



# Multimedia Information Retrieval

- 1 What is multimedia information retrieval?
- 2 Basic multimedia search technologies
- 3 Evaluation of MIR Systems
- 4 Added value
  - 4.1 Information Visualisation
  - 4.2 User Interaction
  - 4.3 Visual Search and Relevance Feedback
  - 4.4 Browsing: Lateral and Geo-temporal



How else could results be displayed?



# Sammon maps

Classics (trans.) FT Old Norse Classics PubMed     Keyword Specificity:  High Medium Low

Google View Radial View **Sammon View** Dendro View Document Viewer

Keyword	Hit Doc Freq
<input type="checkbox"/> Schubert	40%
<input type="checkbox"/> Mozart	32%
<input type="checkbox"/> recital	32%
<input type="checkbox"/> soloist	28%
<input type="checkbox"/> Mendelssohn	28%
<input type="checkbox"/> pianist	28%
<input type="checkbox"/> pianists	24%
<input type="checkbox"/> Piano	24%
<input type="checkbox"/> Schumann	20%
<input type="checkbox"/> Beethoven	20%
<input type="checkbox"/> Bartok	16%
<input type="checkbox"/> Sonata	16%
<input type="checkbox"/> cellist	16%
<input type="checkbox"/> Gewandhaus	16%
<input type="checkbox"/> sound-world	16%
<input type="checkbox"/> sonata	16%
<input type="checkbox"/> Wigmore	16%
<input type="checkbox"/> Haydn	16%
<input type="checkbox"/> 250th	12%
<input type="checkbox"/> quartets	12%
<input type="checkbox"/> Masur	12%
<input type="checkbox"/> accompanist	12%
<input type="checkbox"/> Preludes	12%
<input type="checkbox"/> concerti	12%
<input type="checkbox"/> oboe	12%
<input type="checkbox"/> Skryabin	12%
<input type="checkbox"/> Variations	12%
<input type="checkbox"/> clarinet	12%
<input type="checkbox"/> Ravel	12%
<input type="checkbox"/> Maxim	12%
<input type="checkbox"/> Rakhmaninov	12%
<input type="checkbox"/> Liszt	12%
<input type="checkbox"/> Hero	12%

Filter Documents

25 documents found

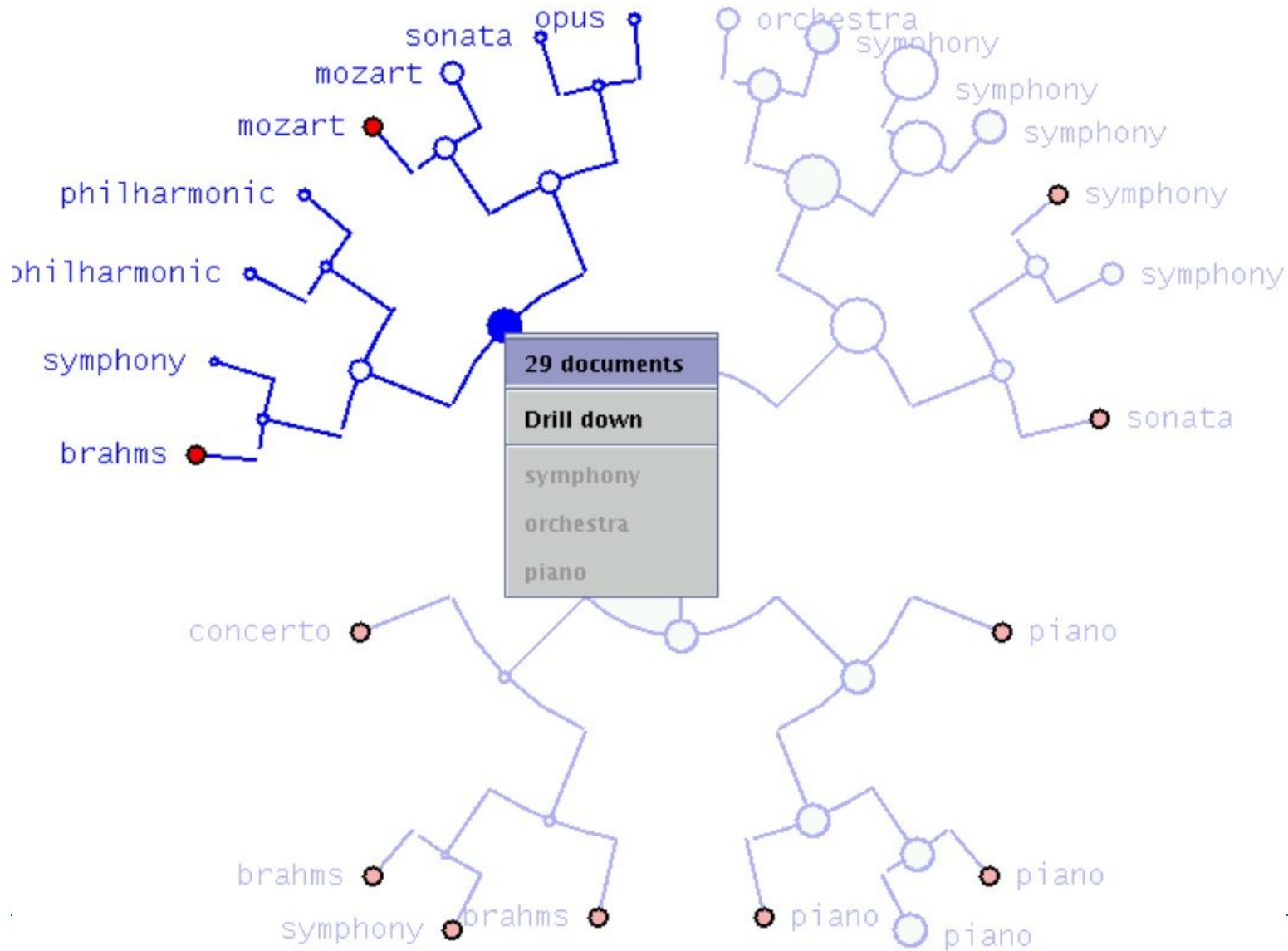
[Document 10534](#)  
 DOCNO FT933-8819 /DOCNO PROFILE\_AN-DHMBNAC1FT /PROFILE DATE 930813 /DATE HEADLINE FT 13 AUG 93 / Arts: Today's Television /HEADLINE BYLINE By CHRISTOPHER DUNKLEY /BYLINE TEXT Given that the Friday night schedules are currently chock-a-block with rubbish and repeats it looks as though ITV's Survival Special will have a

[Document 23388](#)  
 DOCNO FT921-9691 /DOCNO PROFILE\_AN-CBKBQABLFT /PROFILE DATE 920211 /DATE HEADLINE FT 11 FEB 92 / Arts: Flor and Temirkanov - Royal Festival Hall /HEADLINE BYLINE By RICHARD FAIRMAN and MAX LOPPERS /BYLINE TEXT A shortage of eminent German conductors in their prime is starting to make

[Document 21495](#)  
 DOCNO FT933-2249 /DOCNO PROFILE\_AN-DITBZACOF /PROFILE DATE 930920 /DATE HEADLINE FT 20 SEP 93 / Arts: The 'wrong man' wins at Leeds - Piano competition /HEADLINE BYLINE By DAVID MURRAY /BYLINE TEXT There was a



# Dendro map





# Radial

Classics FT Classics (trans.) Newton Old Norse PubMed

Chopin

Find

Back

Forward

Keyword Specificity  


High Medium Low

Google View
Radial View
Sammon View
Dendro View
Document Viewer

Currently selected Keywords:

- recital
- Brahms
- Schumann
- encore
- Sonata
- Chopin
- pianists

Others:

- Scherzo
- Durante
- Preludes
- Viviana
- percussive
- thrillingly
- fugue

20 documents found

[Document: 48166](#)

DOCNO FT923-10637 /DOCNO PROFILE \_AN-CG2ASAETFT /PROFILE DATE 920729 /DATE HEADLINE FT 29 JUL 92 / Observer: Chopin around /HEADLINE TEXT Birdsong, as Observer noted yesterday, may be the order of the day on Classic FM's test transmissions but its potential offerings are being peppered with birdshot. Shostakovich's ninth symphony is deemed OK but his

[Document: 35552](#)

DOCNO FT922-11127 /DOCNO PROFILE \_AN-CD1A7AA8FT /PROFILE DATE 920428 /DATE HEADLINE FT 28 APR 92 / Arts: Jon Kimura Parker - London music /HEADLINE BYLINE BY DAVID MURRAY /BYLINE TEXT This Canadian pianist (half Japanese by birth) won the Leeds Competition in 1984, against the likes of his compatriot Louis Lortie, but we

Settings

Zoom in

Zoom Out

Reset

Cluster

Show Rim

Lock Radius



# Query point moving


ijBase :: Image Browser and Search Engine, version: 2005.6  
Java Applet Window

Back Forward Stop Refresh

Image & Feature Search Temporal Search Collection Categories NNK network Content Viewer Output Settings Collection Settings

**Search for Images**

Search text:

Search images:  


Add image... Open topic...

Search weights:

- HDS-Colour Str... 0%
- Convolution 2 100%
- Smoothness 100%
- Thumbnail 100%
- Uniformity 100%
- Variance 100%

Search Now Clear

<< < Page 1 of 222 > >>



# Query point moving

ijBase :: Image Browser and Search Engine, version: 2005.6  
Java Applet Window

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Image & Feature Search Temporal Search Collection Categories NNK network Content Viewer Output Settings Collection Settings

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Add image... Open topic...

Search weights:

- HDS-Colour Str... 100%
- Convolution 2 100%
- Smoothness 100%
- Thumbnail 100%
- Uniformity 100%
- Variance 100%

Search Now Clear

<< < Page 1 of 222 > >>

Applet

FEATURES DATA

Query Text:

Retrieve



NNK Browser

Simple Search

NNK Search

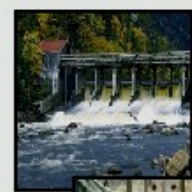
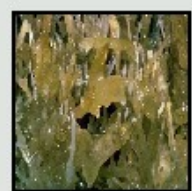




Query Text:

Retrieve

NNK Browser Simple Search NNK Search



Applet

FEATURES DATA

Query Text:

Retrieve

NNK Browser

Simple Search

NNK Search





# Connect similar objects

focus

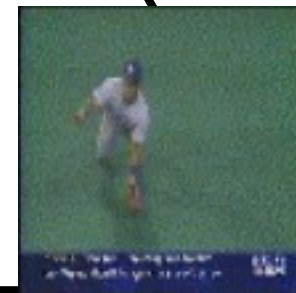


**Structure**



[with Heesch ECIR 2004, CIVR 2005]  
[with Heesch et al ACM MM 2006,  
TRECVID 2003-2004]  
[PhD thesis Heesch, nominated for  
best UK thesis 2005]

**Colour**

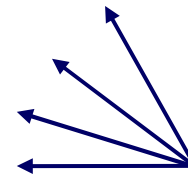


**Text**

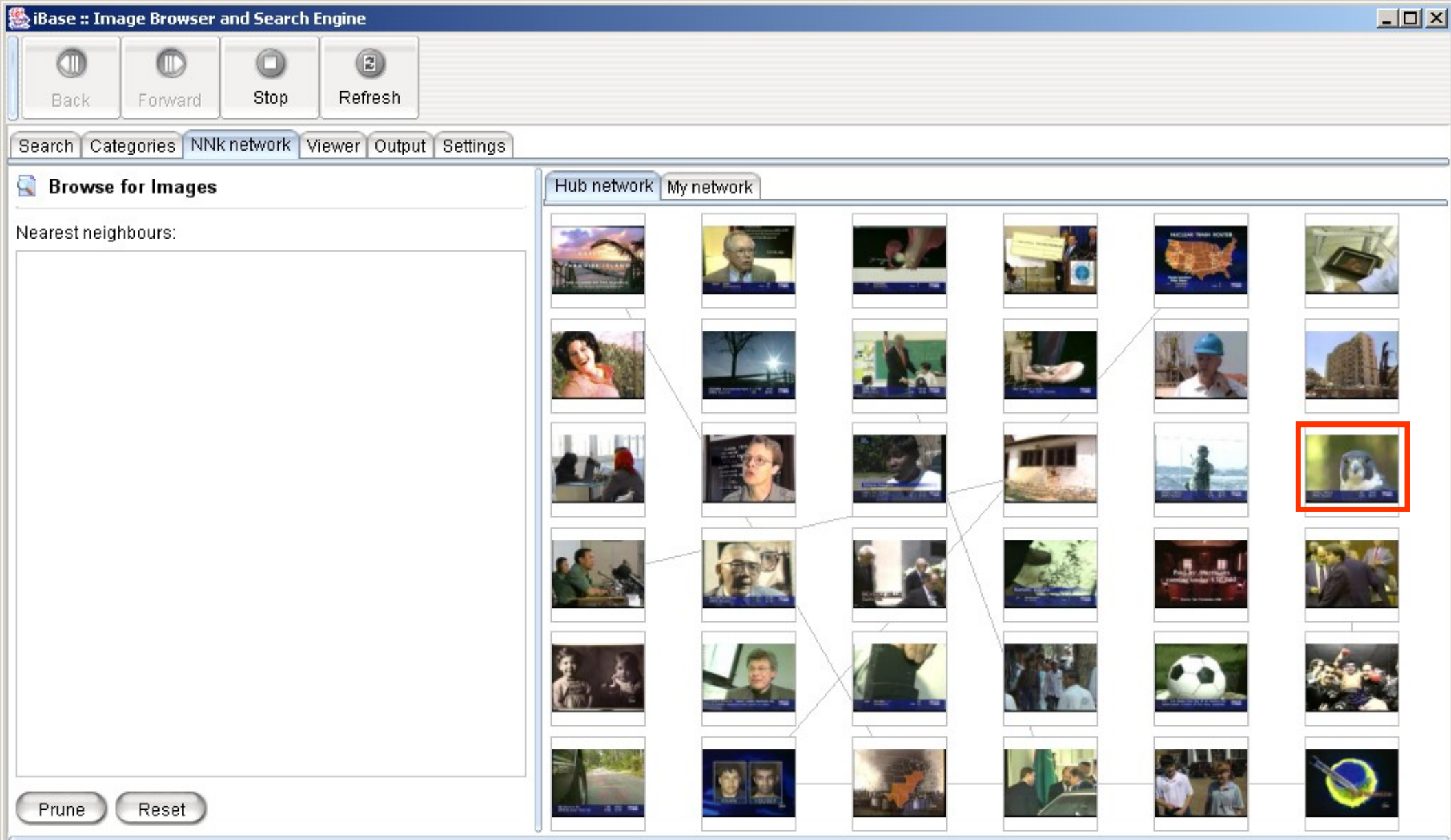


# Browsing example

TRECVID topic 102: Find shots from behind the pitcher in a baseball game as he throws a ball that the batter swings at



**In your mind**



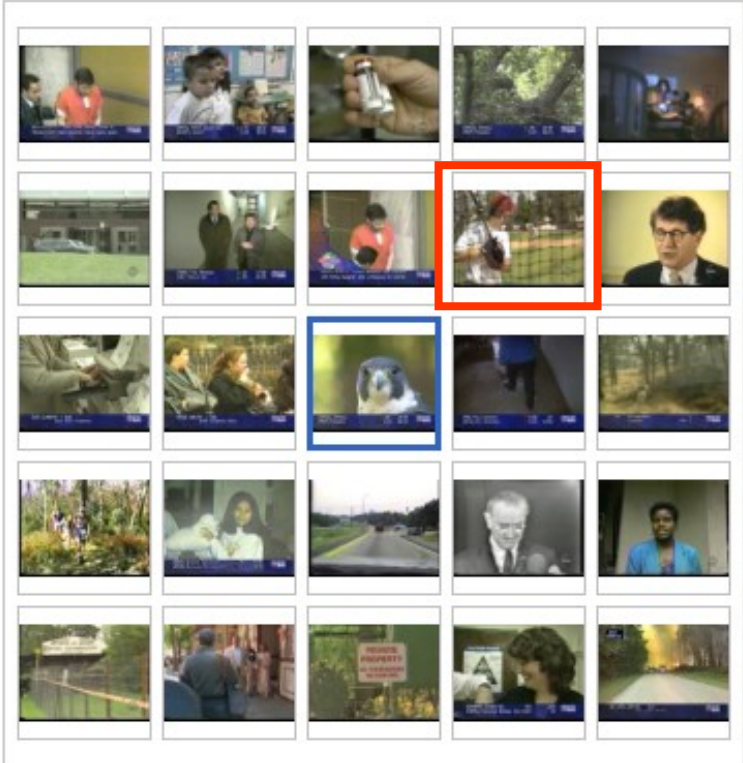
[Alexander May: SET award 2004: best use of IT - **national prize**]  
[dataset TRECVID 2003]

Navigation buttons: Back, Forward, Stop, Refresh

Search Categories NNk network Viewer Output Settings

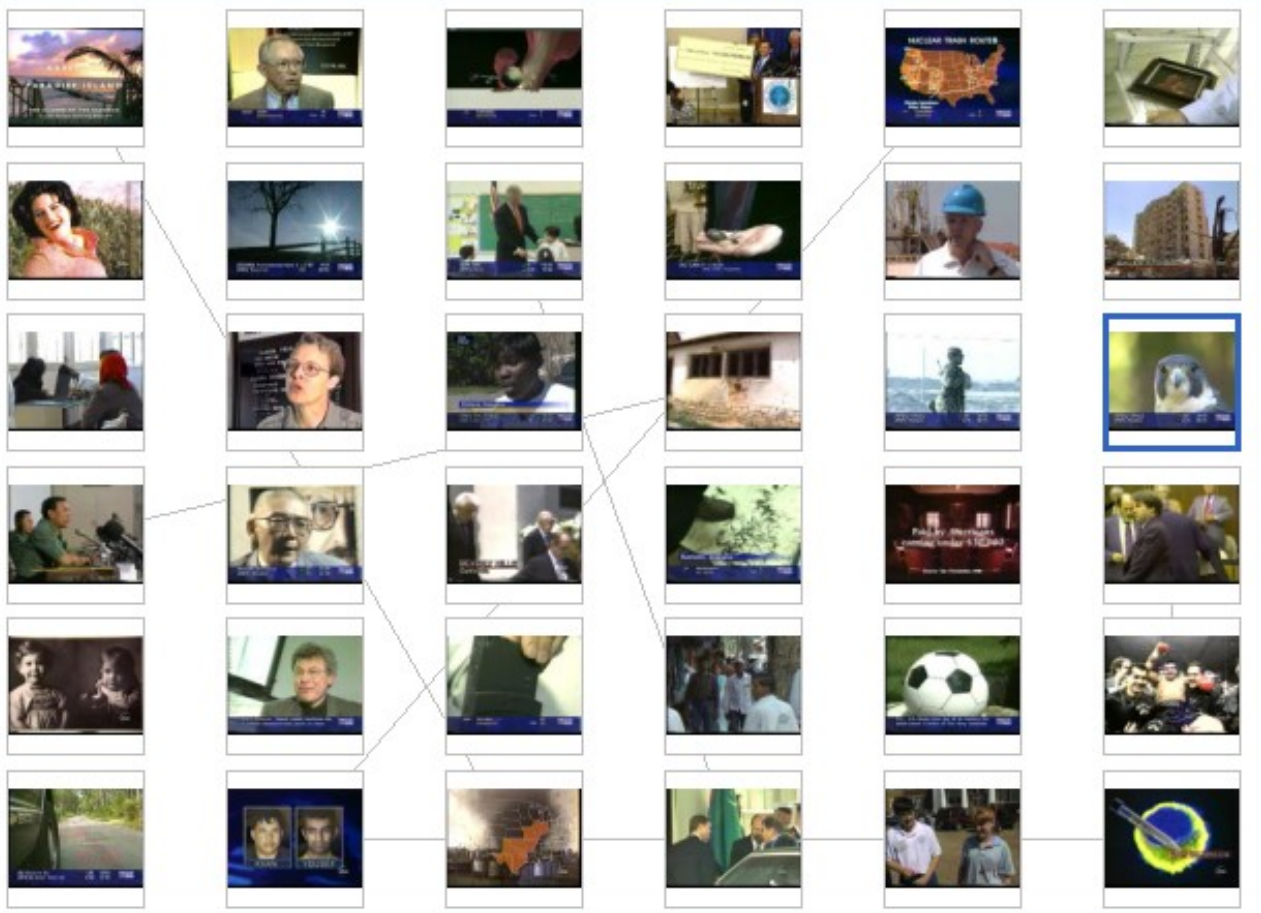
Browse for Images

Nearest neighbours:



Prune Reset

Hub network My network



Temporal My selection



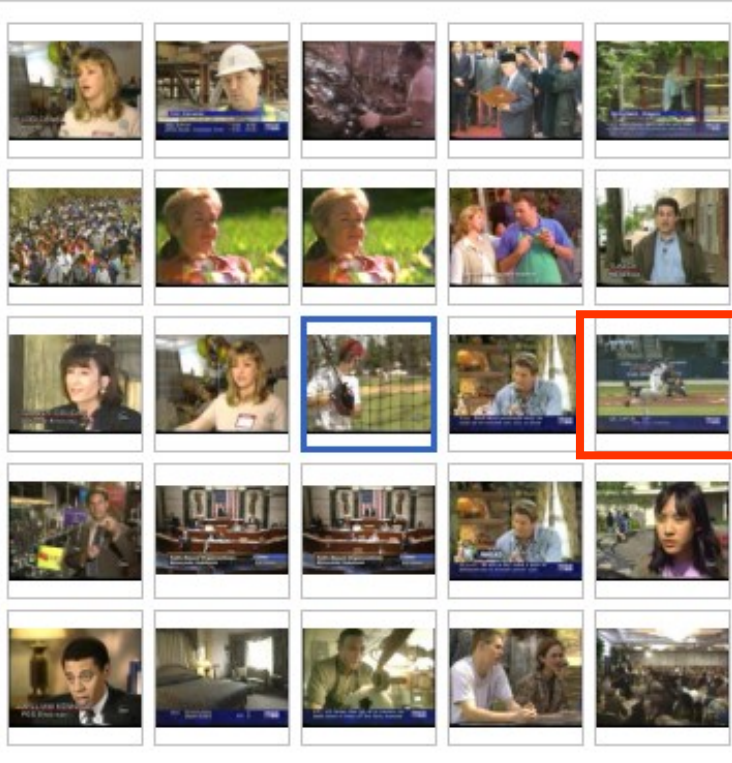
(179 remaining) Loading images...



Search Categories **NNk network** Viewer Output Settings

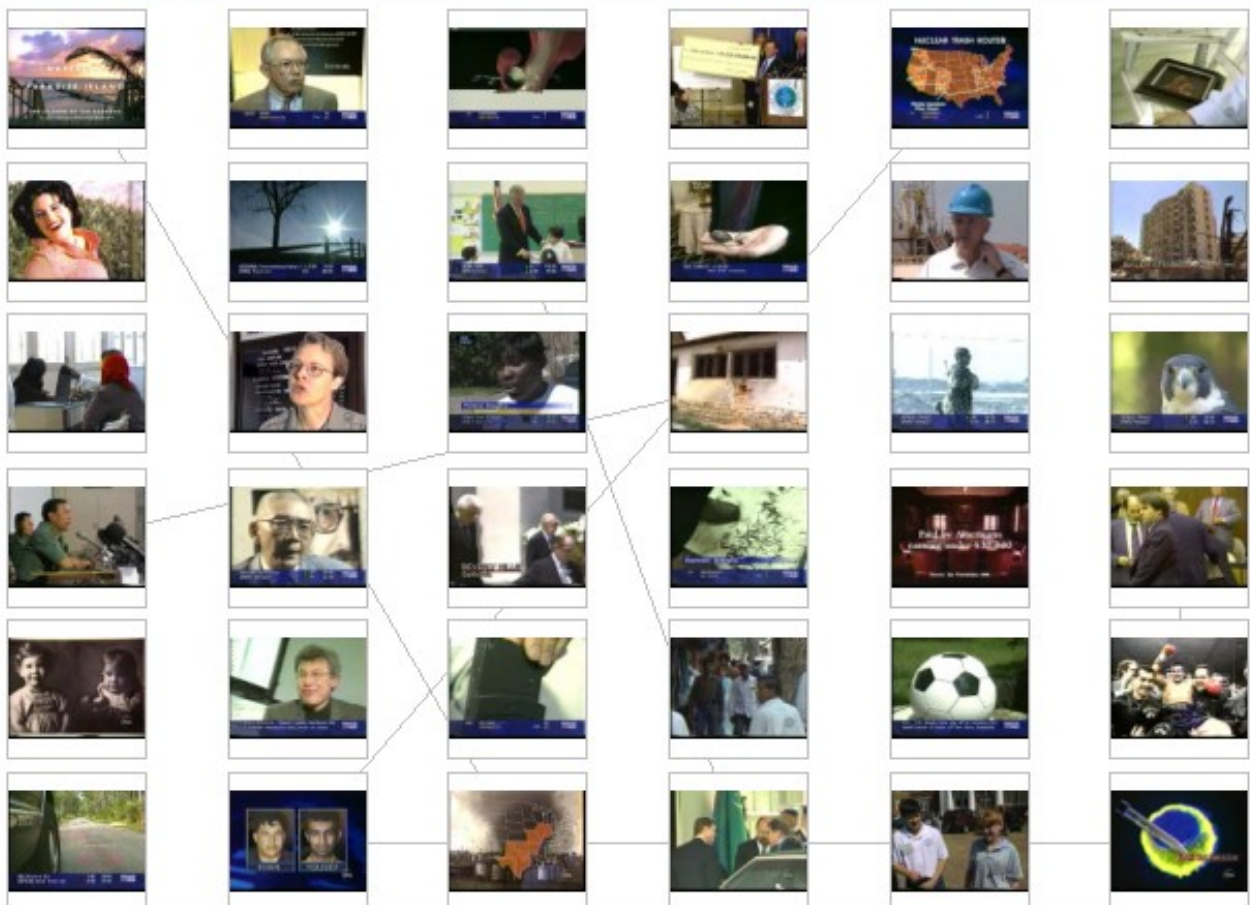
### Browse for Images

Nearest neighbours:

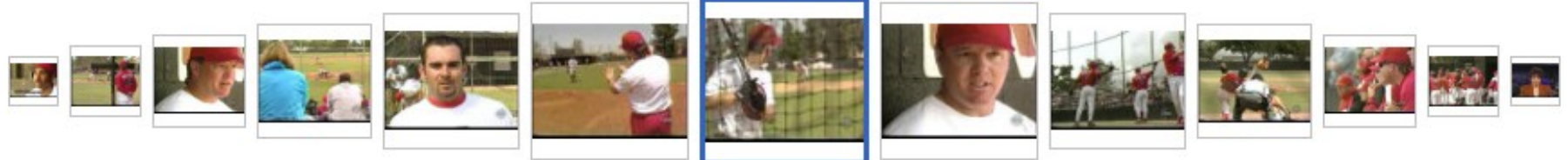


Prune Reset

Hub network My network



Temporal My selection





 Back
  Forward
  Stop
  Refresh

[Search](#)
[Categories](#)
[NNK network](#)
[Viewer](#)
[Output](#)
[Settings](#)

**Image Properties**

Image ID: 1263  
 Collection: Video  
 Resolution: 352 x 264  
 Filename: TRECVID2003\_138/shot138\_210\_RKF.jpg

Keywords: FOR ONE WIN OVER THE SHARKS IN THE MAJORS THE BRAVES BEAT THE



[Temporal](#)
[My selection](#)





## Similar items

Slide to sort by:

Colour Similarity  Shape Similarity

Now Showing: 1 - 18 out of 34,486

Previous | Next



**Patrizia Pepe**

Closed toe slip-ons

£98.00

**NOW £69.00**

VISIT STORE

YOOX.COM

▶ PRODUCT DESCRIPTION

FILTER ITEMS BY

▶ COLOUR

▶ PRICE RANGE

▶ RETAILER

£69 RAS	£135 Marc Jacobs	£150 Missoni	£59 GREY MER	£125 LUCA VALENTINI	£69 SWISH	
£50 Poetic Licence	£245 Celine	£45 SWISH	£98 Patrizia Pepe	£69 Patrizia Pepe	£165 CASADEI	

feedback



## Similar items

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Previous | Next



**Patrizia Pepe**

Closed-toe slip-ons

~~£98.00~~

**NOW £69.00**

VISIT STORE

YOOX.COM

▶ PRODUCT DESCRIPTION

£29.99 Firetrap	£101 VOLTA	£149 Patrizia Pepe	£69 BRAUDE	£464.89 Proenza Schouler	£59.95 Lotus	
£69 DANIELE ANCARANI	£80 Fly London	£35 Gola	£484 Cesare Paciotti	£35 Office	£85 Jones Bootmaker	

feedback

# Geotemporal search

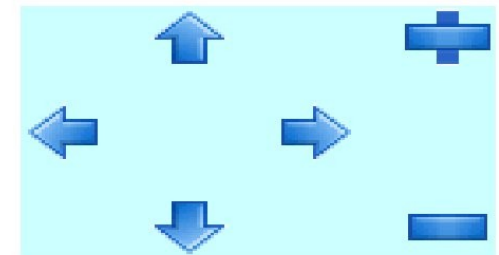
## Geographical, Temporal & Keyword Browsing

[Arlington](#)  
[British](#)

Election

search

>0



Dates

[1976](#) (1 Story)  
[1987](#) (1 Story)  
[1988](#) (1 Story)  
[1989](#) (4 Stories)  
[1990](#) (6 Stories)  
[1991](#) (1 Story)



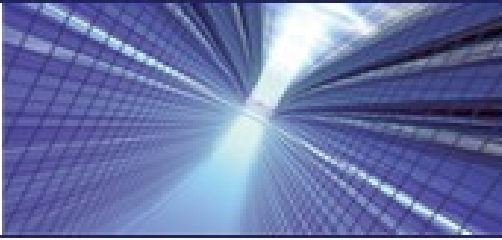
Temporal Distribution

Viewable events  
from:1976-1991

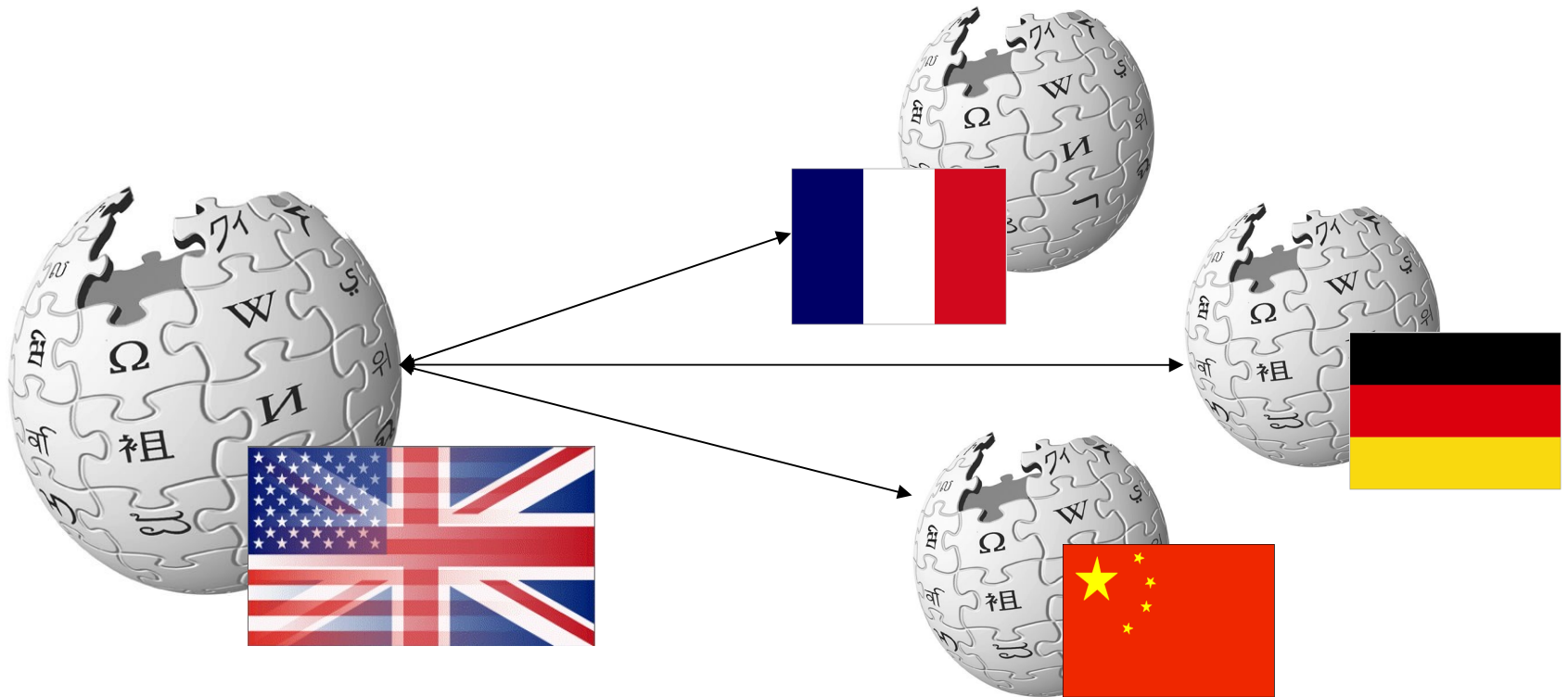




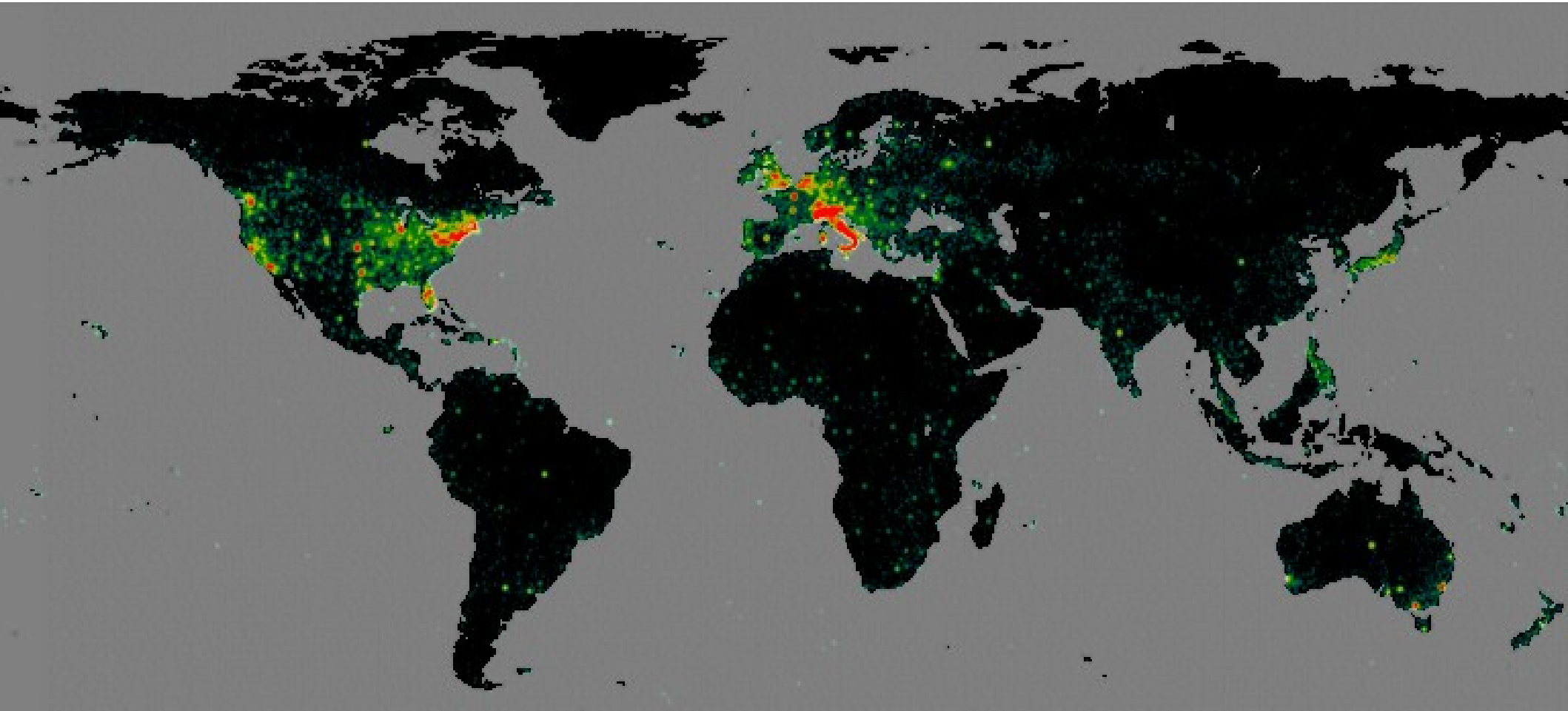
The Open University



# Wikipedia



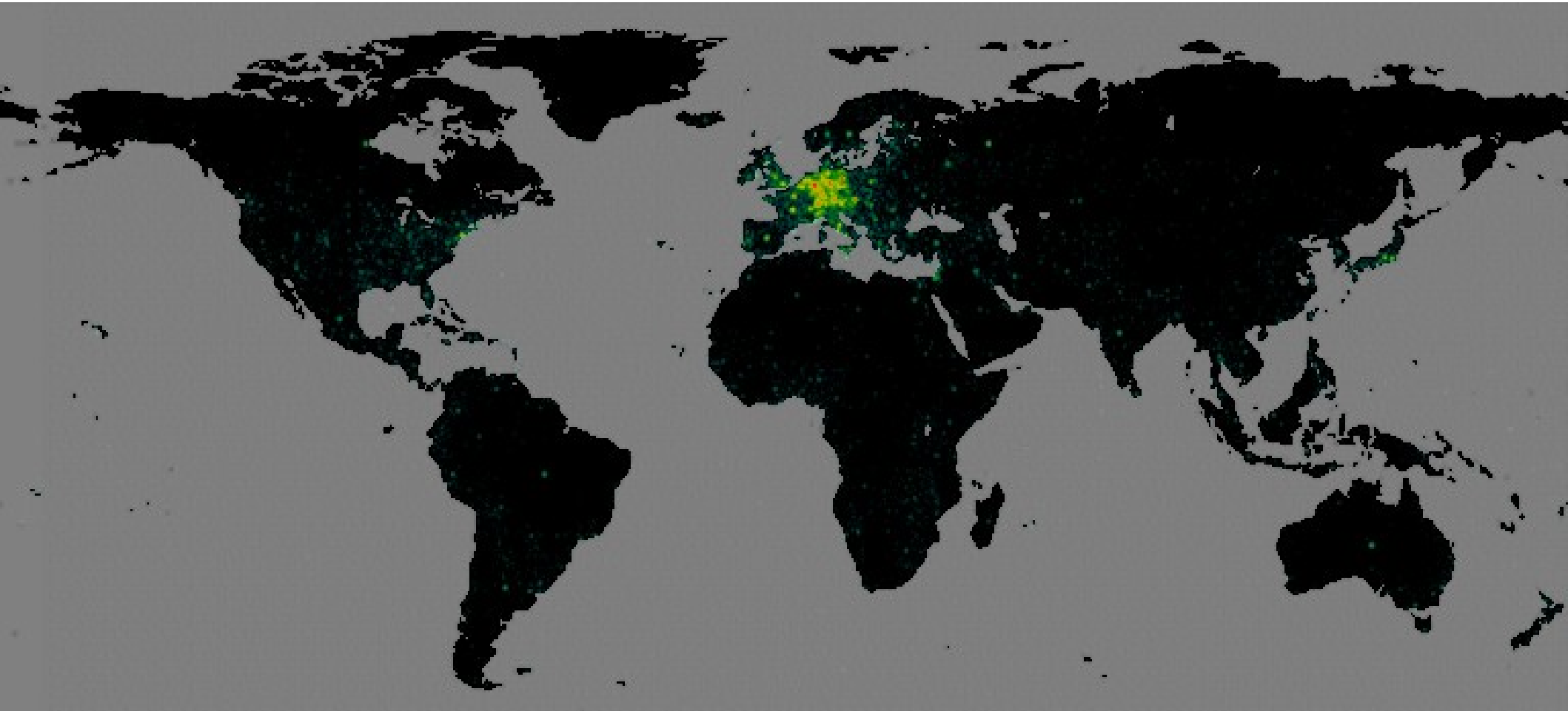
[Logo trademark and © by Wikimedia Foundation, Inc]



[with Overell, GIR 2007; MMKM 2008]

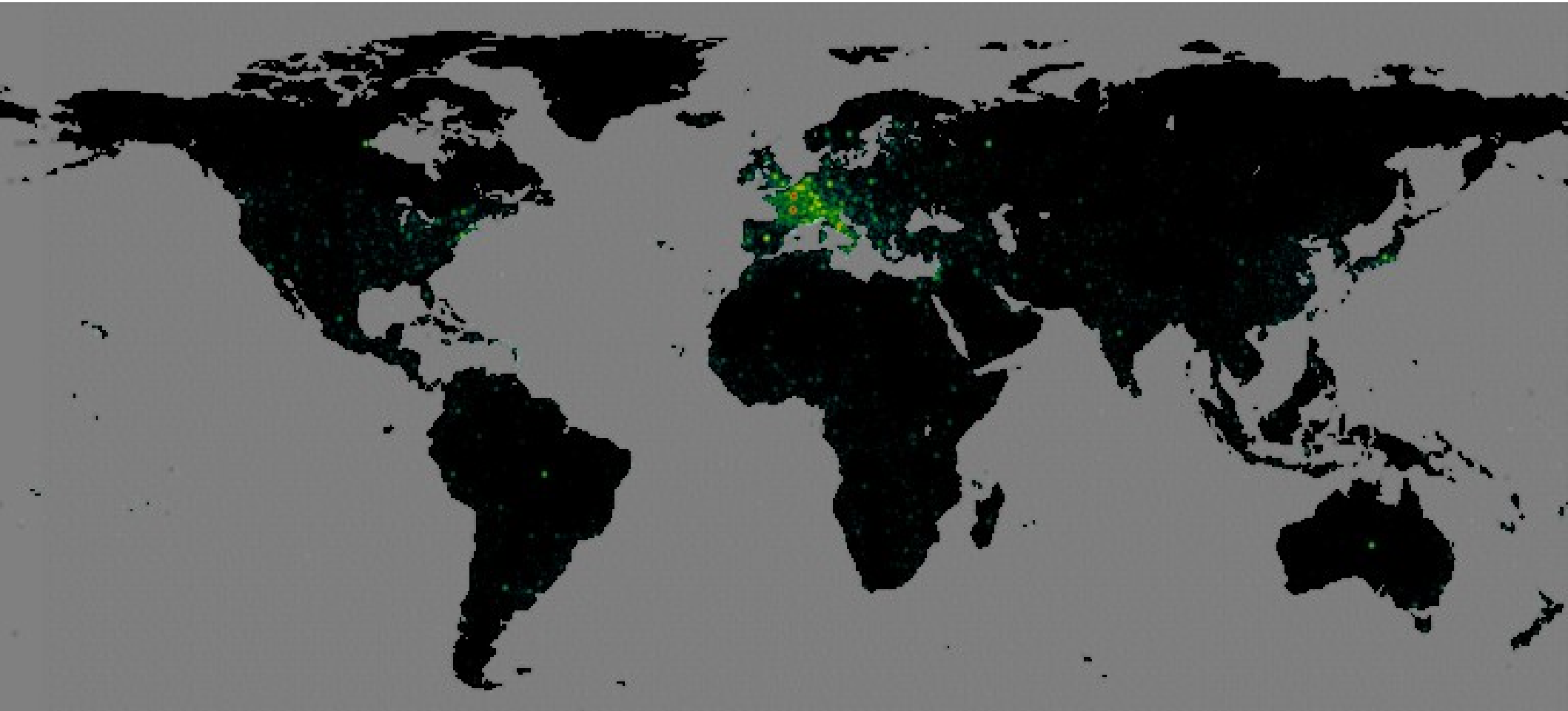


# German



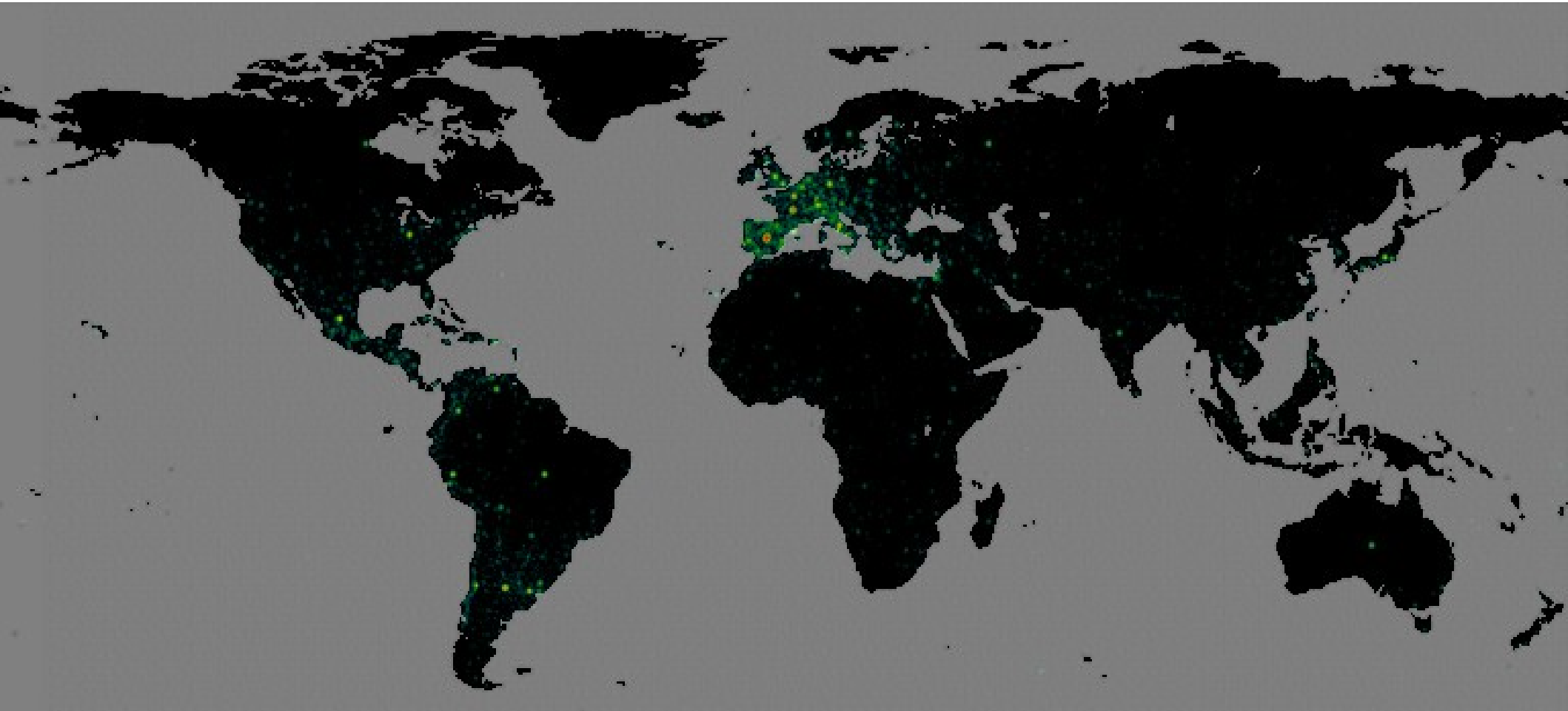


# French

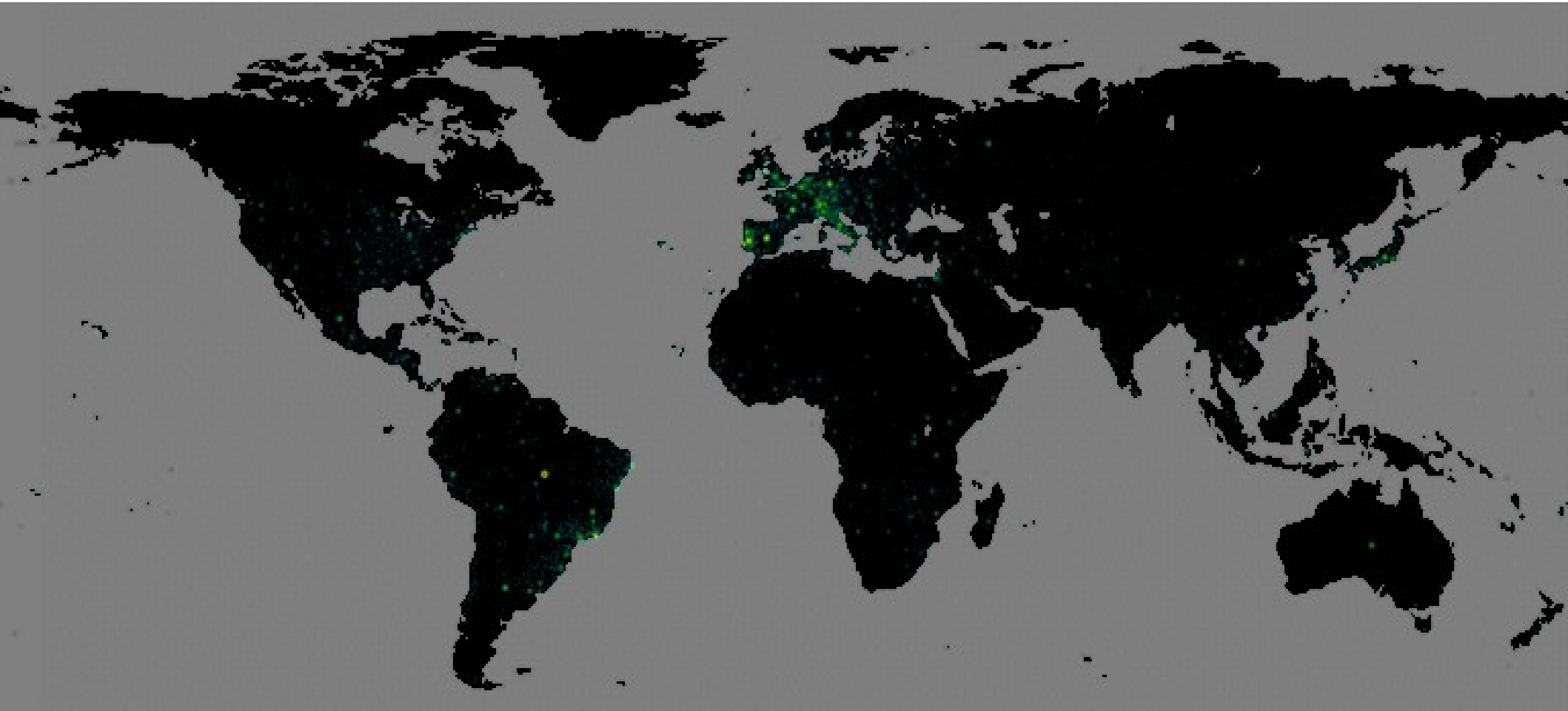


[with Overell, GIR 2007; MMKM 2008]





[with Overell, GIR 2007; MMKM 2008]



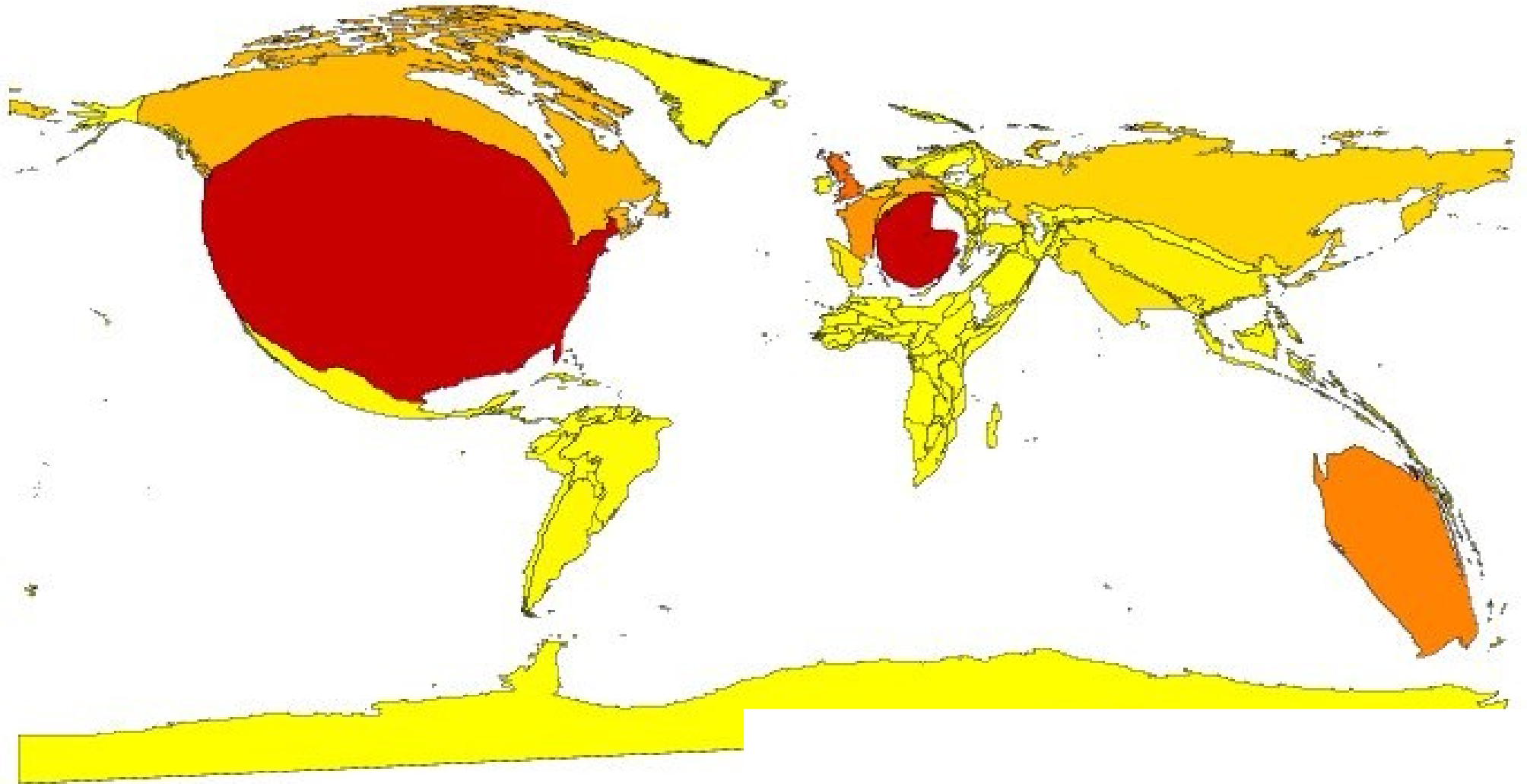
[with Overell, GIR 2007; MMKM 2008]



# Chinese



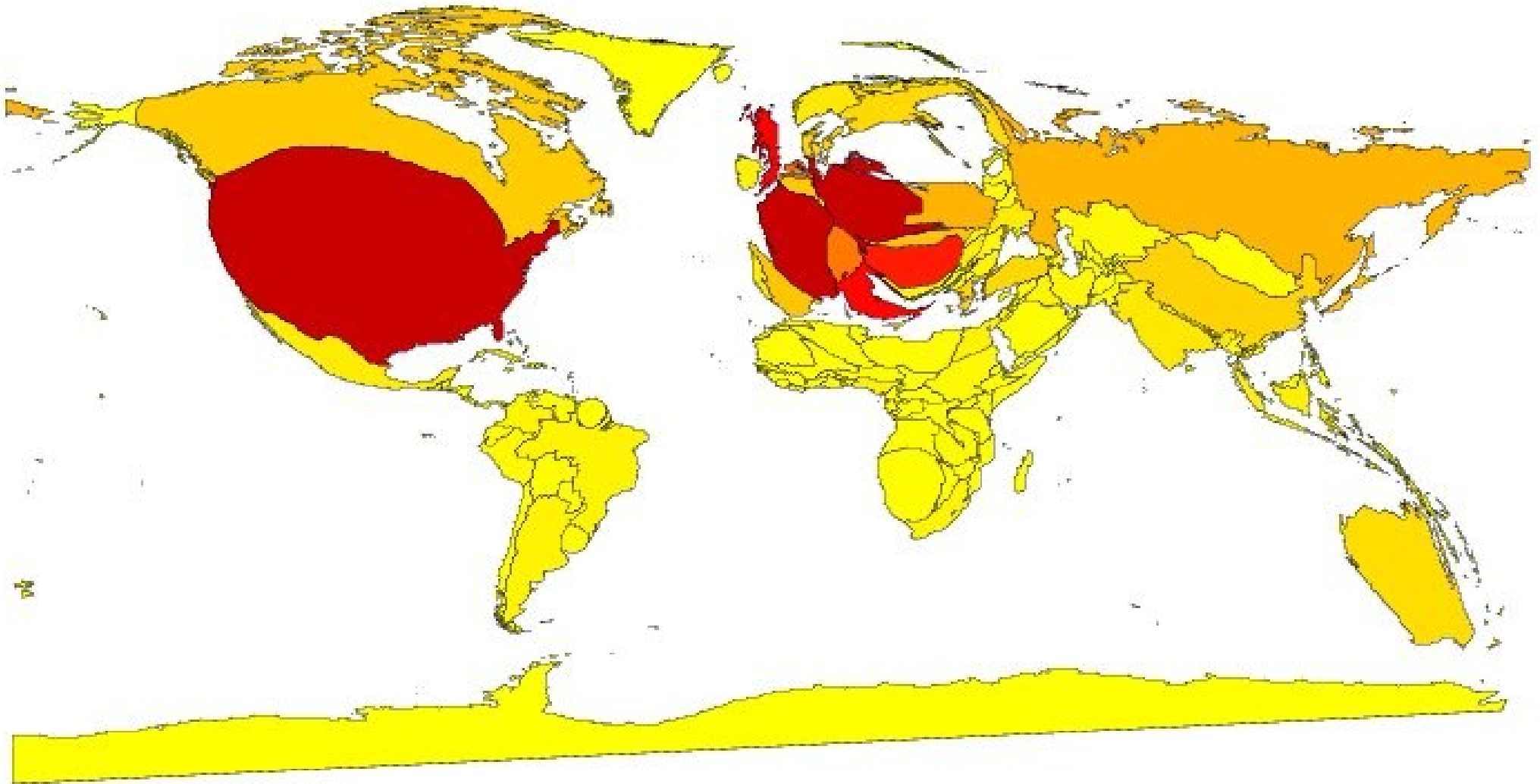




[with Overell, GIR 2007; MMKM 2008]



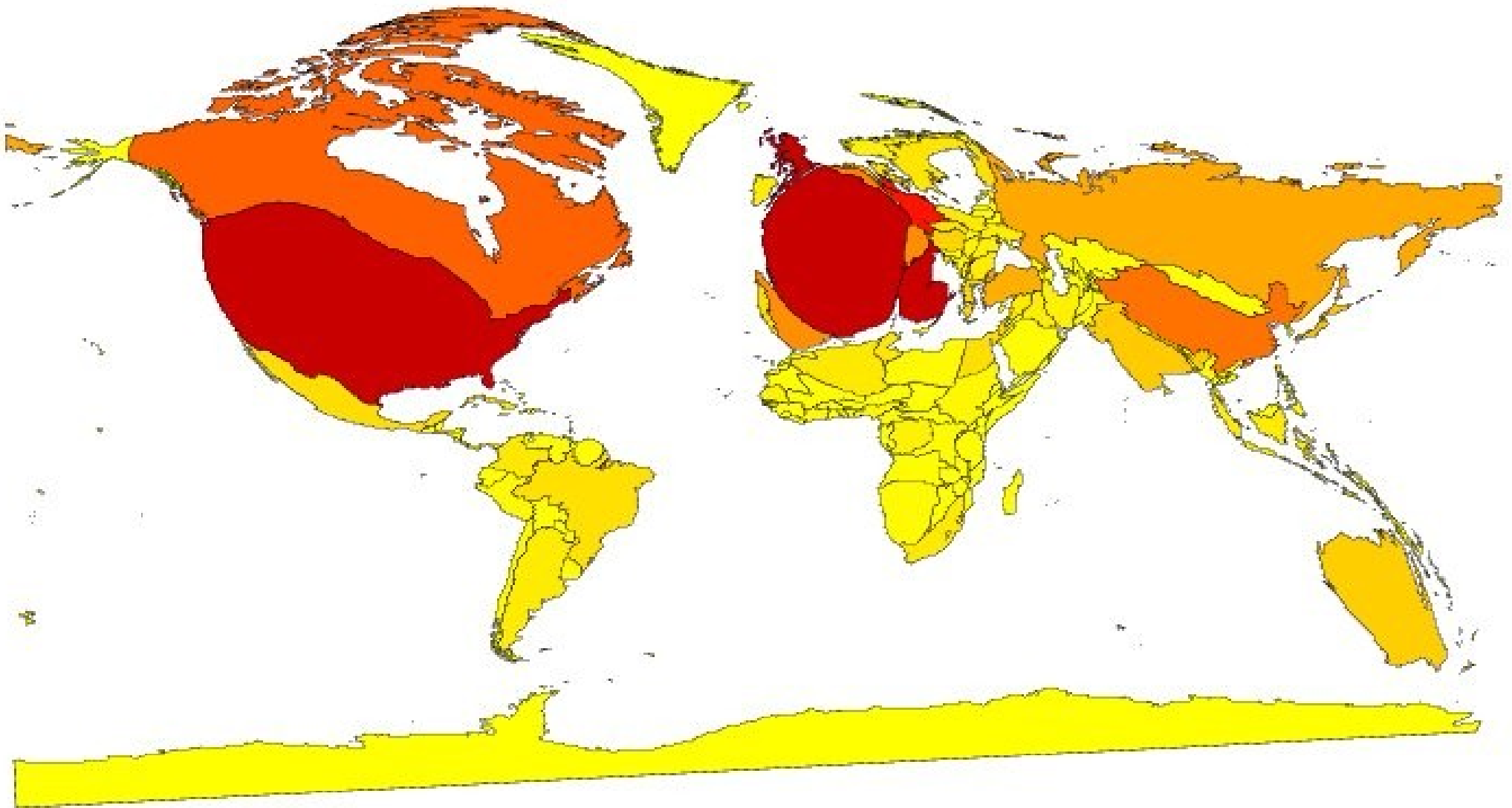
# German



[with Overell, GIR 2007; MMKM 2008]

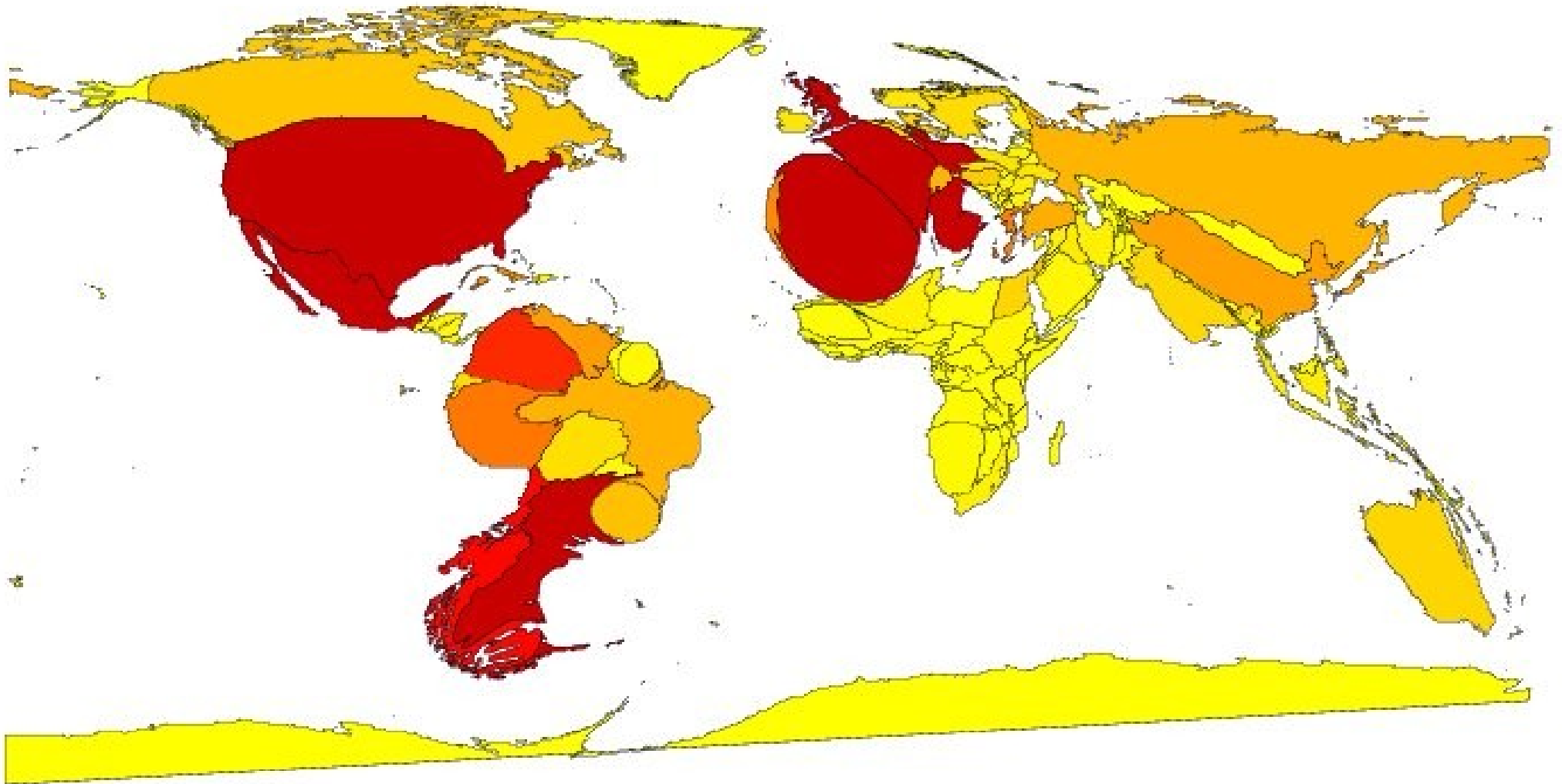


# French

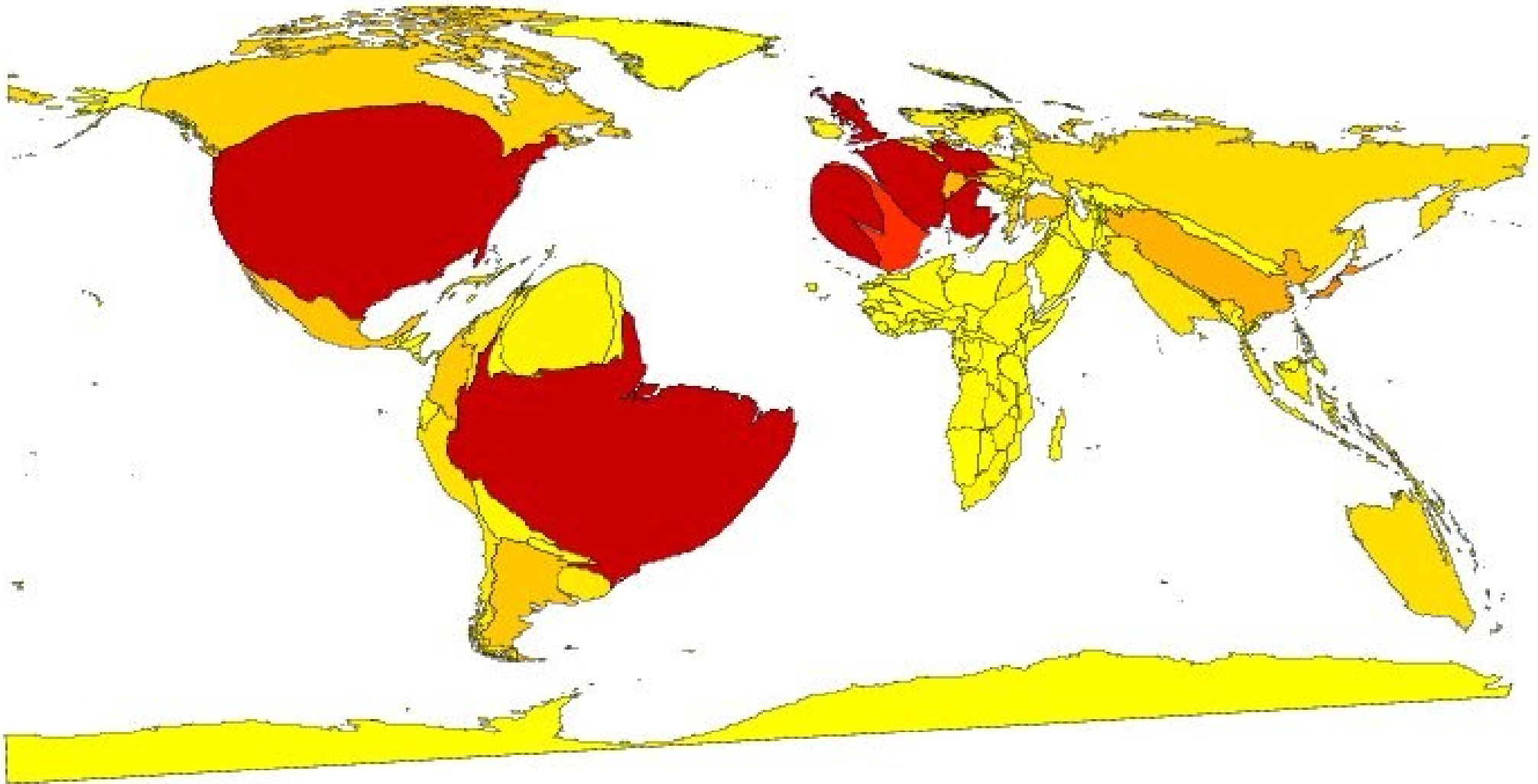




# Spanish

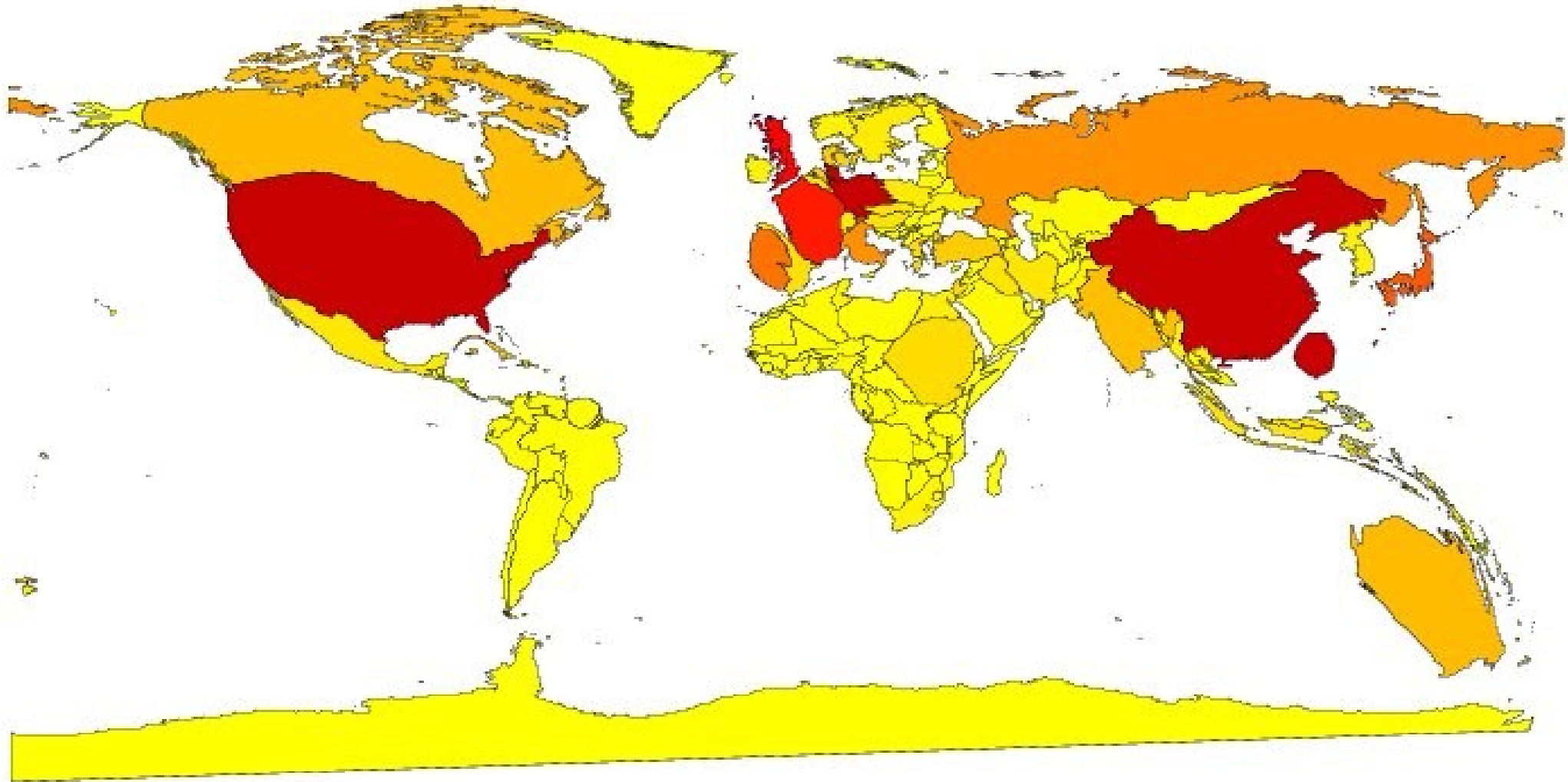








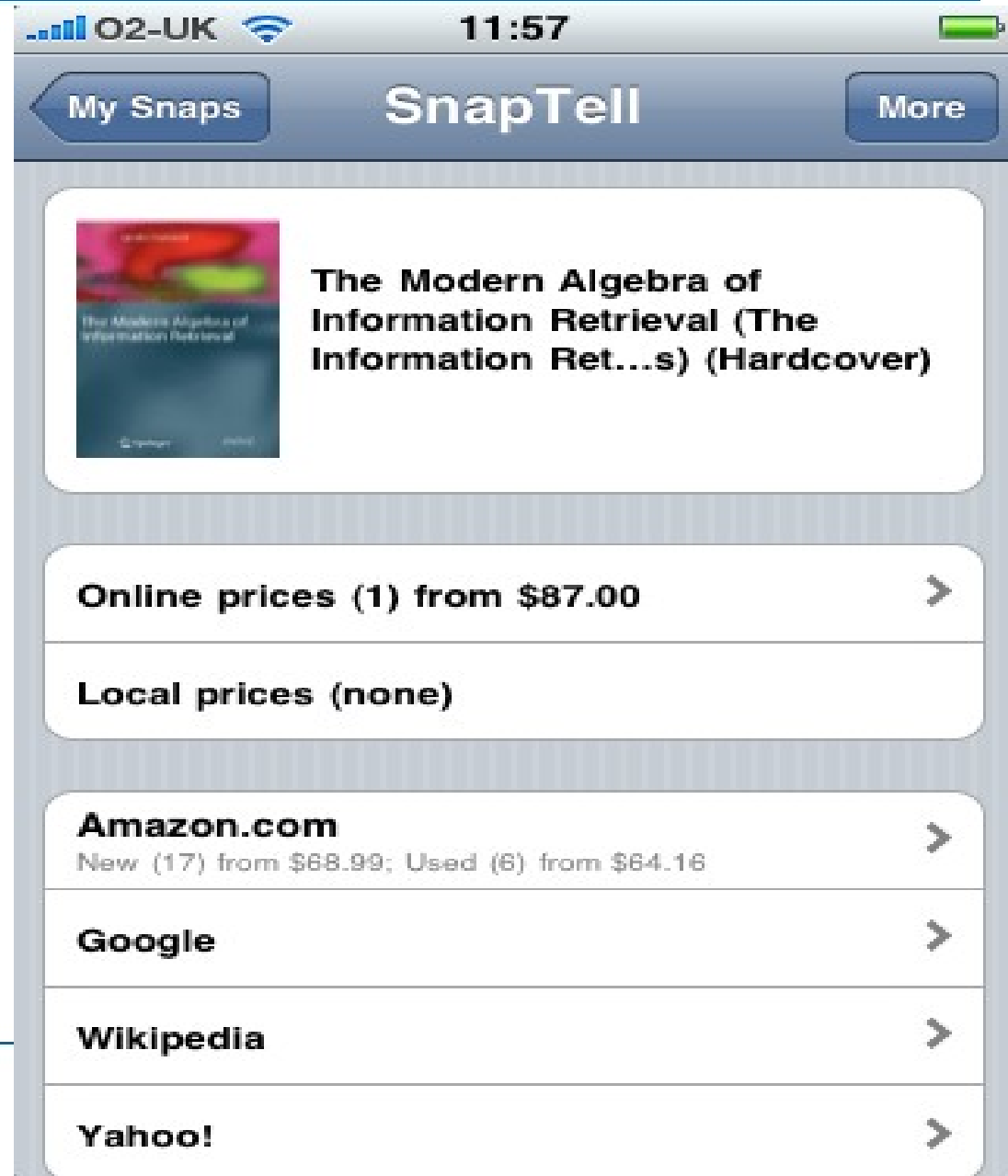
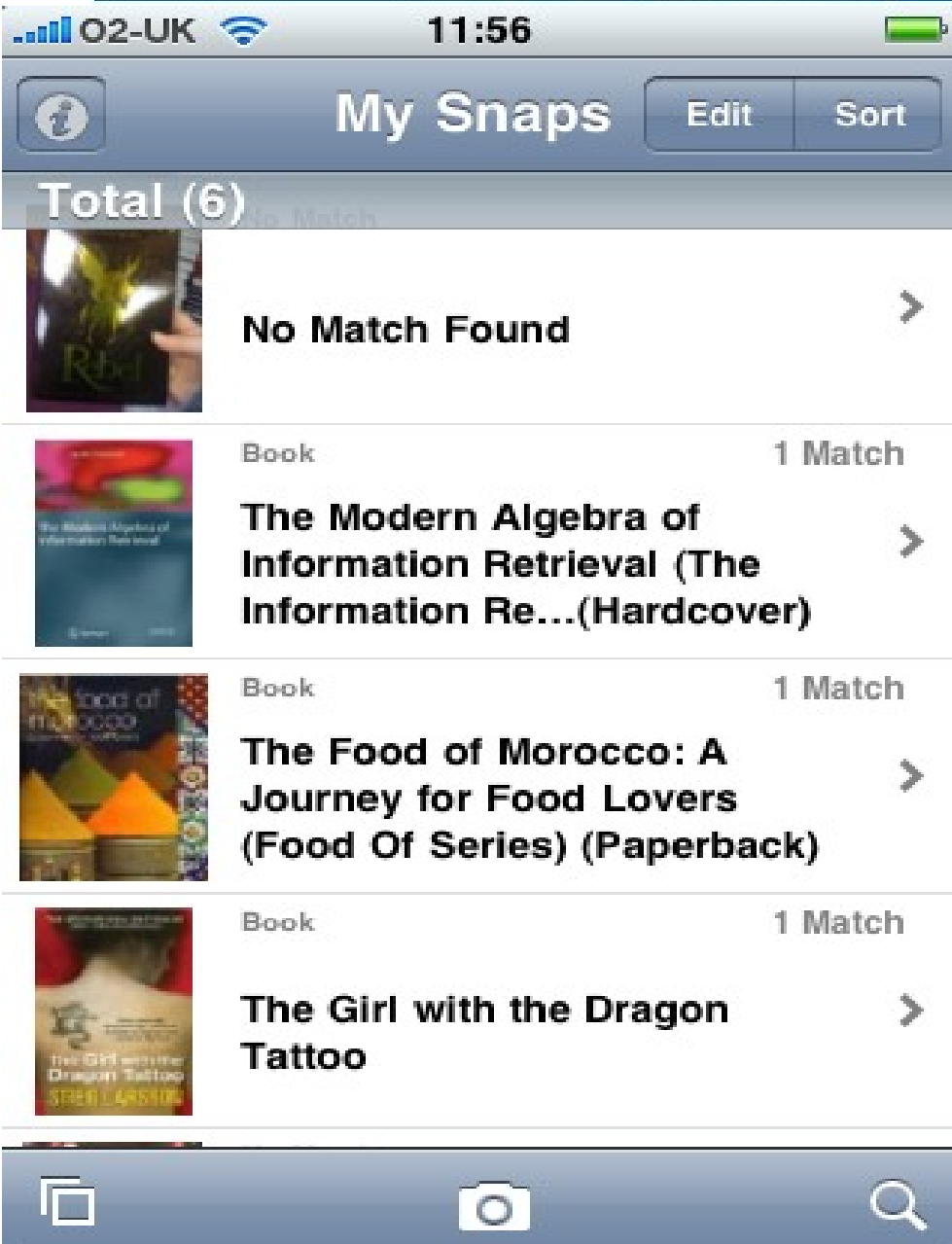
# Chinese





# Mobile interactions

- SnapTell
- Spot&Search





# Spot&Search: OU Art



Spot&Search





[Back](#)

## Search Results



This brilliant Big Art Project in the form of the Open University's letters is the result of OpenUnlimited activities in the Church on Saturday 27th June 2009.

The theme for the project was "What does the OU mean to you?". It was very popular as children and adults expressed themselves freely, by sticking things, adding glitter or drawing with pens and paints to decorate the letters, and as you can see, they did a fantastic job.

Estates Fabrics Team constructed these massive letters from 6ft sheets of plywood, added a matt coat of colour and then once our



- Collaboration between KMi and Greenstone
- Add content-based video indexing and search



Revisit your system design –

Can you think of ways to improve the user interaction?

How else could you present the results?

What technological challenges will you face?





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