

Citizen Science?

Rethinking Science and

Public Participation

Bruno J. Strasser

University of Geneva & Yale University



@citizensciences



BioSCOPE^{UNIGE}e



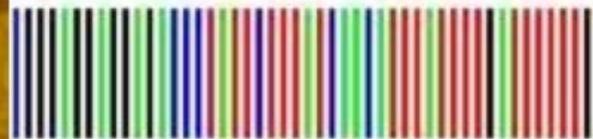
Bioscope

@bioscopelab

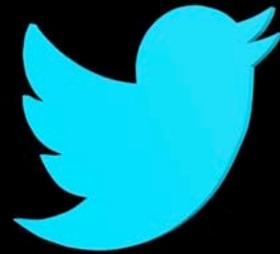


Following

Thx to [#Vuillonnex](#) students, first Wood Cricket DNA barcode online tinyurl.com/jm57w8w
[#citizenscience](#) [#biodiv](#)



bioscope.ch



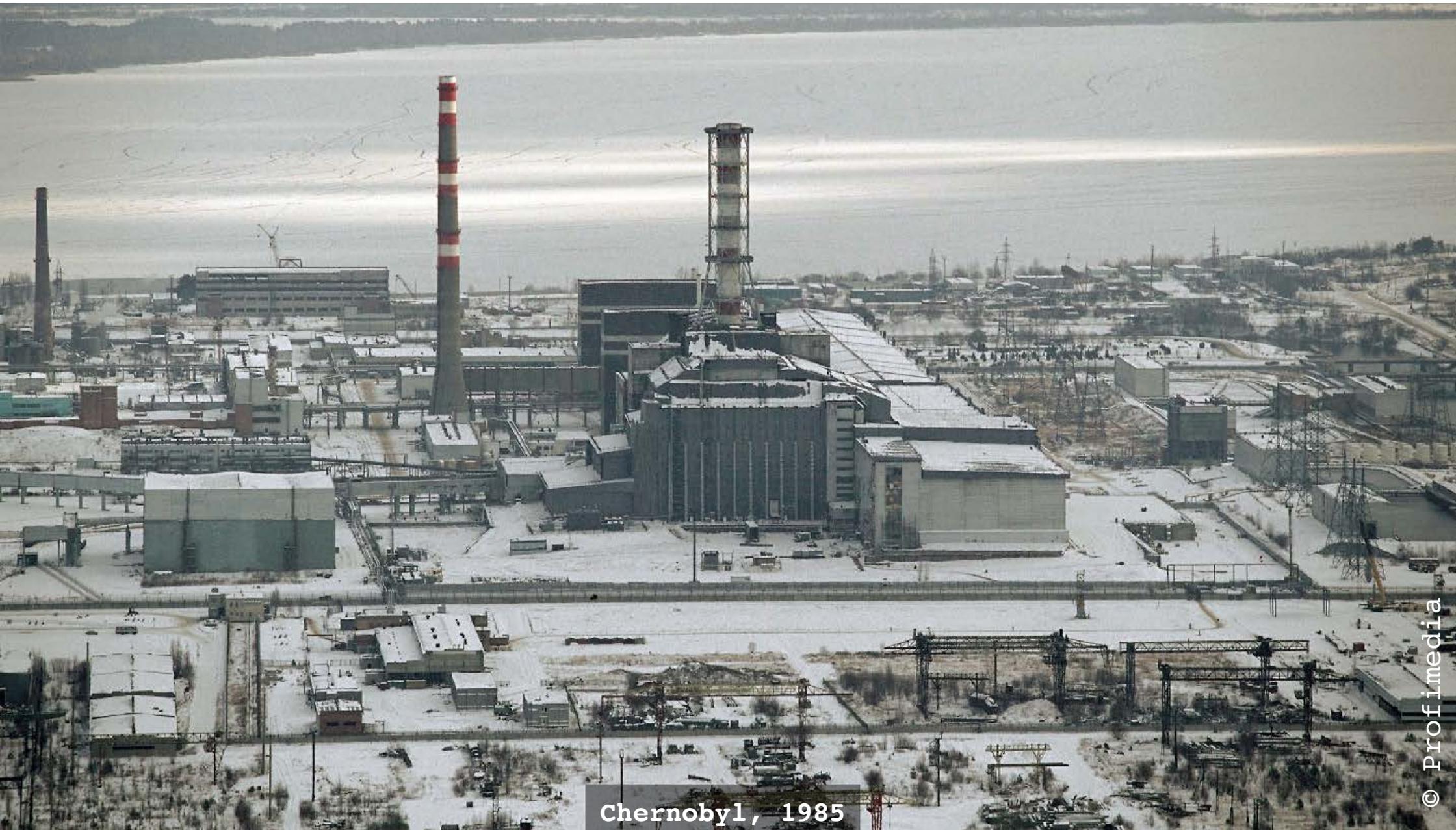
@bioscopelab



@bioscopelab

A hand holding a smartphone in the center of the frame. The phone's screen displays a landscape photograph of a valley with green hills and mountains in the distance under a cloudy sky. The background of the entire image is a blurred, darker version of the same landscape. Overlaid on the center of the image is the text "Citizen science?" in a white, bold, sans-serif font.

"Citizen science"?



Chernobyl, 1985



Chernobyl, 1986

© Igor Krostin, 1990

Pr. Pierre PELLERIN

DIRECTEUR S.C.P.R.I. (protection
contre les rayonnements ionisants)

ina.fr

Antenne 2 April 28, 1986



Antenne 2 April 29, 1986



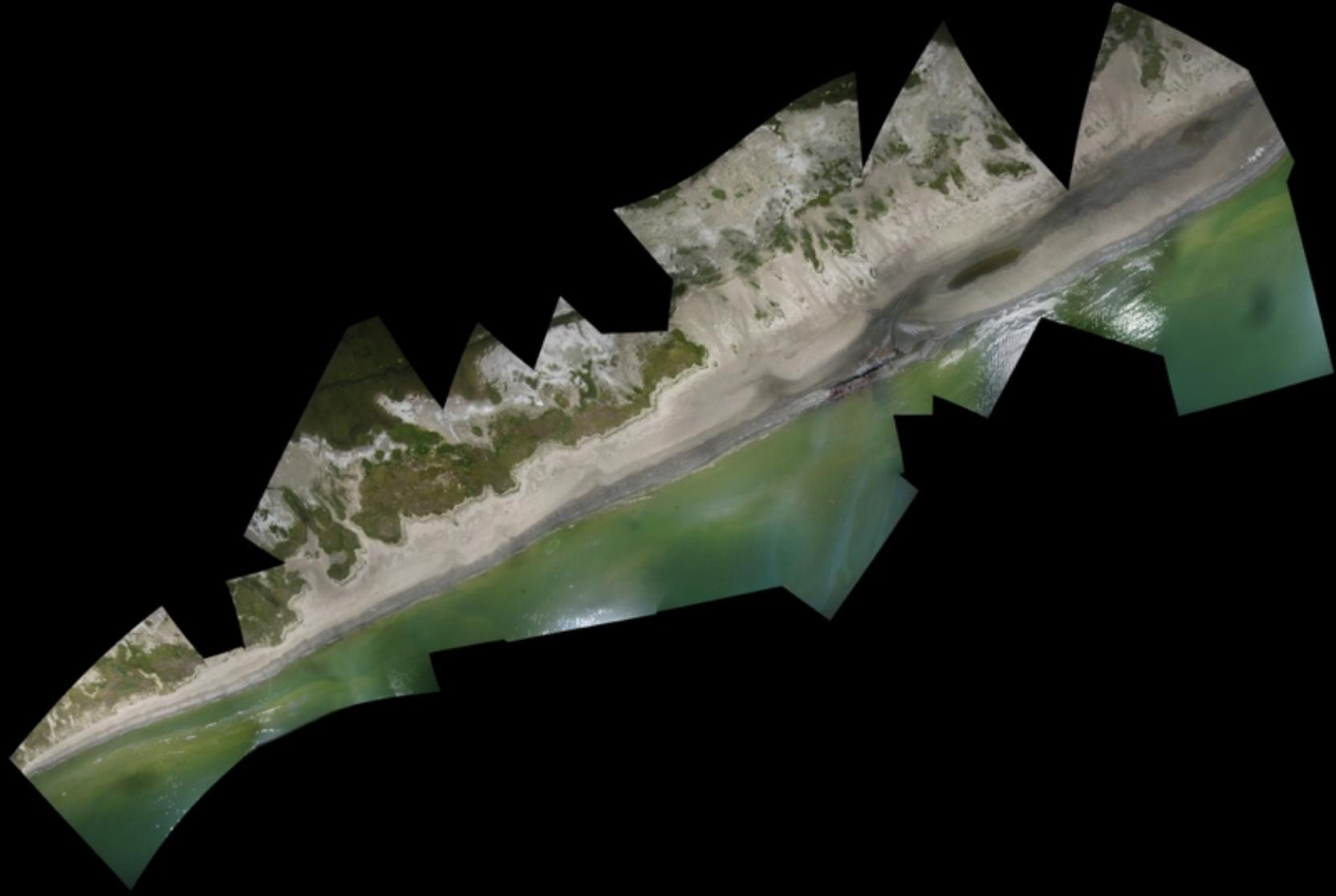
Deepwater Horizon, 2010





© publiclab.org





"participatory mapping"

publiclab.org

"tell a different story"

publiclab.org

empowering the citizen

lifting the citizen to the
level of the expert



**"the largest audience to ever
witness an inauguration,
period."**

Sean Spicer, White House press secretary,
NYT 21.1.2016



2009 Obama Inauguration
(Jewel Samad/AFP/Getty Images)



2017 Trump Inauguration
(Inaugural Committee)

"alternative facts"

**Kellyanne Conway,
White House counselor 22.1.2017**

A photograph of Michael Gove MP, a man with glasses, wearing a dark suit, white shirt, and patterned tie. He is giving a thumbs-up gesture with his right hand. The background is dark and out of focus.

"I think that the people of this country have had enough of experts with organisations [...] with acronyms—saying that they know what is best and getting it consistently wrong."

Michael Gove MP (UK's Secretary of State for Justice),
Interview on Sky News, June 6, 2016



Dr. Ben Carson 

@RealBenCarson

 Follow

It is important to remember that amateurs built the Ark and it was the professionals that built the Titanic. [@my_ccu](#)

6:05 PM - 29 Oct 2015



3,497



4,711

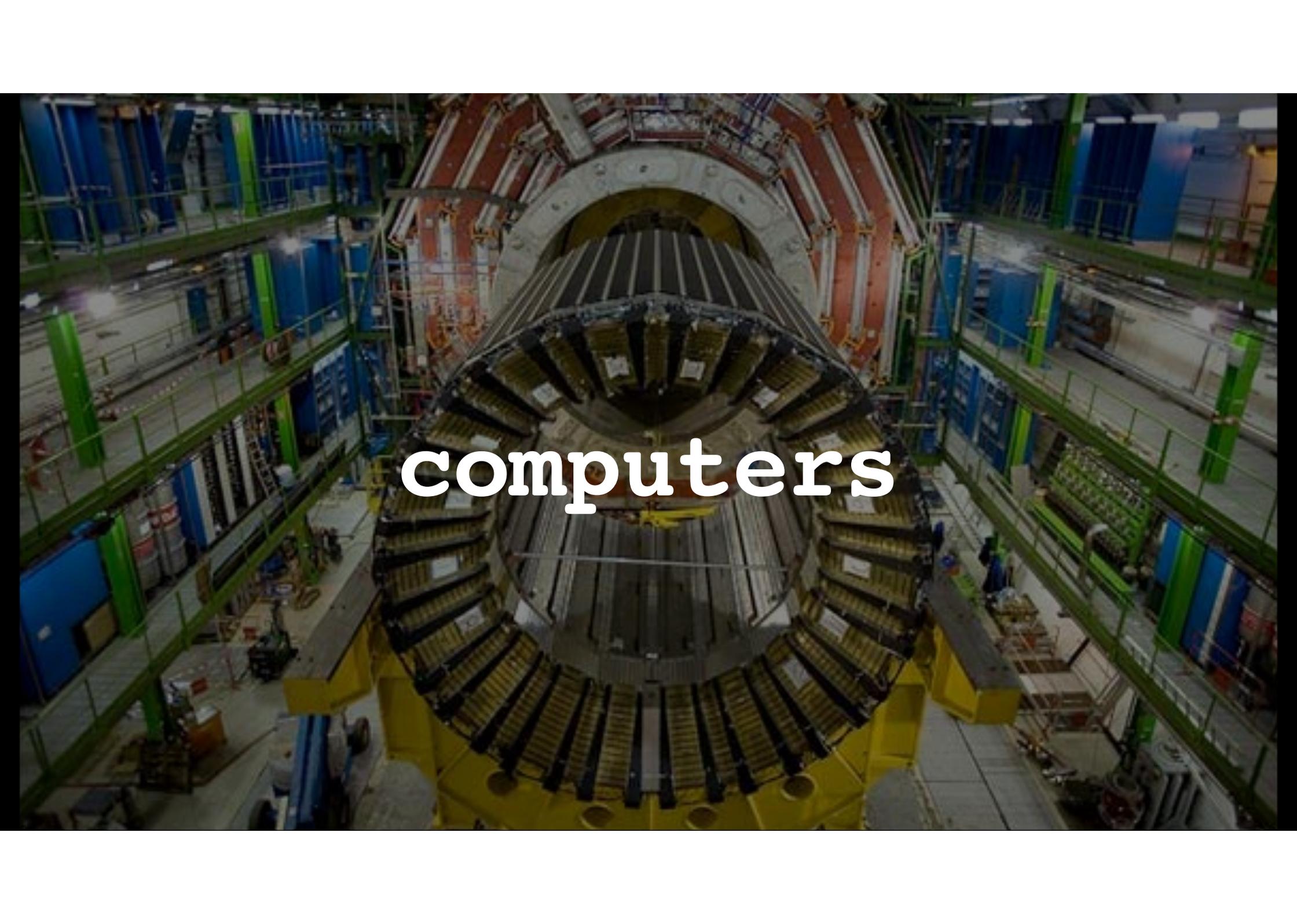
**lower the expert to the
level of the citizen**

rise of "citizen science"?

/// 1 ///

**strike the right balance
between empowering citizens and
trivializing experts**

a label?



computers

**"Whether you are at home
or at work, you can help
experts by connecting
your computer to LHC@home"**

cds.cern.ch



analyzers

“people-powered research”

zooniverse.org



sensors

**"Global tools for
birders, critical data
for science"**

ebird.org



self-reporters

**"Donate your data,
for you, for others,
for good"**

patientslikeme.com

A photograph of four scientists in a laboratory setting. They are all wearing white lab coats. The scientist on the far left is holding a pipette and looking upwards. The scientist in the center is looking towards the left. The scientist on the far right is looking towards the center. The background shows laboratory equipment and shelves with various bottles and containers.

makers

**"Remember when science was
fun? At Genspace it still is."**

genspace.org

Les sciences citoyennes, qu'est-ce que c'est?

L'expression «sciences citoyennes» (Citizen Science en anglais) est de plus en plus souvent employée comme terme générique pour désigner les nombreuses approches qui permettent à des volontaires de participer à des projets scientifiques.

[Plus d'informations](#)



échange européen

Les citoyens scientifiques se mettent en réseau dans toute l'Europe. La Suisse fait partie de ces réseaux pan-européens ! Grâce à...

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Newsletter

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Santé

Vous vous posez des questions sur votre santé et souhaiteriez que des chercheurs y répondent ? Vous avez envie d'échanger avec des personnes qui ont des problèmes similaires aux vôtres ? La qualité de votre sommeil, votre sensibilité dans certaines situations ainsi que les signes de l'âge sont aussi à l'origine de découvertes scientifiques.

[Afficher les projets](#)



Univers

« La vie, ce n'est pas d'attendre que les orages passent, c'est d'apprendre à danser sous la pluie », ainsi s'exprimait Sénèque au I^{er} siècle après Jésus-Christ. Entre-temps, les choses ont bien évolué sur le plan technique et vous pouvez, à votre échelle, même si vous ne pouvez pas encore voler jusqu'aux confins de l'univers, observer les étoiles et, pourquoi pas, découvrir de nouvelles galaxies.

[Afficher les projets](#)



Climat

A quelle vitesse fond la calotte glaciaire ? L'arrivée des oiseaux migrateurs a-t-elle changé en Suisse ou en Europe ? Les noisettes ont-elles mûri plus tôt cette année ? Les observations climatiques offrent un cadre idéal pour les projets de sciences citoyennes.

[Afficher les projets](#)



Société

Nous vivons de plus en plus vieux. Et heureusement, sinon nous ne serions déjà plus là ! En Suisse, près de 18% de la population a 65 ans et plus à l'heure actuelle et, partir de 2050, cette proportion passera à un tiers.



Laboratoire

Vous aimez faire de la recherche en laboratoire ? Les champs d'application sont vastes: des études archéologiques et biologiques aux recherches techniques en science des matériaux, de nombreuses



Langue

Tentez de mieux comprendre votre langue. Vous parlez un dialecte spécial ? Des néologismes se glissent dans votre vocabulaire ? Comment évolue le langage des jeunes ?

CIVIC-SCIENCE
DO-IT-YOURSELF
PARTICIPATORY-ACTION-RESEARCH
RESPONSIBLE-RESEARCH-AND-INNOVATION **AMATEUR-SCIENCE**
OPEN-SCIENCE **COMMUNITY-BASED-RESEARCH** **DIY**
CROWDSOURCING **VOLUNTEER-COMPUTING** **CITIZEN-CYBERSCIENCE**
CITIZEN-SCIENCE
SCIENCE-2.0

OED (2014): "citizen science:
n. scientific *work* undertaken
by members of the *general*
public, often in collaboration
with or under the direction of
professional *scientists* and
scientific institutions"

scientists vs general public?

scientists vs amateurs?

scientists vs lay people? ?

place ?



Domestic Science?



SETI@home

The Search for Extraterrestrial Intelligence

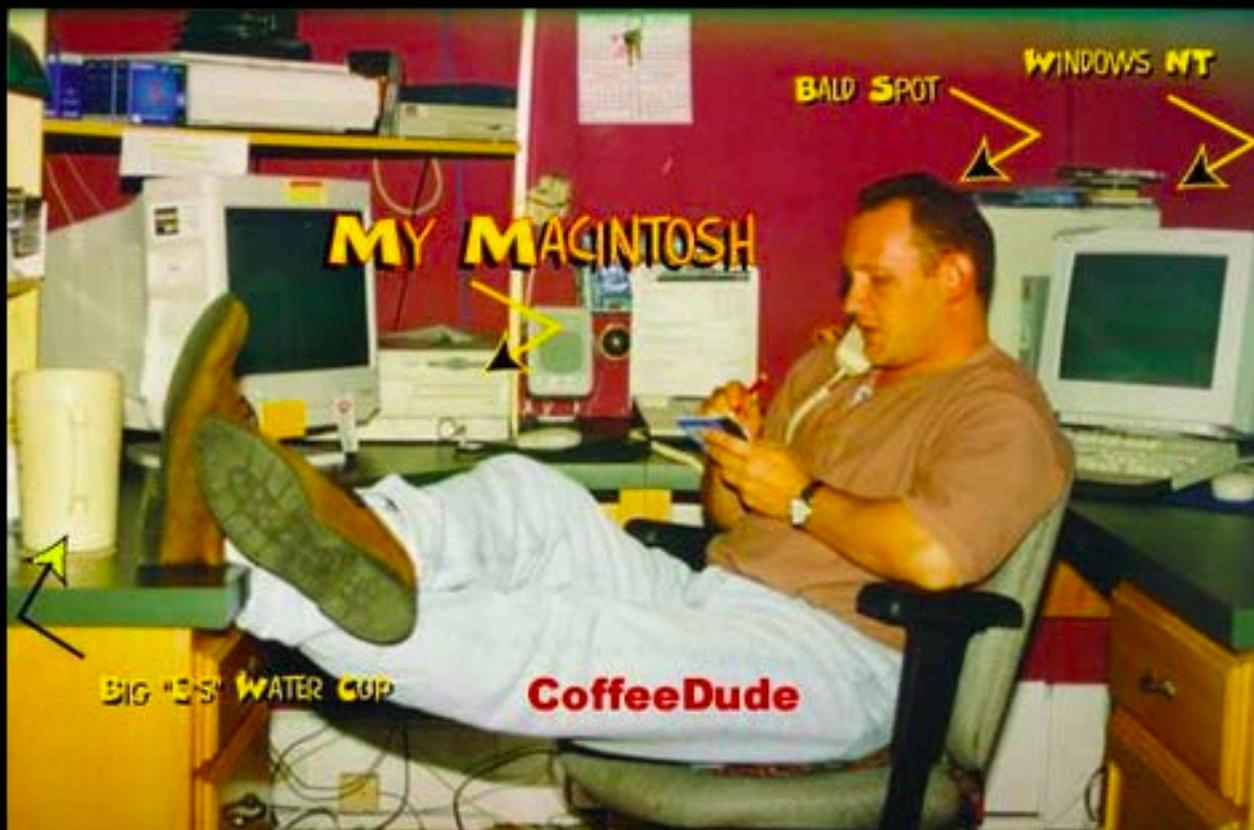
User Profile:

RECOMMEND

[what is recommend?](#)

VOTE TO REJECT

[what is vote to reject?](#)



Country: United States
Email:

Number of Results: 11097
CPU Time Per Result: 11 hr 41 min 28.6 sec
Last Result Time: Wed Mar 31 07:57:53 2004
Date Registered: Fri May 14 20:46:31 1999

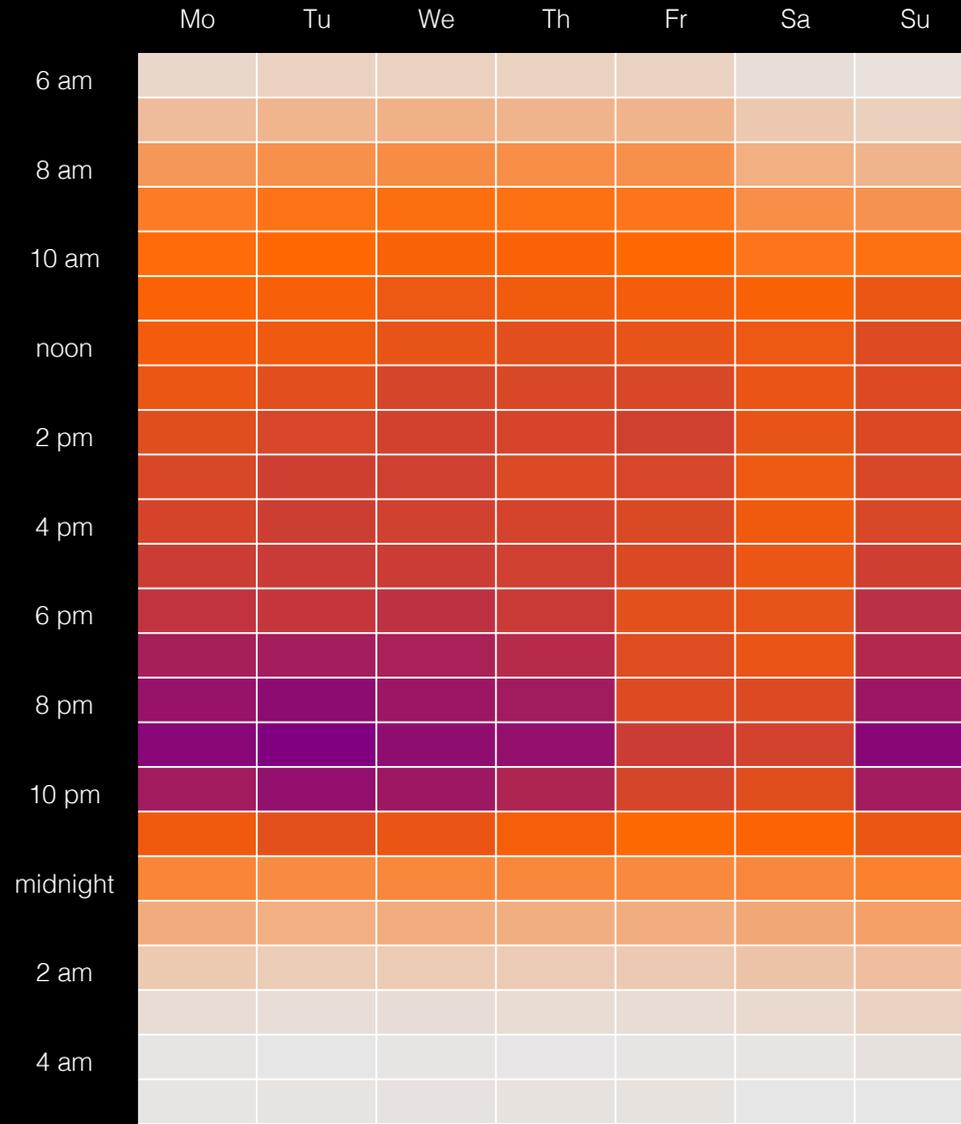


time ?

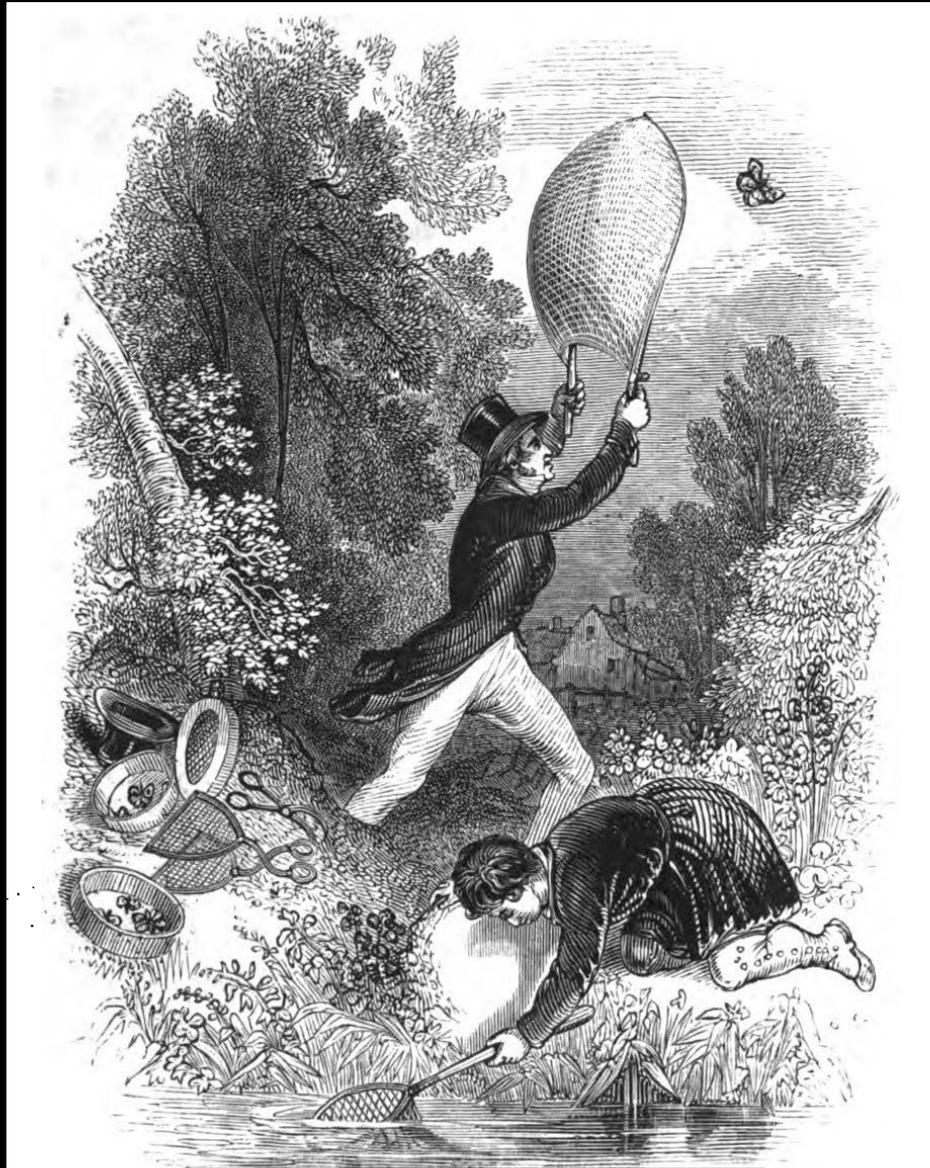
A hiker with a large backpack is shown from the side, leaning forward to examine a plant on a grassy hillside. The hiker is wearing a yellow shirt and dark shorts. The background features rolling green hills under a blue sky with scattered white clouds. The text "Leisure Science?" is overlaid in white, bold, sans-serif font across the center of the image.

Leisure Science?

Signup time on BOINC (n= 6,674,002)



time ?



History of Insects, 1839

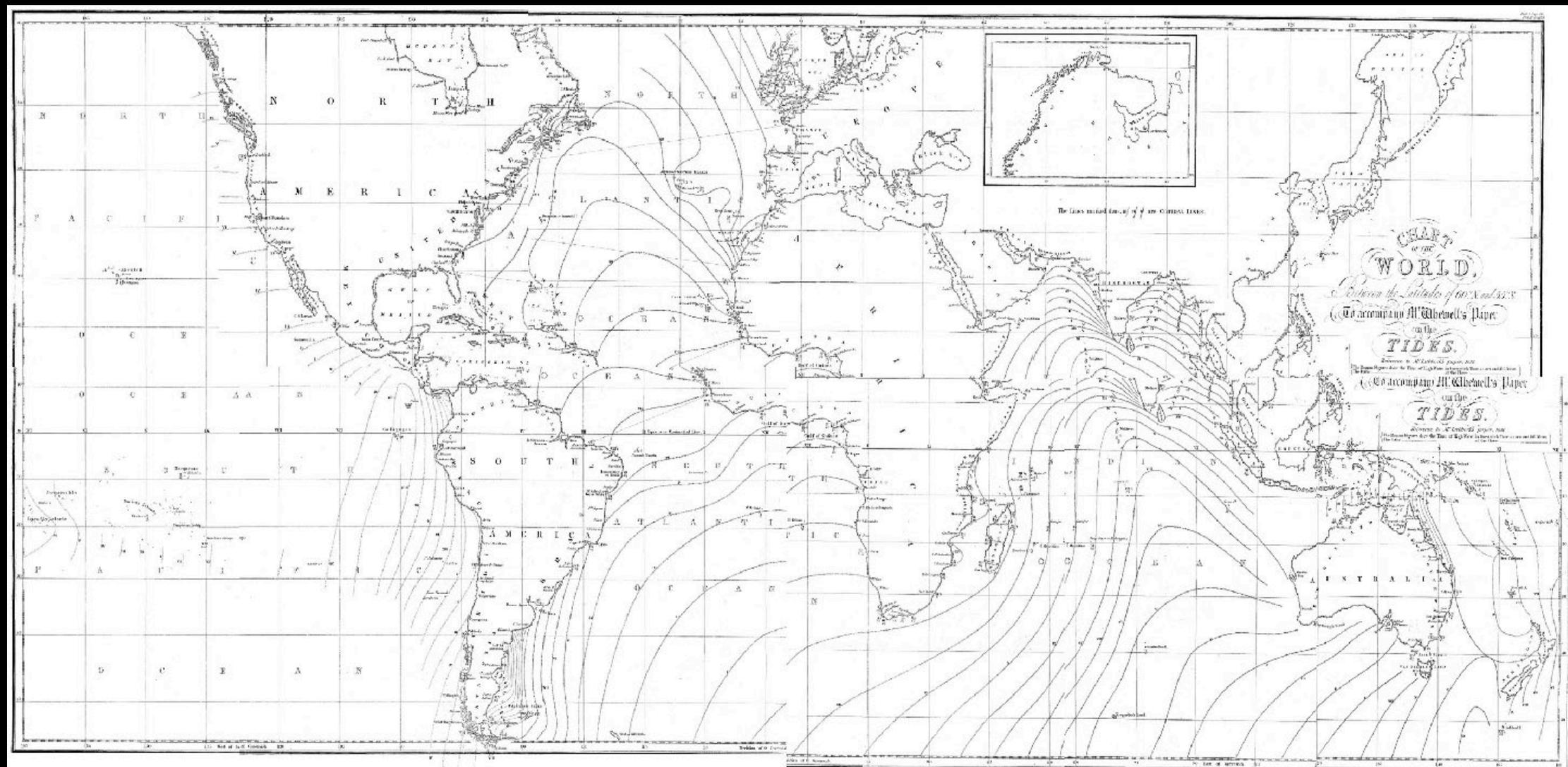


amateurs without

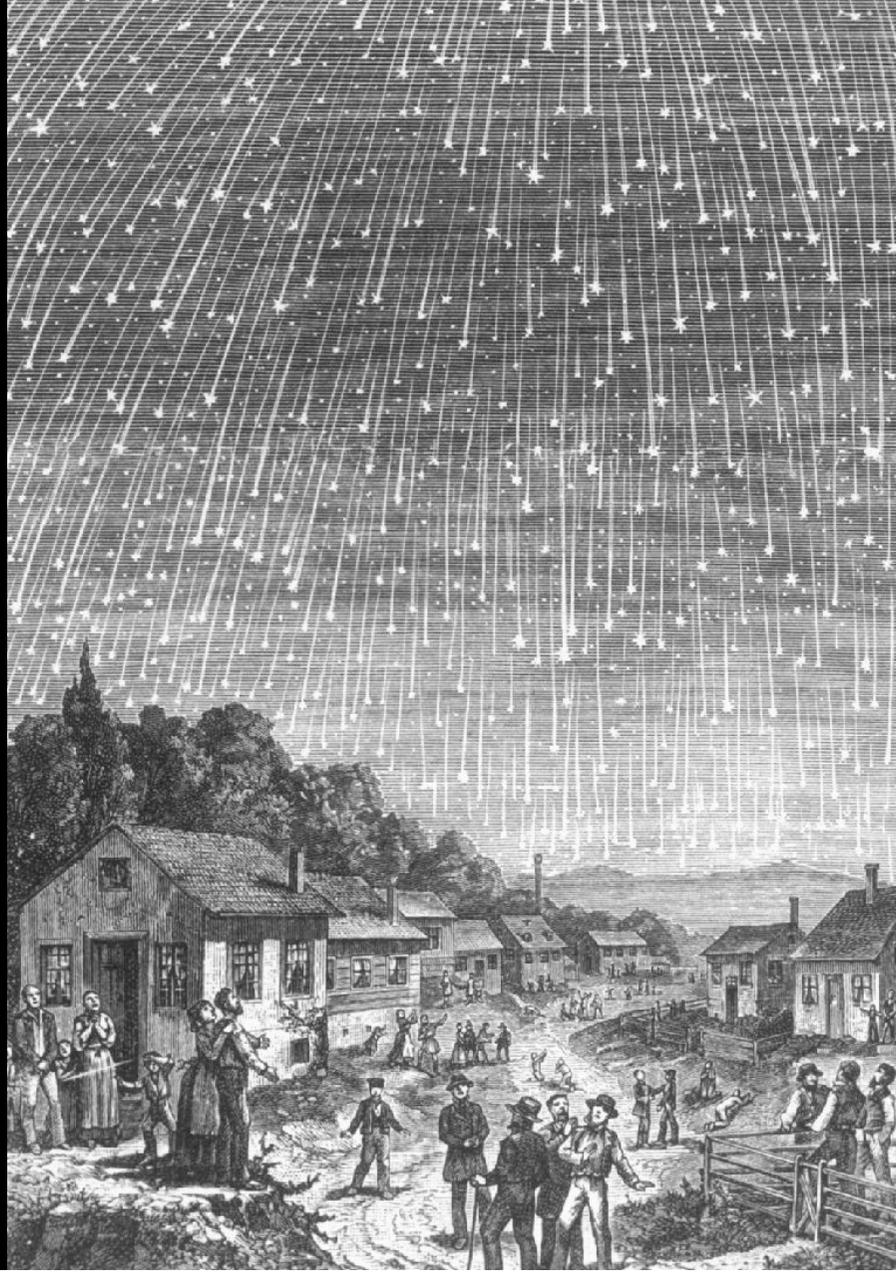
professionals?



Ferrante Imperato, *Dell'Historia Naturale*, 1599



W. Whewell, 1833. Essay towards a first approximation to a map of cotidal lines. *Phil Trans. of the Royal Society of London* 123: 147–236.



1833 Meteor Storm, Bible Readings for
the Home Circle, 1888

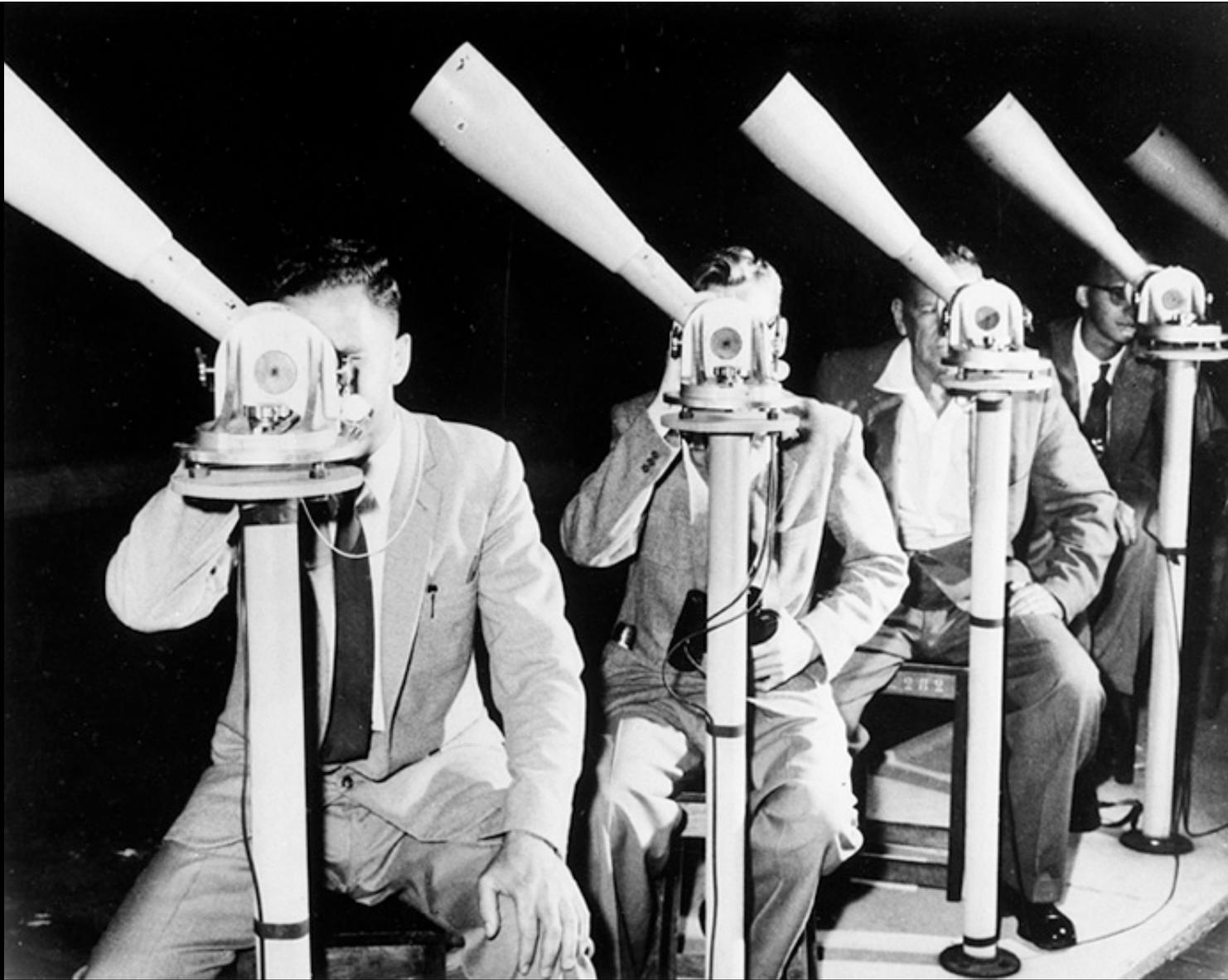


Illustrated London News, 1871

H. P. Peterson



Christmas Bird Count (Audubon Science)



Pretoria, South Africa, 1962 (Smithsonian Institution)





Antoine Lavoisier, *Composition of Air*, 1776

a part-time occupation

late 19th century:
professionalization of sciences

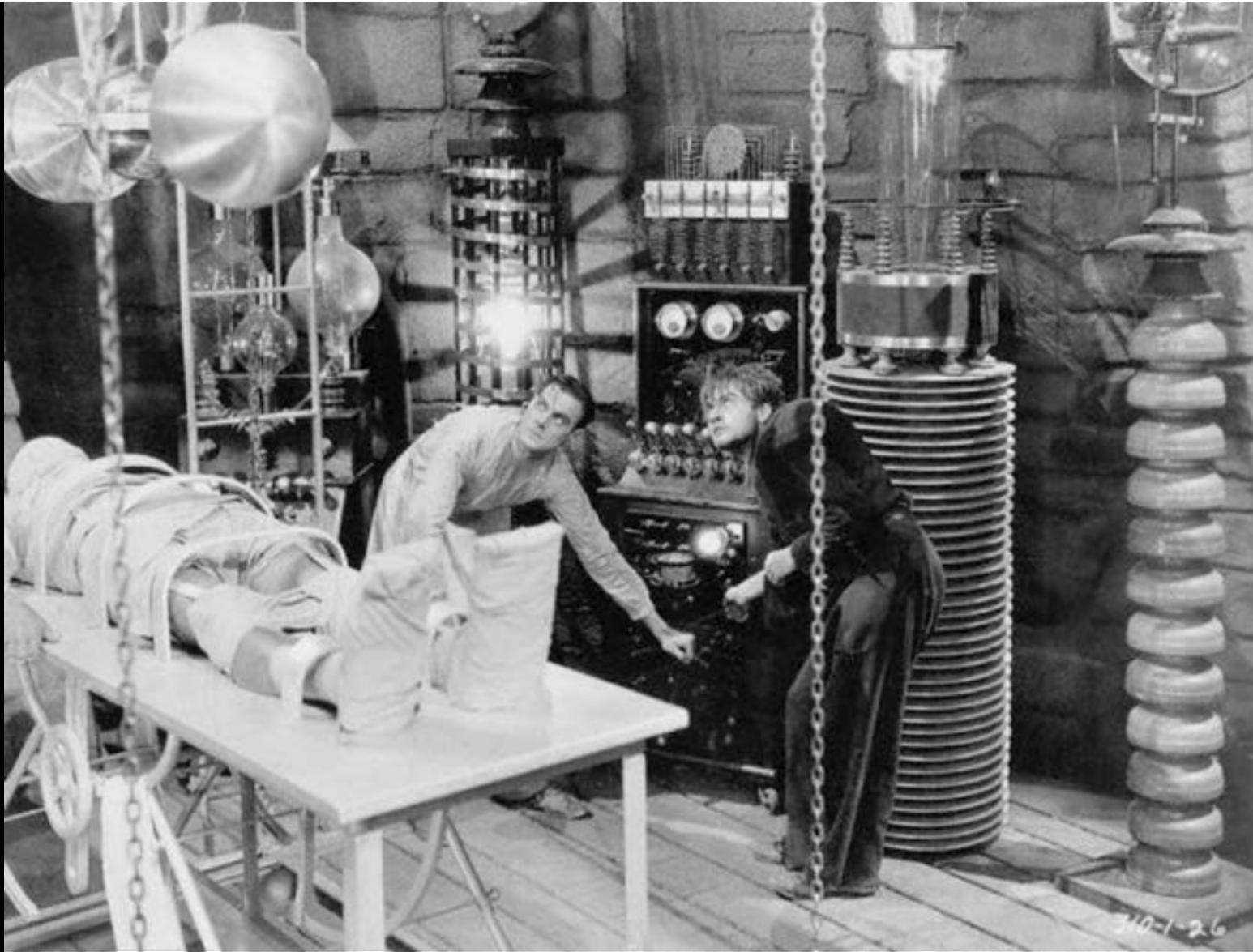
**"The era of the amateur
scientist is passing; science
must now be advanced by the
professional expert"**

Anon. *Popular Science*, Mar. 1902

co-creation of the

professional and the amateur

the "laboratory revolution"



Frankenstein, 1931



Arrowsmith, 1931

divide between

sciences and the public



Dr. Strangelove, 1964

**bridged (and sustained)
by science popularization**

POPULAR SCIENCE

MARCH
15 CENTS
20 CENTS IN CANADA

FOUNDED MONTHLY 1872

NOW
15¢



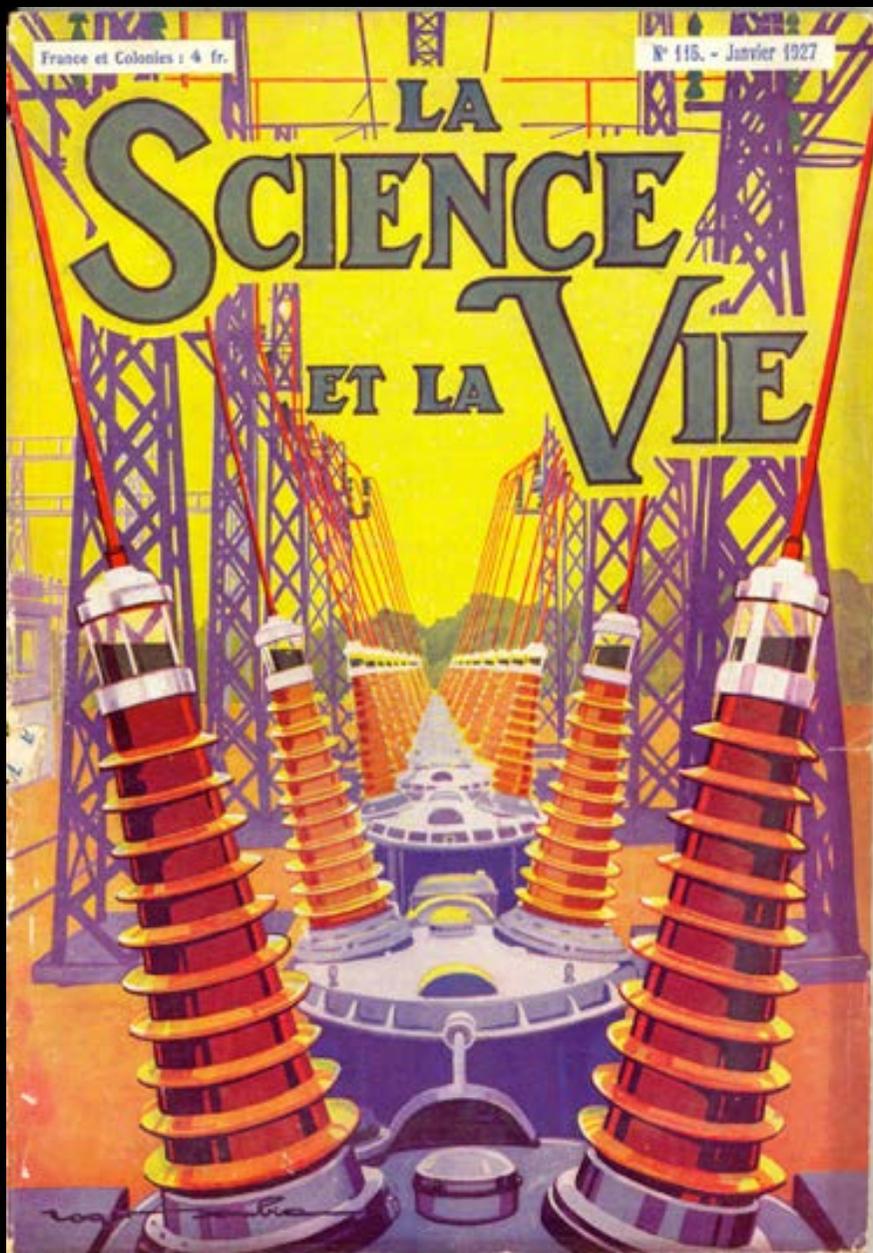
SEE PAGE 49

NEW INVENTIONS • MECHANICS • MONEY MAKING IDEAS
HOME WORKSHOP PLANS AND HINTS • 350 PICTURES

France et Colonies : 4 fr.

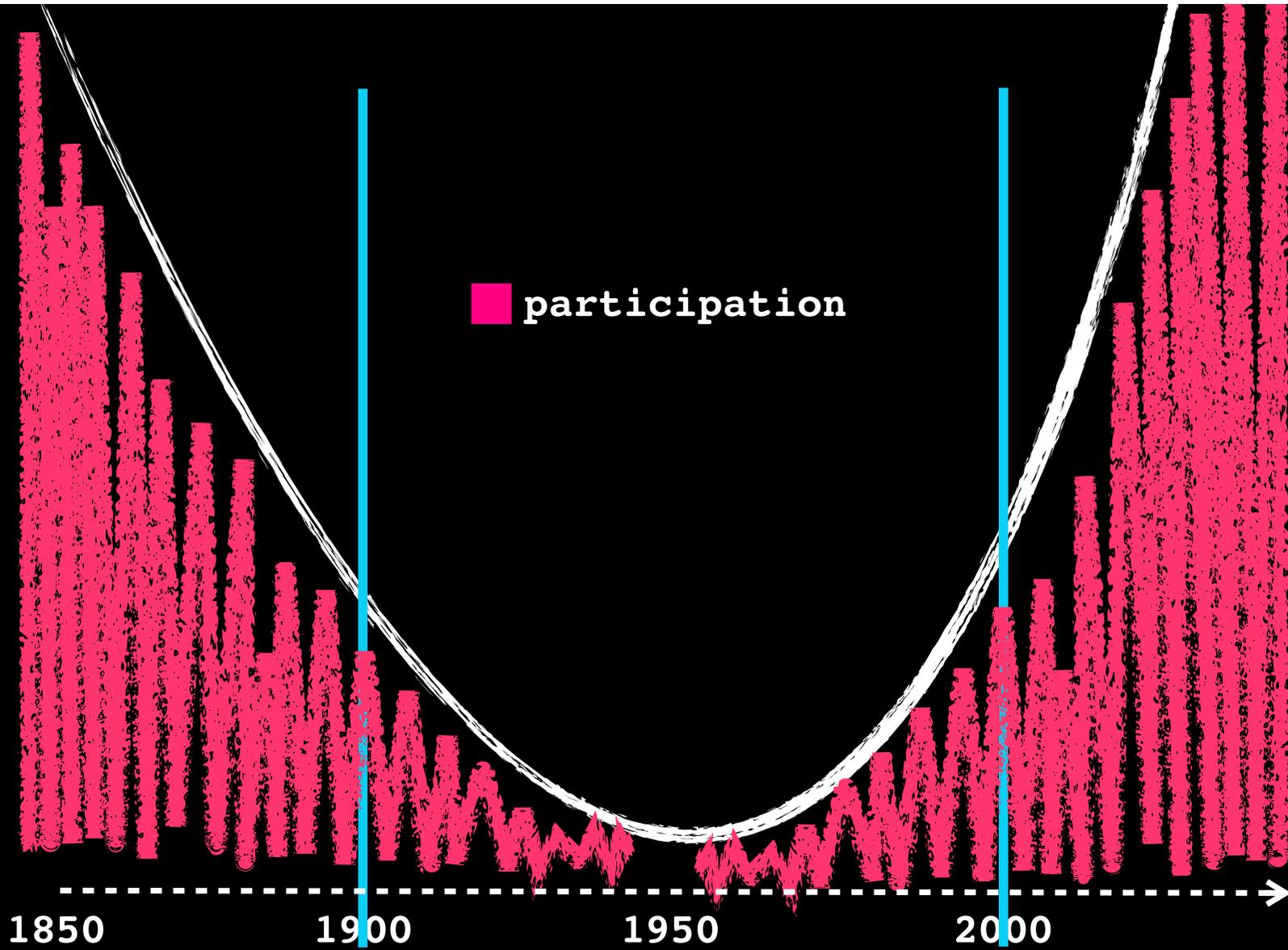
N° 115. - Janvier 1927

LA SCIENCE ET LA VIE



"deficit model"

Michel Callon, 1998



not just the exclusion of
citizens from science,
but the exclusion of
scientists from society

/// 2 ///

not only outreach,
but also inreach

FUTURES

**Institutionalization of
citizen science**

114TH CONGRESS
1ST SESSION

S. 2113

To harness the expertise, ingenuity, and creativity of all people to contribute to innovation in the United States and to help solve problems or scientific questions by encouraging and increasing the use of crowdsourcing and citizen science methods within the Federal Government, as appropriate, and for other purposes.

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 30, 2015

Mr. COONS (for himself and Mr. DAINES) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To harness the expertise, ingenuity, and creativity of all people to contribute to innovation in the United States and to help solve problems or scientific questions by



Green Paper
**Citizen Science Strategy 2020
for Germany**

www.buergerschaffenwissen.de/en

2016



Les
**Sciences
participatives**
en France

Synthèse



Février 2016

2016



HORIZON 2020

The EU Framework Programme for Research and Innovation

[European Commission](#) > [Horizon 2020](#)



[What is Horizon 2020?](#)

[Find Your area](#)

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Sections navigation

Science with and for Society

[Promoting Gender Equality in Research and Innovation](#)

[Ethics](#)

[Science Education](#)

[Public Engagement in Responsible Research and Innovation](#)

[Open Science \(Open Access\)](#)

[Responsible research & innovation](#)

Science with and for Society

[Article](#)

[Newsroom](#)

The aim of this programme is to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility.

The 'Science with and for Society' programme will be instrumental in addressing the European societal challenges tackled by Horizon 2020, building capacities and developing innovative ways of connecting science to society. It will make science more attractive (notably to young people), increase society's appetite for innovation, and open up further research and innovation activities.

It allows all societal actors (researchers, citizens, policy makers, business, third sector



ec.europa.eu/programmes/horizon2020

CITIZEN SCIENCE AT UNIVERSITIES: TRENDS, GUIDELINES AND RECOMMENDATIONS

LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES

University of Amsterdam - Universitat de Barcelona - University of Cambridge - University of Edinburgh
University of Freiburg - Université de Genève - Universität Heidelberg - University of Helsinki
Universiteit Leiden - KU Leuven - Imperial College London - University College London - Lund University
University of Milan - Ludwig-Maximilians-Universität München - University of Oxford
Pierre & Marie Curie University - Université Paris-Sud - University of Strasbourg
Utrecht University - University of Zurich

Politische Analyse
1/2018

Citizen Science: Expertise, Demokratie und öffentliche Partizipation

Empfehlungen des Schweizerischen
Wissenschaftsrates SWR

Politische Analyse von Bruno J. Strasser
und Muki Haklay im Auftrag des SWR



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Schweizerischer Wissenschaftsrat
Conseil suisse de la science
Consiglio svizzero della scienza
Swiss Science Council



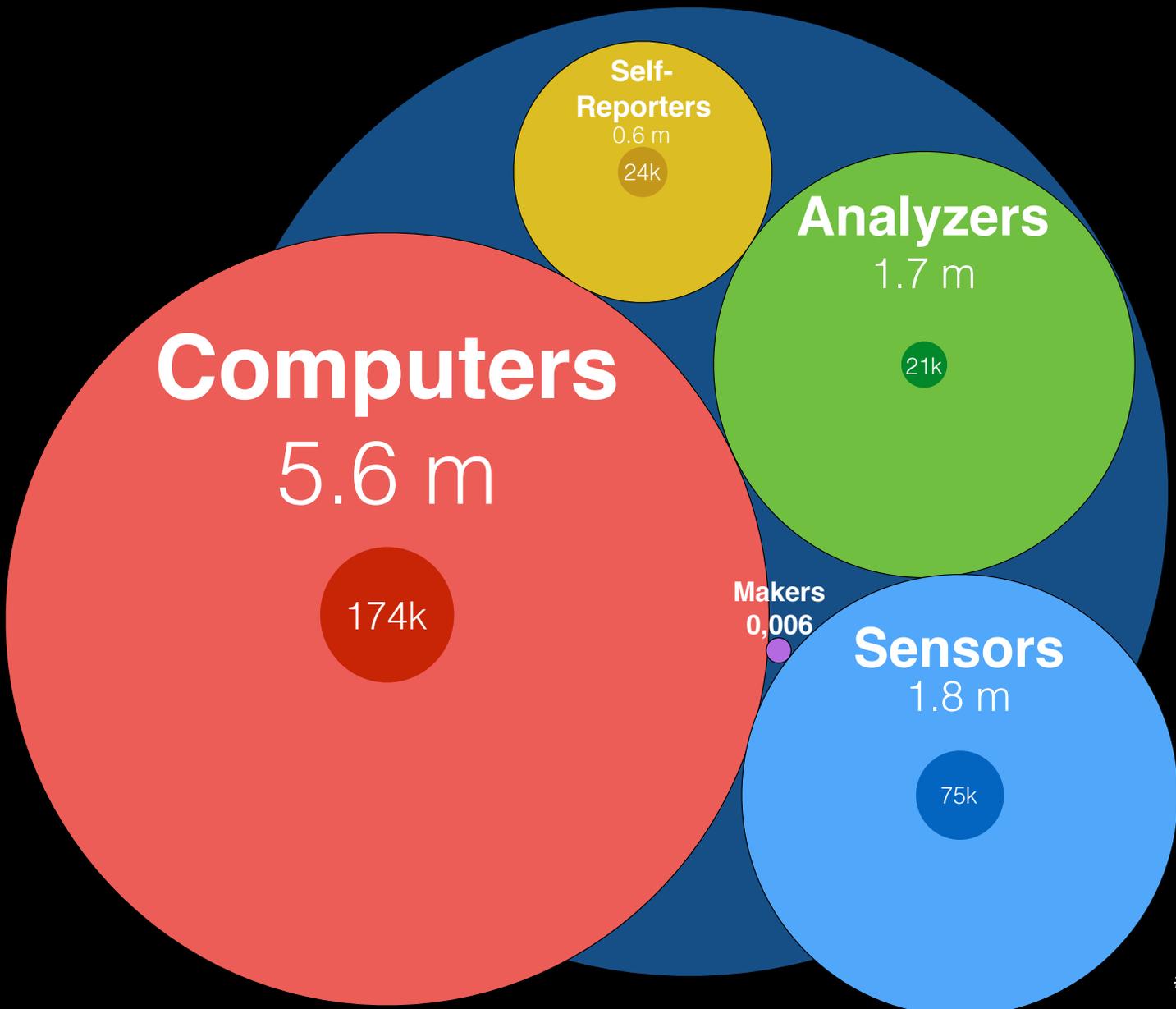
2018



**43% of 24-34 year old have
completed tertiary education
(OCDE 2016)**

/// 3 ///

**Citizen science as
a tool for education**



#citizensciences

**Science
Centres
10 m**

**Citizen
Scientists
0.2 m**

**Facebook
1,000 m**

#citizensciences

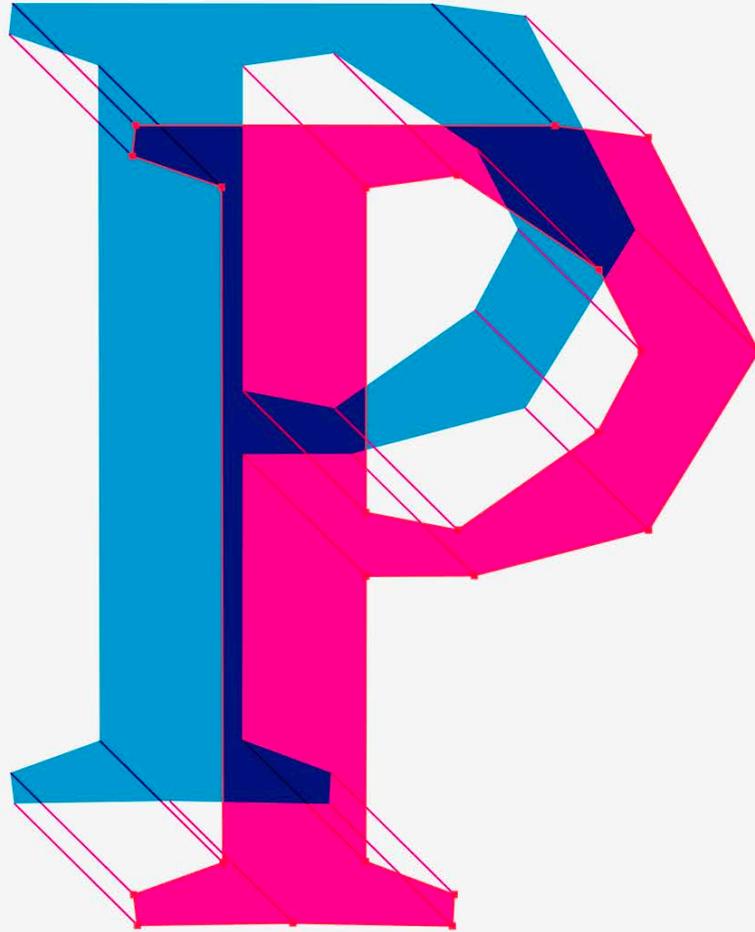
**decreasing relevance of
crowdsourcing (analyzing)
thanks to AI**

/// 4 ///

rise in co-constructed projects

Prototype Fund

=



The call for proposals has ended. Round 6 opens in early 2019.



Partizipative Wissenschaftsakademie



conclusions

je participe
tu participes
il participe
nous participons
vous participerez
ils profitent



**"citizen science" as a tool
for governing the critique
of science?**

cheerleader for science?



ow can we cure
CANCER
if you take away
FUNDS!

SCIENCE

**GRAB
EM BY
THE DATA!**



Show Me
The data

techno-critique?

**"it's not all that clear
that the world needs
more stuff"**

D. Chachra, 2015.

"Why I Am Not a Maker." *The Atlantic*. 2015



Modern Toss tote bag

public interest?

SCIENCE FOR THE PEOPLE

50¢
VOL. 2
NO. 2



BI-MONTHLY PUBLICATION OF SCIENTISTS AND ENGINEERS
FOR SOCIAL AND POLITICAL ACTION · SESPA AUG. 1970

vol. iv no. 5
JULY

SISTER

25¢

LOS ANGELES WOMENS CENTER



THIS ISSUE: SELF-HELP HEALTH CARE

Sister, July 5, 1973

empowering

epistemic justice

reduction of inequalities

proper place of science in democracy

Team



Bruno J. Strasser

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postdoc



Elise Tancoigne

postdoc



Gabriela A. Sanchez



Jérôme Baudry



Patricia Silveira



SWISS NATIONAL SCIENCE FOUNDATION



A research project on how citizens produce scientific knowledge

How did lay citizens become involved in the production of scientific knowledge? Where does this movement fit in the broader history of public participation in science? How did the rise of the “amateur” redefine expertise in a democratic society? And who are these “citizen scientists” today? These are some of the questions we will address in this five years interdisciplinary research project on the transformations of public participation in science.

[Next Colloquium](#)

[Tweets](#)



citizensciences.net

Citizen Science?

Rethinking Science and

Public Participation

Bruno J. Strasser

University of Geneva & Yale University



@citizensciences