



Londres, 1854



# **NOTICE.**

---

## **PREVENTIVES OF**

# **CHOLERA!**

Published by order of the Sanatory Committee, under the sanction of the Medical Council.

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### **BE TEMPERATE IN EATING & DRINKING!**

*Avoid Raw Vegetables and Unripe Fruit !.*

**Abstain from COLD WATER,** when heated, and above all from *Ardent Spirits*, and if habit have rendered them indispensable, take much less than usual.

### **SLEEP AND CLOTHE WARM !**

 **DO NOT SLEEP OR SIT IN A DRAUGHT OF AIR,**

**Avoid getting Wet !**

**Attend immediately to all disorders of the Bowels.**

### **TAKE NO MEDICINE WITHOUT ADVICE.**

Medicine and Medical Advice can be had by the poor, at all hours of the day and night, by applying at the Station House in each Ward.

**CALEB S. WOODHULL, Mayor.**  
**JAMES KELLY, Chairman of Sanatory Committee.**



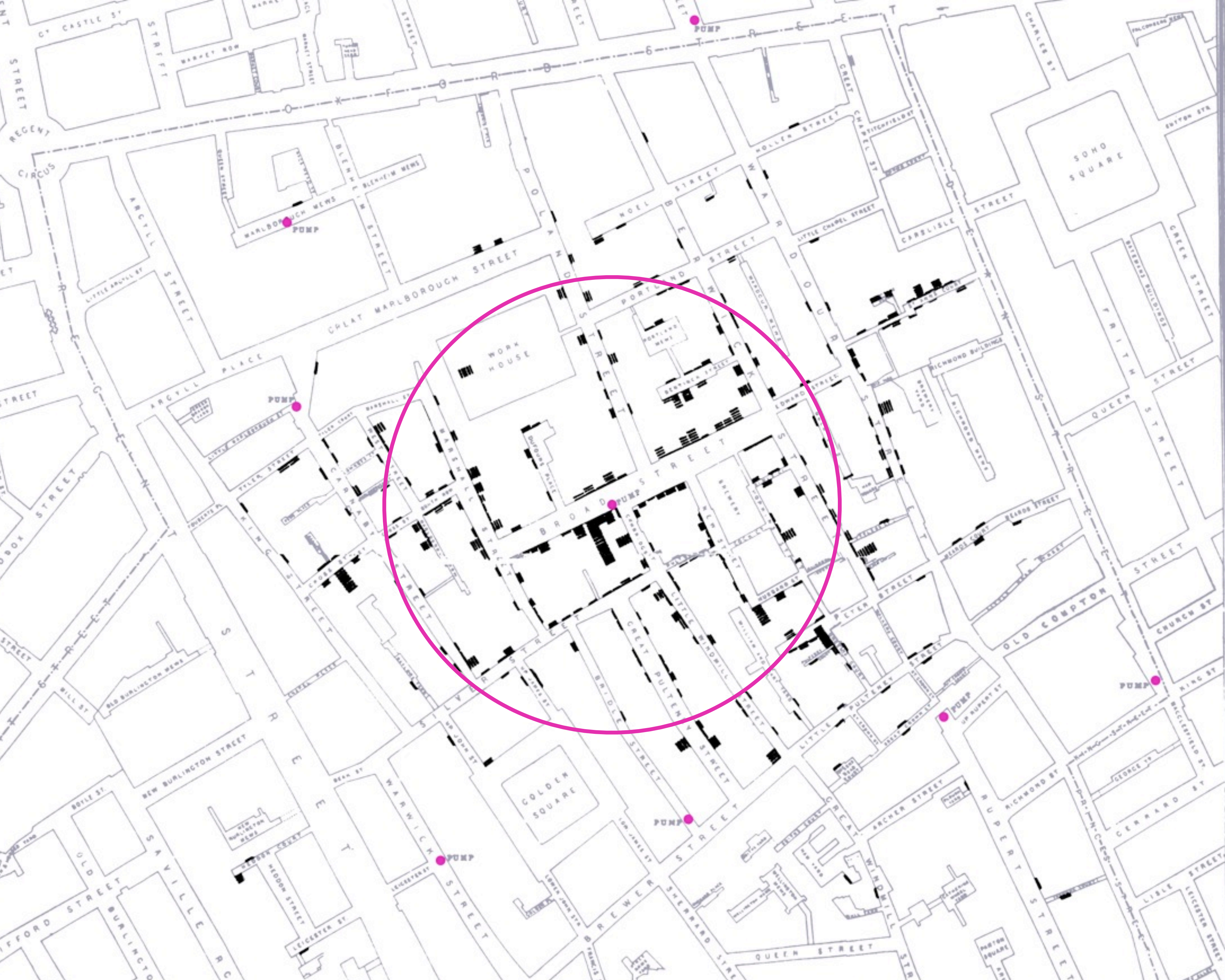
John Snow

























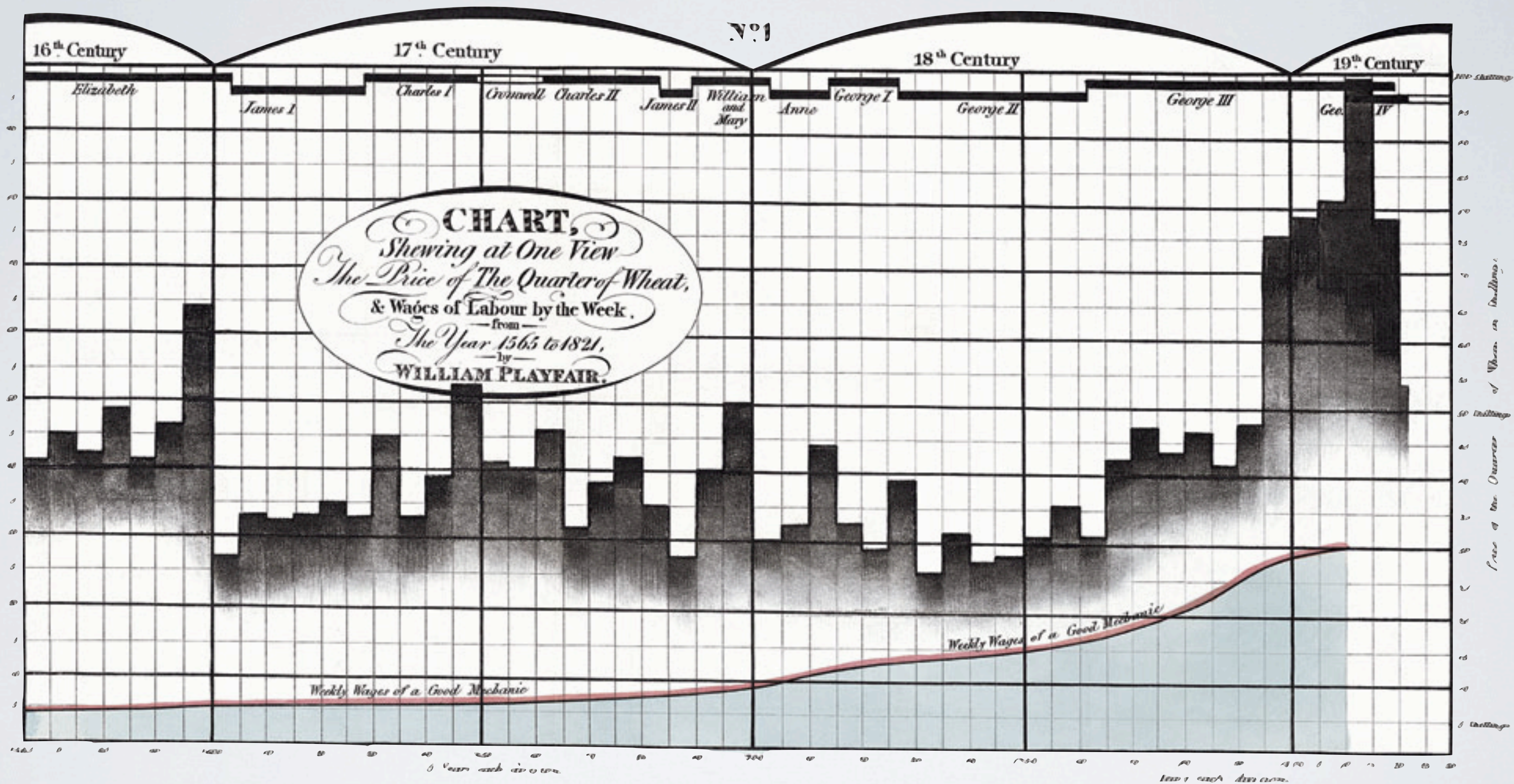
Los gráficos  
son instrumentos  
para razonar  
sobre los datos  
*Edward Tufte*













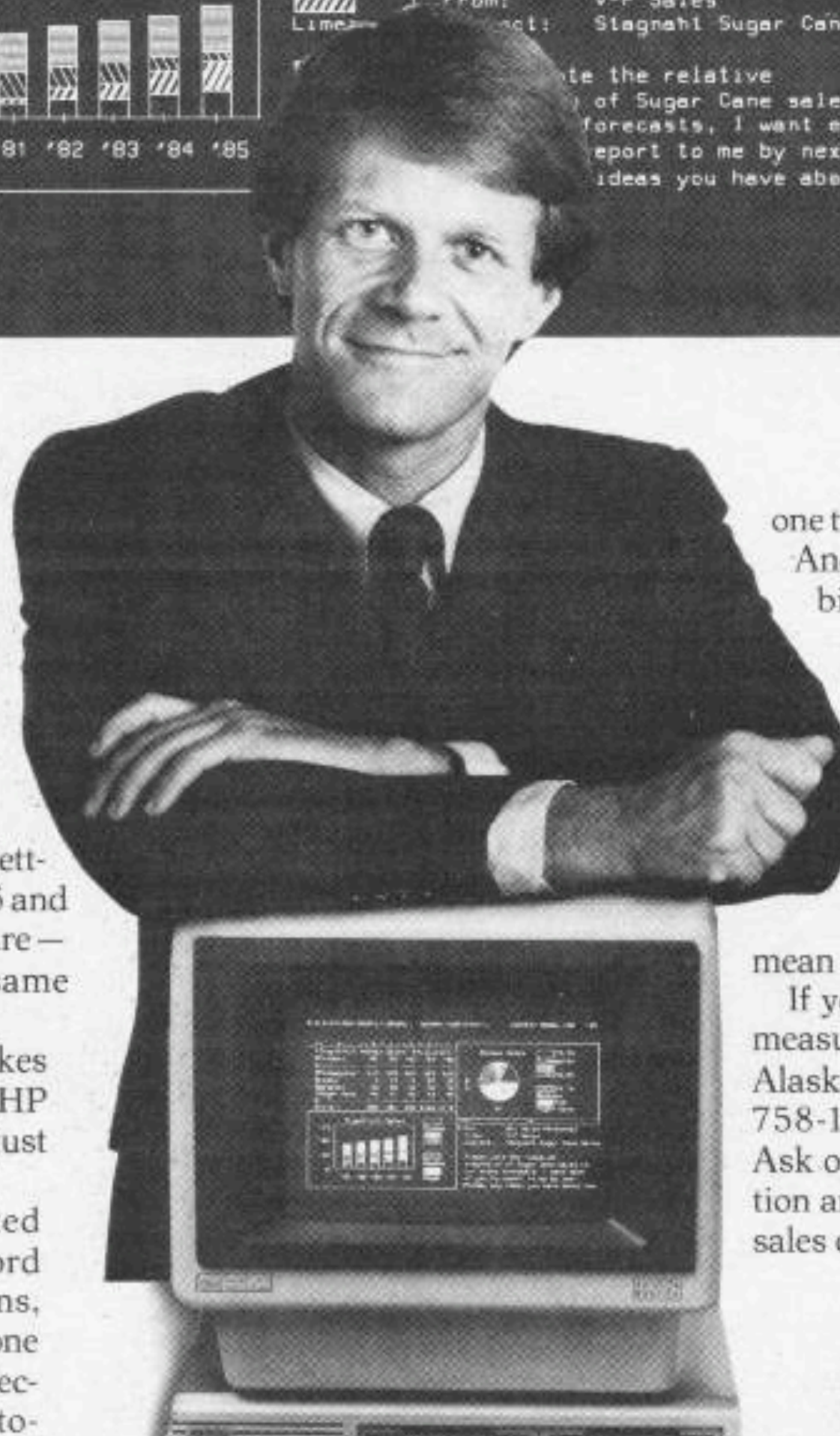


## Hewlett-Packard's new personal computer is up to 5 times faster than IBM's. And half the size.

Take two personal computers: Hewlett-Packard's new Series 200 Model 16 and the IBM PC. Run the same software—Context/MBA™—and solve the same problem.

You'll see one big difference. It takes the IBM minutes to do what the HP 200 can do in seconds.\* And that's just the beginning.

With Context/MBA™ integrated software, the HP 200 can do word processing, spreadsheet projections, indexing, filing and graphics all at one time. Change one number in a projection...and the graphs change, auto-



one time. (Twice as much as the IBM.) And it's got the memory to handle big, complicated problems. (You can have as much as 768Kb.)

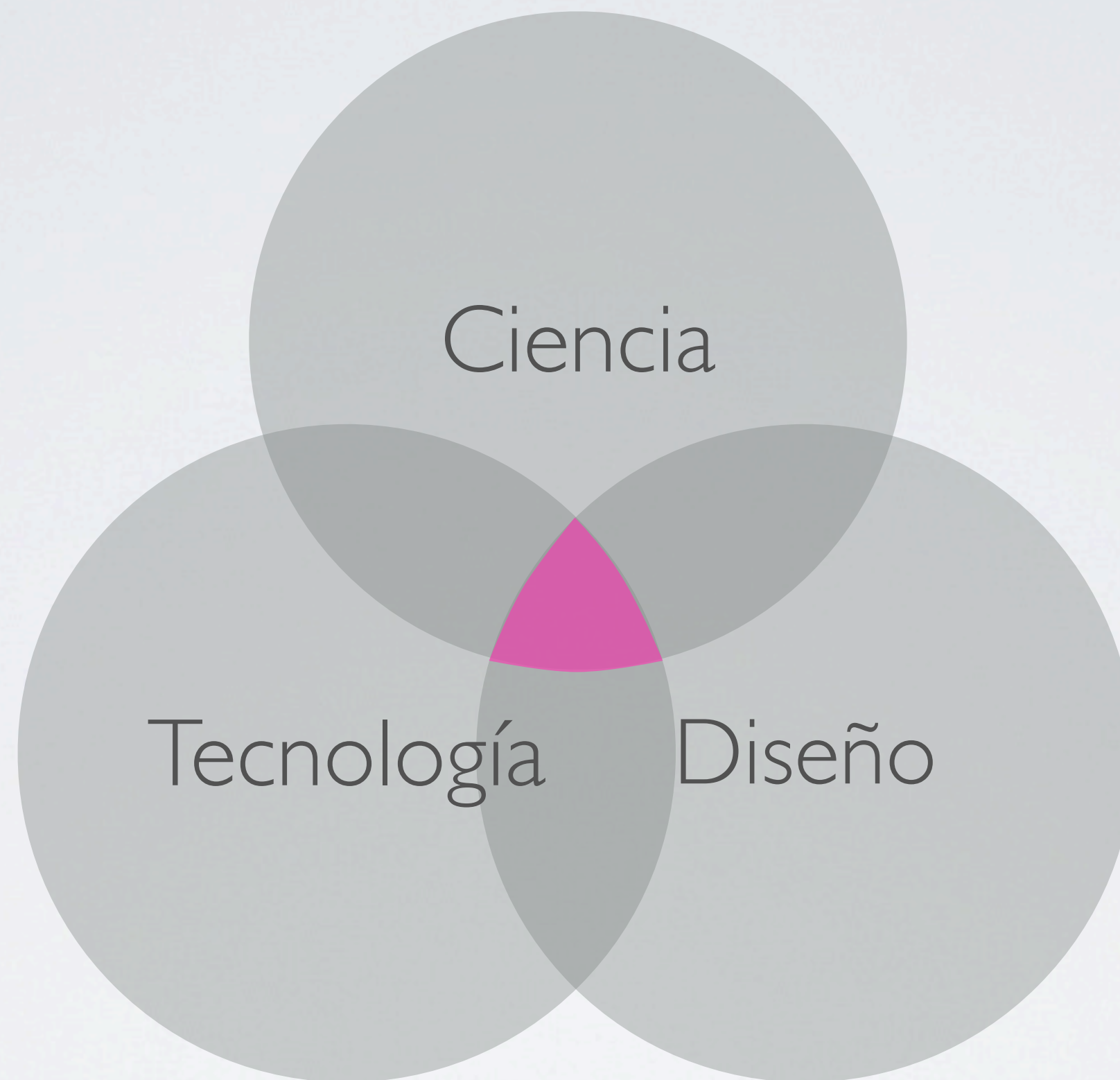
But for all its power, the HP 200 is surprisingly small. The whole computer, not including the keyboard, measures just 12" across by 13" deep. So, putting a personal computer on your desk doesn't mean taking everything else off.

If you'd like to see how the HP 200 measures up, call (800) 547-3400. (In Alaska, Hawaii and Oregon call (503) 758-1010 or TTY (503) 758-5566.) Ask operator #411 for more information and the name of the HP dealer or sales office nearest you.







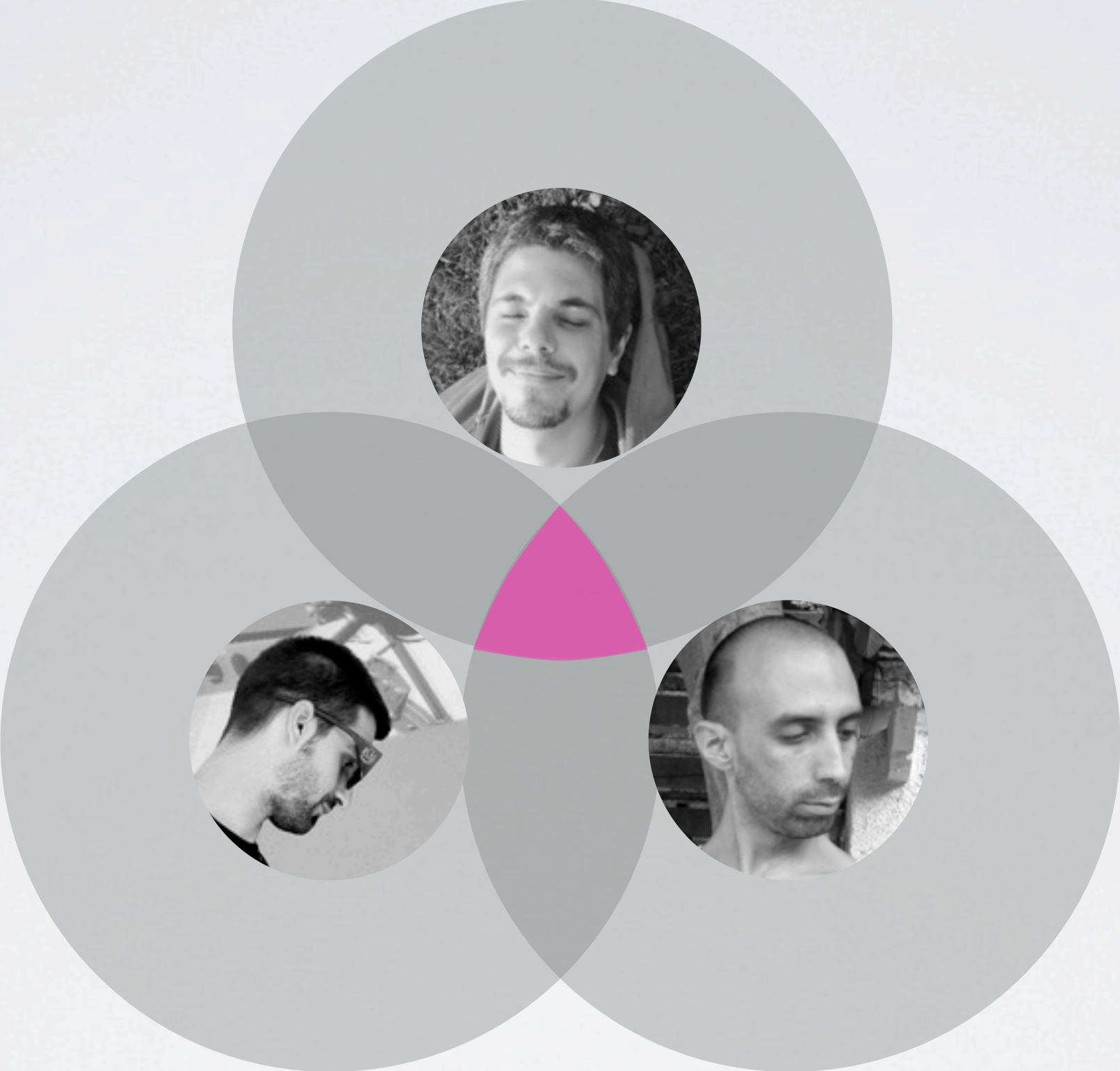


Ciencia

Tecnología

Diseño









Galileo Galilei

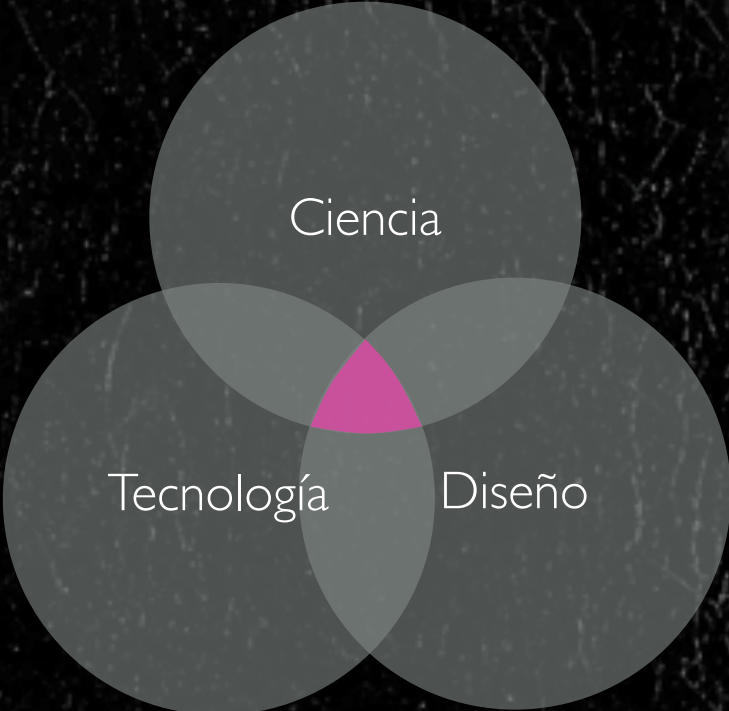










Figure 3. Experimental dam break results at times 0.32s, 0.64s, 0.96s and 2.08s

s) can be observed for the moment the return wave hits the box again at about 5.0 s. This delay has also been observed in the first author's thesis [22] using a different free surface model presented in [6], [7].

#### B. Flushing of a toilet

The second example presents the flushing of a toilet using a complex real geometry with different lengths; from approximately 3mm for the discharge orifices to approximately 400mm for the size of the whole toilet. In order to treat such geometry an unstructured mesh with 748044 nodes and 3104902 tetrahedral, pyramidal and prism elements is used. It is shown in Figure 6. In order to simplify the simulation for the moment slip boundary conditions have been applied at the walls. A constant inflow velocity is applied at the inlet so that the flushing time corresponds to a realistic situation. Figure 7 shows several snapshots during the flushing process. The results show good qualitative comparison with the actual process. Initially only a small portion of the initial prat of the inlet tube is filled with water. When the simulation starts the water starts moving through the internal upper part of the toilet until it reaches the discharge orifices where it comes out as a jet. Finally it collides with the toilet walls to form a thin film of water.



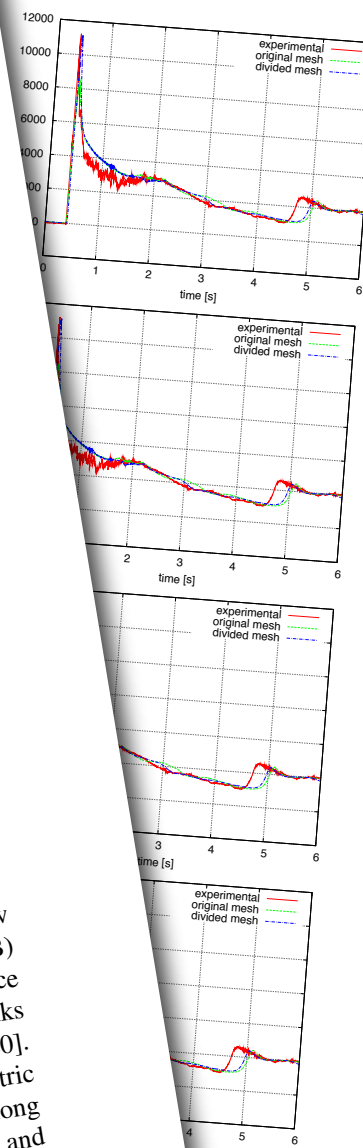
Figure 4. Dam break results at times 0.32s, 0.64s, 0.96s and 2.08s using the divided mesh

#### C. DTMB 5512

In order to benchmark our numerical results the flow around the bare hull David Taylor Model Basin (DTMB) model 5512, a 1:46.6 model scale of a modern surface combatant, is used. It has been tested in the towing tanks at DTMB, IHR (Iowa) [18] and INSEAN (Italy) [20]. It has a sonar dome, which provides additional geometric complexity. The DTMB 5512 model is  $L = 3.048$  m long with 0.132 m draft. Results at  $Re = 4.85 \times 10^6$  and  $Fr = 0.28$  will be shown.

Three different finite element meshes have been used. The first one, that we shall call Mesh A, is formed by 8 Melements and 1.5 Mnodes. The second one, Mesh B, is a slightly improved version of the previous one that takes into account symmetry and therefore simulates only half of the whole domain. It is formed by 5 Melements. Finally Mesh C is obtained by dividing mesh B into elements with half the size arriving to a total of 40 Melements. This has been done automatically using the strategy presented in [13]. All three meshes are formed mainly by tetrahedra and include an anisotropic layer of prisms close to the hull. Mesh B is shown in Figure 8. It is refined close to the free surface is found. As we have said, the other two meshes are quite similar.

The computational domain extends  $L = 3.048$  m ahead of the ship hull and  $2L$  behind. The distance from the



P3, P6 and P8



Figure 7. Different time steps during the flushing of a toilet

undisturbed free surface to the bottom of the domain is  $L$  and the height of the initial air region is  $0.22L$ . The lateral extent of the domain is  $2L$  in the symmetric case and  $4L$  in the non symmetric one. The velocity is prescribed at the inlet, lateral, bottom and top walls. At the outlet the velocity is left free and the normal traction is prescribed as described in Section 2. Reichardt's wall law [25] is applied on the ship hull. The turbulent variables  $k$  and  $\omega$  are prescribed so that the turbulence intensity is 0.0005 and the ratio between the turbulent and laminar viscosities is 10.0 at the inlet. On the ship hull the wall law is again used to apply the boundary conditions for the the turbulence variables. On the remaining boundaries the boundary condition for the turbulent variables corresponds to a zero normal gradient. Finally, the Level Set function is only prescribed at the inlet. When a symmetric



TOP VIEW



00:00:00

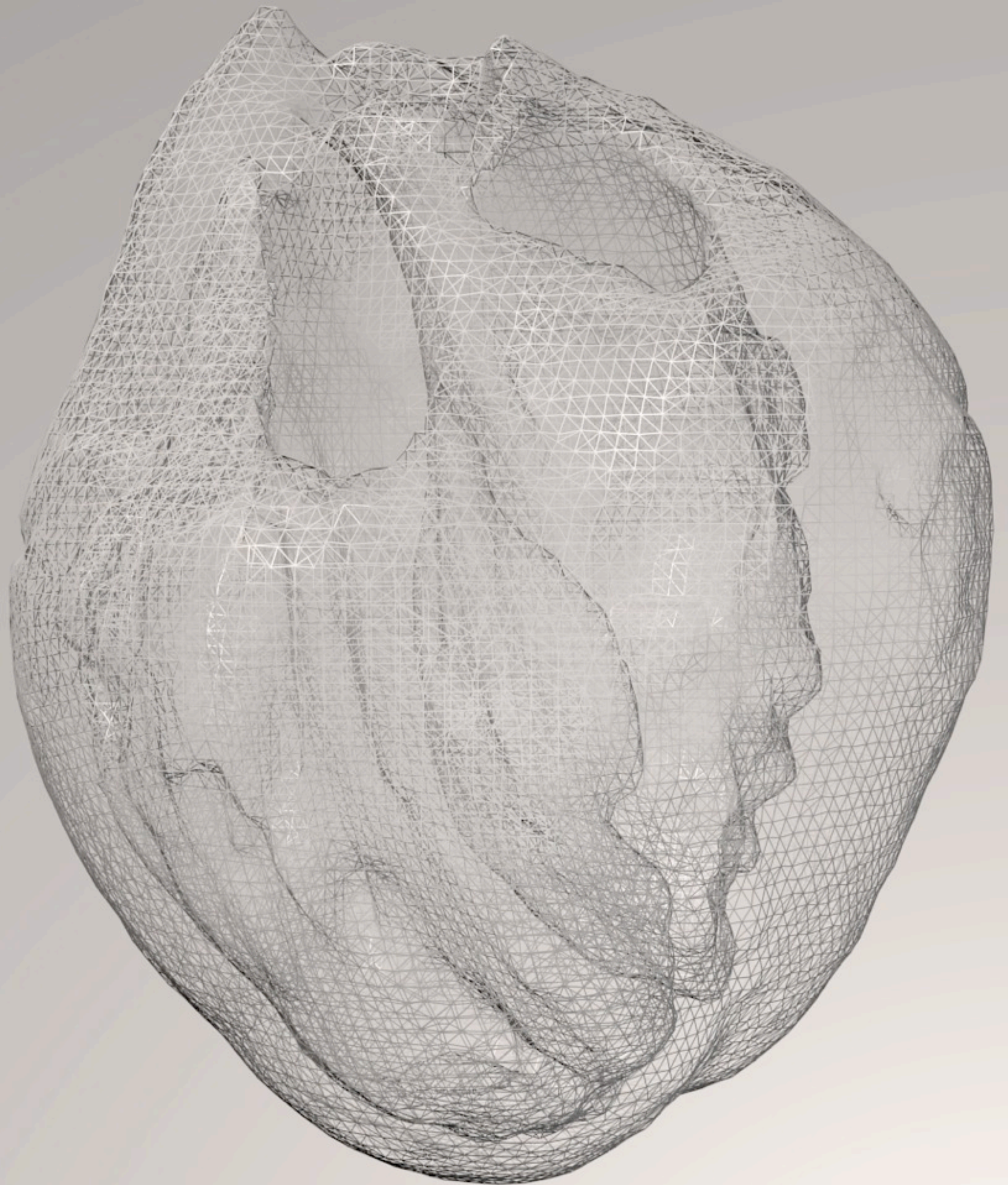
4 km

2,4 km





*Alya red*







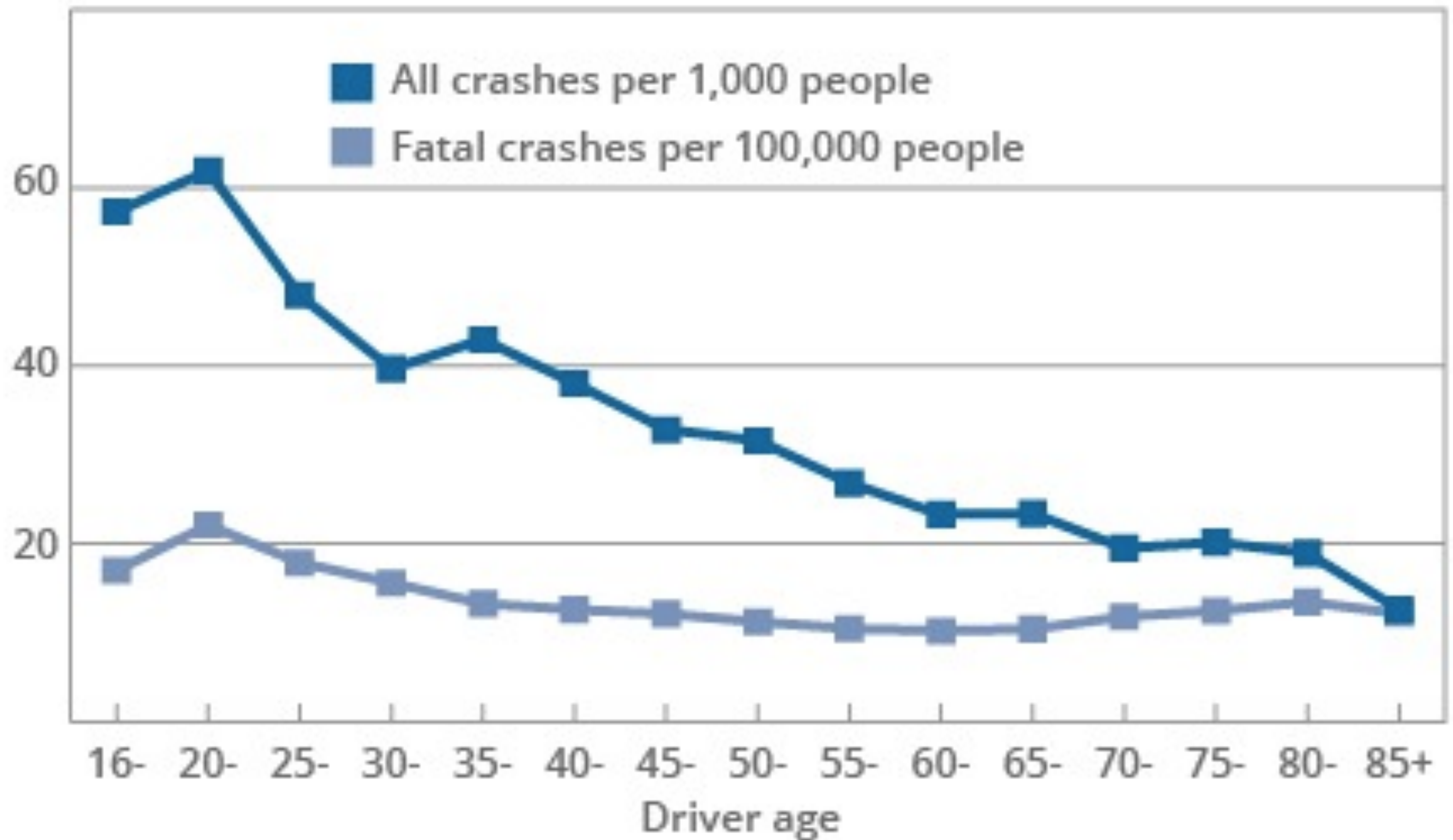
*Intermedio*





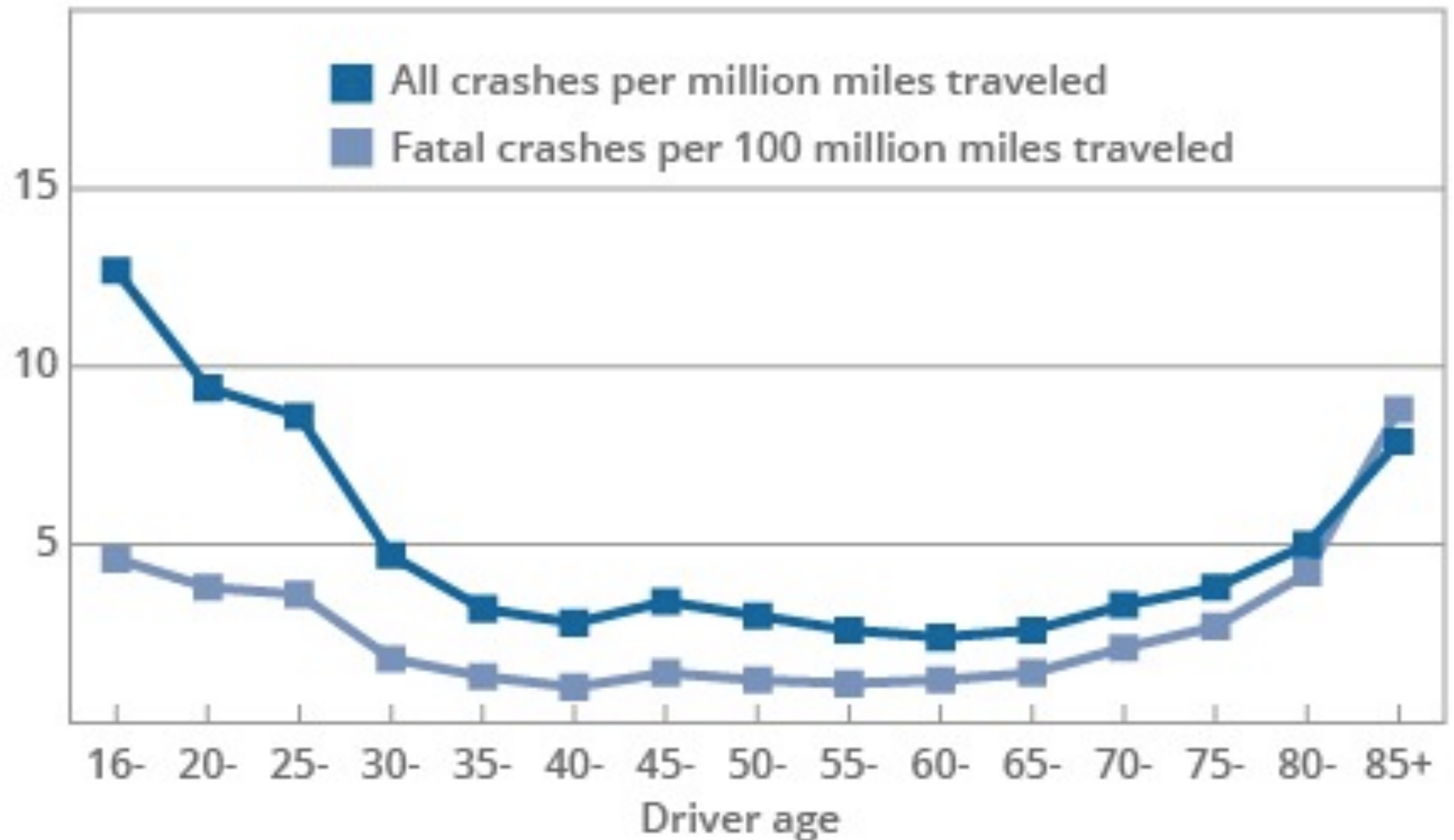


## Per capita rate of passenger vehicle crash involvements by driver age, 2011





## Rate of passenger vehicle crash involvements per mile traveled by driver age, 2008







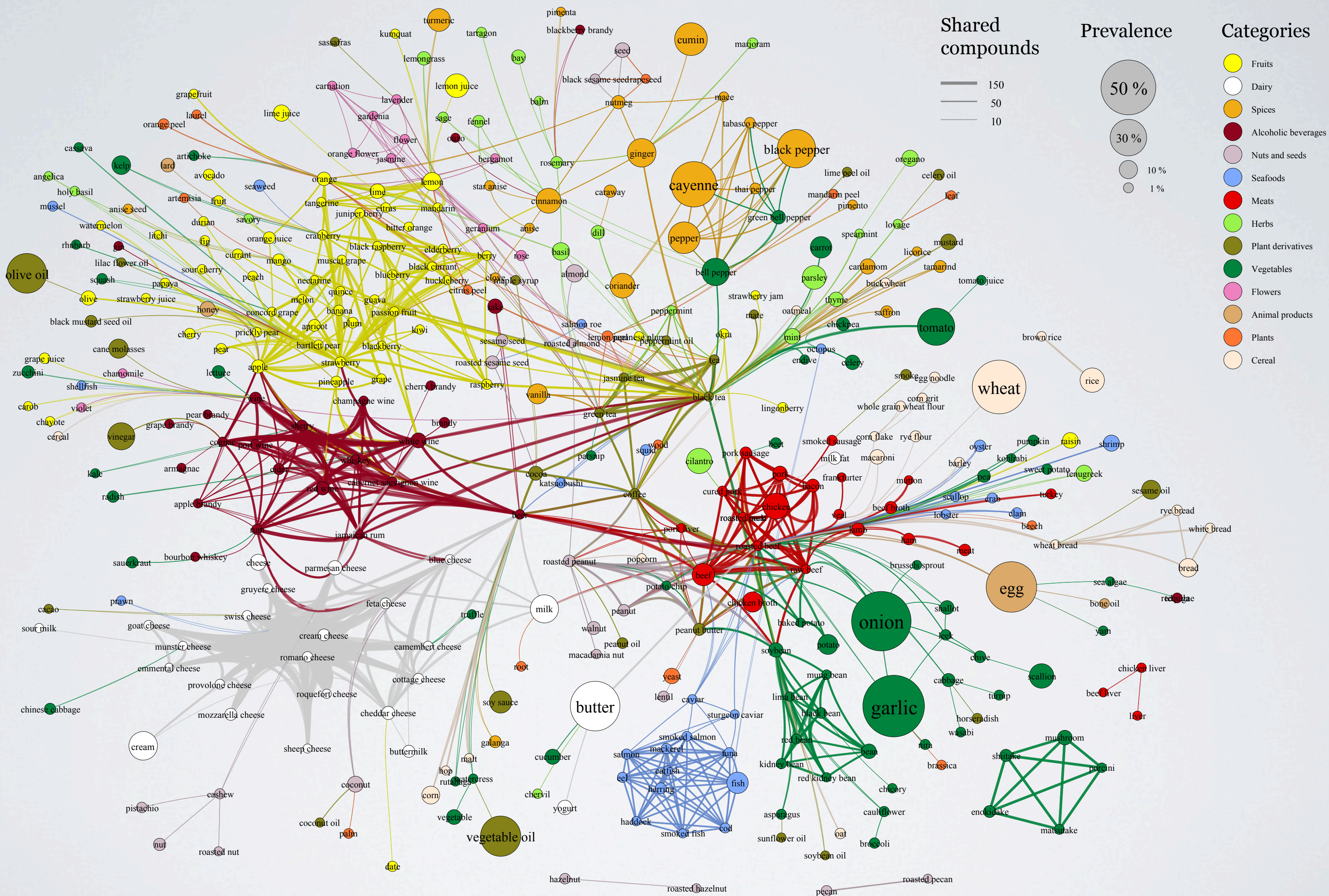
No muestres  
los datos,  
muestra  
la verdad.

*Moritz Stefaner*



# Flavor Network

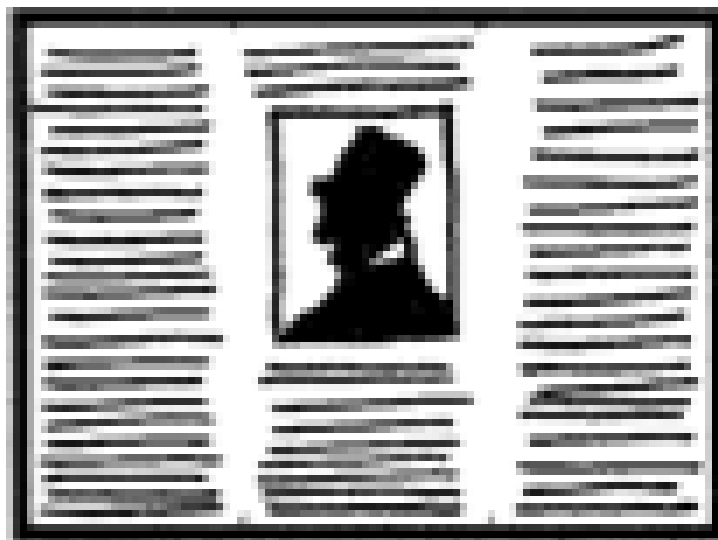
Yong-Yeol Ahn, Sebastian Ahnert, James P. Bagrow, and A.-L. Barabási



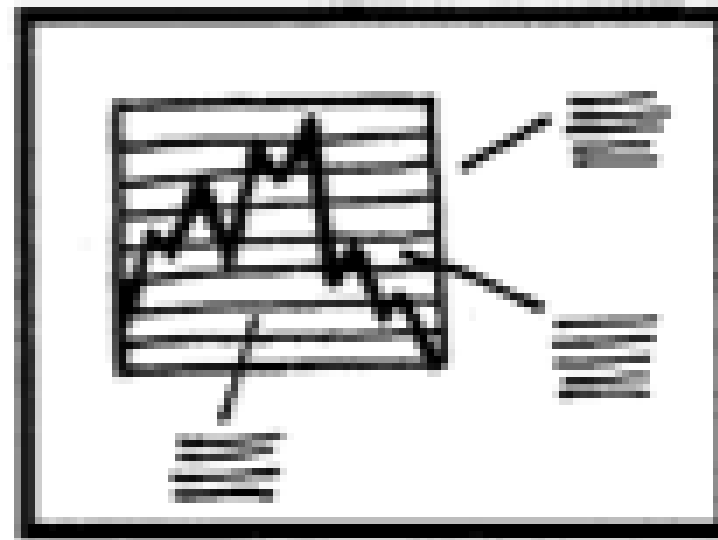
Flavor network. Culinary ingredients (circles) and their chemical relationship are illustrated. The color of each ingredient represents the food category that the ingredient belongs to, and the size of an ingredient is proportional to the frequency we use (collected from online recipe databases: epicurious.com, allrecipes.com, menupan.com). Two culinary ingredients are connected if they share many flavor compounds. We extracted the list of flavor compounds in each ingredient from the book “Fenaroli’s handbook of flavor ingredients (5th ed.)” and then applied a backbone extraction method by Serrano et al. (*PNAS* **106**, 6483) to pick statistically significant links between ingredients. The thickness of an edge represents the number of shared flavor compounds. To reduce clutter, edges are bundled based on the algorithm by Danny Holten (<http://www.win.tue.nl/~dholten/>).



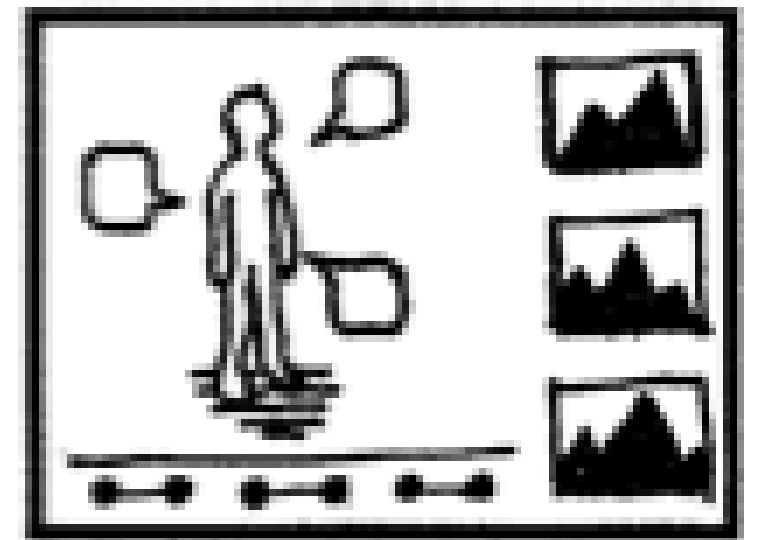
# Siete Géneros



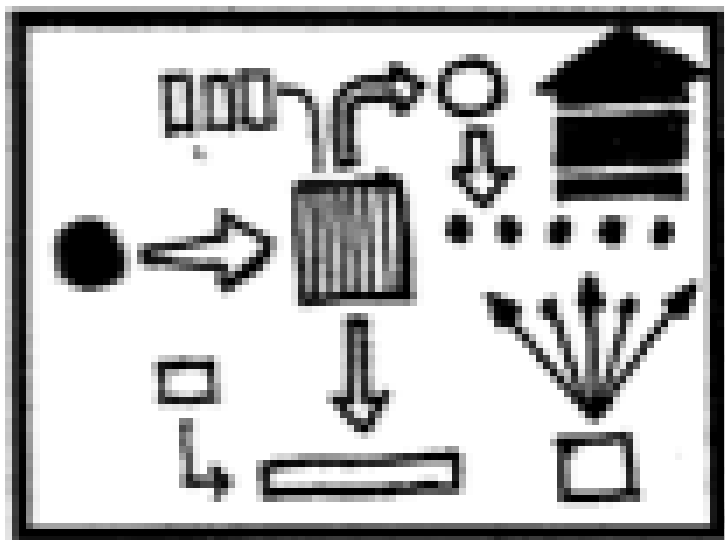
Revista



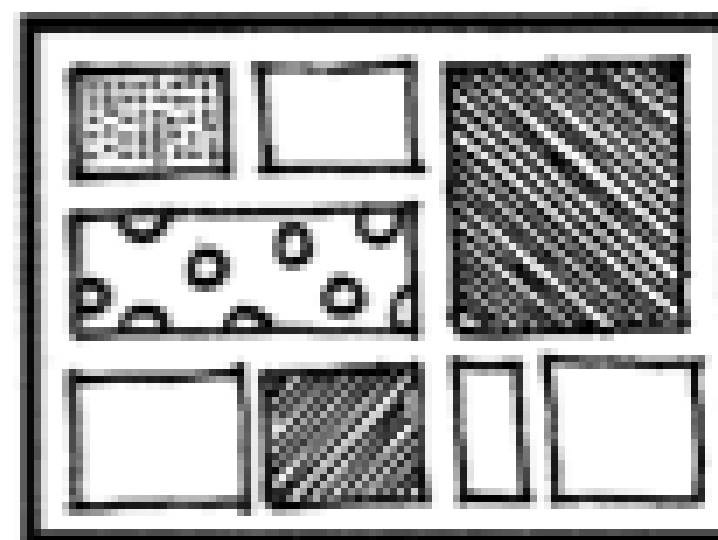
Chart



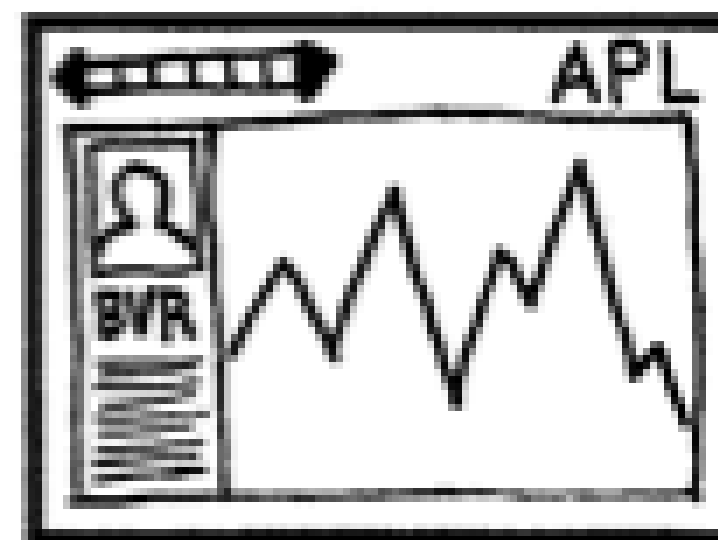
Poster



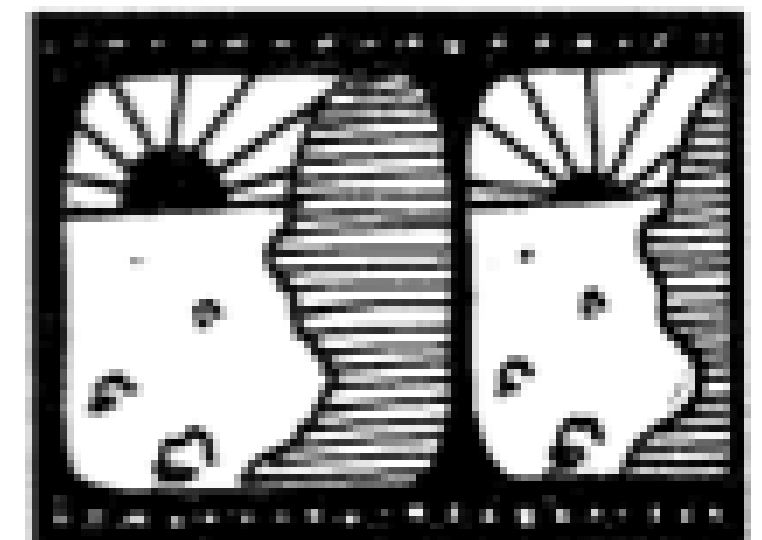
Diagrama



Comic

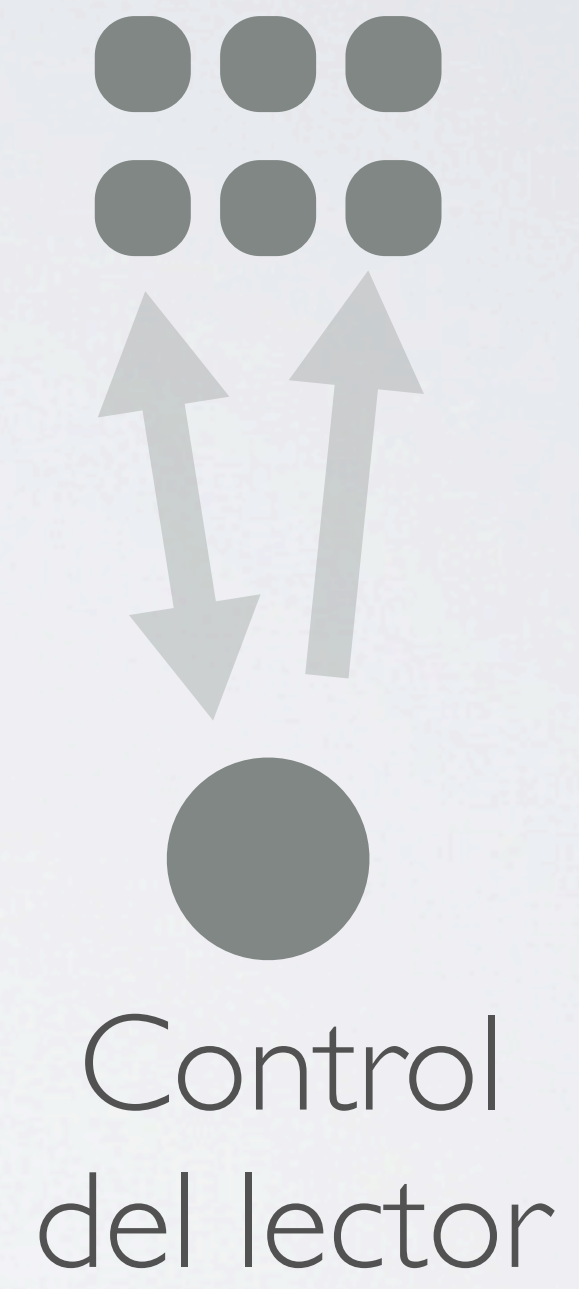
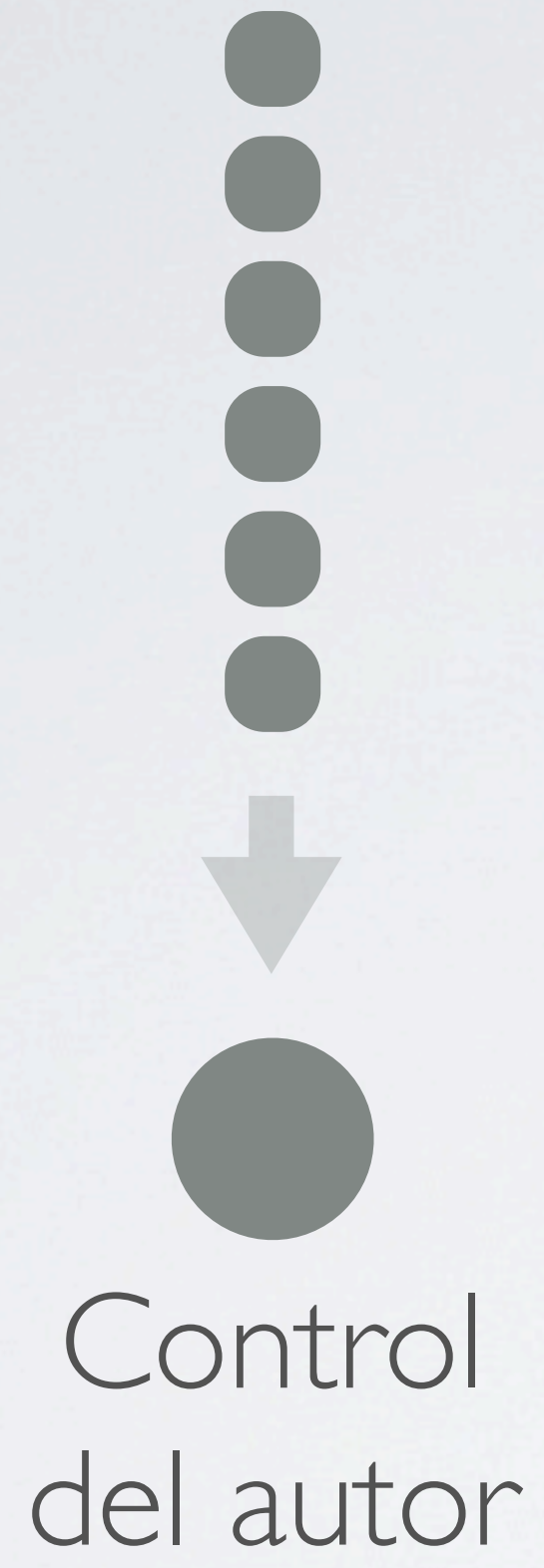


Presentación

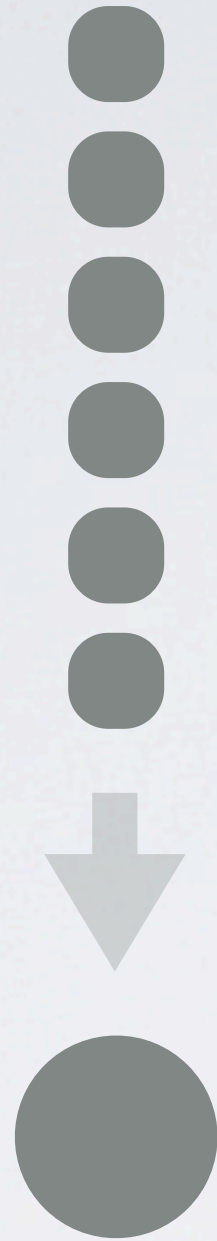


Video/animación

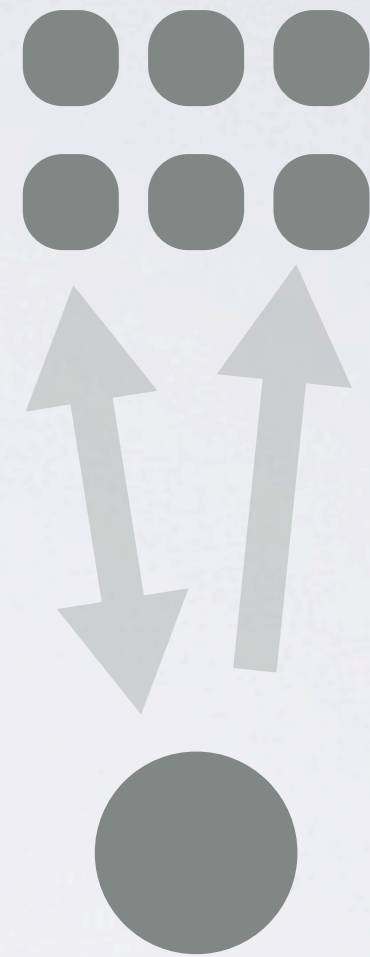








Explicativo



Exploratorio



# Técnicas de narrativa



# Mapping the World's Friendships

Show

Language



Se

Learn which countries share the closest friendship connections on Facebook.

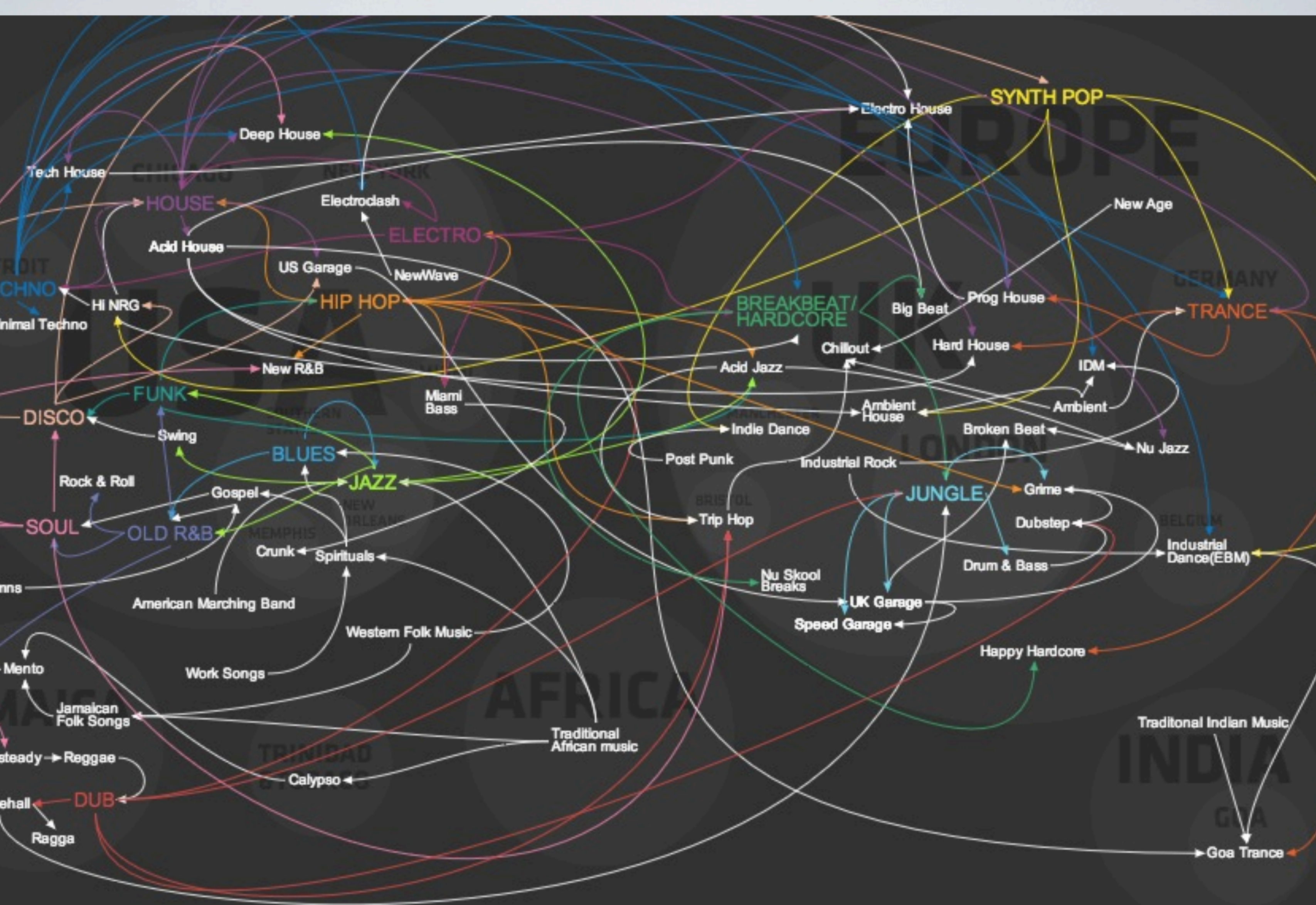
[Methodology](#)



## A Closer Look: Spain & Romania

Romania is the biggest source of immigrants in Spain, although Spain recently decided to close its borders to Romanian immigrants through the end of 2012.





1800 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000

Play





# 755

## Steroids or Not, the Pursuit Is On

Barry Bonds is taking aim at the career home run record. He needs only six more to tie Babe Ruth and 47 to equal Hank Aaron.

Lines are cumulative home runs.

**Hank Aaron**  
755 homers  
23 seasons



**Babe Ruth**  
714 homers  
22 seasons



**Barry Bonds**  
708 homers  
20 seasons

**Bonds takes lead**  
Home runs  
after 16 seasons  
Bonds 567  
Aaron 554  
Ruth 516

600

755  
714  
23 seasons  
22 seasons  
20 seasons  
Bonds was injured last season. He played 14 games and hit 5 homers.

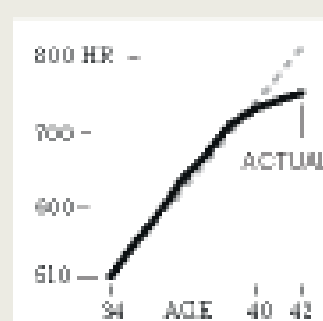
### Homer Pace After Age 34

If the accusations are correct, Bonds was 34 in his first season on steroids. Here are projected home run paces for each player after age 34.

----- PROJECTED PACE BASED ON AVERAGE OF PREVIOUS FIVE SEASONS

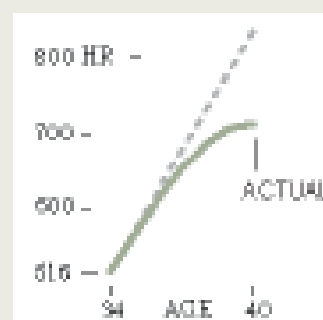
#### Aaron

Actual homers slightly outpace projected homers for five seasons.



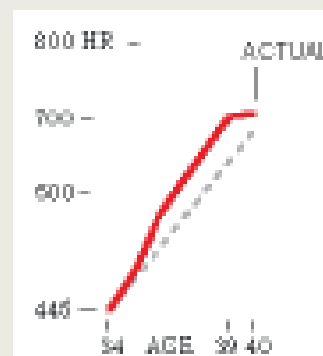
#### Ruth

Averaged 46.4 homers a season from age 30 to 34. Averaged 42.5 for next four seasons.



#### Bonds

From age 35 to 39, he averaged 14 more homers a season than projected.



Note: Ages as of July 1 of each season.

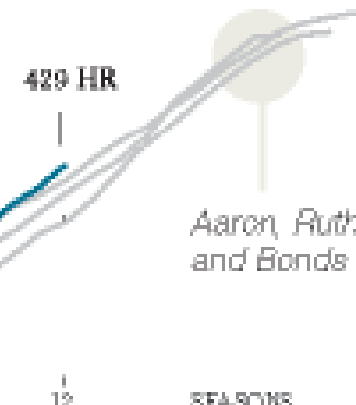
According to allegations in a book about Bonds, he began taking steroids before the 1999 season, his 14th in the league. Two seasons later, he hit 73 home runs, surpassing Aaron's career pace.

### Others Taking Aim



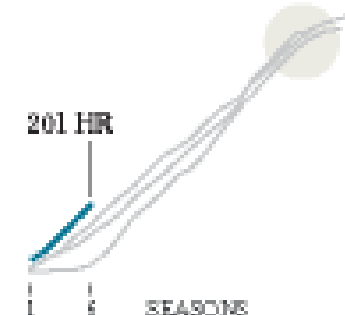
#### Alex Rodriguez

Is ahead of the pace set by all three home run leaders.



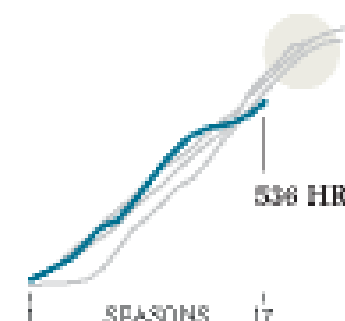
#### Albert Pujols

Averaging 40 homers a season, he has started stronger than the three leaders did.



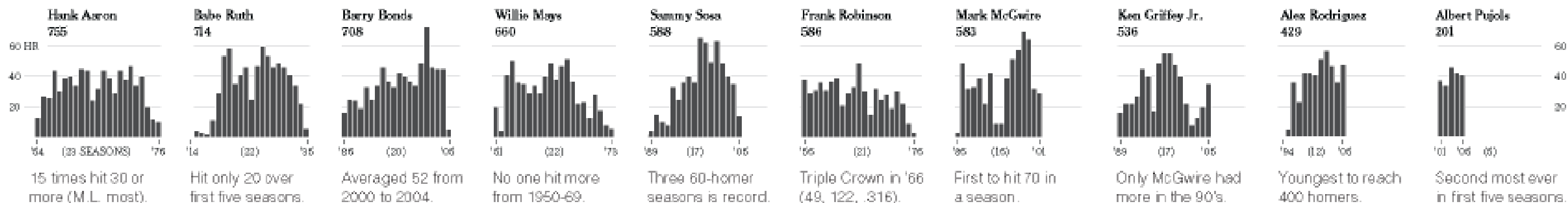
#### Ken Griffey Jr.

Many thought he would be the first to catch Ruth and Aaron until injuries limited his output.



### Differing Paths to the Top of the Charts

The top seven players on the career home run list, along with a look at Griffey (12th), Rodriguez (37th) and Pujols (tied 257th).







# Nacemos comunicadores **visuales**

*Nancy Duarte*



A black and white photograph of Nancy Duarte, a woman with long dark hair, wearing a dark top and large hoop earrings. She is shown in profile, facing right, with her mouth open as if speaking. Her hands are raised in front of her, palms facing each other, in a gesturing motion. The background is blurred, showing a crowd of people in an audience.

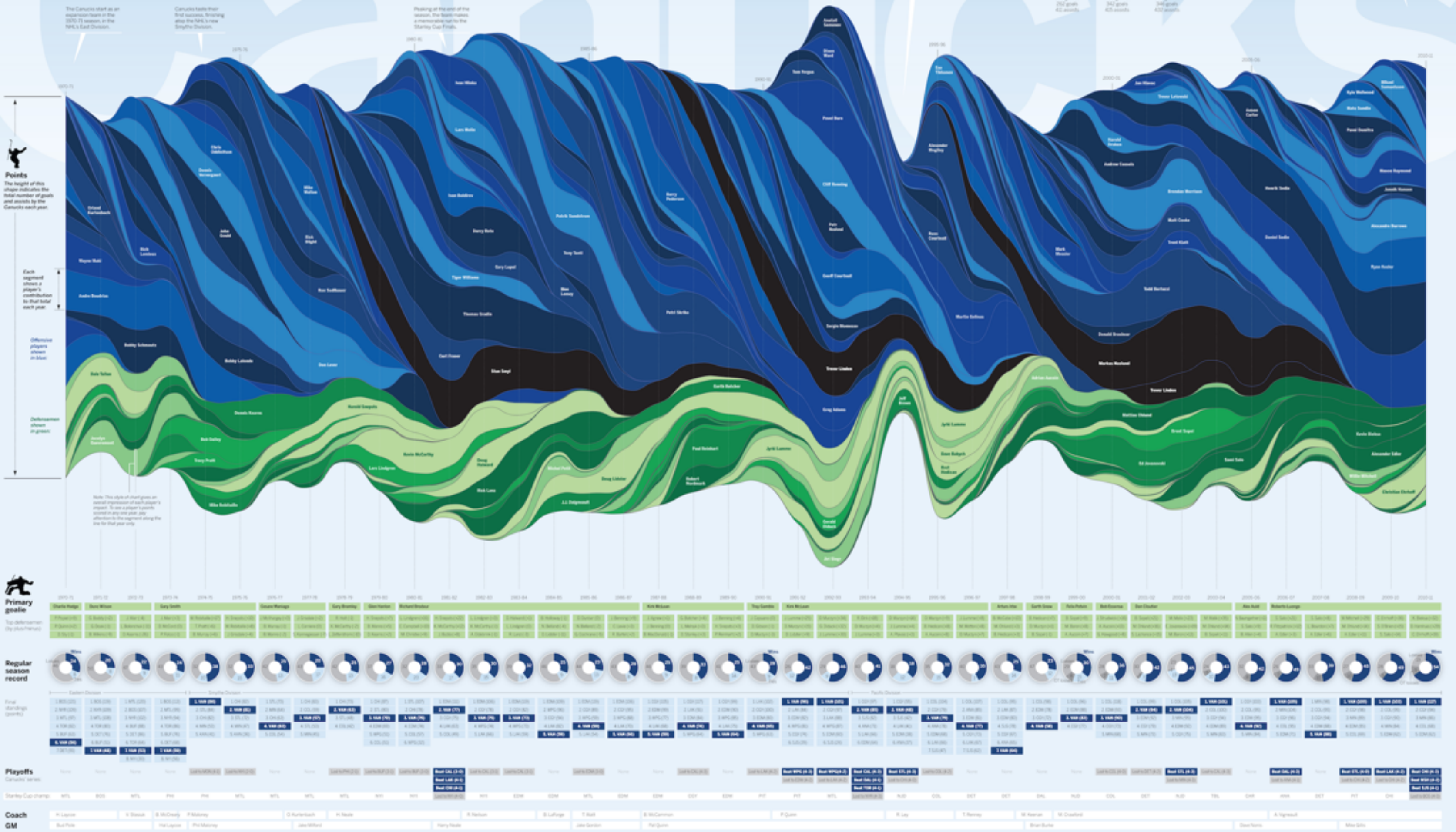
# Nacemos comunicadores **visuales**

*Nancy Duarte*



# Vancouver Canucks

## A Chartball Franchise History





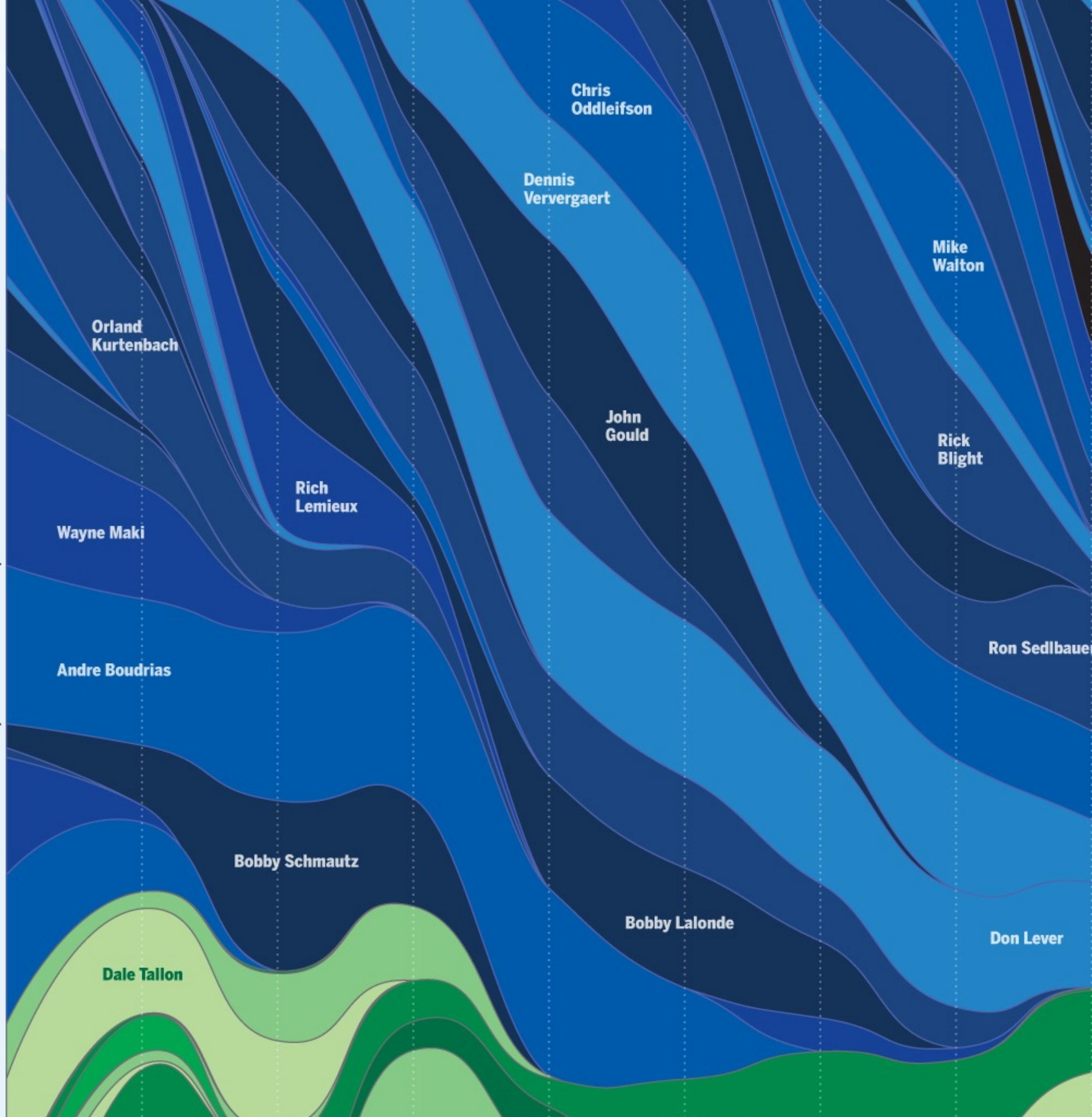


## Points

The height of this shape indicates the total number of goals and assists by the Canucks each year.

Each segment shows a player's contribution to that total each year.

Offensive players shown in blue:





# CASUALTIES: HOME AND AWAY

AFGHANISTAN

IRAQ

Search

Map view | List view

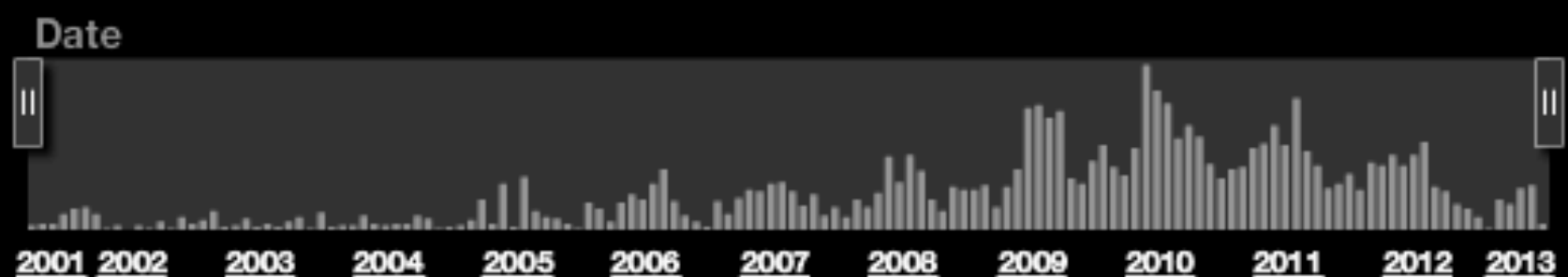
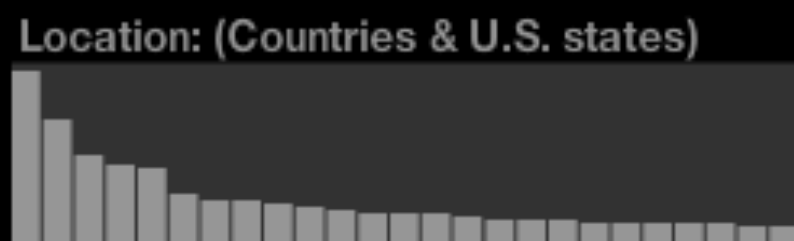
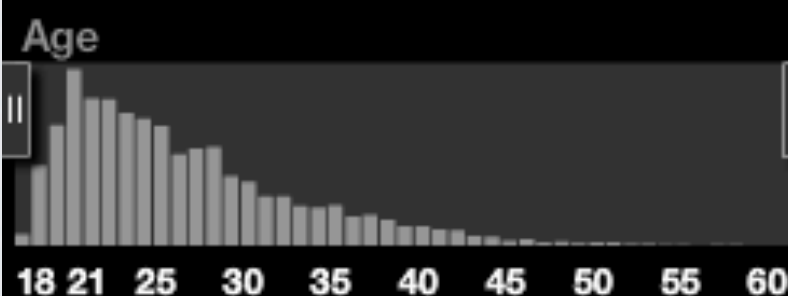
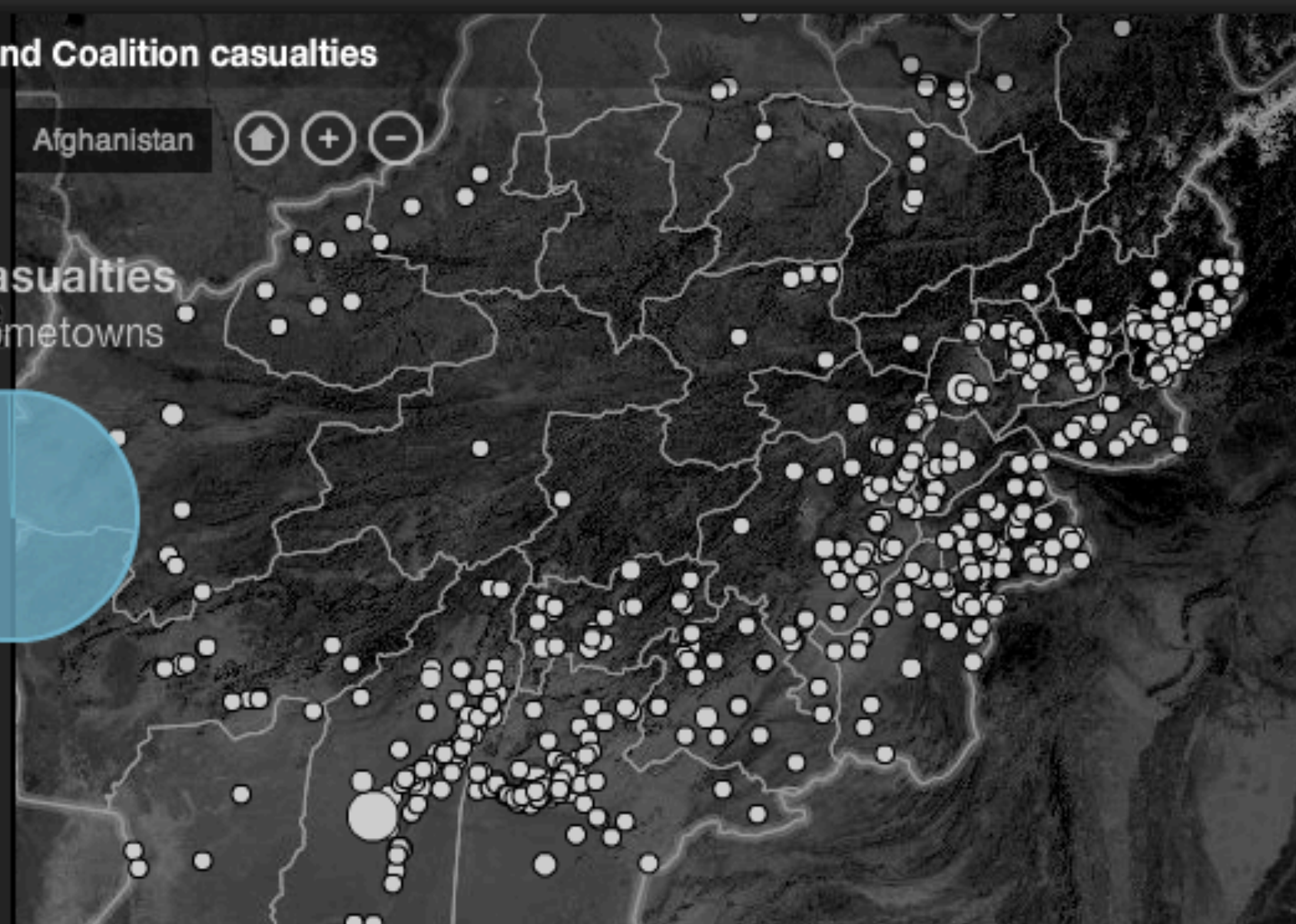
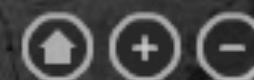
Showing 3,339 US and Coalition casualties

Hometown Locations



3,325 casualties  
2,429 hometowns

Afghanistan



Totals: 3,345 deaths | 18,957 wounded | Last updated 7/17/2013



# CASUALTIES:

AFGHANISTAN

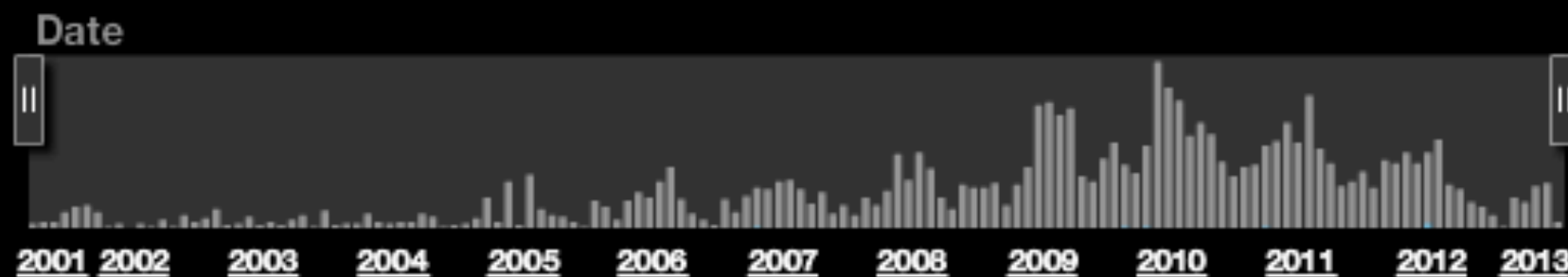
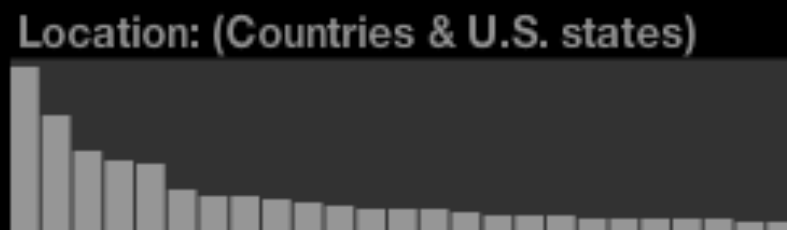
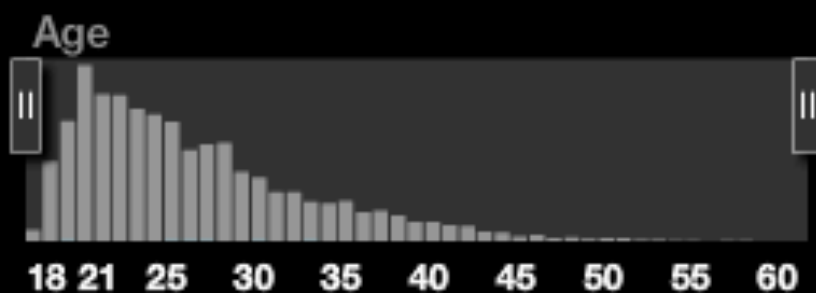
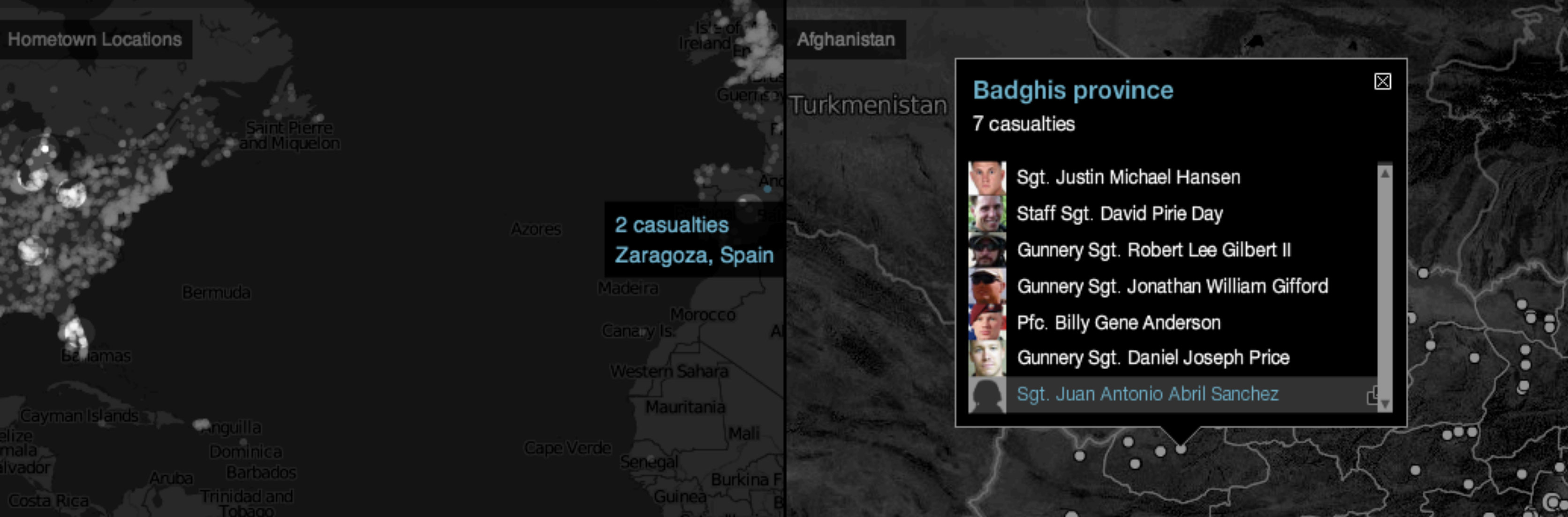
IRAQ

Search

[Map view](#) | 
 [List view](#)

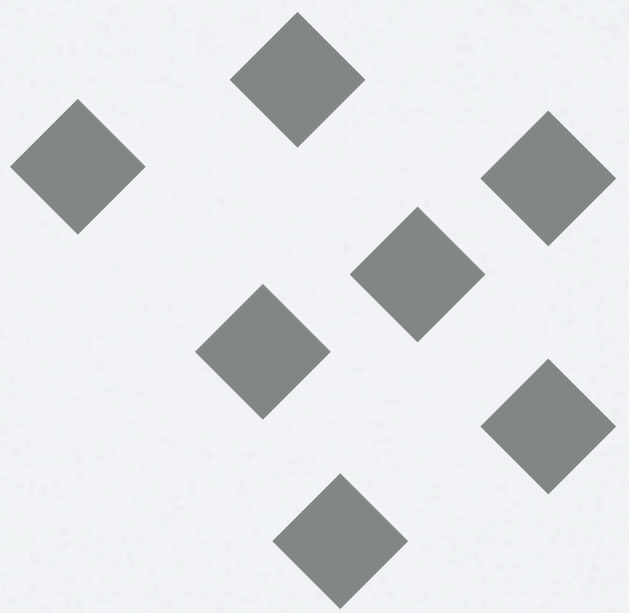
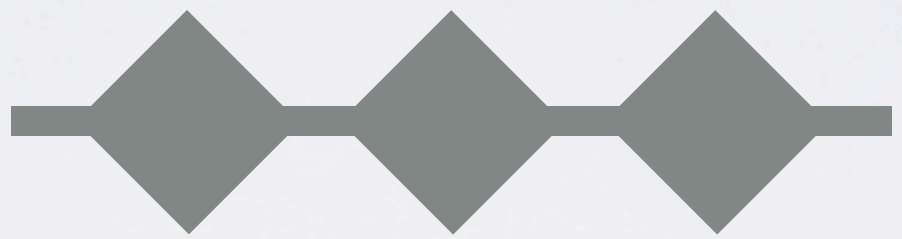
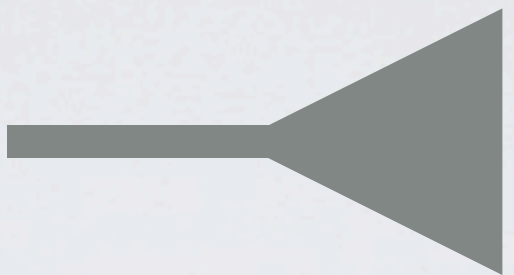
Showing 3,339 US and Coalition casualties

Hometown Locations



Totals: 3,345 deaths | 18,957 wounded | Last updated 7/17/2013



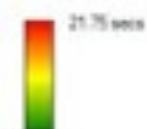








Media: Diapers-01.jpg  
Time: 00:00:00.000 - 00:00:06.033  
Participant filter: All



## Extra gentle for the most sensitive skin.

Sensitive skin is sensitive skin, add the chemicals and moisture of a diaper and you have diaper rash.

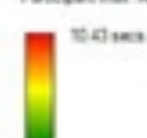
Baby Wipes' unique high-absorbency natural-blend cotton provides cotton-soft, extra thick, gel-free protection for your baby's sensitive skin. The chlorine-free materials and absorbent polymers is non-toxic and non-irritating. Clinically tested and pediatrician recommended for babies with allergies and sensitive skin.



Baby Wipes™

If you are not satisfied with the baby leakage protection, you will get your money back. Read more about our leakfree guarantee at [www.baby.com](http://www.baby.com)

Participant filter: All



## Extra gentle for the most sensitive skin.

Sensitive skin is sensitive skin, add the chemicals and moisture of a diaper and you have diaper rash.

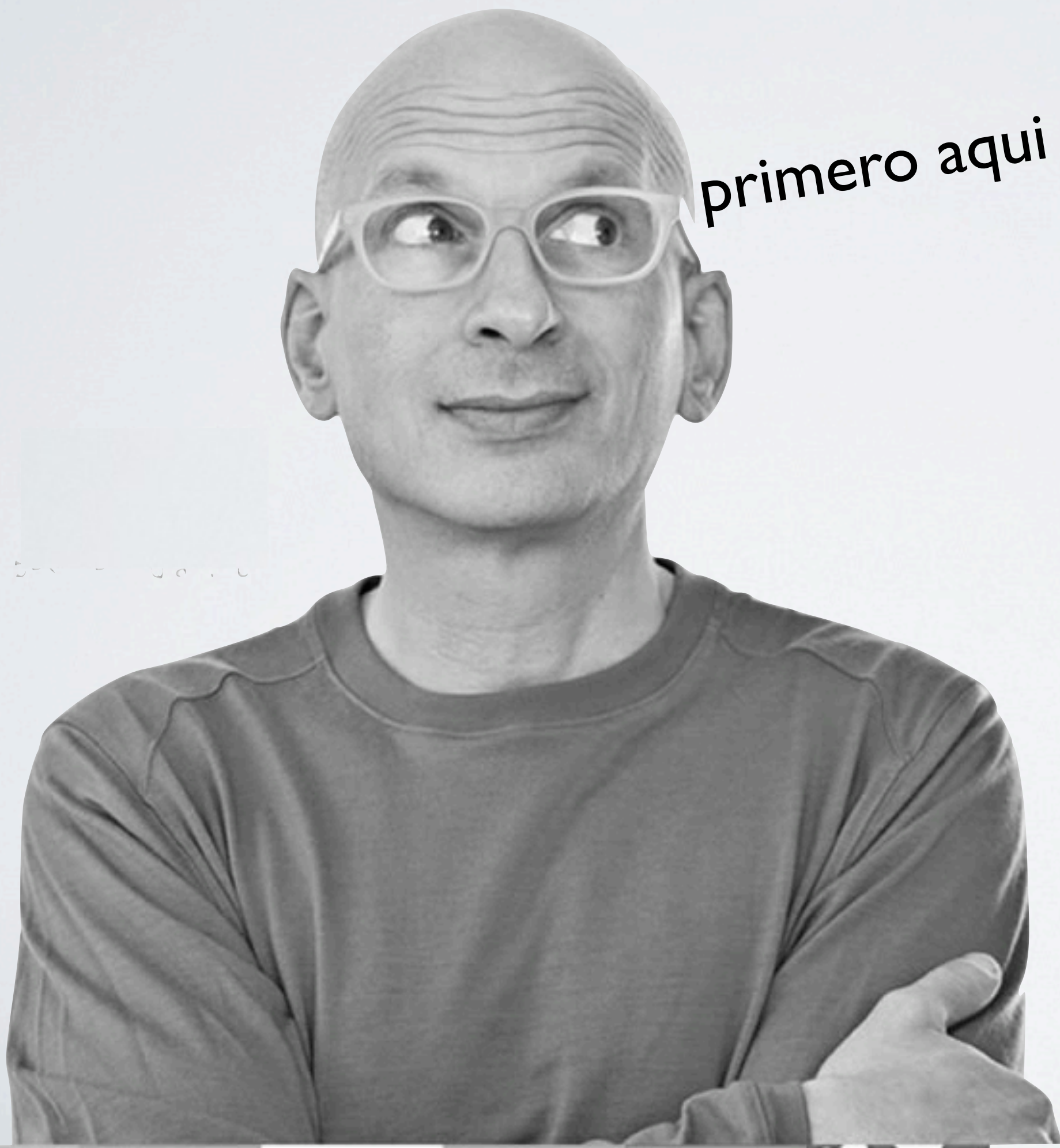
Baby Wipes' unique high-absorbency natural-blend cotton provides cotton-soft, extra thick, gel-free protection for your baby's sensitive skin. The chlorine-free materials and absorbent polymers is non-toxic and non-irritating. Clinically tested and pediatrician recommended for babies with allergies and sensitive skin.



TM

If you are not satisfied with the baby leakage protection, you will get your money back. Read more about our leakfree guarantee at [www.baby.com](http://www.baby.com)





primero aqui

luego  
abajo



termina  
aqui





**Miramos a donde  
mira la gente**

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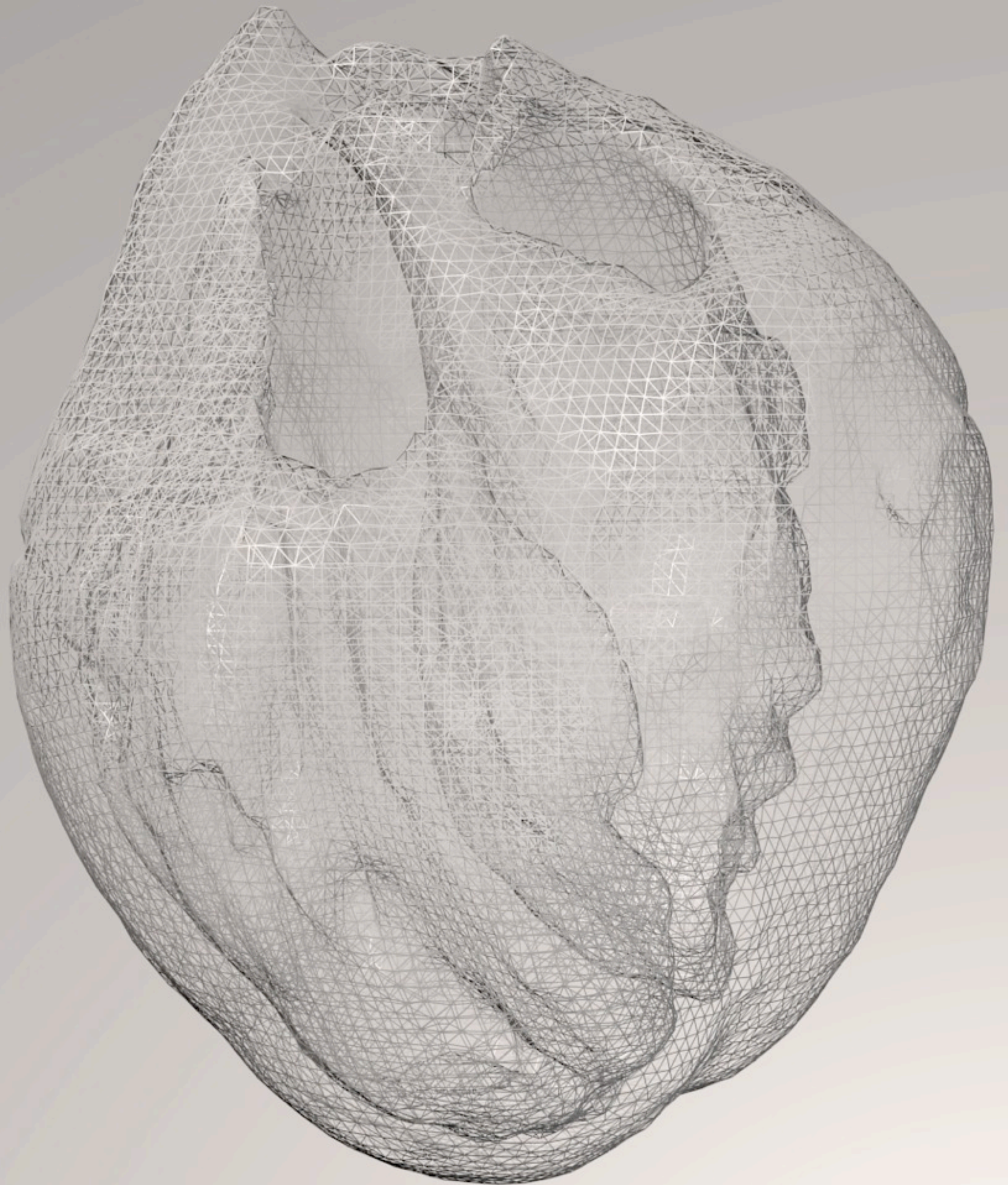




*Continuamos*



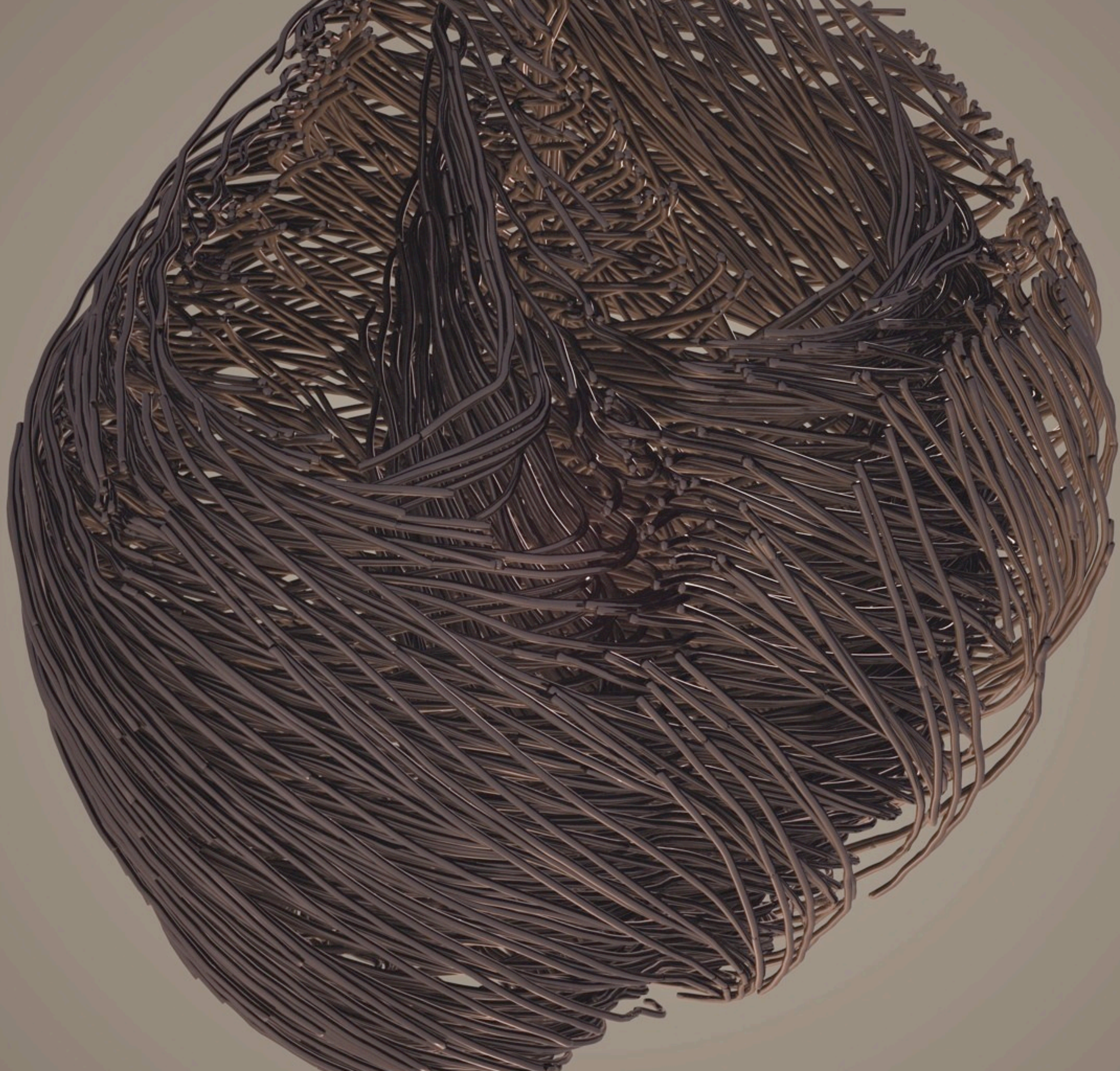
*Alya red*



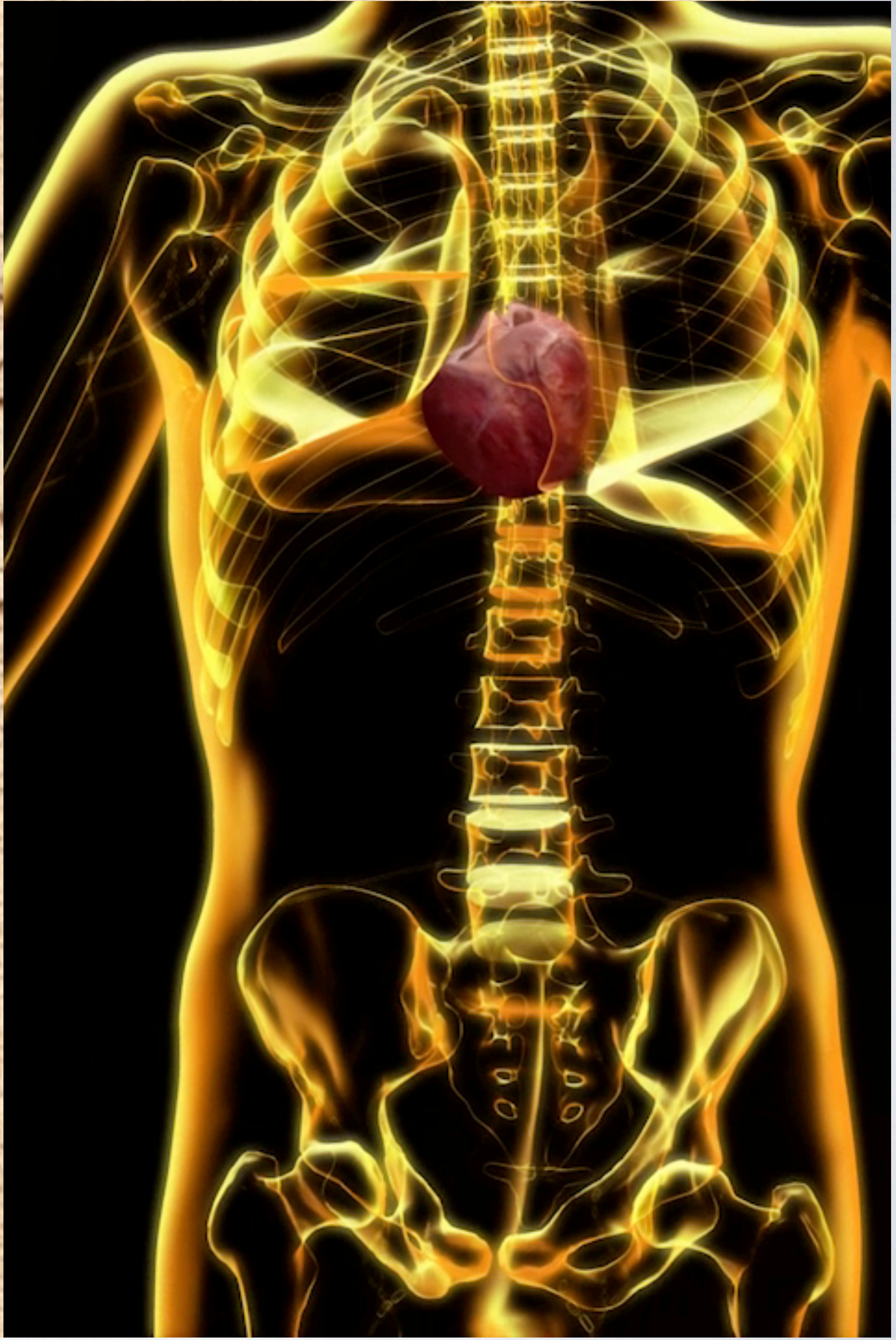
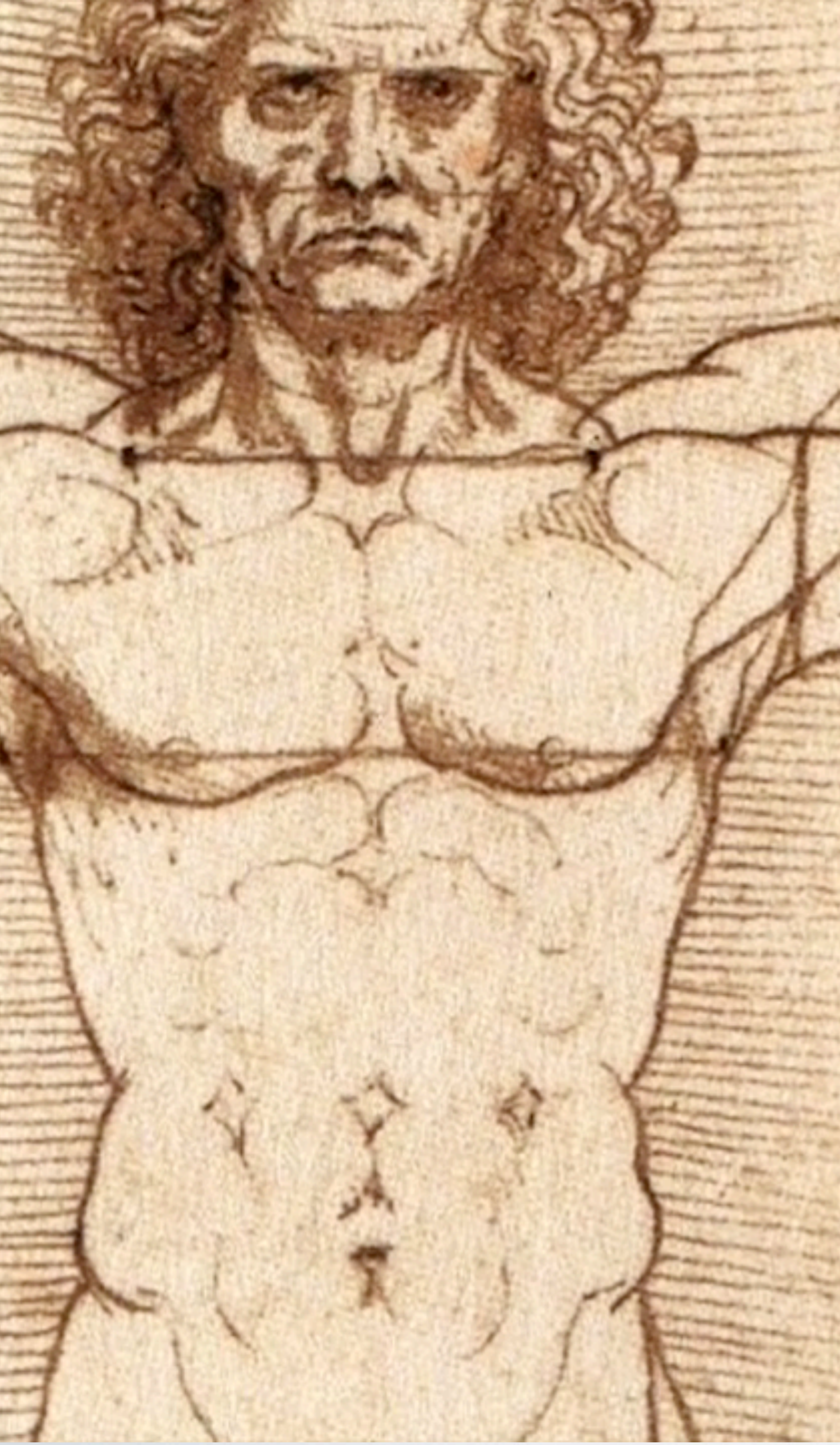


Para ver el video pulse aqui

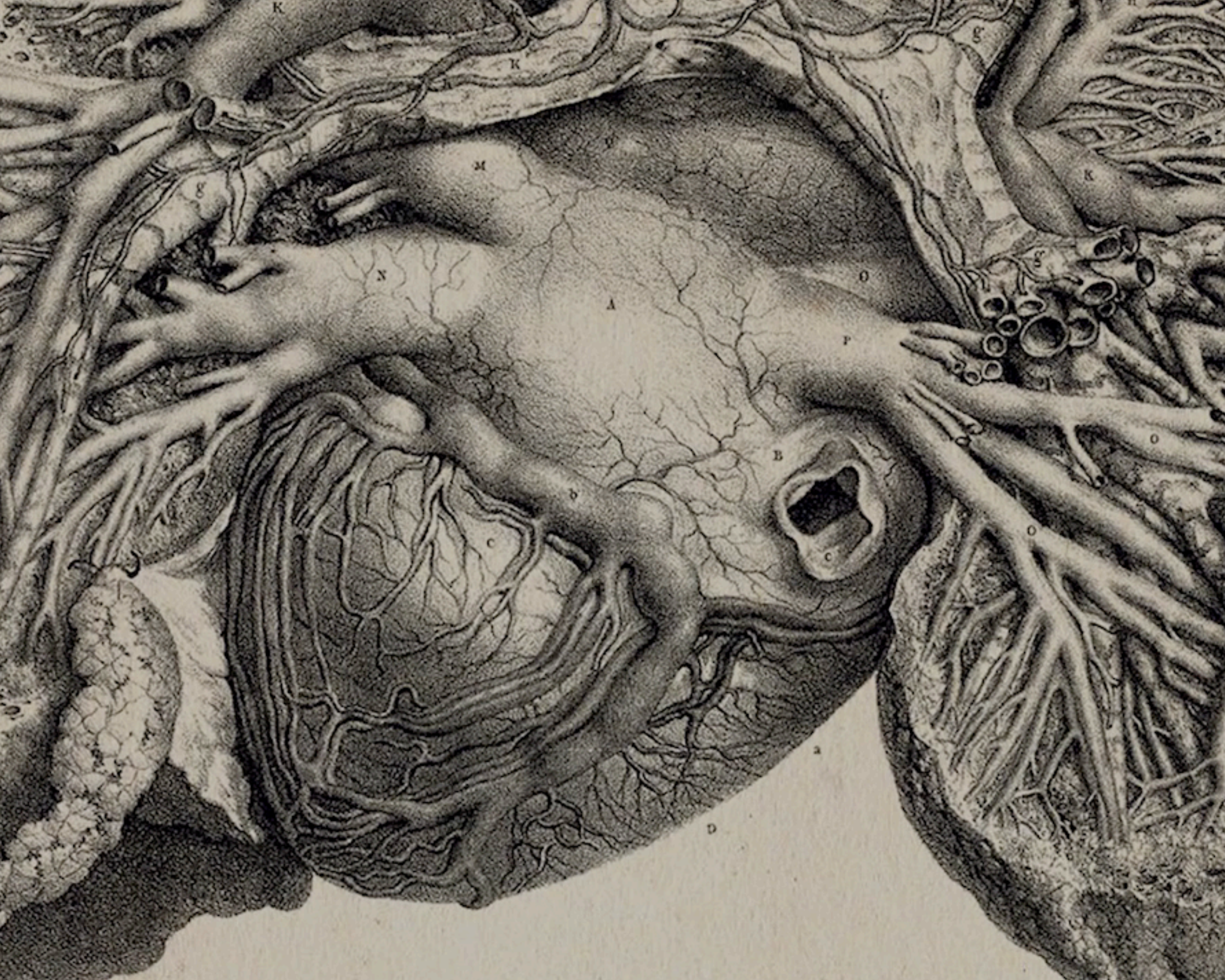




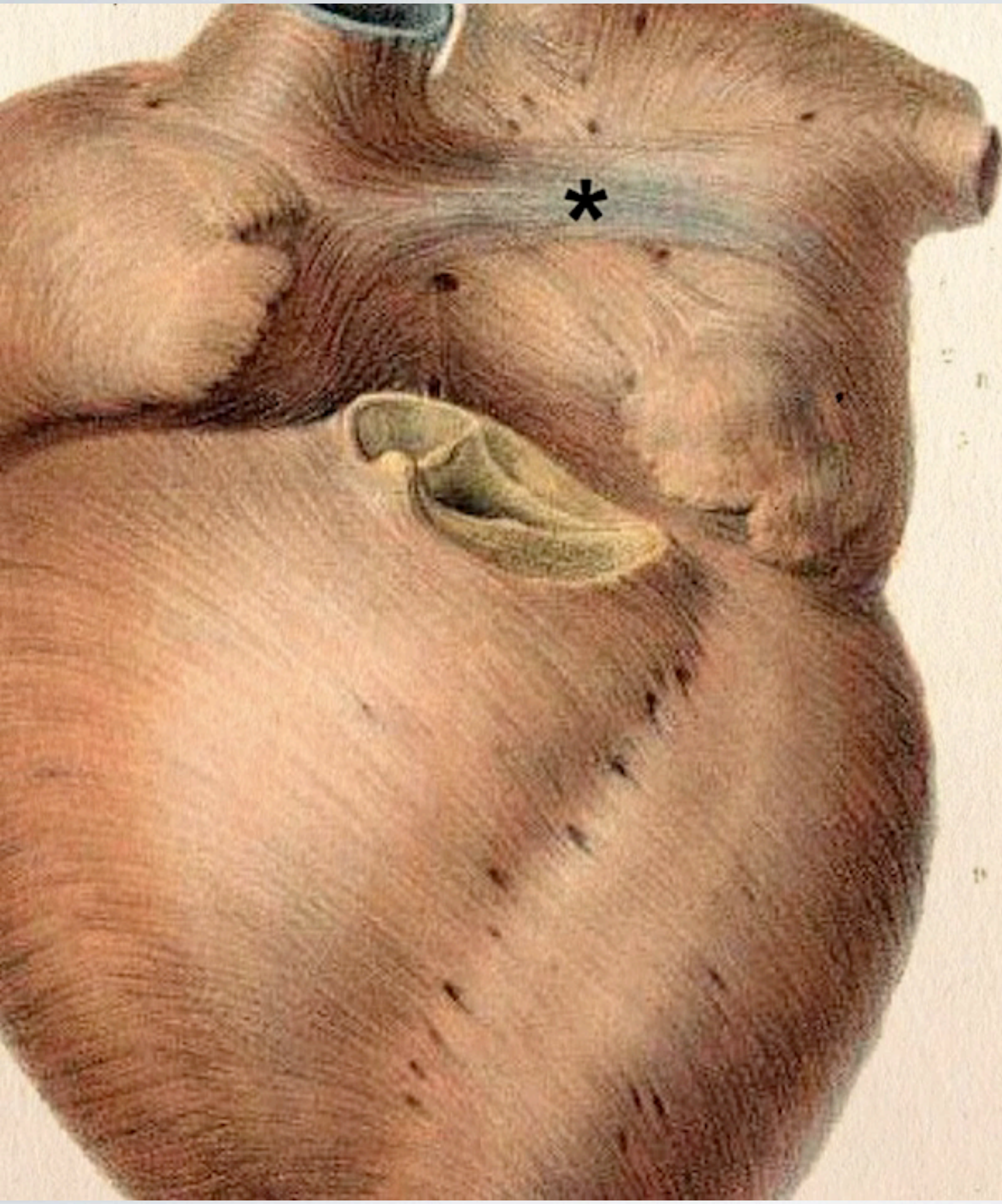




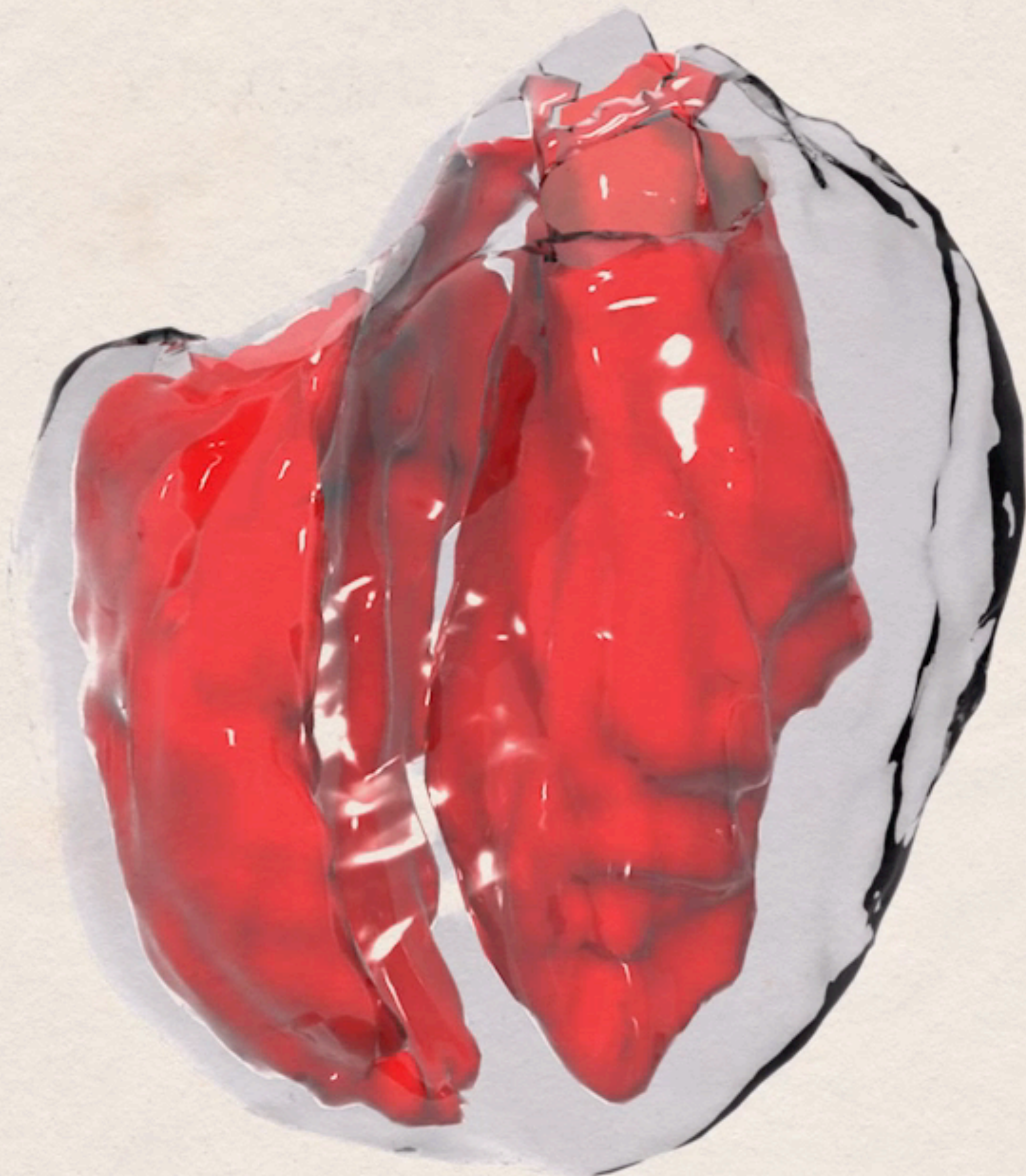






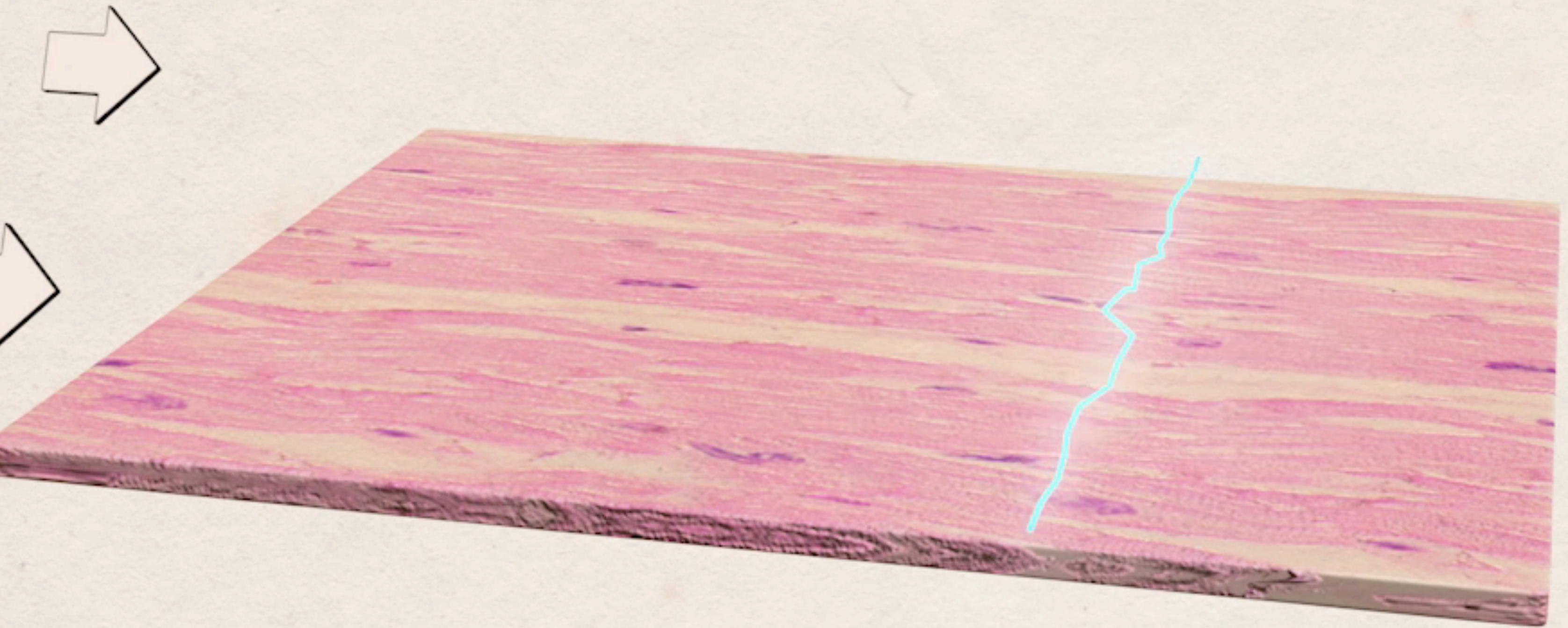








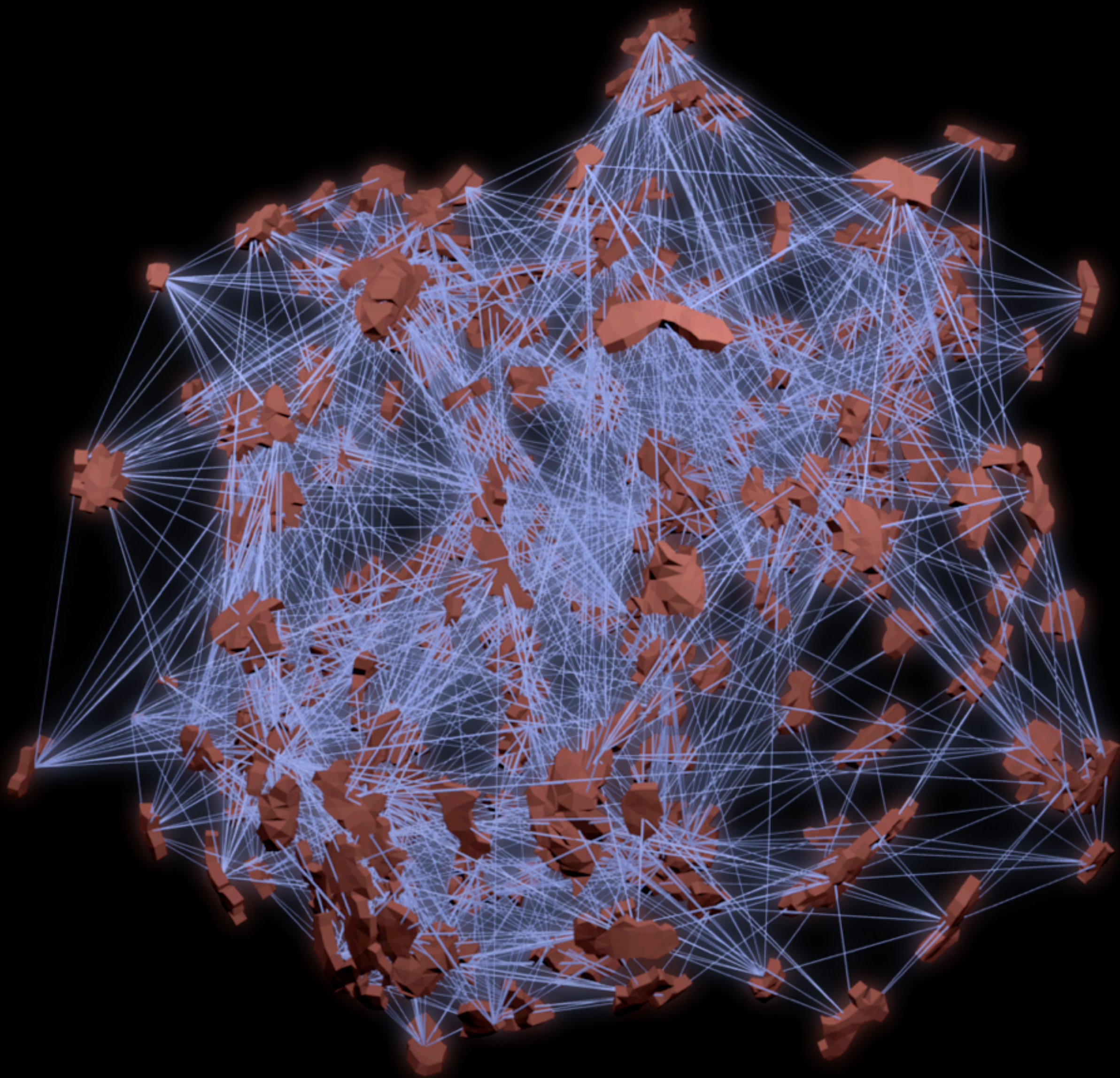
Electrophysiology potential model  
propagation equation through  
macroscopic continuous media







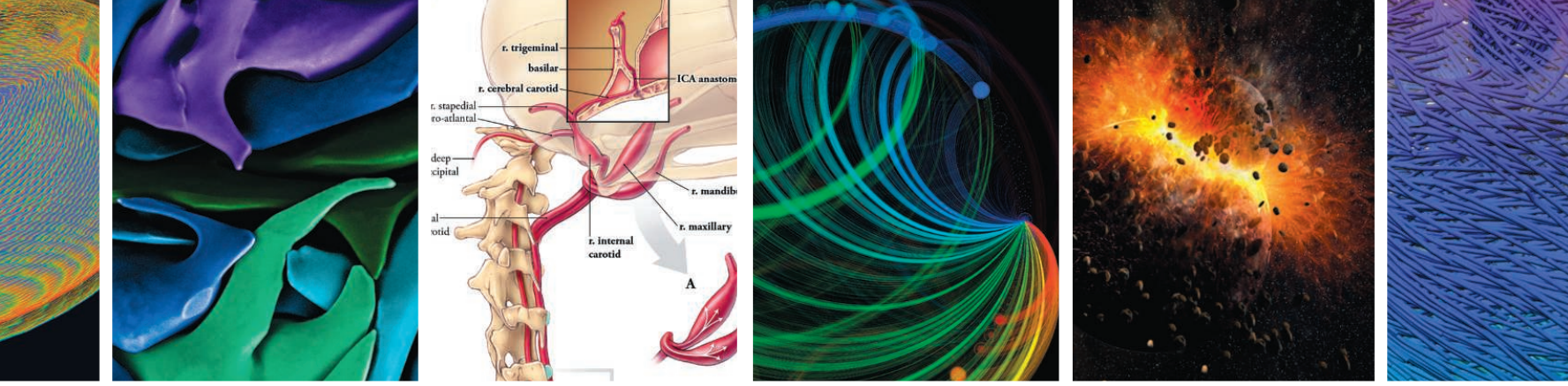












# 2012 Visualization Challenge

Ten years ago, *Science* and the National Science Foundation (NSF) launched a unique experiment: an international competition to recognize the best examples of projects that bring scientific information to life. The goal was to encourage new ways to visualize data—efforts that are increasingly important for conveying scientific principles and ideas across disciplines and to the general public, and for revealing the hidden beauty of structures on scales from nanometers to the cosmos. The following pages showcase the winners of the 10th in what has become the annual International Science and Engineering Visualization Challenge.

The 10th anniversary winners merge biology and physical science in interesting ways. They include a “wiring diagram” of the macaque brain (featured on the cover of this issue), which inspired a new type of computer chip; a scanning electron micrograph that reveals the crystal structure of a sea urchin’s tooth; a poster showing how the owl manages to swivel its head without shutting off blood to its brain; and a video of a computer model of the heart that marries imaging techniques with high-powered computing.

We received 215 entries from 18 countries. A committee of staff members from *Science* and NSF screened the entries. Those selected as finalists were posted on NSF’s Web site, and visitors were invited to vote for their top choice in each category. A total of 3155 votes came in; entries that received the most votes were named the “People’s Choice.” Independently, an outside panel of experts in scientific visualization reviewed the finalists and selected the winners. The winning entries are featured on the following pages, in a slideshow and podcast at [www.sciencemag.org/special/vis2012](http://www.sciencemag.org/special/vis2012), and at [www.nsf.gov/news/scivis](http://www.nsf.gov/news/scivis). Some entries were put together by large teams, not all of whose members could be listed in print; the online presentations provide more details. Tarri Joyner of NSF organized this year’s challenge.

We encourage you to submit applications for next year’s challenge, details of which will be available on NSF’s Web site, and to join us in celebrating this year’s winners.

**JUDITH GAN, DIRECTOR, OFFICE OF LEGISLATIVE AND PUBLIC AFFAIRS, NSF**  
**COLIN NORMAN, NEWS EDITOR, SCIENCE**

Science



## JUDGES

**Michael K. Reddy**  
National Institutes of  
General Medical Sciences  
Bethesda, Maryland

**Corinne Sandone**  
Johns Hopkins University School of  
Medicine  
Baltimore, Maryland

**Tierney Thys**  
National Geographic Explorer  
Carmel, California

**Thomas Wagner**  
NASA  
Washington, D.C.

Text by Emily Underwood

Design by Kay Engman



## FIRST PLACE WINNER AND PEOPLE’S CHOICE

### Alya Red: A Computational Heart

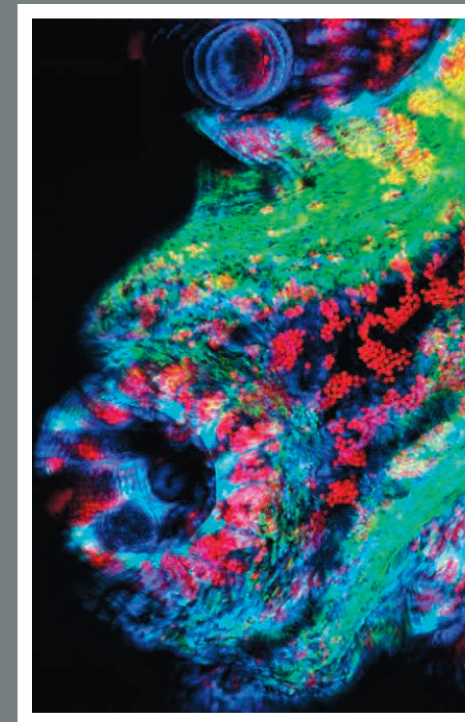
Guillermo Marin, Fernando M. Cucchiatti, Mariano Vázquez, and Carlos Tripana,  
Barcelona Supercomputing Center

From this tangled swirl of fibers, scientists hope to divine the deepest secrets of the human heart. Based on MRI data, each colored strand represents linked cardiac muscle cells that transmit electrical current and trigger a model human heartbeat. The image is an artistic rendering of Alya Red, a new computer model of the heart at the Barcelona Supercomputing Center that marries modern medical imaging techniques with high-powered computing.

Despite centuries of study, scientists are still largely baffled by the heart’s complex electrical choreography, says physicist Fernando Cucchiatti, who helped produce the video. When faced with the challenge of presenting Alya Red to a general audience through video, he says, “It took a lot of work to get a script that was engaging, but still scientifically deep enough for an expert eye to see interesting details.” The most challenging part was to get the heart fibers in the image above to move in a realistic way, Cucchiatti says. At one point, he says, the animation showed the electrical currents moving backwards. “We had to keep going back to the scientists—did we mess something up?”

“We wanted to create a sense of wonder at the complexity” of the heart itself, he says. The awe wasn’t lost on the judges. “I was literally blown away,” says Michael Reddy. “After the first time I watched the video, I thought, ‘I’ve just changed the way I thought about a heart.’”

Video



## HONORABLE MENTION

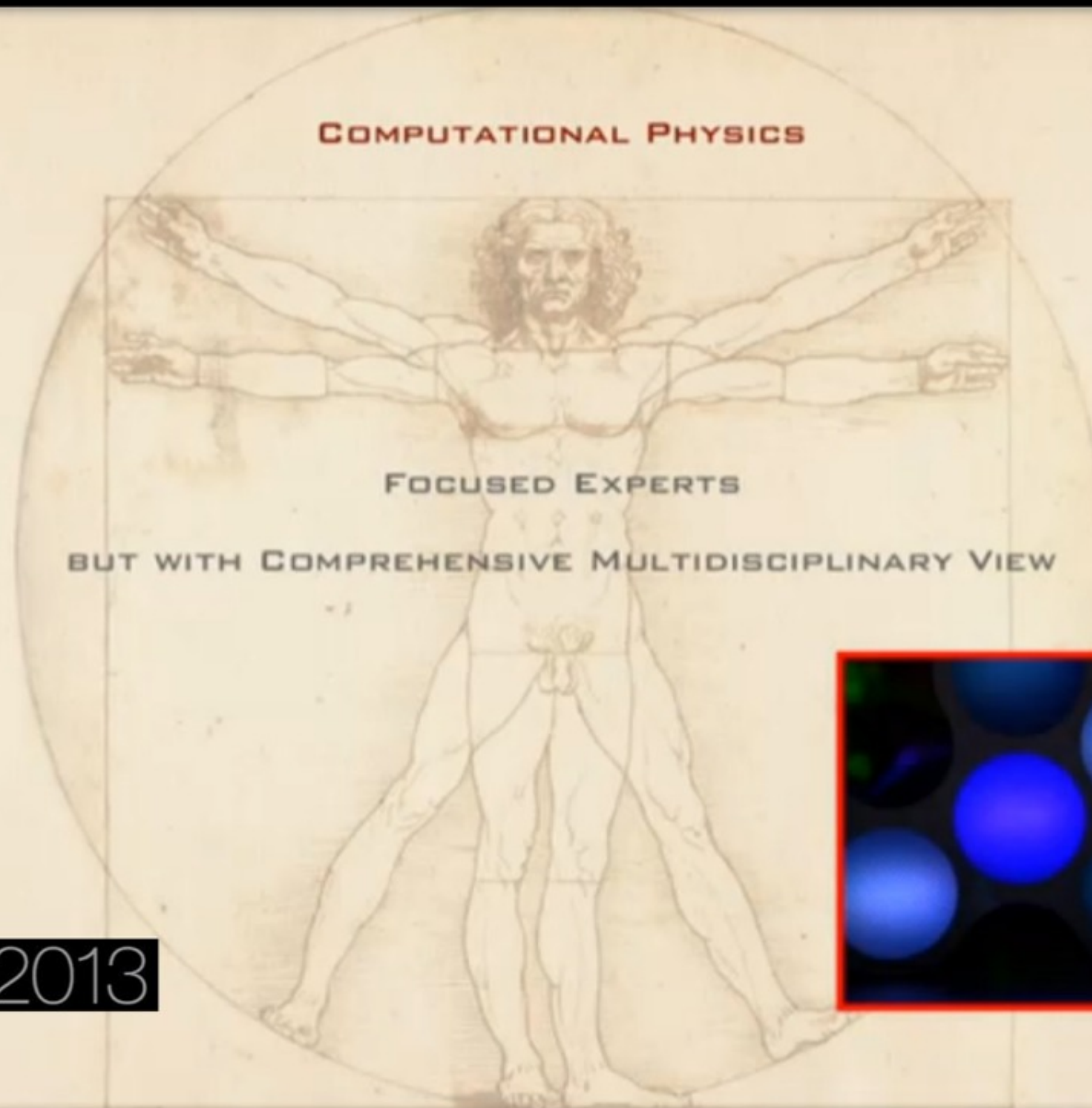
### Observing the Coral Symbiont Scanning Confocal Microscopy

Christine E. Farrar, Zac H. Forsman, Rufus  
Leong, and Robert J. Toonen, University of

No dyes or digital software—just the brilliant color of these corals—own. Fluorescent molecules, innate to the red algae that live inside and shine like Christmas lights under lengths of light emitted by a confocal microscope.

When she saw the corals under the first time, “my jaw just dropped,” says coral biologist at the University of and the narrator of the video. “Most corals are inanimate rocks,” she says. “How beautiful and dynamic they are.” In the video, which compiles three-dimensional, time-lapse and extend and retract their glowing tentacles crawl over the corals, all part of a threatened ecosystem. In the future, it might be possible to use confocal microscopy to identify different coral species or diagnose their health by their fluorescent patterns. Prior to this technique, she says, “that was not something I was thinking about coral biology.”





**TEDMED**2013



Washington, April 2013



# **Proyectos 2013**





Supercomputers

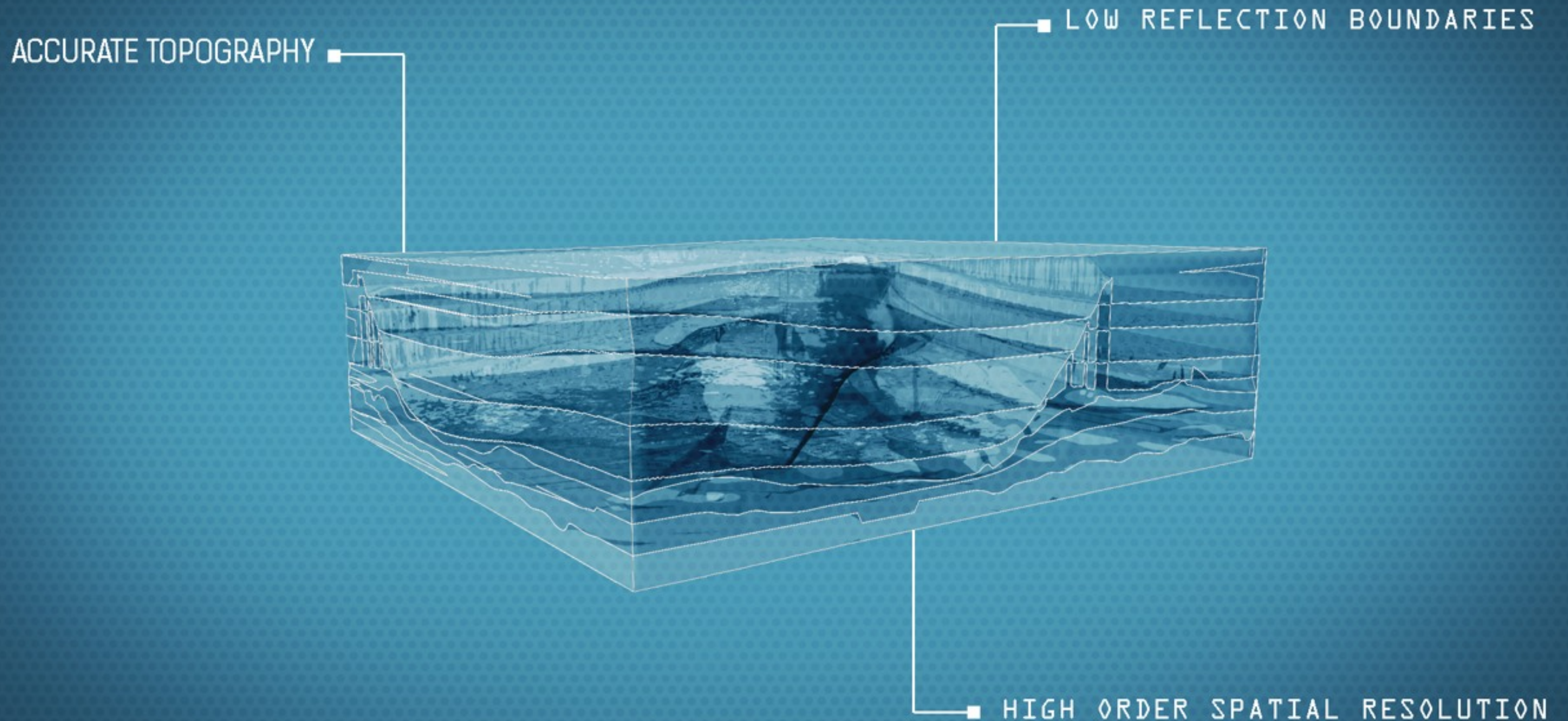


# Simulpast

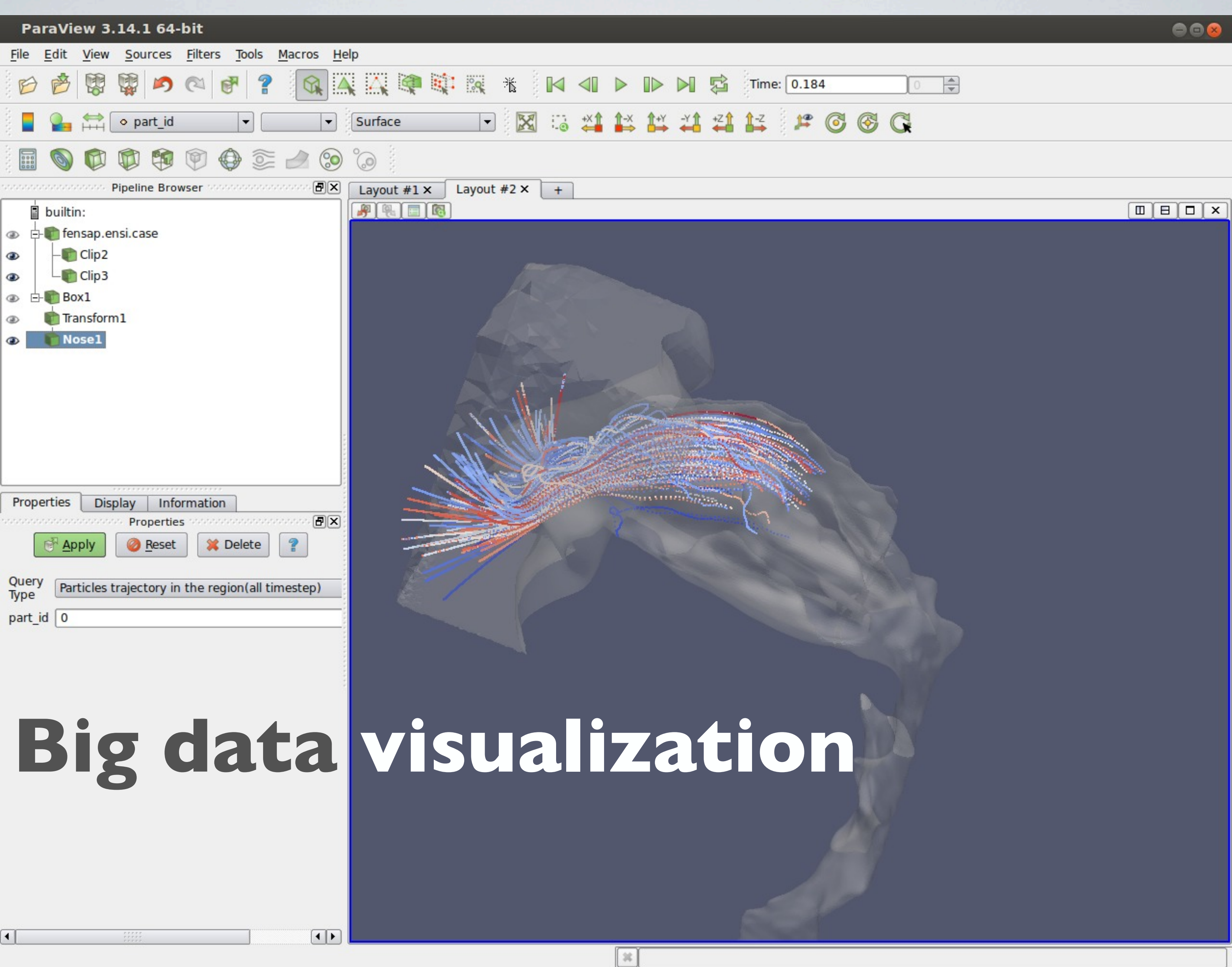




# Exploración geofísica









User

Paraview



Query



VTK

Hive

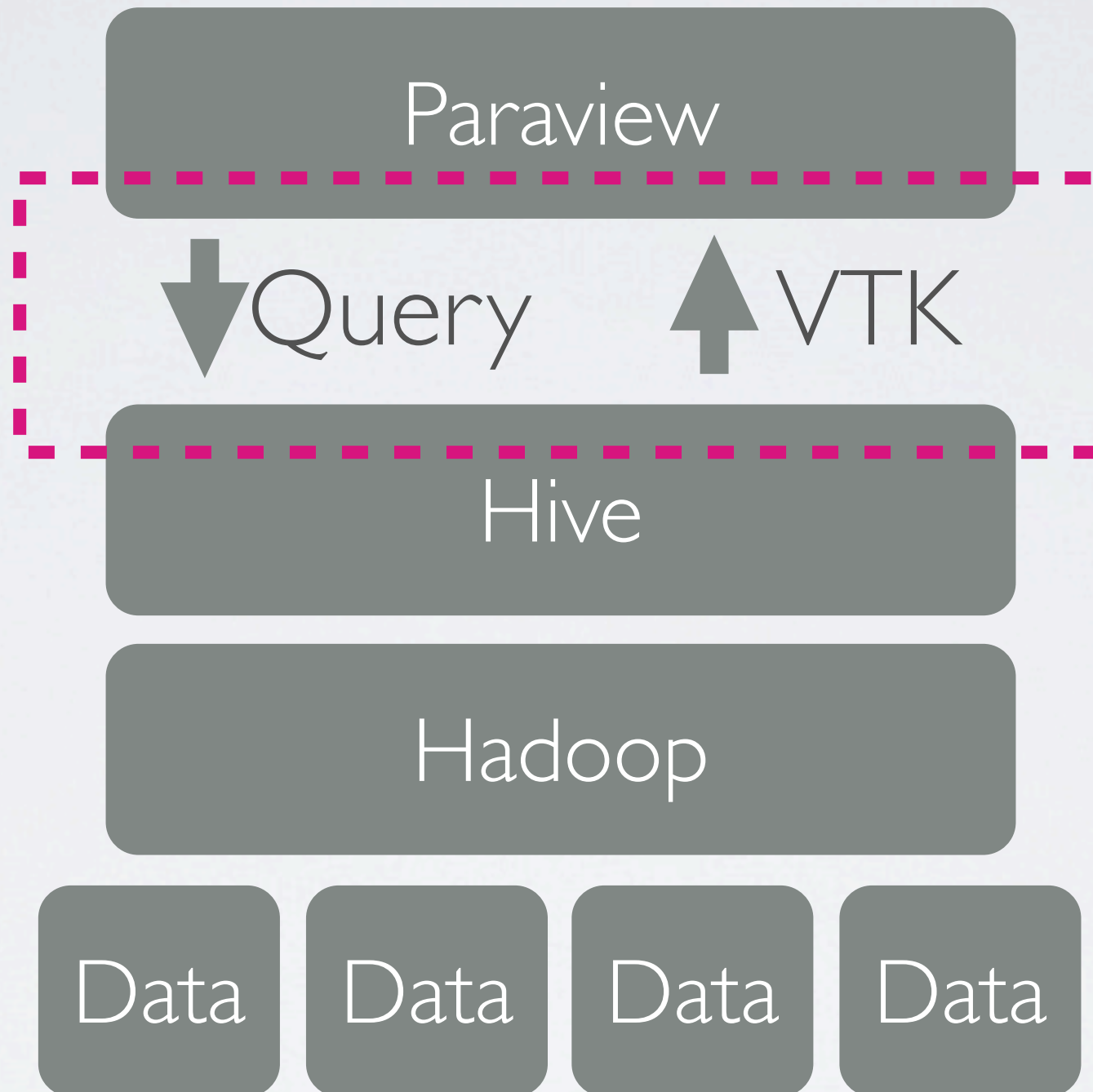
Hadoop

Data

Data

Data

Data







**Barcelona  
Supercomputing  
Center**

*Centro Nacional de Supercomputación*

Posición abierta:

**Human Interface Designer**

*fernando.cucchietti@bsc.es*



