



Eitan Altman Feb 22nd, 2013

## CONTENT:

- Streaming applications over the Internet.
   Example: Youtube. Tools for analyzing popularity.
- Social networks: twitter, facebook, linkedin. Analysis tools for twitter and facebook.
- Specialized social networks: vodcaster (cinema and micro-critics).
- × Blogs and their analysis tools.
- × How to create a social network

## CONTENT

- × Business models and popularity
- × Virality and buzzes in the internet
- Access to knowledge and culture in the Internet: Hadopi, the general license approach

## **BUSINESS MODELS AND POPULARITY**

- Targeted advertisement based on users' profile.
- Selling contents (e.g. tweets)
- Selling services for social network users. E.g.: direct access to a large number of users.

Both the content creator and the content provider are interested in increasing popularity of content. Also used as a source of reveniew

## **EXAMPLE: YOUTUBE**



Top Comments

This is one of the most beautiful pieces of music I have ever heard. Piazzolla never ceases to amaze me.

LucasLin 2 months ago 3



Ad

9,566 views

Milonga para tres - Astor piazzolla by extremaydura006 11,666 views

## **EXAMPLE: YOUTUBE**

#### AD 1

ntemlibre100

Subscribe 154 videos V





**Top Comments** 

This is one of the most beautiful pieces of music I have ever heard. Piazzolla never ceases to amaze me.

LucasLin 2 months ago 3



**AD 2** 

AD 3

Top Tracks for Astor Piazzolla

Astor Piazzolla -**Romance Del Diablo** by anes1001 54 899 views

Piazzolla: Le Grand Tango(Yo-Yo Ma) by cellopera 9,566 views

Milonga para tres · Astor piazzolla by extremaydura006 11,666 views

## **EXAMPLE: YOUTUBE**

#### AD 1

Subscribe 154 videos V



Show more

**Top Comments** 

This is one of the most beautiful pieces of music I have ever heard. Piazzolla never ceases to amaze me.

LucasLin 2 months ago 3





**AD 2** 

Direct star: Morning Star by lapoupeequipue 35,901 views

AD 3

Ad

Top Tracks for Astor Piazzolla

Astor Piazzolla -**Romance Del Diablo** by anes1001 54 899 views

Piazzolla: Le Grand Tango(Yo-Yo Ma) by cellopera 9,566 views

Milonga para tres · Astor piazzolla by extremaydura006 11,666 views

### Recom graph

## POPULARITY

Various definitions of popularity of content:

- × Total number of views
- × Number of views in a given period
- × Number of "likes" or the rank
- Degree of virality: how much did the network contribute to the increase in the number of viewers.
- Other considerations: potential number of interested users

### **CLASSIFICATION OF POPULARAITY MODELS**

According to whether there is a fixed bounded target population or not.

- **×** Example: announcing an exhibition.
- Examples of unbounded targets: news bulletin.
   The same person may be interested again in contacting a source of information.
- × Timelines
- Time scale: even a bounded target population may behave as an unbounded if the infection rate is small enough

## CLASSIFICATION

× According to degree of virality

## LINEAR GROWTH: IMMIGRATION.

- \* There is only an external source of demand for content. The network itself is not used to infect other users.
- × Unbounded target population.
- One does not get contaminated due to an epidemic process, but due to intentional search of a content.

### MODELS OF EXPONENTIAL GROWTH: BRANCHING PROCESSES

- Branching processes are used to describe the growth of populations.
- The key parameter is virality: the average number of direct offsprings of an individual.
- If it is larger than 1 then we get exponential convex growth of the instantaneous population size.
- If it is smaller than 1 then a finite population will be contaminated. The total poplation grows like a concave exponential function.

## EPIDEMIC MODELS

In branching, one assumes that the distribution of the number of off spring does not depend on the population size.

In practice, the population may be limited. Thus the more there are infected, the smaller is the probability for new infected.

### **BOUNDED POPULATION VARYING VIRALITY:**

**×** Fraction of infected:

$$\frac{dx}{dt} = kx(1-x)$$

## EXAMPLES WITH X(0) = 0.0001, 0.01, 0.3

**x** k=1





### PROPAGATION MODELS WITHOUT VIRALITY, WITH MAX POPULATION SIZE

**×** Growth rate decreases

$$\frac{dx}{dt} = M(1-x)$$

M is the size of the population that will be attained. There is an apriory limit.

Branching process with low virality: no a prioro limit. A finite population is attained simply because of a low interest in the content.

## **CURVES WITH DIFFERENT X(0)**

× Converge to 1



## WHAT CAN WE LEARN FROM YOUTUBE

× As a general user

#### President Obama Sings "Sweet Home Chicago"

whitehouse

0

0/120414 ht h

Subscribe 2,720 videos \*







Backstage at the White House: Tedeschi & by whitehouse 54,660 views

President Obama Welcomes Guests to "In by whitehouse 21,945 views

President Obama at the University of Miami by whitehouse 27,501 views

First Lady Surprises White House Tour by whitehouse 89,265 views

President Obama's Bilateral Meeting with by whitehouse 13,356 views

3/20/12: White House Press Briefing by whitehouse

301 views

03294119

A LIST CONTAINING OTHER AD EVENTS: SHARING AND EMBEDDING

an in this



#### Significant discovery events

	Date	Event	Views
Α	02/22/12	First view from a mobile device	107,108
В	02/22/12	First embedded on – facebook.com	75,452
С	02/22/12	First referral from YouTube search – obama singing	31,008
D	02/22/12	First embedded on – whitehouse.gov	23,221
Е	02/22/12	First referral from – facebook.com	19,180
F	02/22/12	First embedded on – plus.google.com	11,465
G	02/22/12	First referral from YouTube search – barack obama singing	7,892
Η	02/22/12	First referral from YouTube search – obama sings	6,601
I	02/22/12	First embedded on – failblog.org	5,824

### "Ave Maria" (Biebl) - 2006-07 Tualatin HS Concert Choir



### Ave Maria Mater Dei (2006) by composer Daniel J. Knaggs





### EXAMPLE OF MODERN CLASSICAL MUSIC LINEAR GROWTH OVER 5 YEARS 2007-2012





Contemporary Classical music

Linear growth

5 years period 2007 - 2012

## **CONVEX PROCESS**

### × Branching, or early epidemic phase

Tchaikovsky 5th Symphony - (WHOLE) - Gustav Mahler Jugendorchester





Pepsi Football Remix by PepsiSWE 65,919 views Ad



How To Approach A Woman by DeStorm 22.875, FEATURED VIDEO



mozart requiem karajan by cagin 622.376 views



Beethoven Piano Concerto 5 complete by videomedia123 133,191 views



Relaxation Piano Music I - Chopin, by Kamibambiraptor 1,464,900 views



Mozart: Piano concerto n. No. 21 in by Alessandro152 459,132 views



Symphony No. 9 (Ludwig van by FotoKadr 180,136 views



Beethoven Moonlight Sonata (Sonata al by Theichigo999 3,790,746 views

Tchaikovsky :

### POPULAR CLASSICAL MUSIC EPIDEMIC ROUTING ONE YEAR PERIOD.



## **MOZART: POPULAR CLASSICAL MUSIC,**



## EPIDEMIC BEHAVIOR

#### JS Bach - Partita for solo violin no. 3 in E Major BWV 1006 Preludio



**₩**)

Total views: 277,942

06/19/10

Like

J 300k

200k

100k

0

0:05 / 4:19

HGF EDCBA

Share

PL.

06/16/11

Add to

2 years period Epidemic routing Populr classical music

Ċ.

0

06/12/12

dist

×

277,942



3 year old Jonathan playing "Allegro" by esenuk 495,671 FEATURED VIDEO



7 year old violinist No.2 (mendelssohn violin by ysjin 469,150 views



Konzert In D Major (Adelaide-Konzert) by olivessj0923 328,804 views



Bach - Sarabande in D minor - Anne-Sophie by karateko 241,791 views



Violin Solo by Multi-Talented 4 Years Old by thaiabstract 20,952,993 views



(Champion of vienna cup) Edouard LALO by RayLin0910 198,856 views



Homeless Boy Steals The Talent Show by inspirationbygod 50,509,973 views

[HQ] Itzhak Perlman





## **CONCAVE BEHAVIOR**

### President Obama and the Fight for LGBT Rights



#### President Obama on Creating an Economy Built to Last







This video is public.

🖕 Like 🏼 🖣

Share 🏴

#### 498 views 🕐 🔤

54

#### Video statistics

Add to

View more stats

Because this video has been claimed by a copyright owner, statistics cannot be made public.

#### Views and discovery







Loreen - Euphoria (Sweden) 2012 by eurovision 13,881,251 FEATURED



The Social Network Song - San Marino by GarikAvakianTube 2,018 views



Valentina Monetta Facebook uh oh oh by Sorin Adrian Dorha 769 views



Da Facebook Song Tanya Markova by jovea22 14,920 views



Eurovision 2012 San Marino Valentina by DeMarcus2506 6,096 views



The Social Network ( SoundTrack ) - A by ramsri374 3,104 views

### HYBRID CONCAVE BEHAVIOR: EXPONENTIAL AND LINEAR

### President Obama and the Fight for LGBT Rights



#### President Obama on Creating an Economy Built to Last



### President Barack Obama 2009 Inauguration and Address 3 years. Concave? Epidemic?



### COMBINATION: LINEAR GROWTH + CONCAVE GROWTH, 2 MONTHS

President Obama Sings "Sweet Home Chicago"



Y(t) = 300000(1 - exp(-2t)) + 12000t



## "NON POPULAR VIDEOS"

### UNPOPULAR VIDEO WITH MANY VIEWS AND MANY DISLIKES



#### Engagement



#### Audience

#### **Top locations**

Mexico Peru Spsin

#### Top demographics

Male, 35-44 years Male, 13-17 years Male, 45-54 years

## FAMOUS EXAMPLE

### × Why linear growth?

Friday - Rebecca Black - Official Music Video

REBECCA BLACK 
G Subscribe 32 videos 
\*





### JUMP IN VIEWS DUE TO EXTERNAL EVENT (2<sup>ND</sup> HOSPITALIZATION)





- (A) First referral from YouTube search: joyeux anniversaire annick Aug 27, 2012 - 3 views
- B First referral from: facebook.com Aug 27, 2012 - 12 views





Je lui fête son anniversaire surprise by ESCALOPEdotCOM 58,883 PEATURED



Brain surgery removal of metastatic tumor by MicroNeuroSurgeryOrg 240,891 views



Novel Neurosurgery at Johns Hopkins by JohnsHopkinsMedicine 44,317 views



Anesthesia vs Neurosurgery by hautegirll 328,061 views



A neurosurgeon talks about his job by ChicagoTribune 49,090 views



Cirurgia para tumor cerebral (HD) by Ed Zerati 508,312 views



BRB, NEED BRAIN SURGERY!!! (3.6.12 by CTFxC 377,770 views



Neurosurgeon: I Experienced Afterlife by TheYoungTurks 87,618 views



Contribution of Ariel Orda, Chairman of

ALA AN IN Adda to a

## JUMP IN THE SLOPE OF THE LINEAR INCREASE



09/22/12

0

07/13/12



Les Cinq Légendes by ParamountFrance 261,412 views



Le Corbeau et le Renard - Vidéo Fable by HelloKidsVideos 530,551 FEATURE



Un mix de chansons algéroises by yachmina

**D** 

La cigale et la fourmi by Eitan Altman 179 views

302,425 views

Ant Internet Part any period Market Part any period

[French for beginners 145 minutes to learn by imagiers 1,416,825 views



Le Corbeau et le Renard by likesalla 62,138 views



Le corbeau et le rena - Fable de la Fontaine by Horizonspoetiques 5,072 views



12/03/12

Les Trois petits Cochons-En by mrvincent47300 11,373,310 views





Download mp3

#### Video statistics

Views and discovery





Les Cinq Légendes by ParamountFrance 281,412 views



Einat sings HURT by Christina Aguilera by Einat Altman 105 FEATURED

Ad



Beethoven Violin concerto (Perlman & by TodoGardel 185,875 views



Kid sings "A Sheinem Cholem" (Yiddish) by shiezoli 112,350 views



Contribution of Ariel Orda, Chairman of by EITAN Meir ALTMAN 1 view



54

Itzhak Periman plays Klezmer by yakovsmirnov55 1,204,335 views



Giora Feidman & Gershwin-Quartett / by krogius83 30,067 views



Giora Feidman: The Klezmer's Freilach by Thelonious Wehwalt 93,776 views



Yiddish vs. German: an experiment.



Q Browse

Movies Upload Eitan M Altman



#### 8 Avignon (France): I've got Peace in my Fingers





Teddy Bear Puppies Ready by sterrenberg1 130,765 views Ad





I've got Peace in my **Fingers** (Susan by Eitan Altman

14,781 views



#### I've got Peace in my fingers by EITAN Meir ALTMAN 616 views



Peace in my fingers video contest. Planet

by TheBelchertown 5,308 views



Create Your Own Video **Using Susan Salidor's** by Jay Rehak 1,377 views



Aesop's Fable: The North Wind and the

#### leo statistics

#### Video statistics

#### Views and discovery



#### Key discovery events

- (A) First referral from related video: I've got Peace in my Fingers (Susan Salidor) Jul 7, 2012 - 388 views
- (B) First referral from related video: "Peace in My Fingers" Music Video Susan Salidor Jul 8, 2012 - 7 views
- C First view from a mobile device Jul 8, 2012 - 23 views
- (D) First referral from YouTube search: peace in my fingers Jul 9, 2012 - 6 views
- (E) First referral from related video: Create Your Own Video Using Susan Salidor's "Peace in My Fingers" Win \$100!
  - Jul 29, 2012 8 views
- F First referral from related video: I've got Peace in my fingers Aug 4, 2012 - 21 views
- (G) First referral from related video: Einat chante "Pour que tu m'aimes encore" (Celine Dion) Aug 12, 2012 - 5 views
- (H) First referral from YouTube search: i've got peace in my fingers Aug 13, 2012 - 5 views
- First referral from related video: "Israel loves Iran" based on the children song "Peace in my Fingers" (Susan Salidor)



18,693 views



I've Got Peace in My Fingers - Susan Salidor by TheWenter96 279 views



#### "Israel loves Iran" based on the children

by Eitan Altman 5,862 views



#### Theater history: Mahabharata in by OnlineDramaturgy 1.862 views



Free MP3 of "I've Got Peace in My Fingers" by Jay Rehak 8,299 views



#### Halloween Song: Them Bones Susan Salidor

by Jay Rehak 1,316 views



#### Danza 'I've Got Peace in My Fingers' by

by Ceip Antonio Valbuena 953 views



#### The Best of France -Avignon by emeritamanansala 32,089 views



Travel France - Visiting the Avignon Bridge

### INFLUENCE OF OTHER VIDEOS IN THE CHANNEL

Eitan M Altman Subscribe

5 videos \* | Download mp3







Paris sous l'occupation, by Eitan M Altman 13 views



France Telecom Grand Prix award of the by Eitan M Altman 114 views



Downtown, Haifa, 2012 by Eitan M Altman 2 views



Atal Bihari Vajpayee Speech : Amazing by Hindubhumi 131,889 views



Wadi Salib, Haifa by Eitan M Altman 2 views



A Coyne A Dawkins and a Mathematician walk by HannibaltheVictor13 218 views



Thu Minh Body Language Official by Dominikjazz 2,124 views



Daaru Desi - Song Promo - Cocktail by erosentertainment 7,118,499 views



Things I Don't Understand About Girls by MarcusButlerTV



## INFLUENCE OF PUBLICITY

Attribution des Prix de l'Acadéie des Sciences, 16 octobre 2012



by PascalLemoineProjet 299 views

Ad



The Great Pyramid : Lost Legend of Enoch by DiscloseTruthTV 1,845 views



Tsunami - Caught On Camera - P1 by noeuro 28,648,889 views



Monster High - Una Fiesta Divina de la by MonsterSpainHigh 82,840 views



Enoch, The Story Behind the Bible by BlueMediaMagic 14,252 views



Especial Monster High -Espantada de Isla by Tsprefes 5,209,247 views



ET Realities with Dr. J.J. Hurtak by academy24 7.288 views



Enoc un hombre que camino con Dios by Xavi Perez 17,925 views



ENOCH & ELIJAH RETURN TO PLANET by thirdeaglebooks 44,068 views



Dr's JJ and Desiree Hurtak on Contact Has



a

Download mp3

### Attribution des Prix de l'Académie des Sciences, 16 octobre 2012

62 videos ·

() 0	03 / 7:03	* • • • • :
Like 9	Add to Share	151 views
Video stat	istics	3
Views and d	scovery	



<mark>风凰传奇-最炫民族风 MV</mark> by fountainpark723 1,382,160 FEATURED



3/3 - Colloque sur la Kabylie : Intervention by Hace Mess 210 views



La crise pour les nuls 2/2 au 13/09/2011 by general3gaulle 4,032 views



2/3 - Colloque sur la Kabylie : Intervetion du by Hace Mess 258 views



1/3 - Colloque sur la Kabylie : Intervention by Hace Mess 1,304 views



Shad: LE CIRCUIT JUNO DES OEUVRES D'ART by mbacmedia 28 views



Edition 2012 -Académie de Créteil by FondationEADS 58 views



CIMETIERE DU GRAND JAS A CANNES, L'UN by SUSEJ474 222 views



Edition 2012 -Académie de Versailles

### VIDEO COMMENTS: EMBEDDING A VIDEO AS COMMENTS





Étienne Drapeau - Tes ma femme, t'es la plus by LaGuerillaProd 768,479 FEATURED



Adya Classic Vol.1 13 The Marriage Of by kwongliang 117,727 views



**Eli Eli אלי אלי** by BackToOslo 26 views



Avinu Shebashamayim by 5736krull 24,733 views



#### Key discovery events

- A First view from a mobile device Sep 1, 2012 - 10 views
- (B) First referral from related video: Carmen (Bizet) The Royal Opera Sep 3, 2012 - 2 views
- C First referral from related video: Grace BUMBRY Carmen Habanera Sep 8, 2012 - 4 views
- (D) First referral from related video: Avinu Malkeinu. We are not proud of IDF. Sep 8, 2012 - 14 views
- (E) First referral from YouTube search: carmen bizet Sep 8, 2012 - 18 views
- First referral from YouTube search: toreadore Sep 12, 2012 - 4 views
- First referral from: facebook.com Sep 18, 2012 - 14 views
- H) First embedded on: facebook.com



#### Adya Classic Vol.1 - 11 Eine Kleine

by kwongliang 205,296 views



#### Ode To Joy - Adya (Classic Music)

by MsHollywoodFilm 30,519 views



#### Phish - TMW SIY~Avenu Malkenu~TMW SIY -

by LazyLightning55 6,811 views

## 4:18

#### BARBRA STREISAND -AVINU MALKEINU

by judebelly 1,508,767 views



#### Bizet - Carmen -Habanera by omraamm 2.392.327 views



LEA MICHELE - "My Man" [LIVE @ Tribute by Sophia Bergamo 72,750 views



Adya Classic Vol.2 11 Aida by kwongliang 165,972 views

## WHAT DO WE LEARN FROM YOUTUBE DATA

### AS A CREATOR OF CONTENT:

- How many views according to the profile (age, sex, location)
- What brought the views: another social network? Another WEB site? The recommendation of Youtube? A search in Youtube etc.? Is it a mobile source?
- × Audience Retention

### TRAFFIC SOURCE

- 2103 views during 70 days
- 850 from recommendation s of youtube
- 172 from other sites



I've got Peace in my Fingers (Susan Salidor)

VIDEO Uploaded: Jun 27, 2012 - Duration: 01:57 - Lifetime views: 2,103

This year (Jan 1, 2012 - Sep 9, 2012)



¥	Traffic source	Views	% of total views
J	YouTube suggested video	850	40.4%
3	Mobile apps and direct traffic (unknown sources)	438	20.8%
1	YouTube channel page	282	13.4%
3	Embedded player (unknown sources)	199	9.5%
1	External website	172	8.2%
V	YouTube search	89	4.2%
7	YouTube - other features	63	3.0%
1	Google search	8	0.4%
1	Homepage feeds and subscriptions	2	0.1%

### TRAFFIC SOURCE

Social Networks:

Linkedin (71)

(From INRIA: 5)

Facebook(38)



I've got Peace in my Fingers (Susan Salidor)

VIDEO Uploaded: Jun 27, 2012 - Duration: 01:57 - Lifetime views: 2,103

Last 30 days (Aug 11, 2012 - Sep 9, 2012)



# 2E:

- × France: 820
- × USA: 540
- Unknown: 200
- Next come X locations where I gave talks: India (87), Germany (37), Israel (27), Italy (24)



I've got Peace in my Fingers (Susan Salidor) VIDEO Uploaded: Jun 27, 2012 - Duration: 01:57 - Lifetime views: 2,103 This year (Jan 1, 2012 - Sep 9, 2012) Views Monetizable views



Go	eography Date		
	Geography	Views	Monetizable views
1.	France	820	549
2.	United States	540	450
3.	Unknown region	200	191
4.	India	149	13
5.	Germany	67	0
6.	Israel	27	17
7.	Italy	24	12
8.	Canada	21	10
9.	Greece	17	8
10.	Netherlands	15	7
11.	Tunisia	14	0
12.	Japan	13	8
13.	Spain	12	10

## PROFILE: GENDER AND AGE

× 9,8% Fem views

× 4,4% Fem views in France

× 7,2% Fem views in US



I've got Peace in my Fingers (Susan Salidor)

VIDEO Uploaded: Jun 27, 2012 - Duration: 01:57 - Lifetime views: 2,103

This year (Jan 1, 2012 - Sep 9, 2012)





	Top locations by views	Views	13–17 years	18–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65+ years	Gender
1.	France	820	0.8%	1.5%	2.0%	2.0%	90.4%	1.8%	1.5%	
2.	United States	540	0.0%	2.8%	3.2%	3.6%	64.5%	24.6%	1.3%	
3.	Unknown region	200	0.0%	0.0%	0.0%	17.7%	82.3%	0.0%	0.0%	
4.	India	149	0.0%	5.4%	12.0%	5.7%	76.9%	0.0%	0.0%	

### AUDIENCE RETENSION (ALLOWS DIMENSIONNING)

Demographics Playback locations Traffic sources	Absolute audience retention	Relative audience retention	1	
Playback locations Traffic sources	Absolute audience retention he			
Traffic sources	Absolute audience retention he			
	percentage of total views. Rewin	ips you see how often each mor noting and re-watching can resul	ment of your video is being w t in values higher than 100%	atched as a
Audience retention				
Consoement reports	"Israel loves Ira	an" based on the chik	dren song "Peace i	n my
Subscribers	Fingers" (Susa	an Salidor)@	487	
Likes and distikes	BULLE SCREET FOR			
Encodes	st 30 days (Aug 11, 2012 – Sep	9, 2012)		
Comments				
Charles	107%			
Accession	75%			
An electron of (and)	50%			
Send heedback	25%			
	0%			
	0000 0008 0017 002	5 00.34 00.42 00.50 00.55 01	OT 01-18 01-24 01-22 01-4	01-49 01:58

D:24/2:00
 Contraction

## SNOWBALL EPIDEMIC EFFECTS

### Other acceleration Factors:

- Other publishers
   Embed content
- Comments and Responses increase visibility



## PROPOSED TASKS

- Create a video clip or a video slide show (diaporama) on youtube,
- × Create a facebook page, embed the video.
- × Attain 30 "likes" for facebook
- Compare statistics on the views of the video over facebook using (1) youtube data, (2) facebook data
- Study: what type of content brought views/likes both through questioners as well as stat.

## EXAMPLES:

- × "Cause": Laicity, Peace, etc.
- × Page on a particular tourist atraction
- Videos on testimonies of events such as resistence during 2<sup>nd</sup> world war, Algeria war, Immigration, Civil war in Spain.
- Cultural events (e.g. Marseille cultural capital).
- × Artistic creation

### **ACTIONS TO INCREASE VIDEO'S POPULARITY**

- × Choice of title
- × Choice of tags
- Choice of category
- × Videos: create sequences of videos
- Embed as video comments
- × Create discussions
- Embed in facebook pages