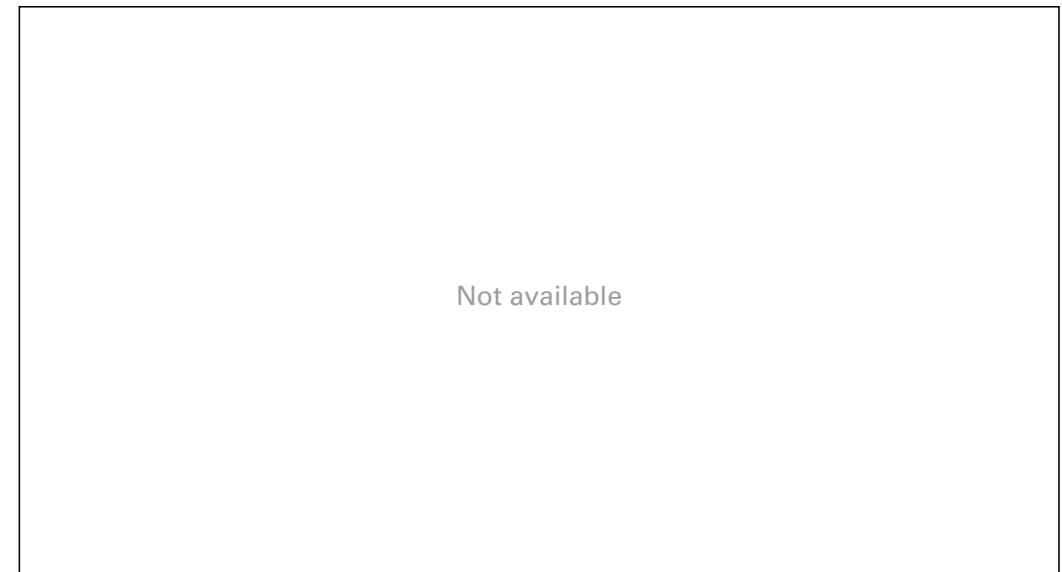
### Prime Video



### YouTube






### Twitch

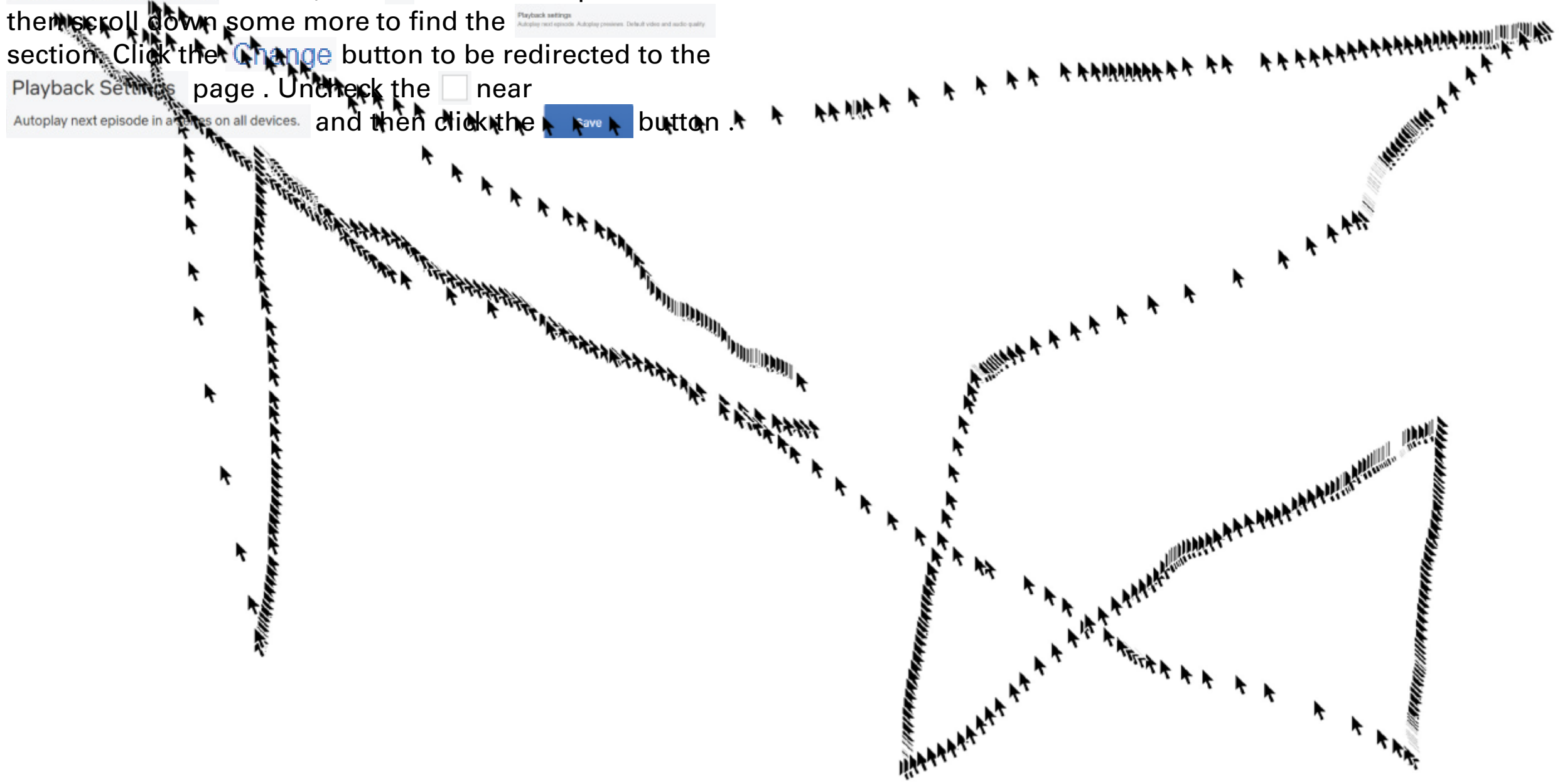


It was found that YouTube facilitates the disabling process by placing the “disable autoplay” switch right on the video player window, while Netflix makes the user search for this option and “hides” it deeper in the settings page, so the resulting walkthrough appears to be nonlinear and time consuming, discouraging users from performing this action. This is what is referred to as a “dark pattern” – a user interface trick that is carefully crafted to trick users into performing or not performing certain actions.


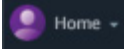
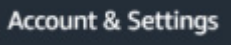
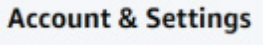
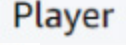


# Netflix

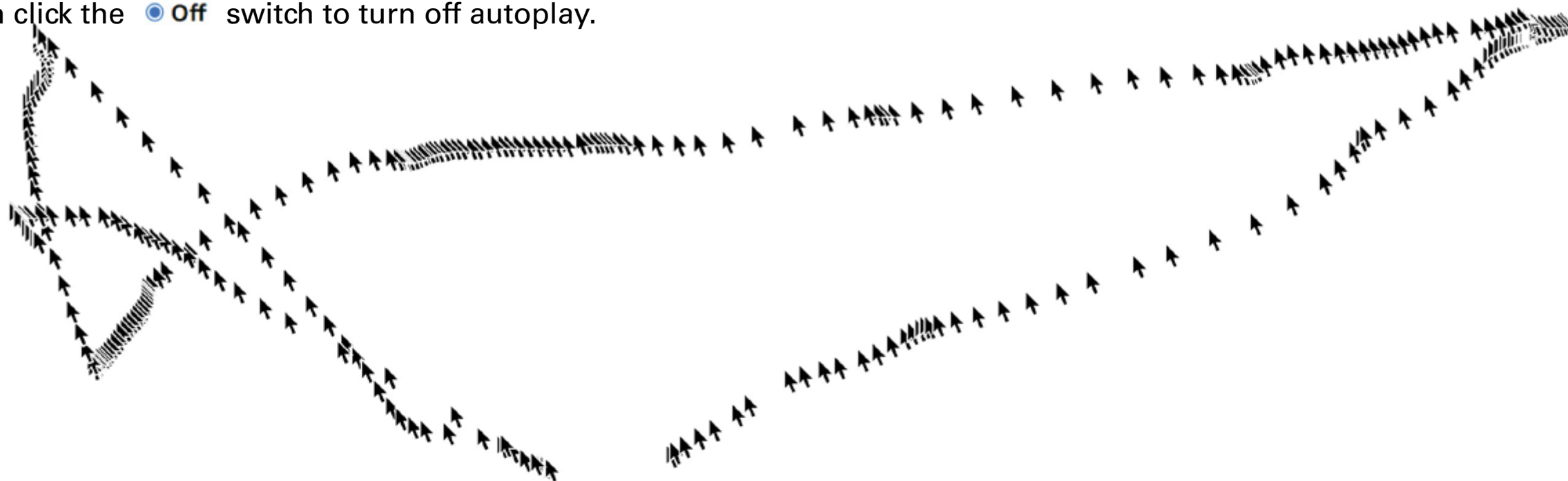
Click the  button in the player window to reach the homepage. Here click the down arrow near the profile picture . In the drop down menu, click the **Account** button to go the **Account** page. Scroll down until the **Profile & Parental Controls** section, click  the near the profile and then scroll down some more to find the **Playback settings** section. Click the **Change** button to be redirected to the **Playback Settings** page. Uncheck the  near **Autoplay next episode in a series on all devices.** and then click the **save** button.

← Autoplay disabling process walkthrough and cursor trace.




## Prime Video

Click the  button at the top of the player window, then click the down arrow near the profile picture . You will see a drop down menu, where you have to click the  button that will lead you to the  page. Here, click the  tab and under the  section click the  switch to turn off autoplay.



## YouTube

Switch off the  switch on the bottom-right side of the player.



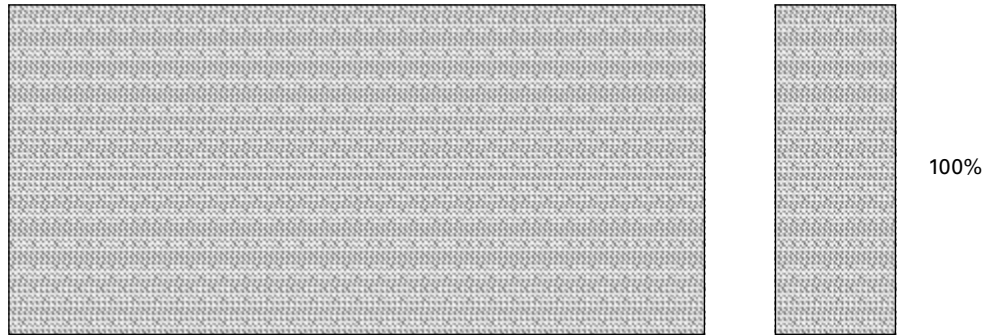
### F3: YouTube intensively shows recommendations as a video is playing

↓ Viewport spatial distribution, distinguishing video player and recommendations as content is being played.

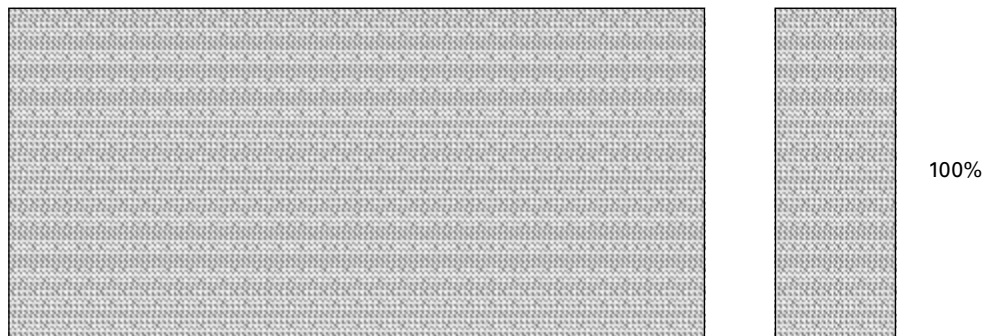
The size for the video player differs depending on the type of content. Netflix and Prime Video, being platforms that mainly offer longer contents in duration (films and TV series), only give users the possibility to watch them in full screen mode. For this reason, recommended content is not shown during the viewing process but only before or after choosing what to watch.

In the case of YouTube and Twitch the scenario is different: suggested content is shown even while a video is currently playing. For both of these platforms, the total area occupied by the video suggestions was calculated in order to define how much space they require compared to other elements of the interface.

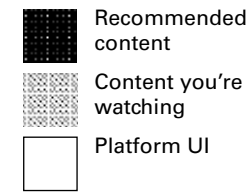
Netflix



Prime Video

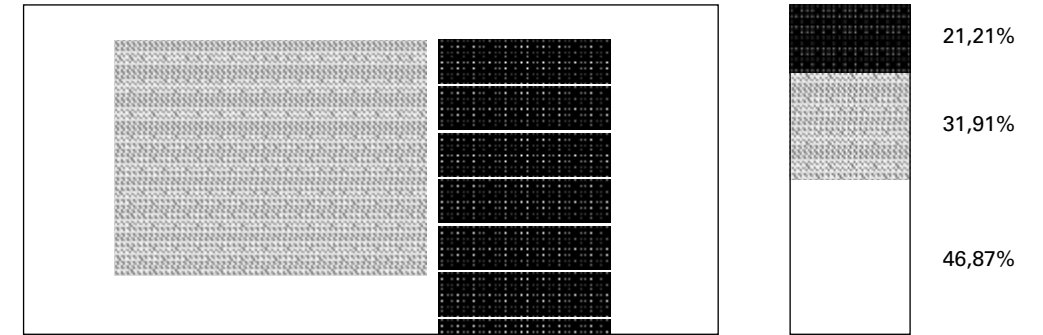


LEGEND:

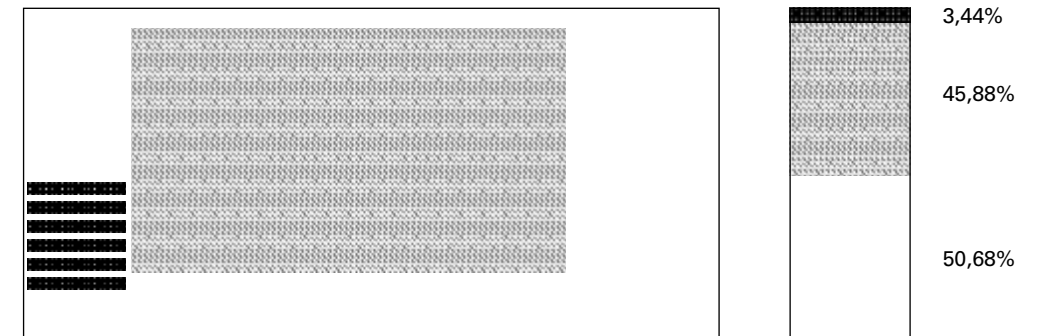


It was discovered that suggestions take up a bigger portion of the viewport than the one occupied by the video player. Moreover, the amount of recommended content can, in some cases, appear overwhelming: while watching a YouTube video, you can scroll suggestions for a total of more than 120 different videos. In conclusion, YouTube is the platform where the recommended content occupies the largest area of the viewport – 21,21% of it, to be exact.

YouTube



Twitch





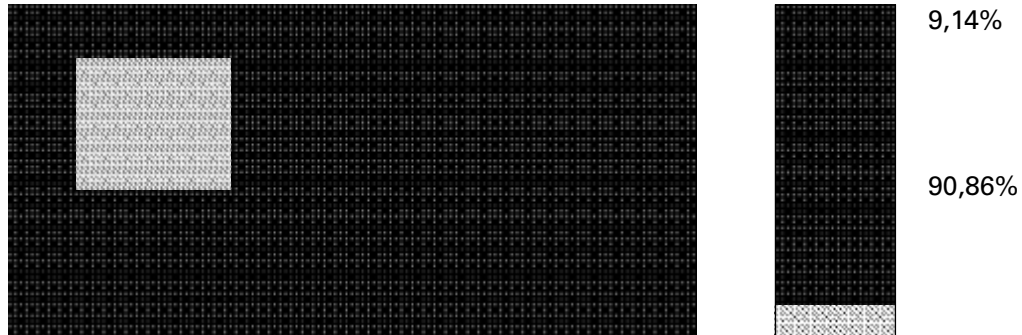
## F4: Netflix doesn't want you to leave after you're done watching

↓ Viewport spatial distribution, distinguishing video player and recommendations as content is done playing.

Before analysing what happens when content is done playing on the different streaming platforms it was necessary to make some decisions on what to consider for the observations since, depending on the features activated or the type of content itself, the displayed elements change.

For Netflix and Prime Video the content considered for the analysis was the one that is shown to the user at the end of a movie or an entire TV series, the reason for this being that at the end of a TV series episode both platforms lead the user into watching the next episode through a short autoplay. For YouTube, the modality observed was the one in which video player is set at its smallest size and automatic autoplay is enabled (default

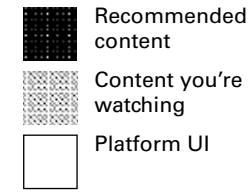
Netflix



Prime Video



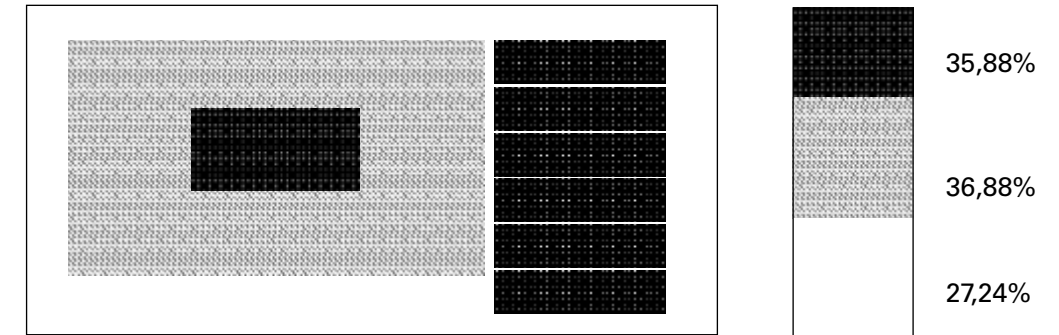
LEGEND:



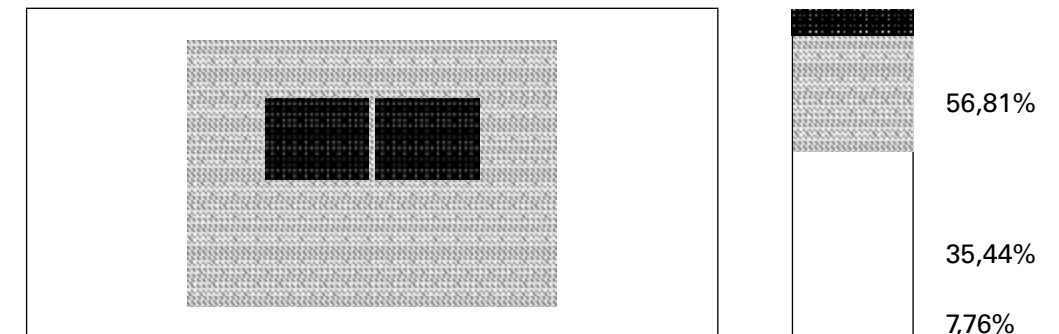
setting). Finally, the Twitch analysis shows what happens after watching an offline video (livestream rewatch), considering that at the end of a livestream the user is simply redirected to the home page.

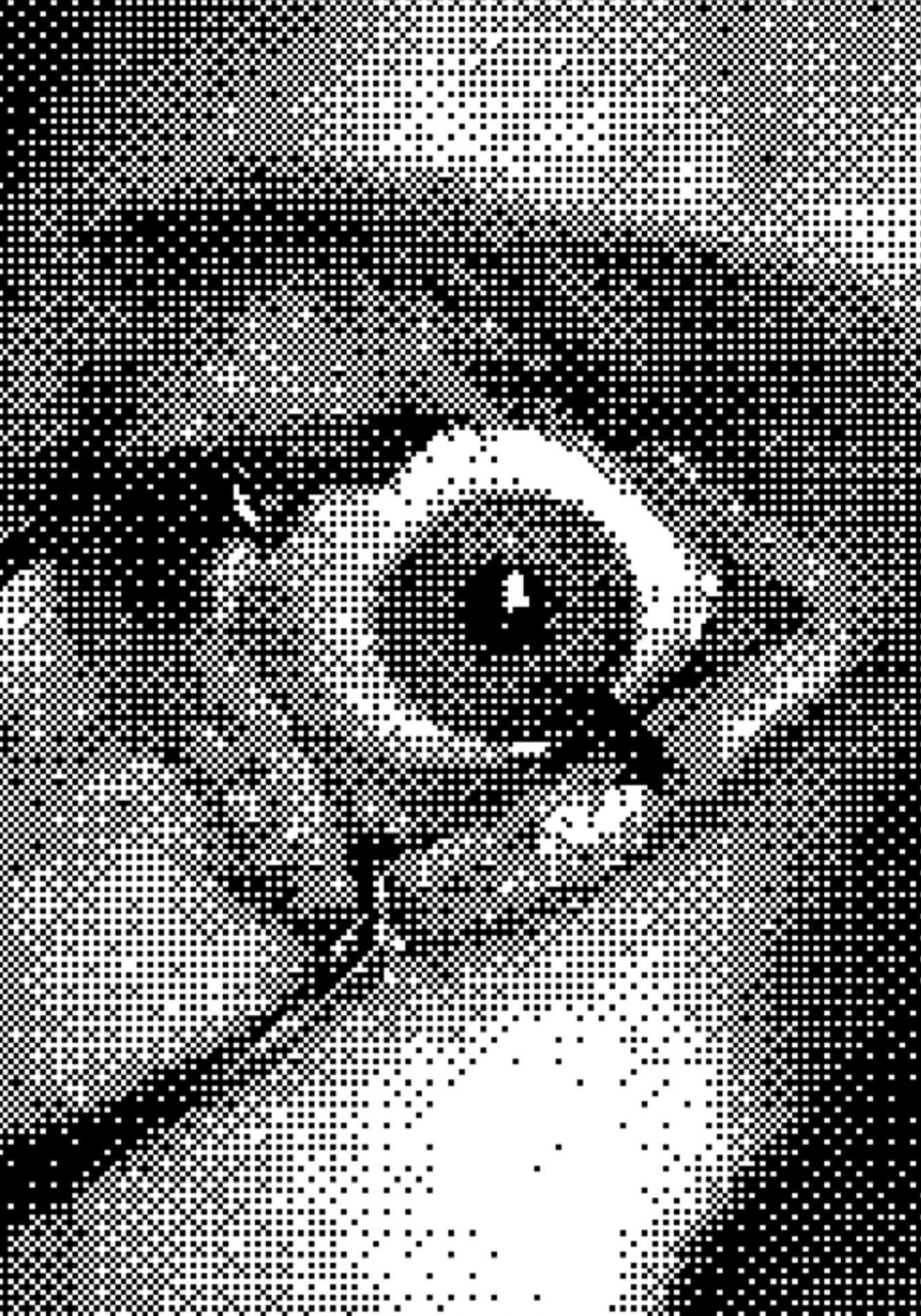
The case of Netflix is the most interesting one: when done watching a show or movie, the platform shows a full screen thumbnail of a recommended content while giving the user the possibility to play it right away or watch its trailer. This recommended content occupies 90.86% of the window viewport. The remaining part of the screen is occupied by the content that has just finished (9.14%). For this one, the user is given the possibility to give a positive or negative evaluation through two buttons.

YouTube



Twitch



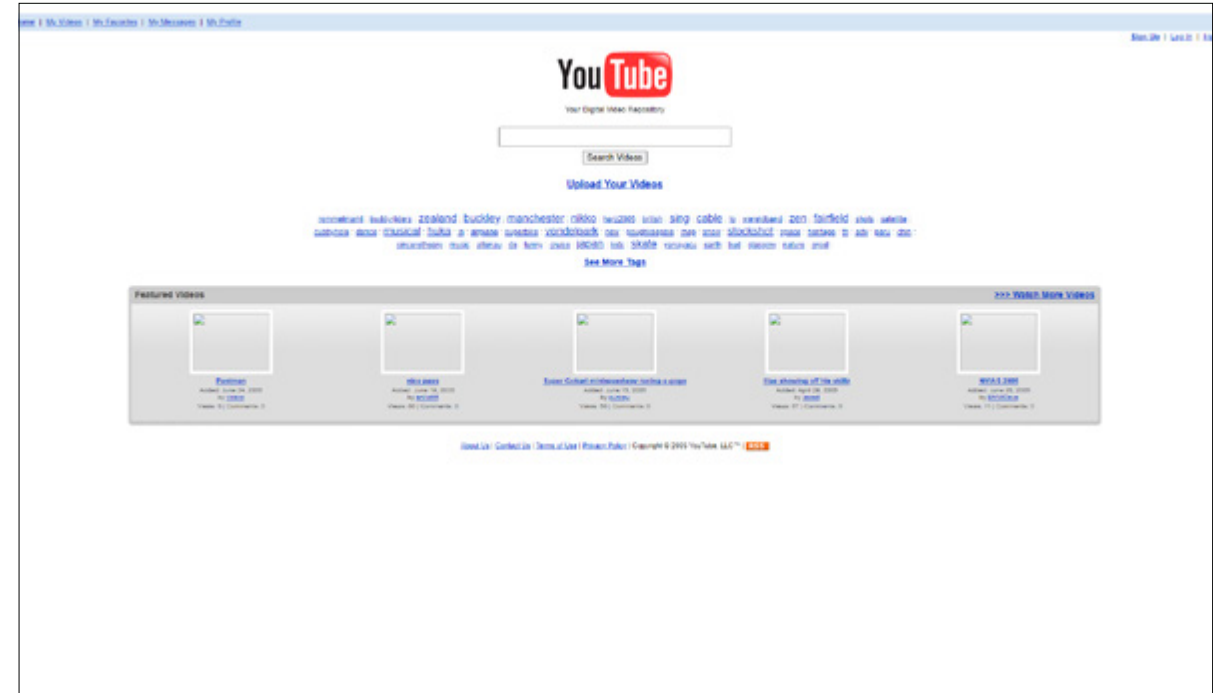


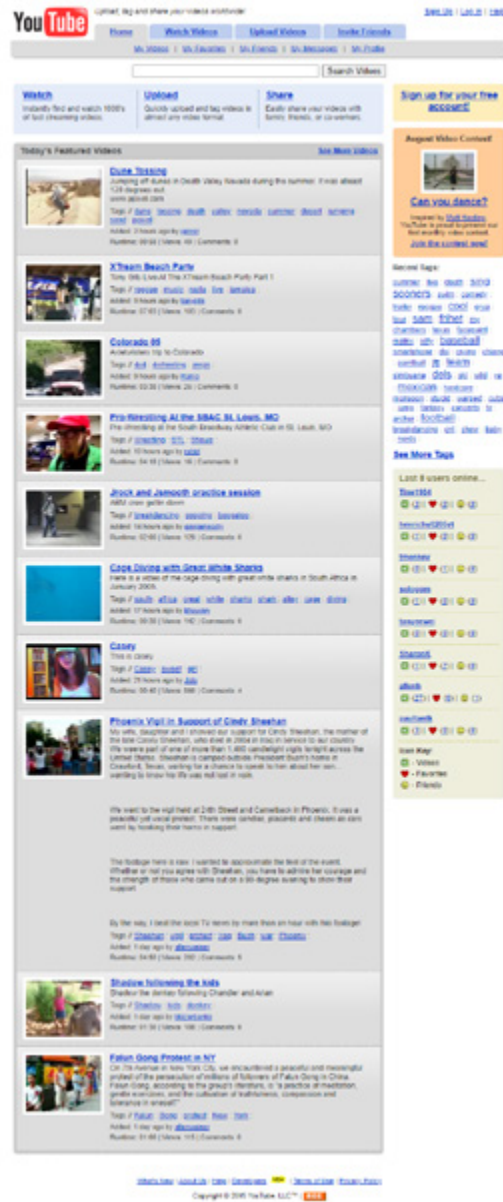
### Q3: HOW DID THE HOMEPAGE OF YOUTUBE EVOLVE OVER THE YEARS?

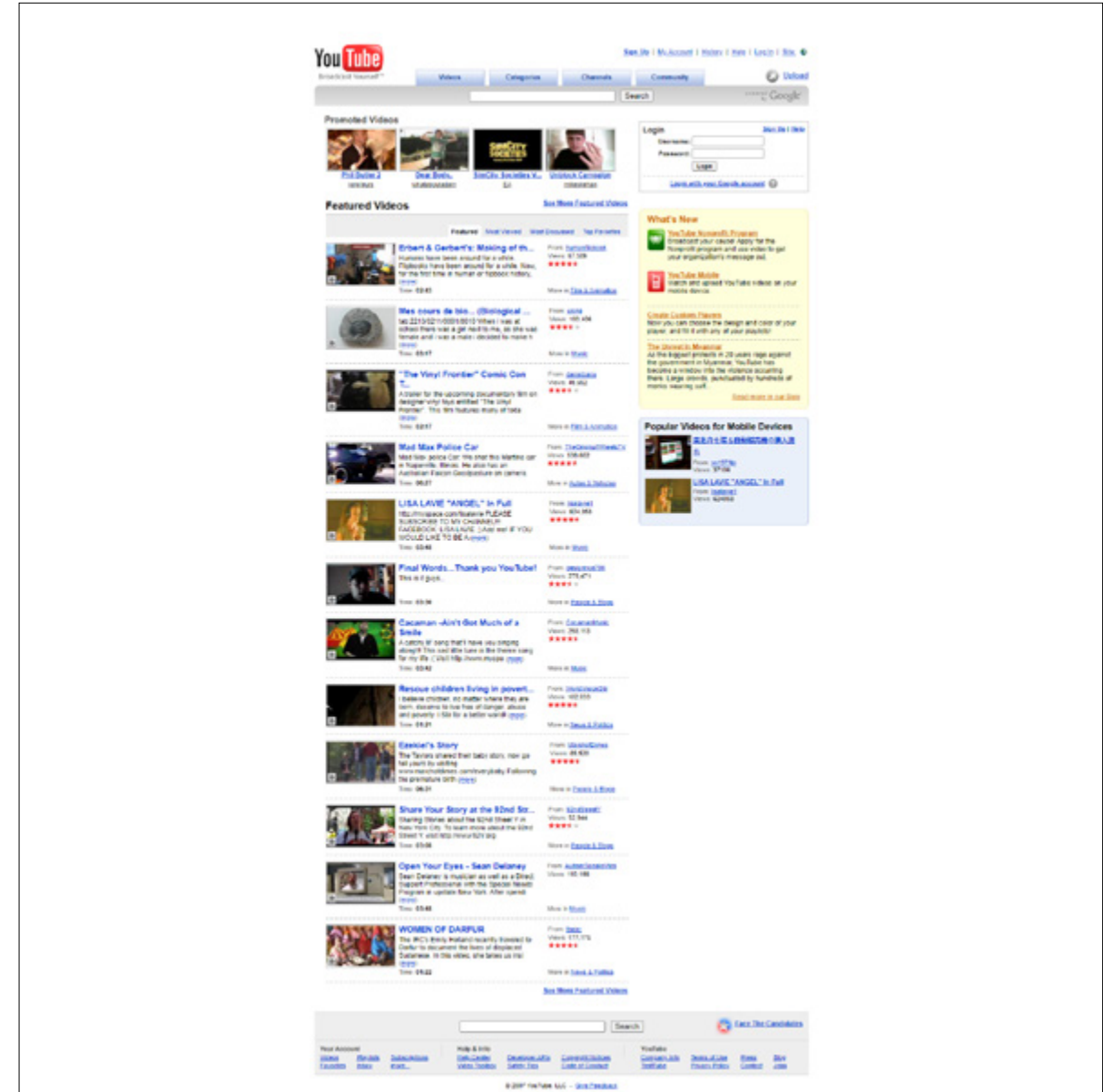
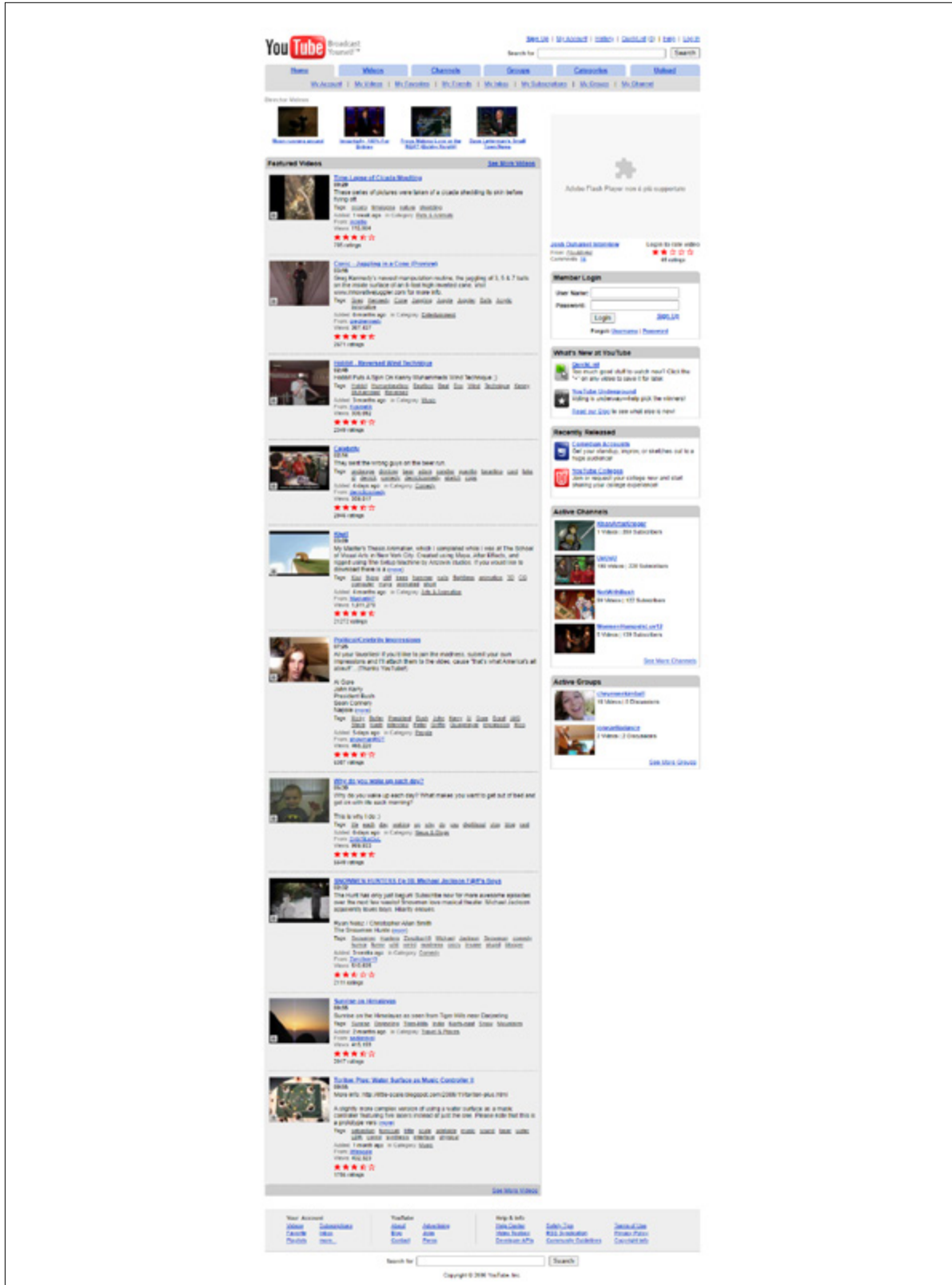
YouTube was launched on the 14th of February in 2005, making it one of the oldest streaming platforms still popular today on the internet. It did not take long for the project to prove a success. The site grew rapidly and in July 2006, the company announced that more than 65,000 new videos were being uploaded every day, receiving 100 million video views per day. A key event in the platform's history is undoubtedly its acquisition by Google. This happened very early on, in October 2006. This makes YouTube a perfect candidate to carry out an historical analysis, capable of narrating the evolution of the concept of online video streaming platforms more accurately than any other.

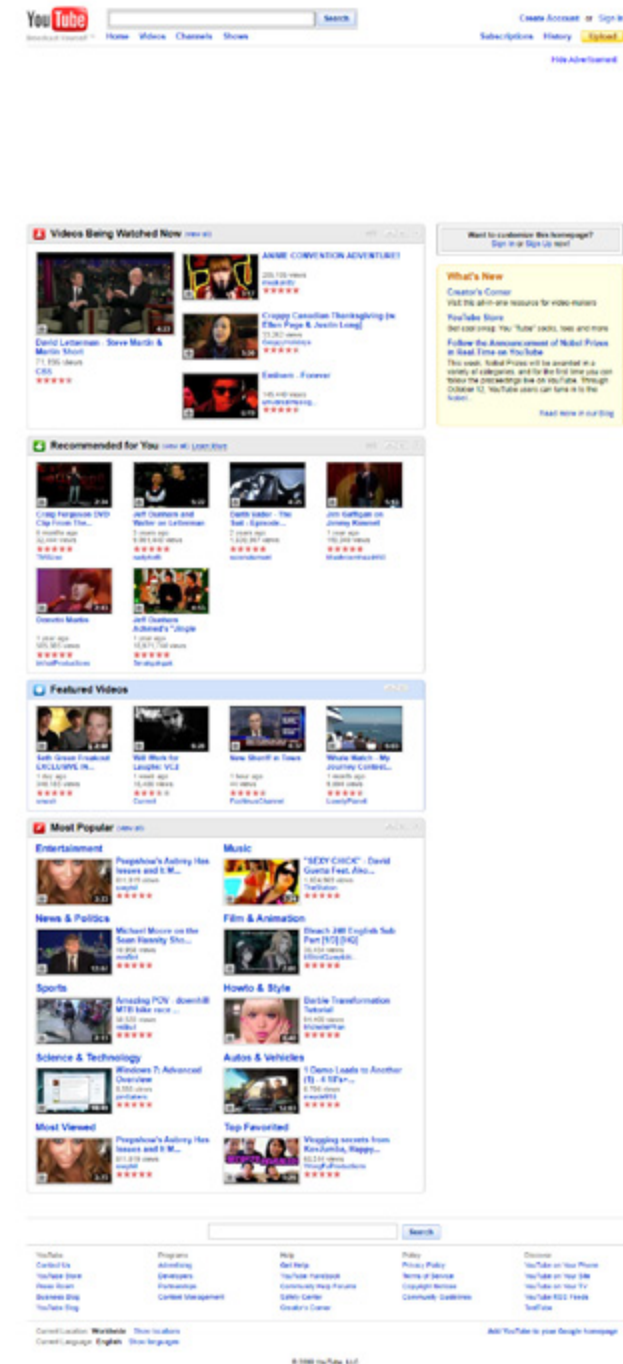
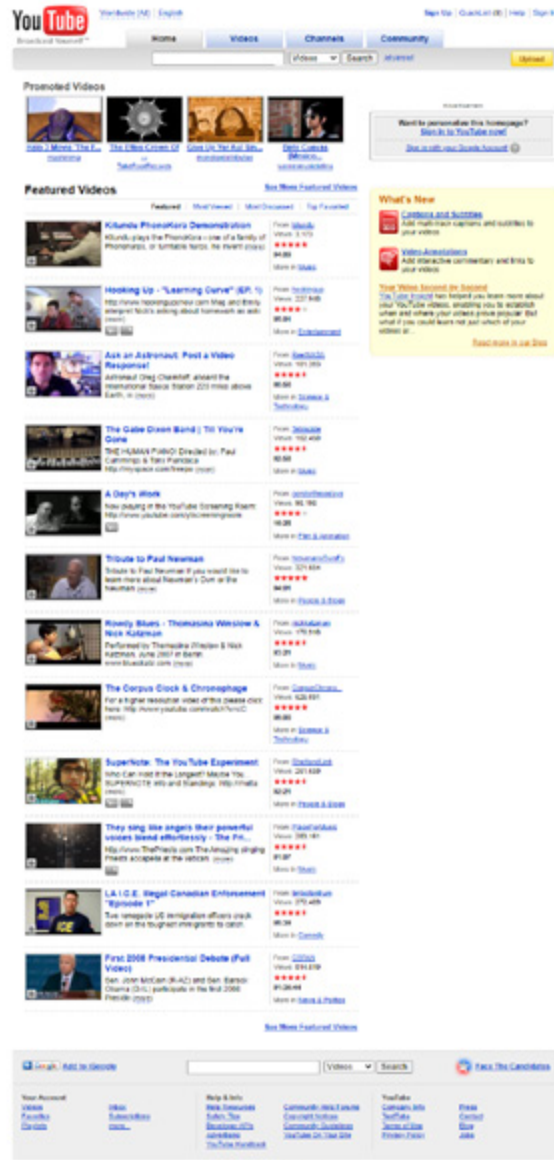
The aim of this analysis was trying to understand how we shifted to the “personalised culture” through the years, identifying the different steps that led to the current state of the platform’s interface. The main tool used to answer this question was Wayback Machine, a huge database of website pages, catalogued according to the date on which they were archived. The analysis was narrowed to the homepage of the website as, with the exception of a few others, it is the only page on the site whose presence has been a constant throughout the years. The use of Wayback Machine to retrieve old versions of the site, only allowed the access of the website in a logged out status.

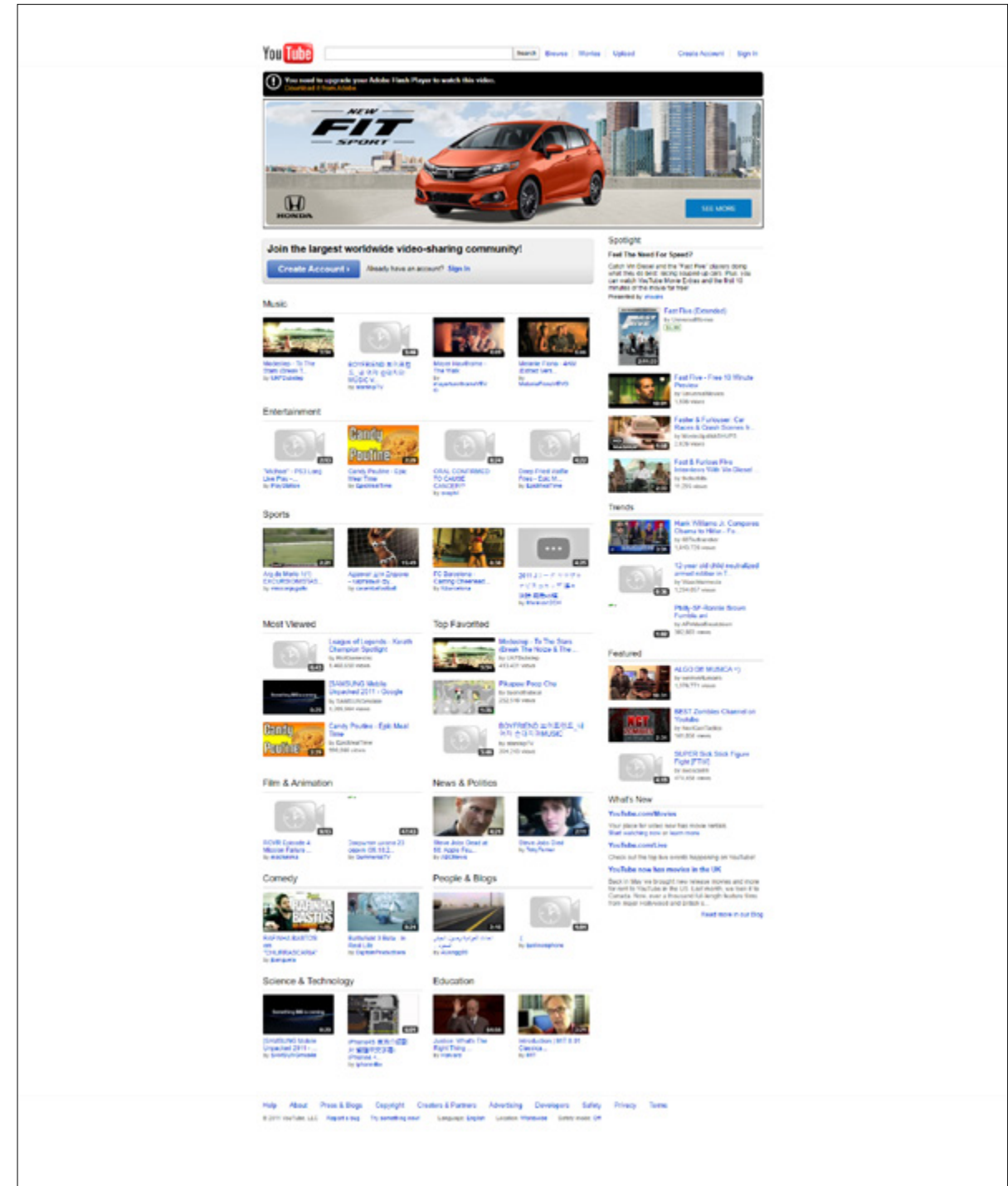
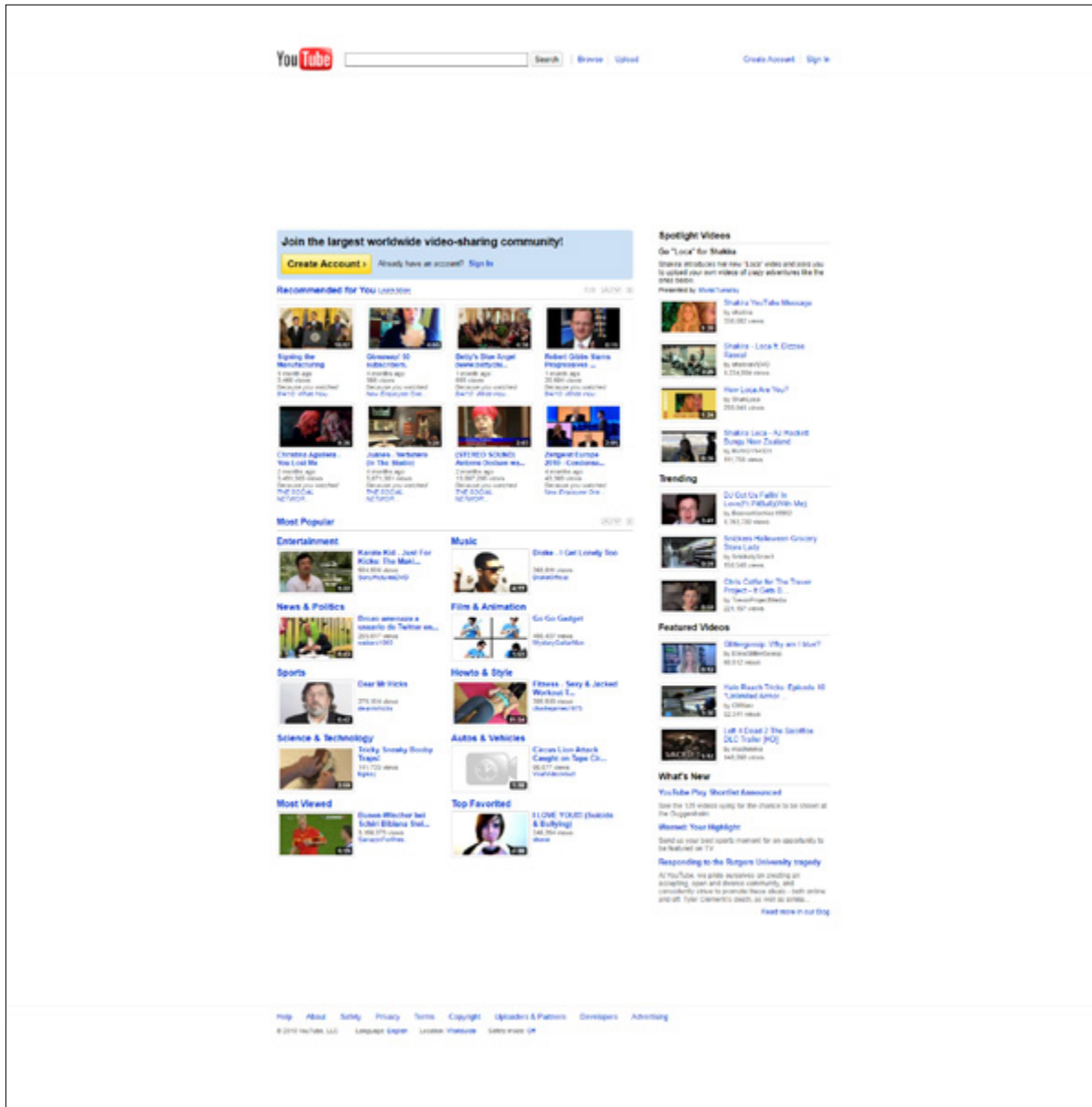
- F1: The interface has encountered three main layouts (77)
- F2: The amount of personalised content has increased (79)
- F3: Video thumbnails have steered towards a more image-based design (81)
- F4: The concept of community has changed over time (85)

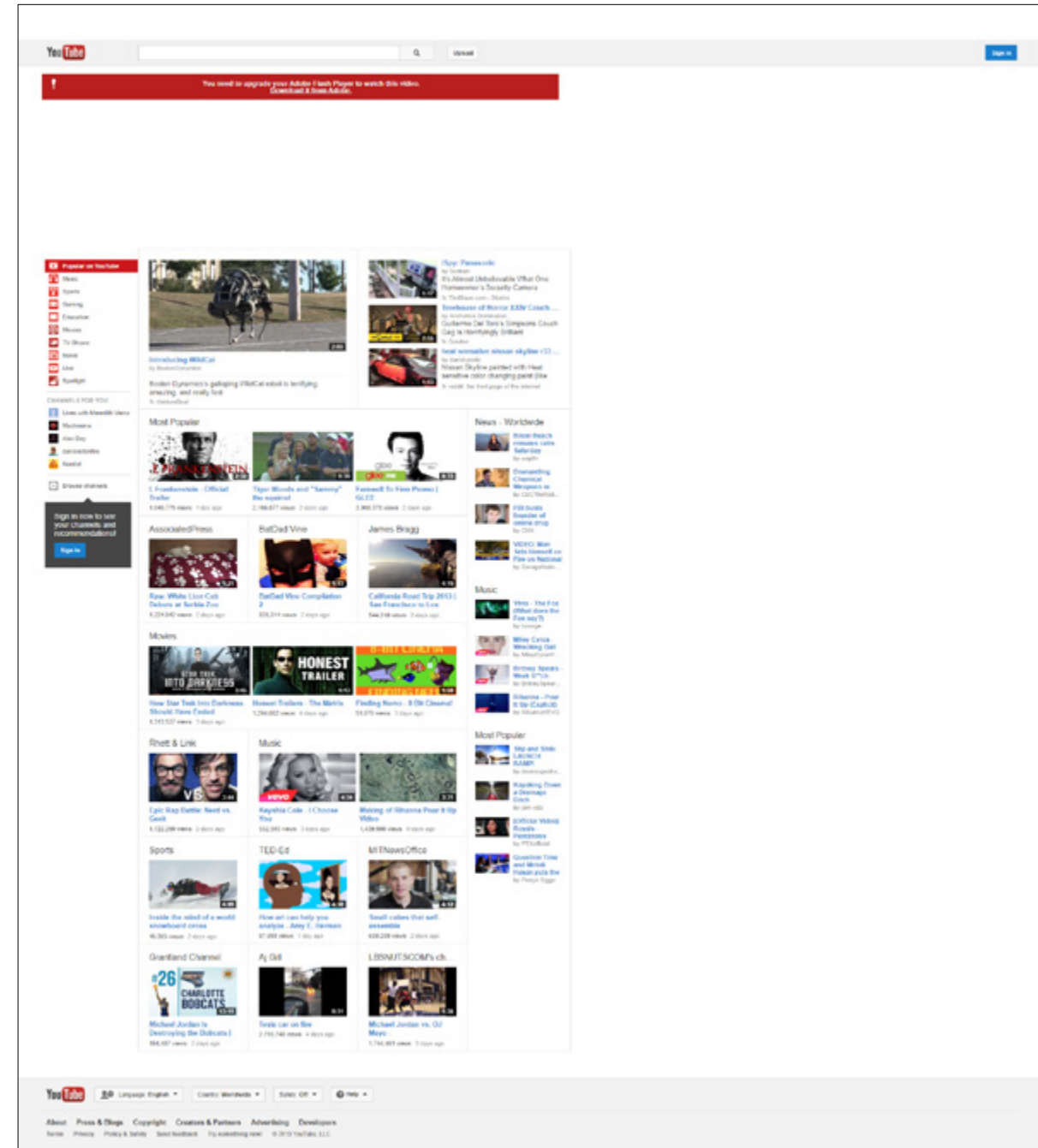
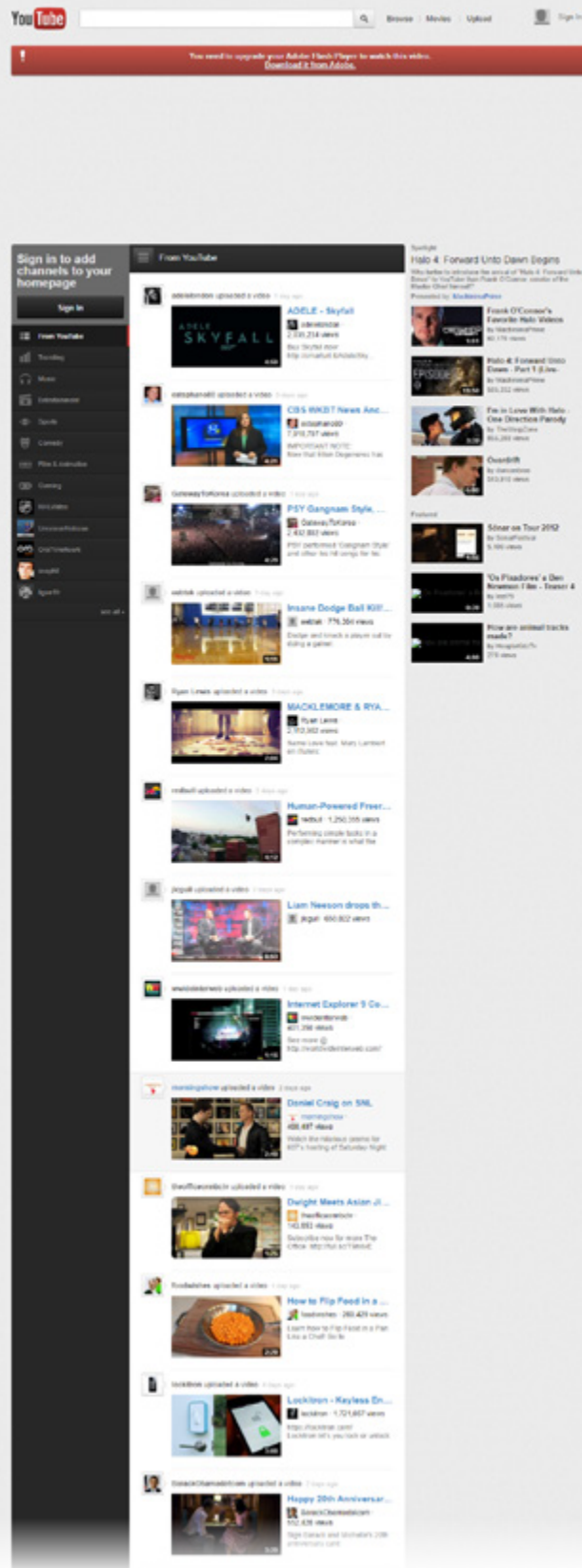




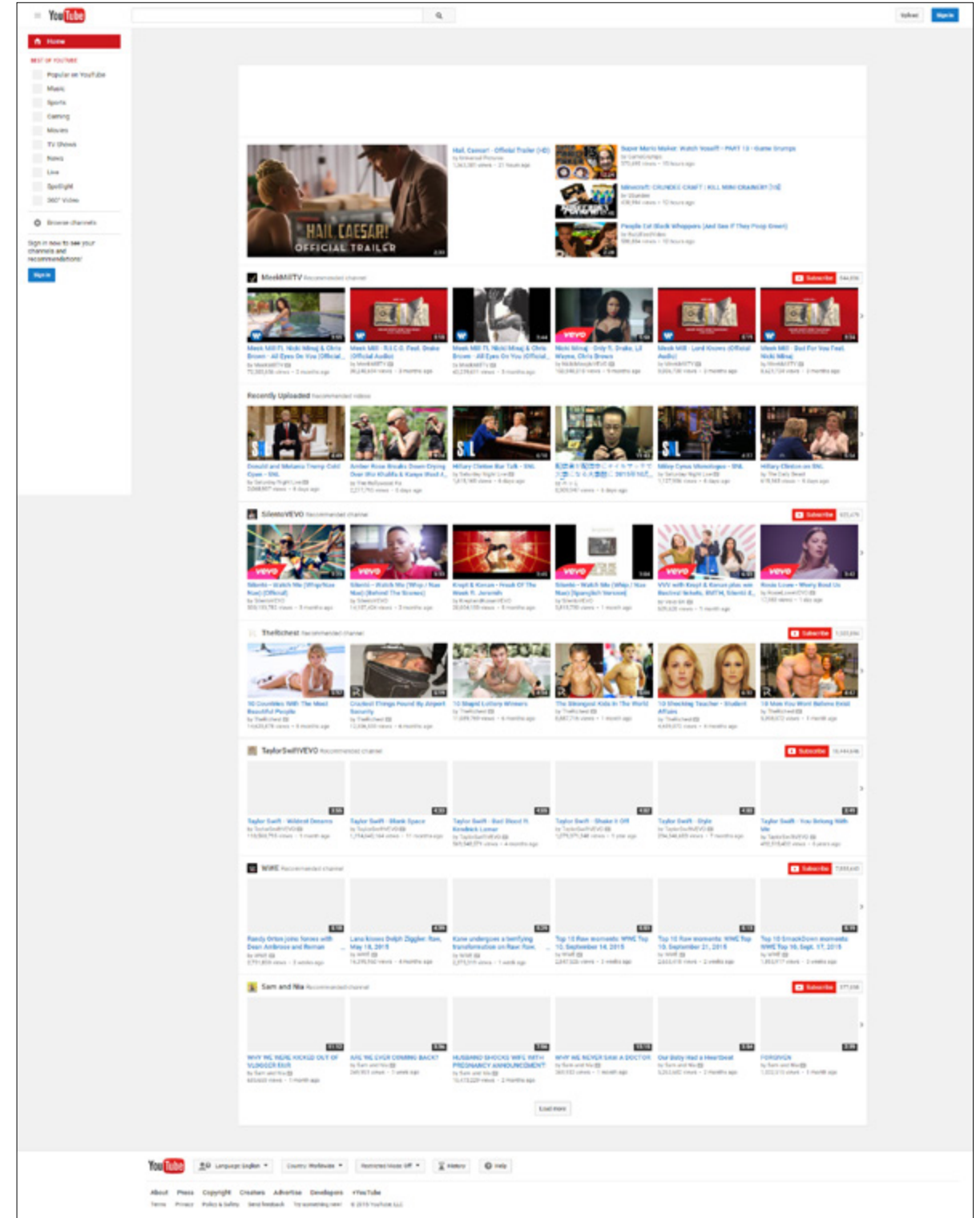
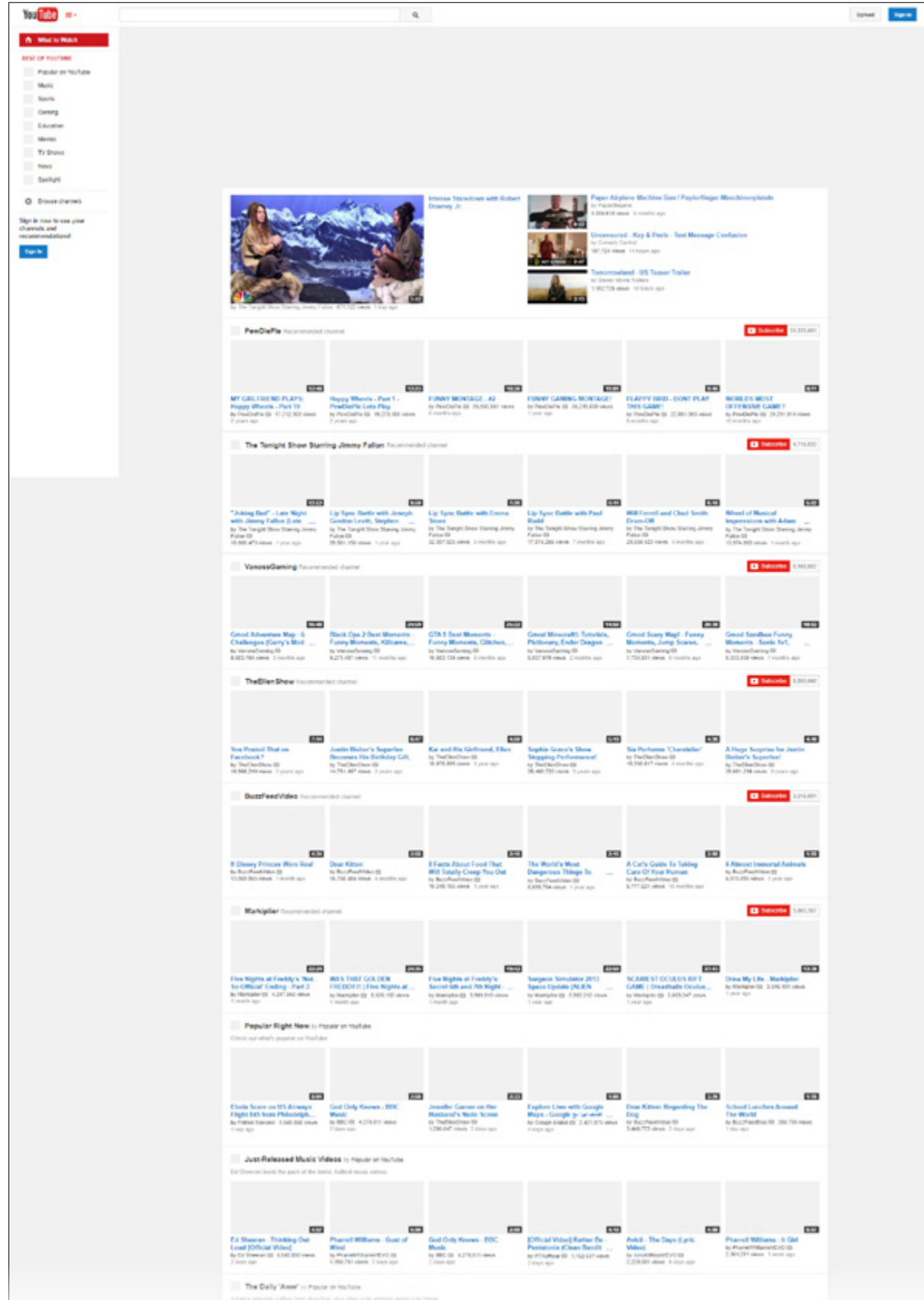


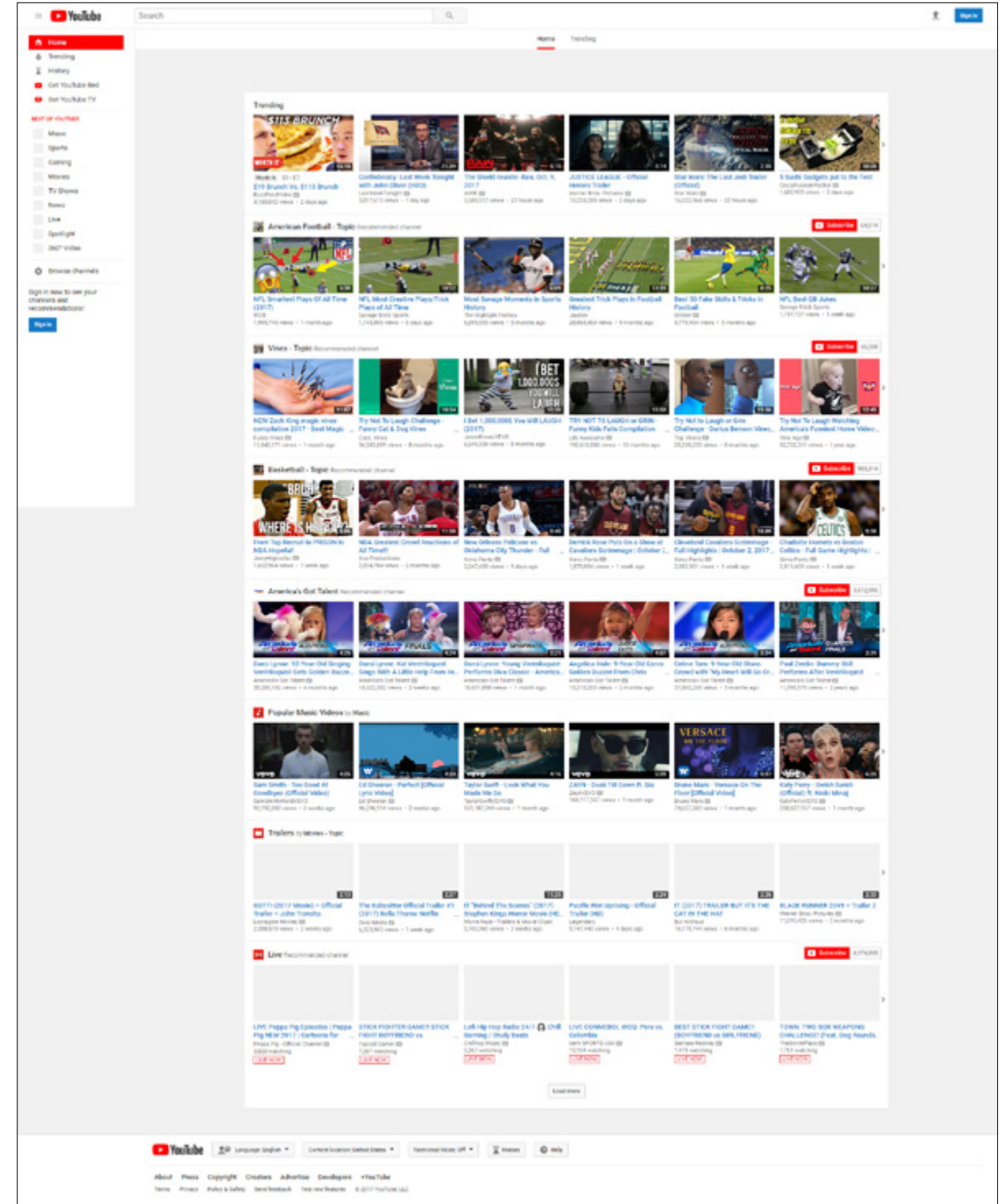
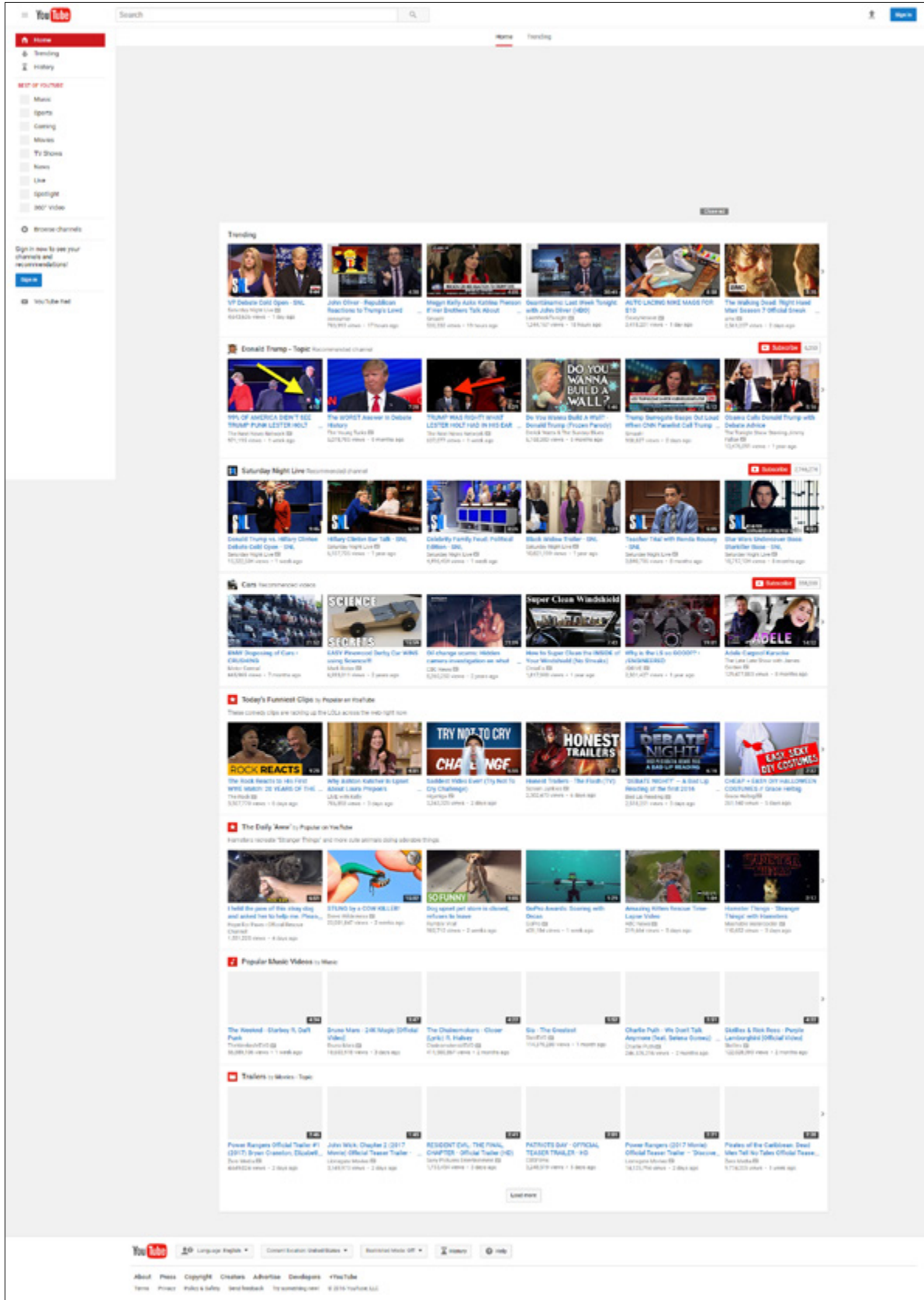


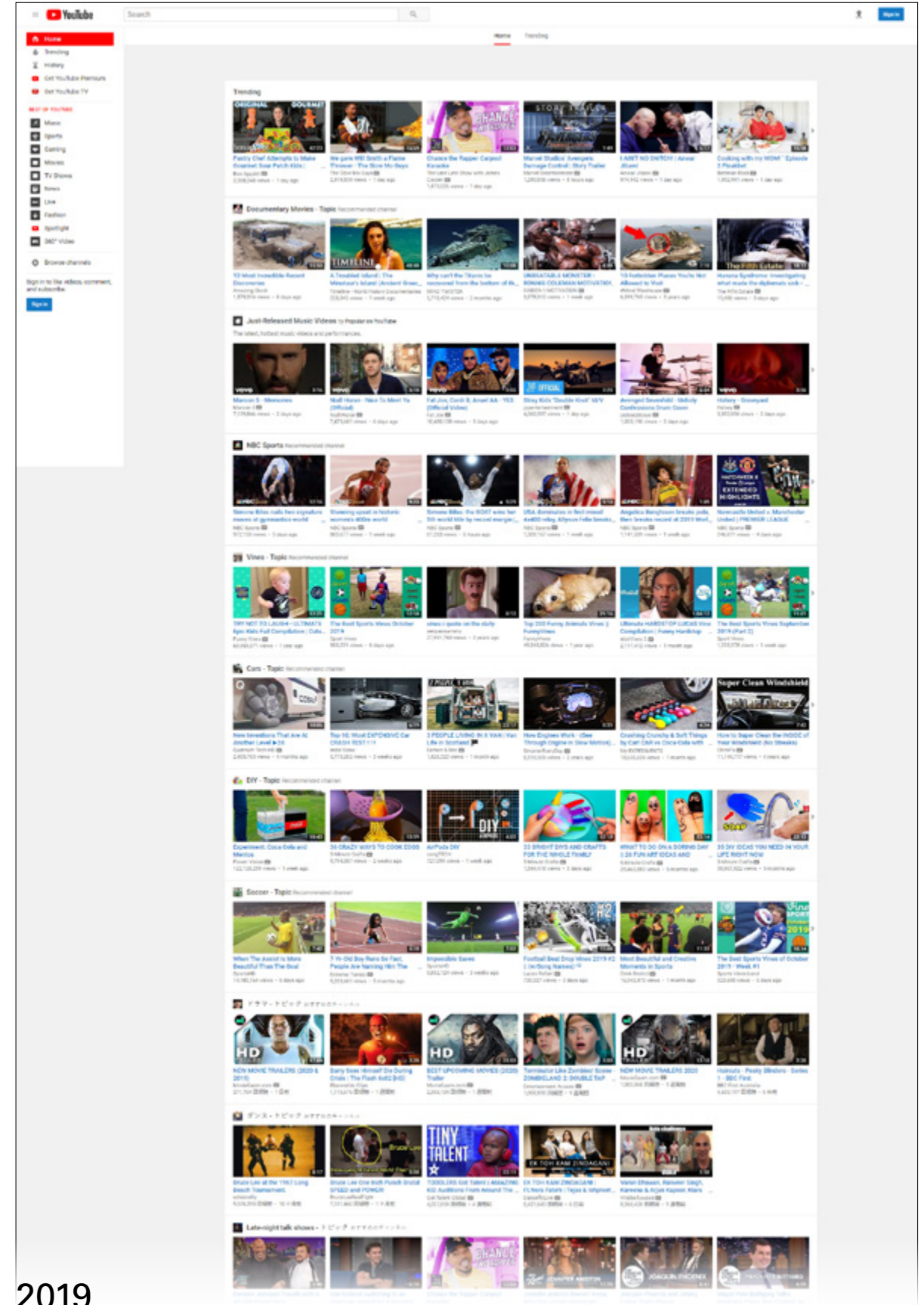
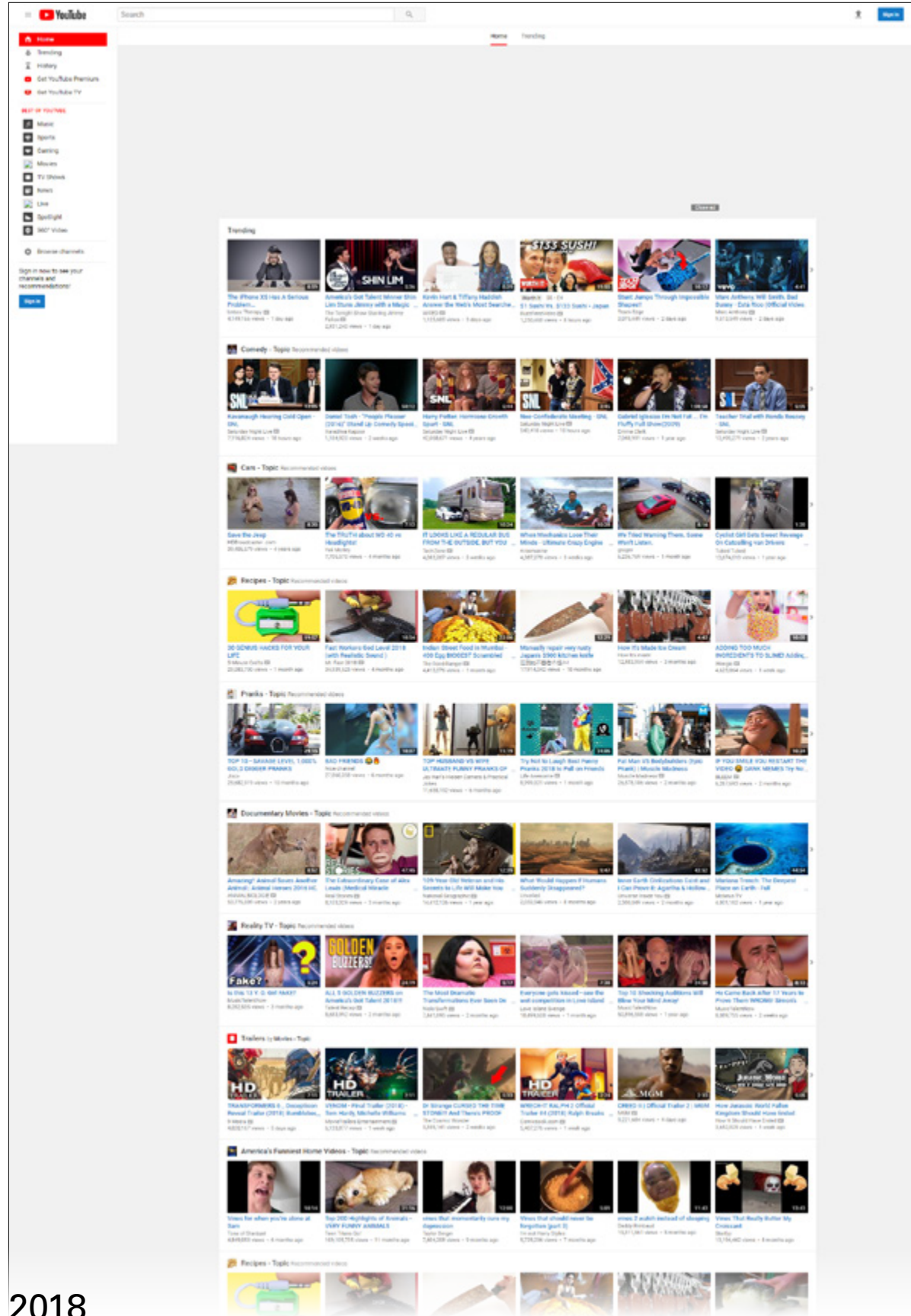


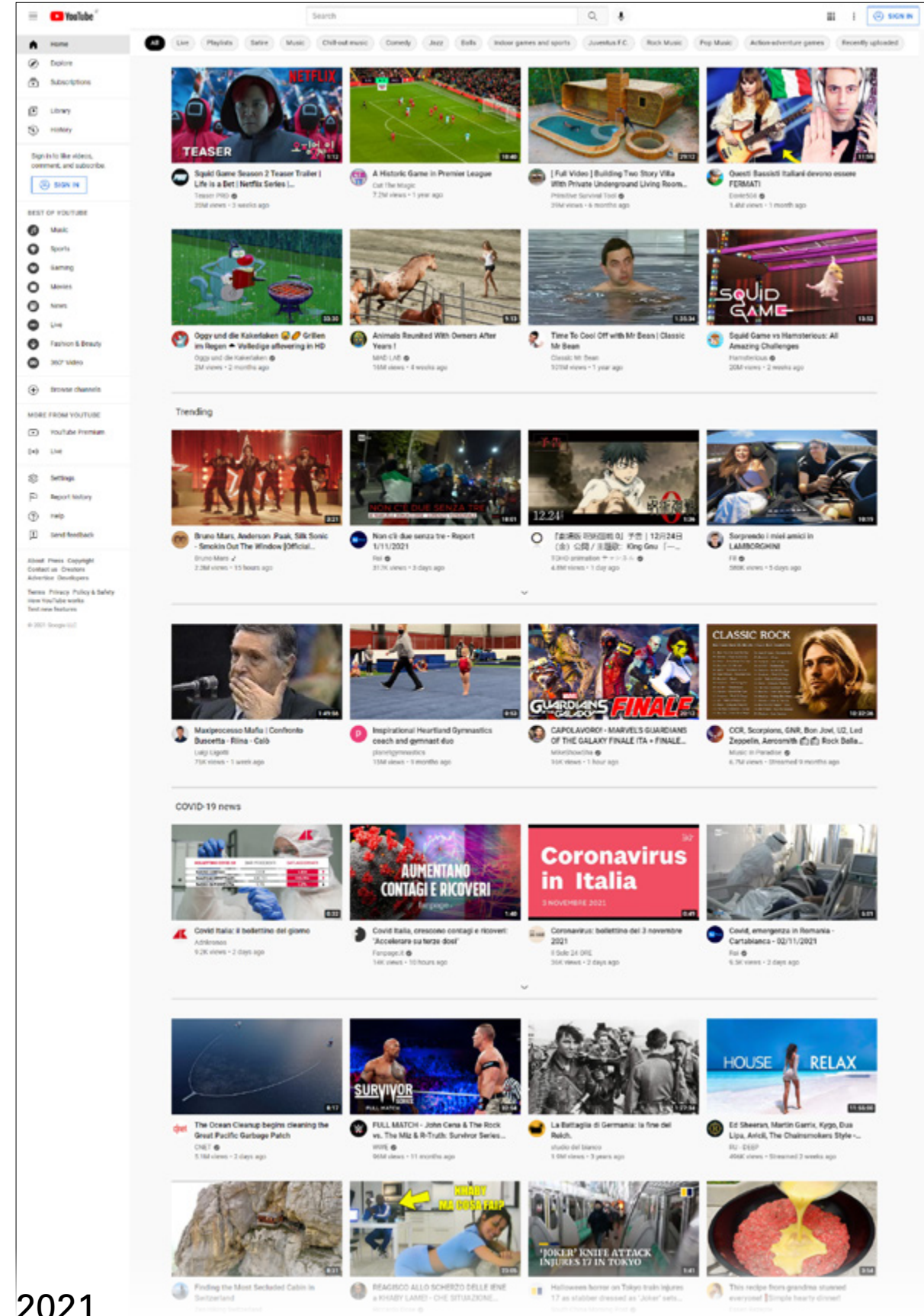
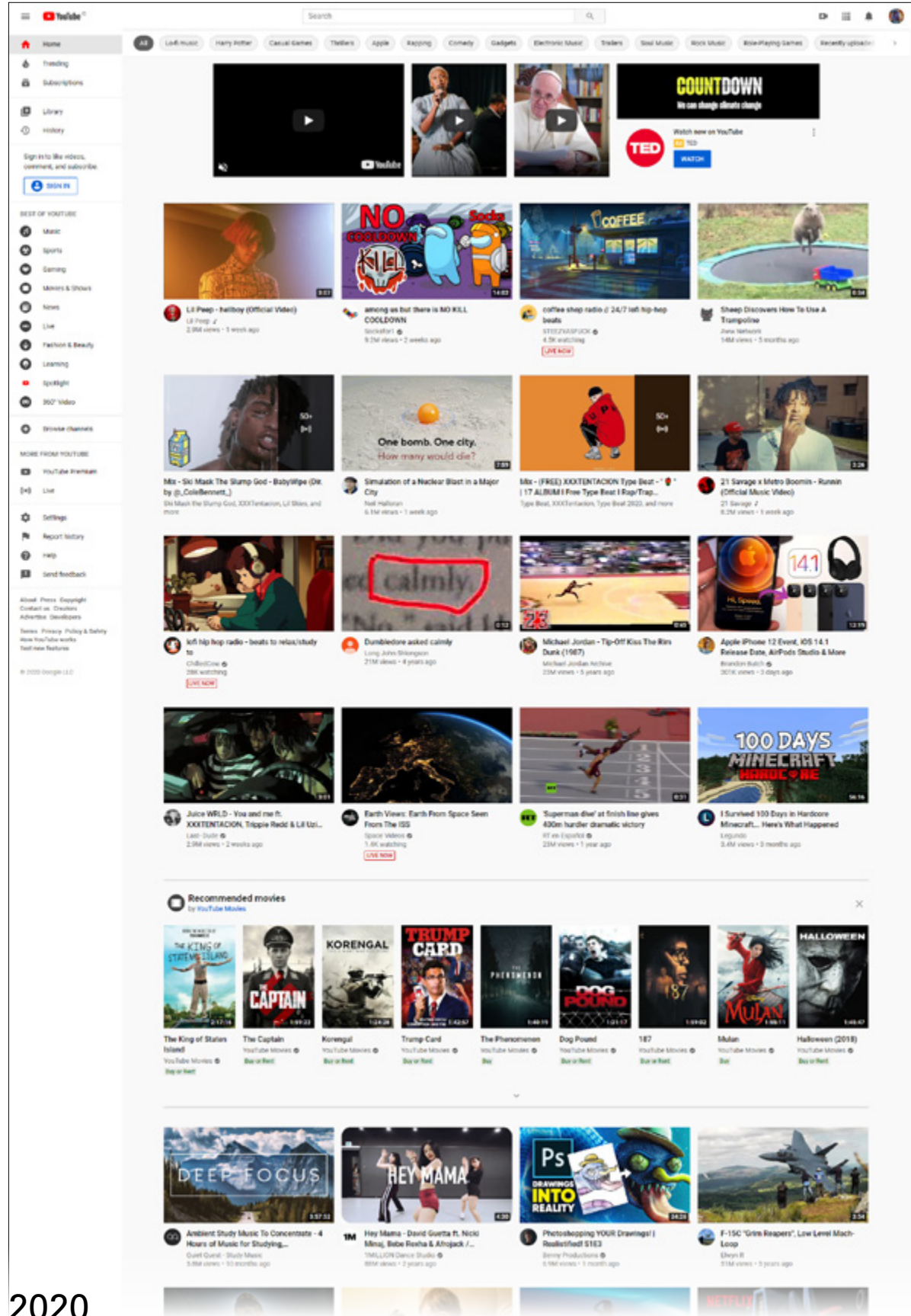










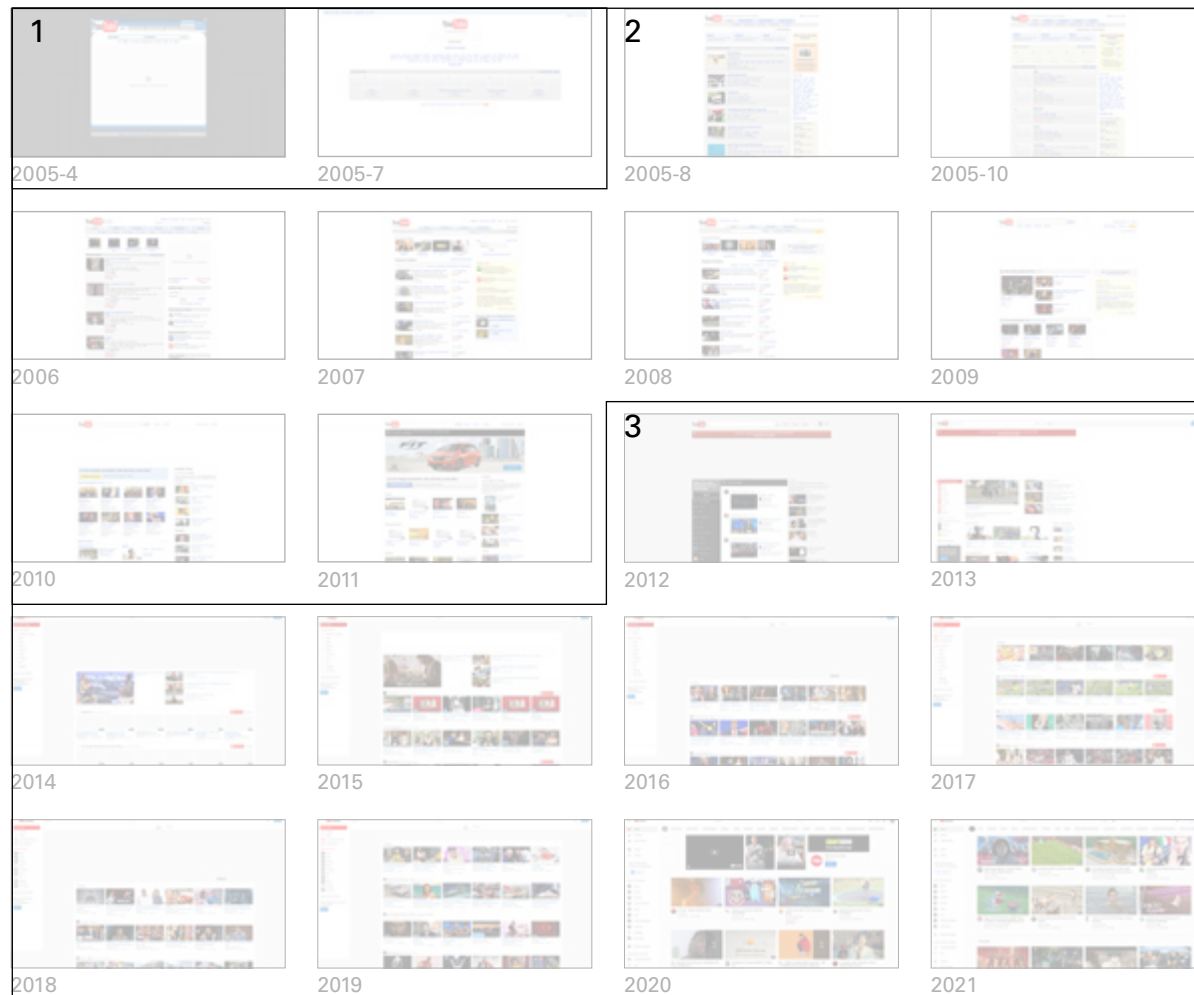


## F1: The interface has encountered three main layouts

↓ Clusterization of the homepage layout.

One of the first observations we can make by looking at every homepage of YouTube since 2005 until today, concerns its layout and distribution of content. We can clearly see that the page layouts can be divided into three major groups: group 1, 2 and 3.

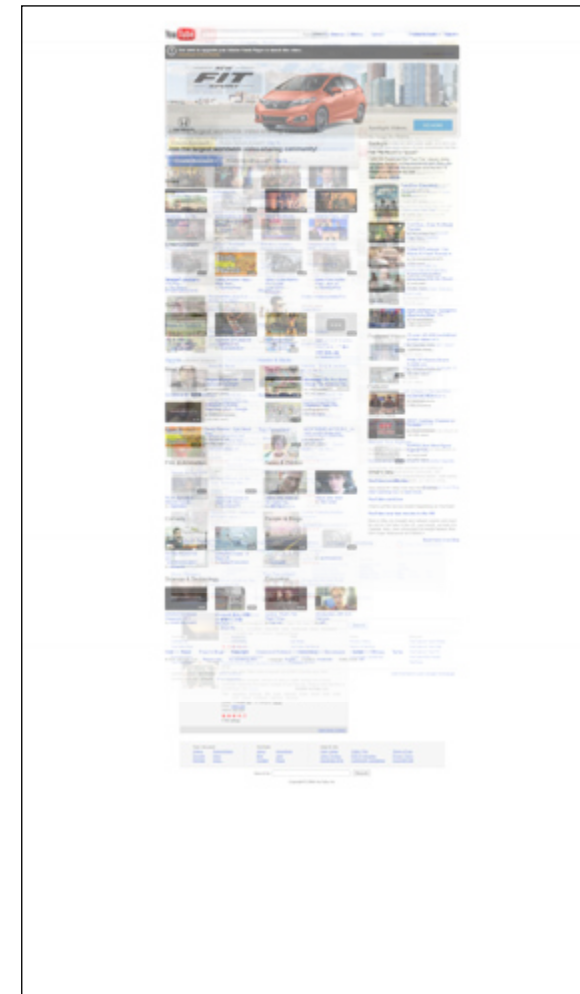
Group 1, which includes the first two iterations of the YouTube homepage (2005), has a very primitive and simple structure based on a centered box, with a very low amount of images and information and a wide amount of screen space left empty. In group 2 (2005-2011), the defining feature is a top bar which contains the search bar and all the buttons leading to other pages and features of the interface. In group 3,



↓ Overlaid screenshots of every homepage in group 2 and 3.

we can see an increase of buttons and functionalities that are now splitted between a top bar and a sidebar on the left, furthermore in this type of layout the page gets gradually wider, occupying all the space available.

2 (2005-2011)



3 (2012-2021)

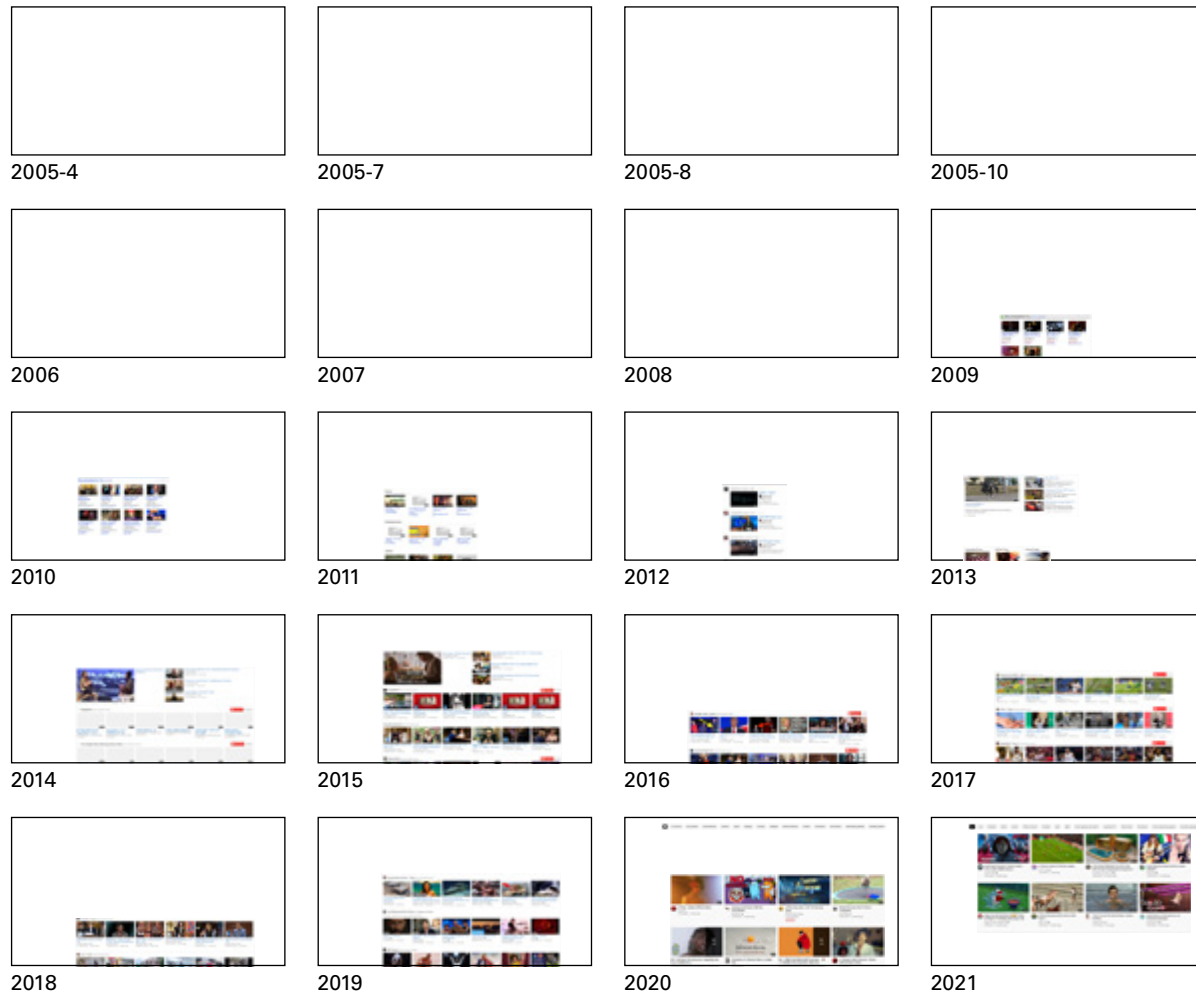


## F2: The amount of personalised content has increased

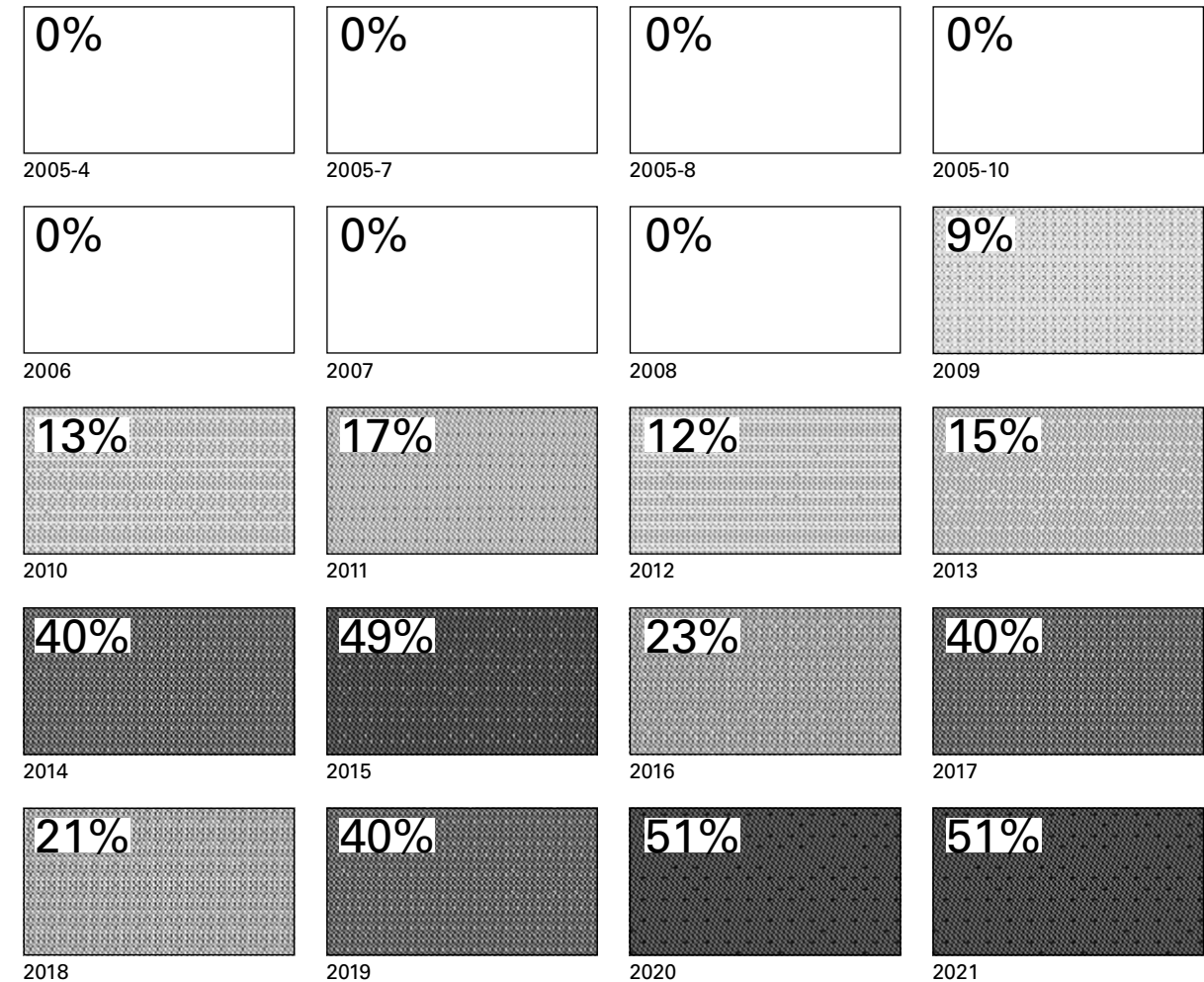
↓ Cut-outs of recommended content in every homepage.

The use of personalised content has increased more and more over the years, becoming the most prominent part in today's YouTube homepage. As recommendation algorithms improved, it became clear that the absolute priority was providing the user with content that may interest them as soon as possible, during their navigation on the website.

In this way YouTube shifted the focus of its homepage from "featured" and "most popular" categorizations, to purely user based suggestions.



↓ Percentage of recommended content in every homepage.



# F3: Video thumbnails have changed toward a more image-based design

↓ YouTube video boxes categorized by their design.

Let's define the *video box* as the area of YouTube's interface which includes the thumbnail, the title and all the other metadata related to a specific video. As the building block of YouTube homepage, its design is carefully crafted to present the video to the user in the best way possible.

We analyzed how the video box design evolved over the years, looking at three major factors: the overall size, the amount of metadata and the size of the thumbnail. Looking at them side by side we can easily break them into 7 groups (A, B, C, D, E, F, G). This tells us that there have

been only seven redesigns of the videobox and the most long-lived one was group F (2013-2019).

On the next pages, arranging them by the number of metadata, we can also see how these decreased more and more, while the thumbnail image grew constantly in size.

A



2005-8-19

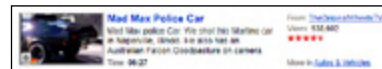


2005-10-30



2006

B

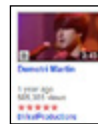


2007



2008

C

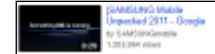


2009

D

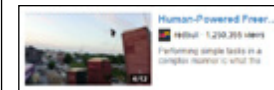


2010



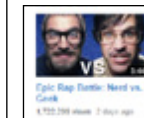
2011

E

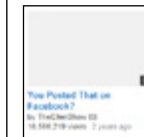


2012

F



2013



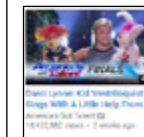
2014



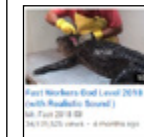
2015



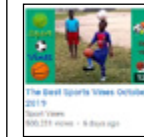
2016



2017

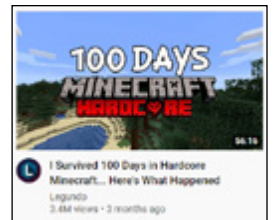


2018



2019

G

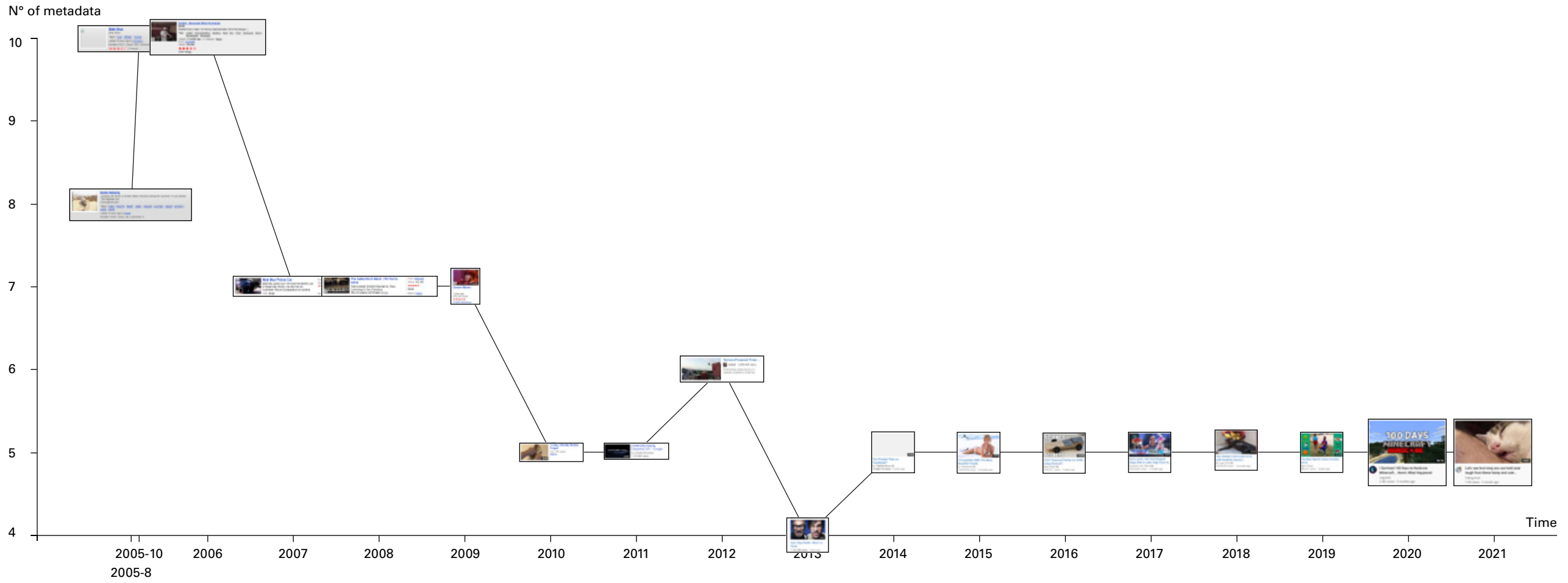


2020



2021

↓ YouTube video boxes arranged by year and number of metadata.



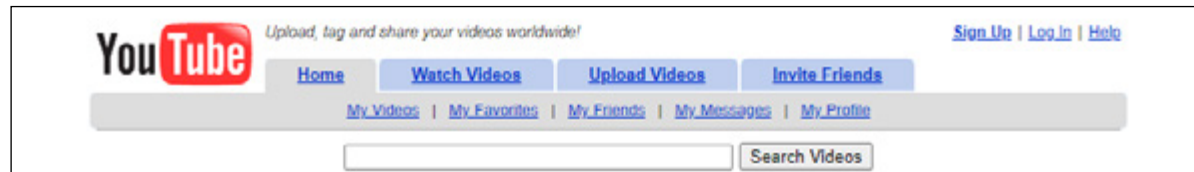


## F4: The concept of community has changed over time

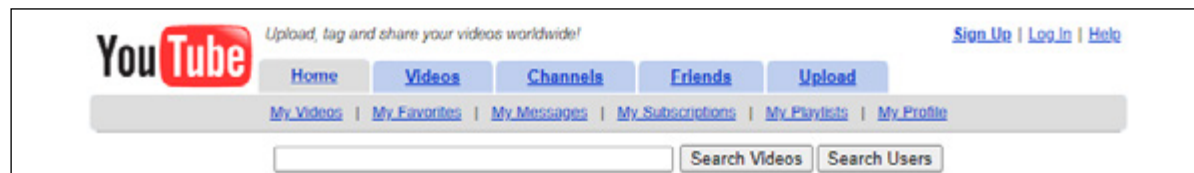
↓ Cut-outs of YouTube functionalities referring to social/forum-like functionalities.

Between 2005 and 2009 some buttons linking to other pages like “Friends”, “Messages” and “Community” slowly disappeared, one after another. This is a clear sign of the paradigm shift that YouTube undertook in that period, removing many features and moving from a social/forum structure to a more channel-centric structure.

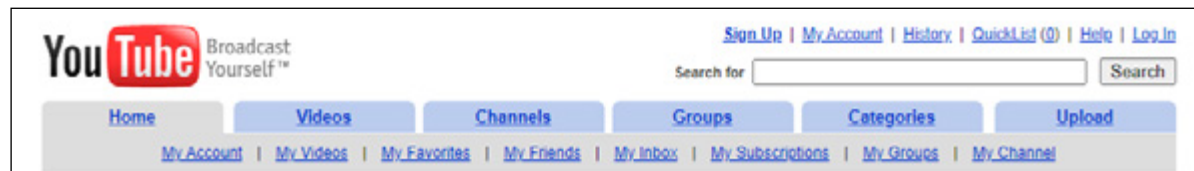
Nowadays, YouTube is no longer focused on talking to friends or engaging in community discussions: the algorithm is now solely managing all content on the platform and its arrangement in each page, so that users who don’t produce content, can just explore and be entertained. This shift implied a change in social interactions, now limited to channel followers groups and comments on videos.



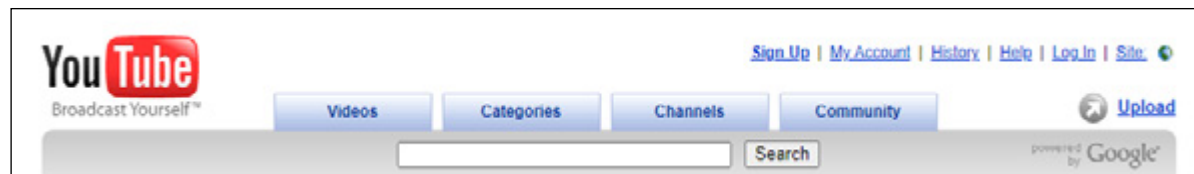
2005-8



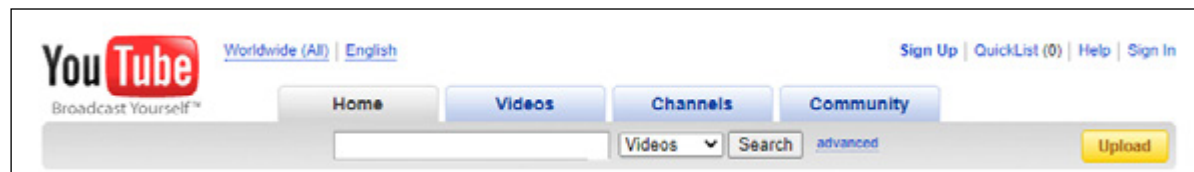
2005-10



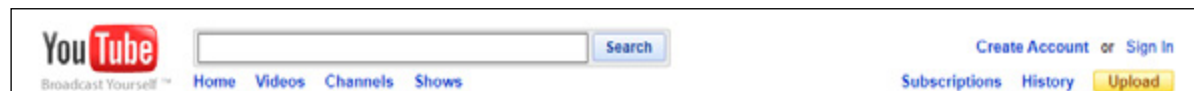
2006



2007



2008



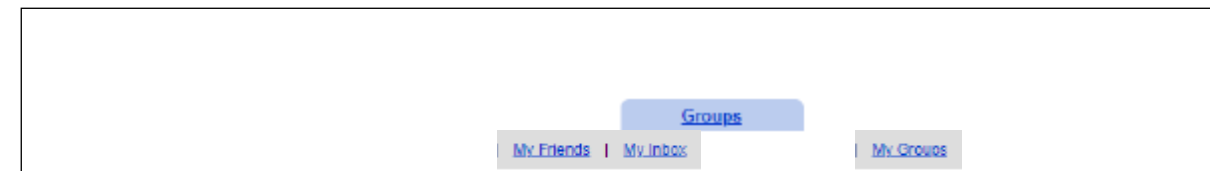
2009



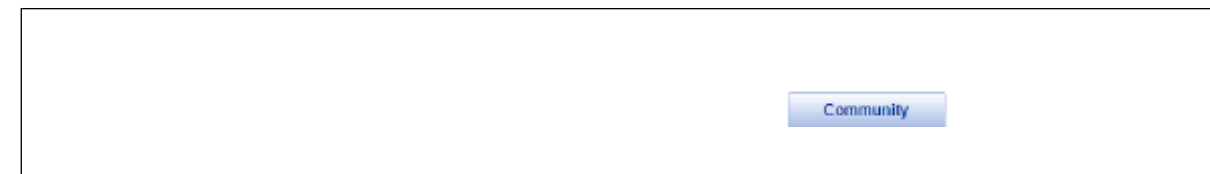
2005-8-19



2005-10-30



2006



2007



2008

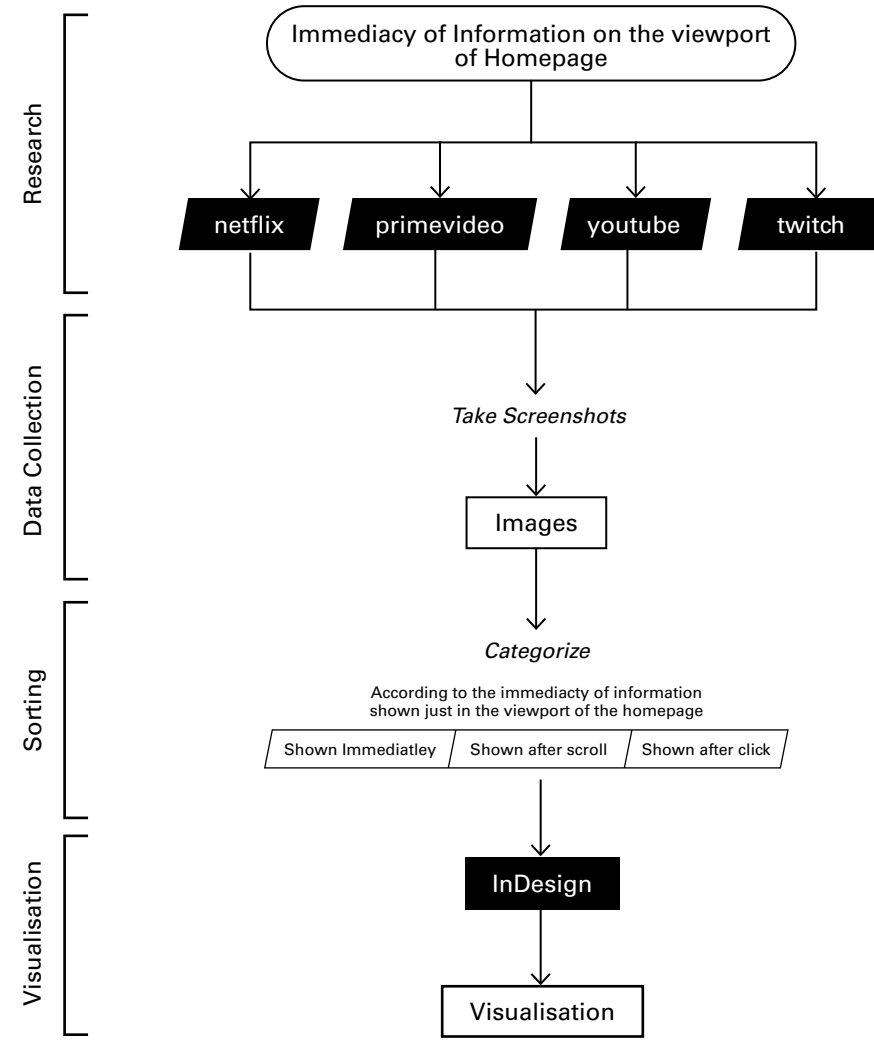


2009

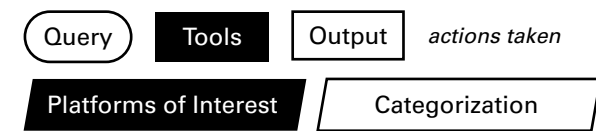
Protocol diagrams

P1:	Q1, F1	(88)
P2:	Q1, F2	(89)
P3:	Q1, F3	(90)
P4:	Q1, F4	(91)
P5:	Q2, F1	(92)
P6:	Q2, F2	(93)
P7:	Q2, F3	(94)
P8:	Q2, F4	(95)
P9:	Q3, F1	(96)
	Q3, F2	
	Q3, F3	
	Q3, F4	

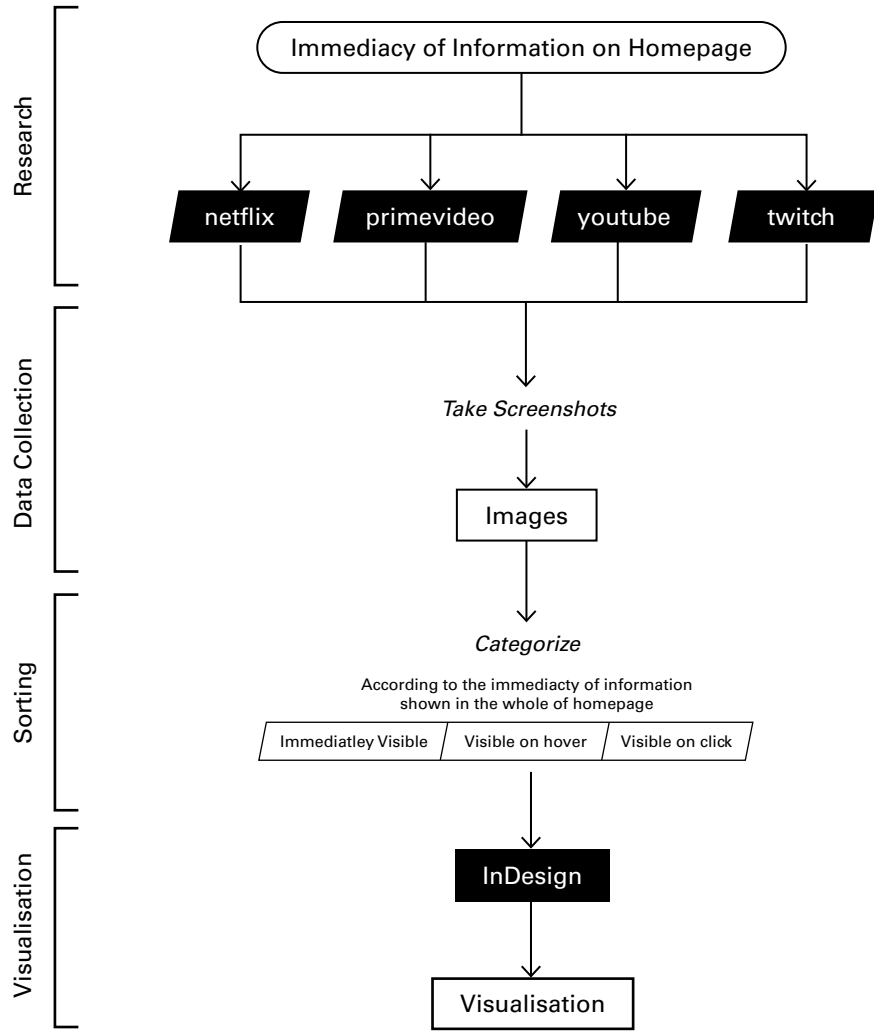
P1: Q1, F1



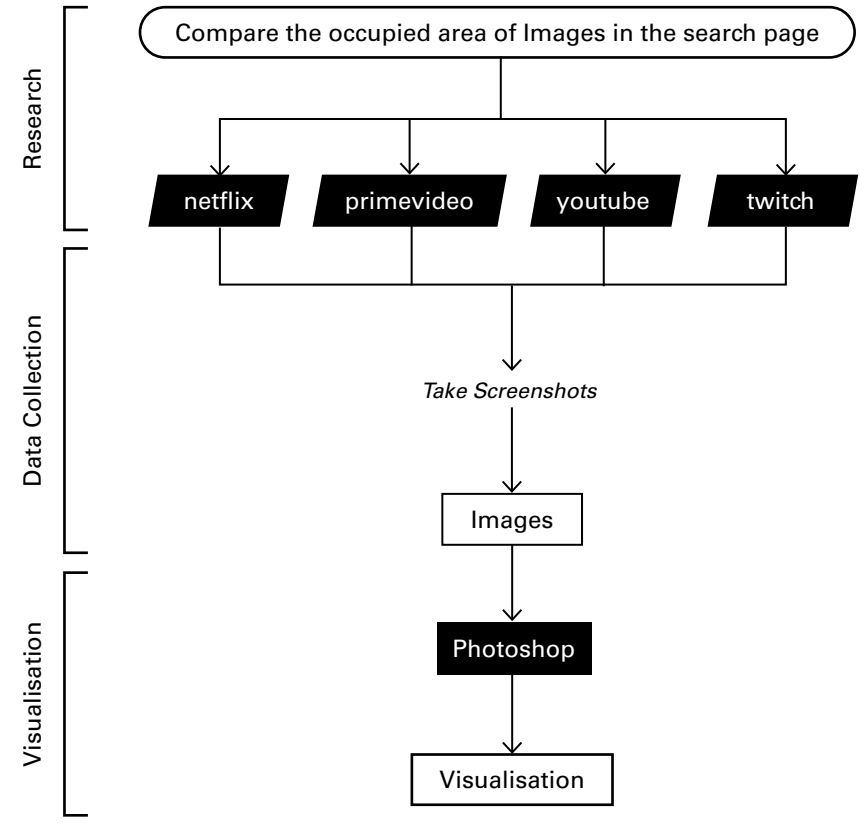
HOW TO READ THEM:



P2: Q1, F2



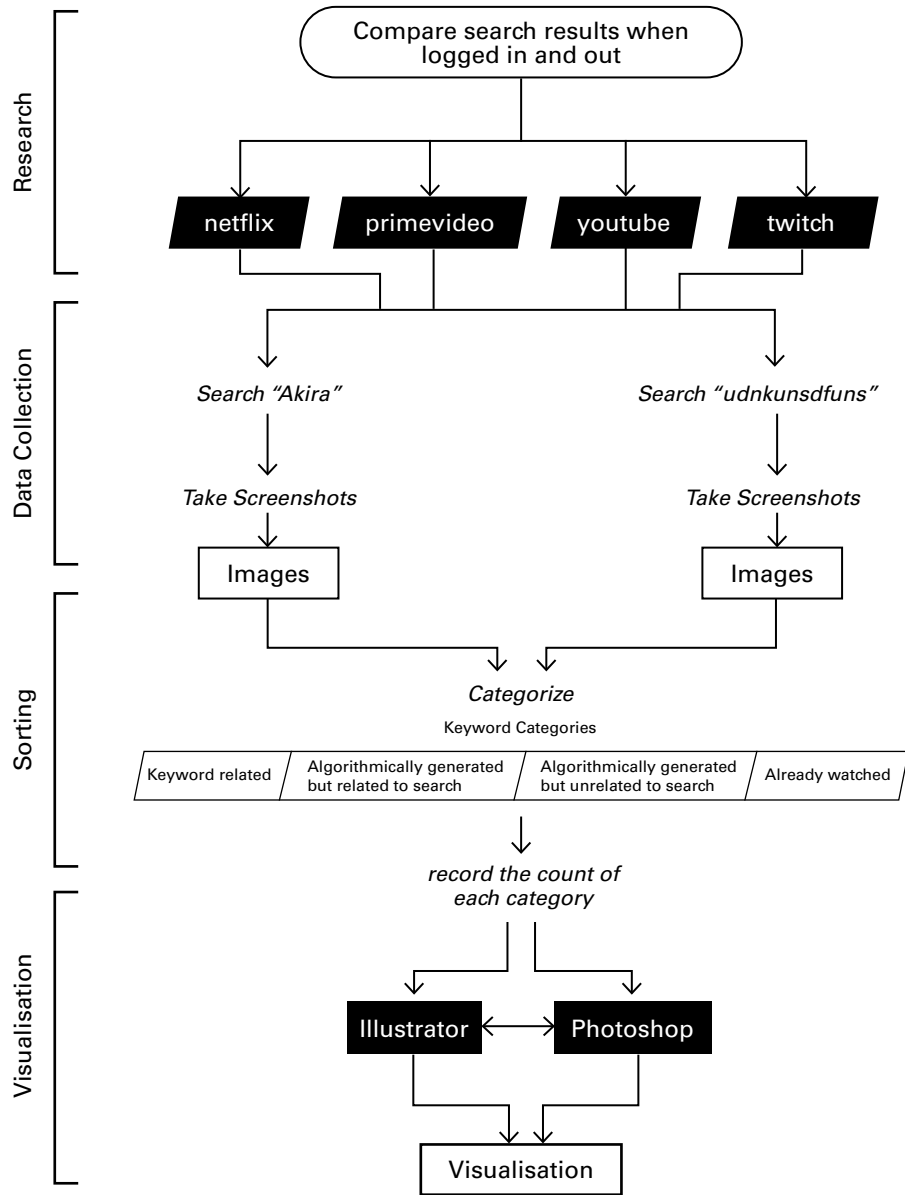
P3: Q1, F3



HOW TO READ THEM:



P4: Q1, F4

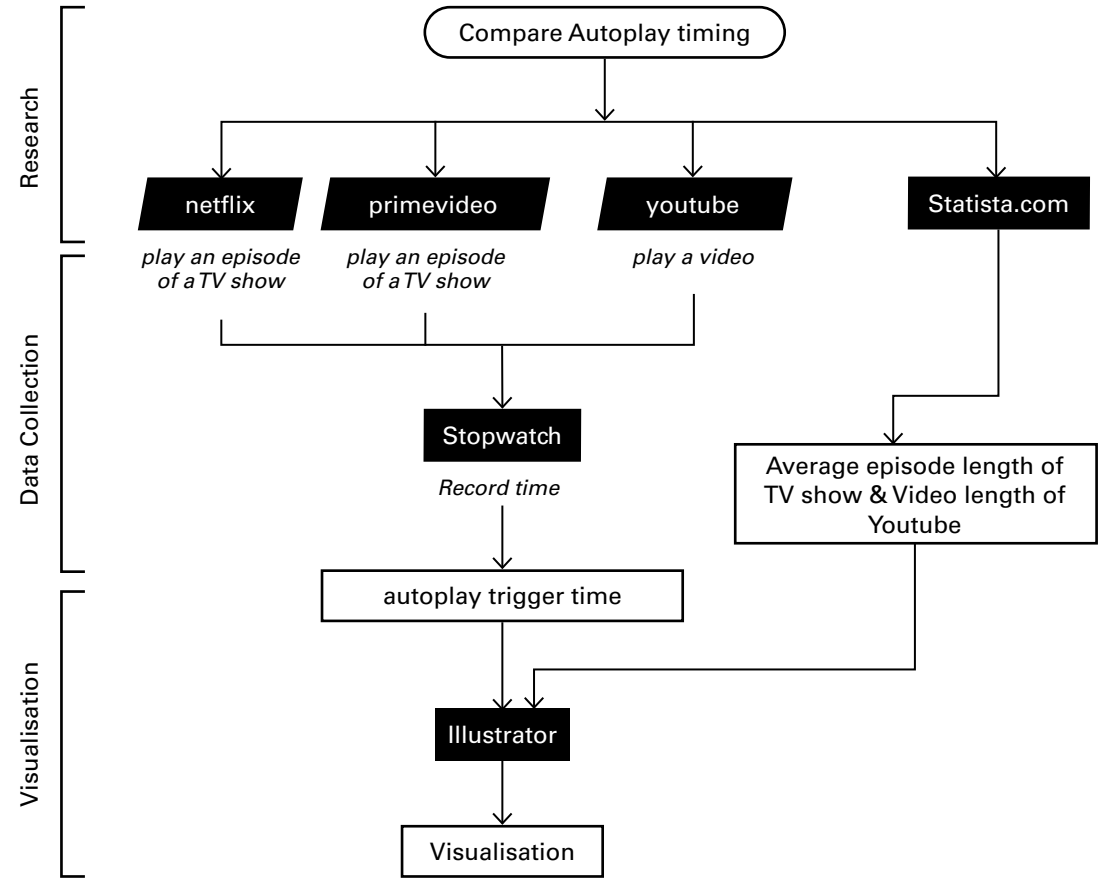


HOW TO READ THEM:

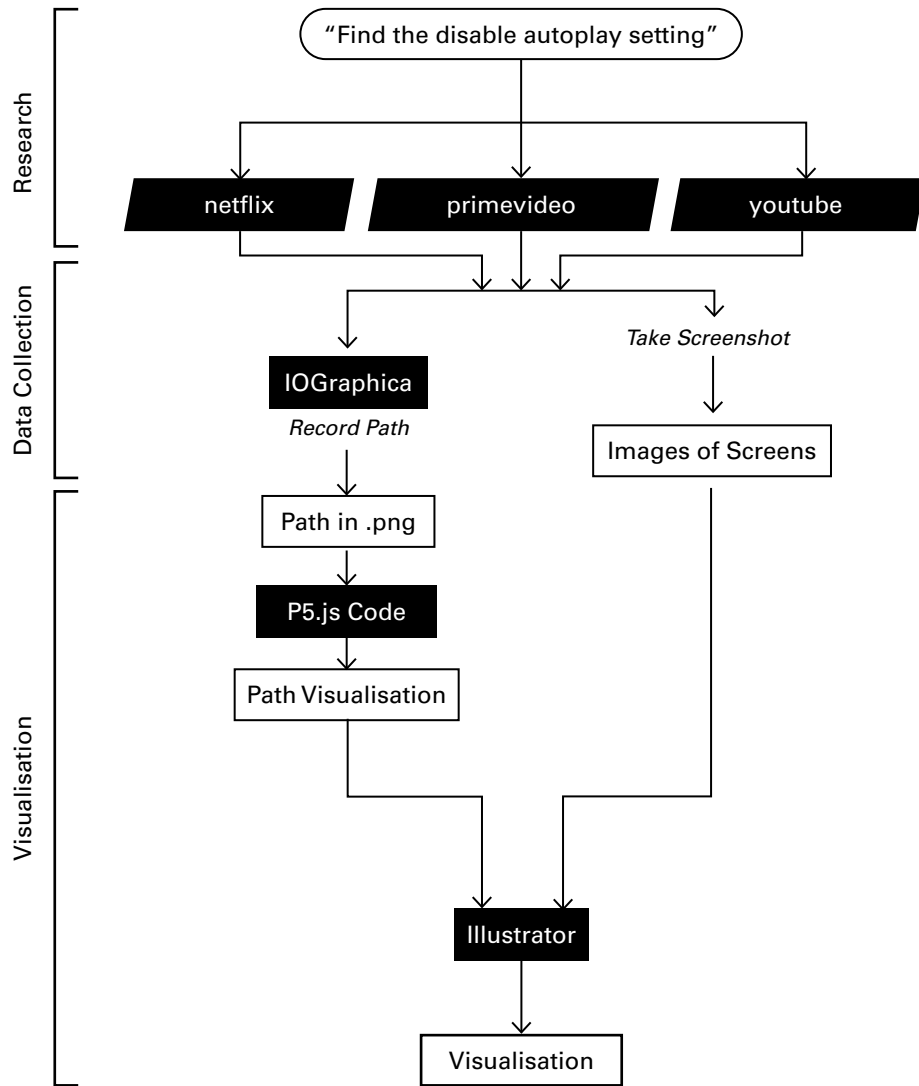
Query Tools Output actions taken

Platforms of Interest Categorization

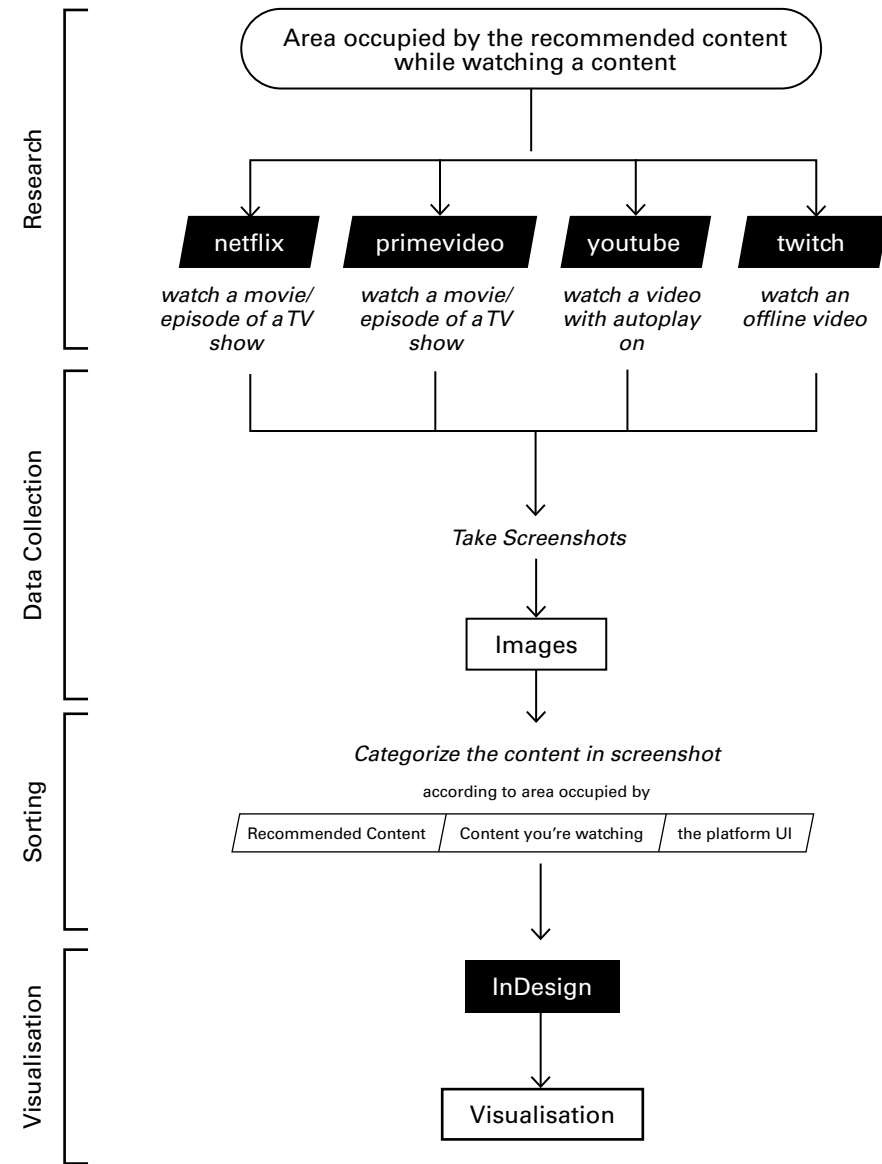
P5: Q2, F1



P6: Q2, F2



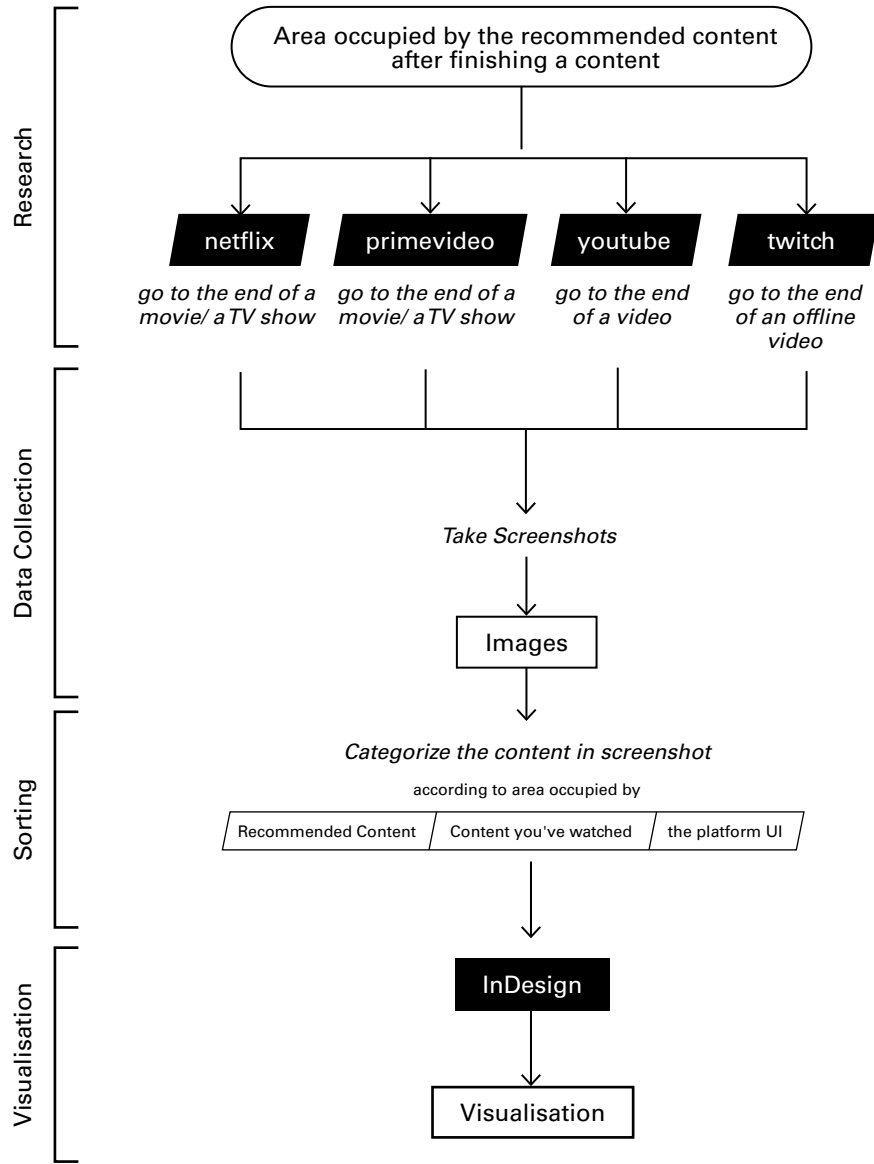
P7: Q2, F3



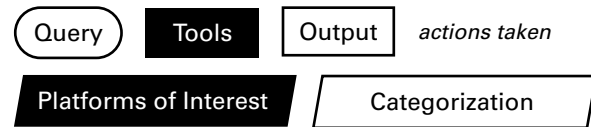
HOW TO READ THEM:



P8: Q2, F4



HOW TO READ THEM:



P9: Q3, F1; Q3, F2; Q3, F3; Q3, F4

