

# Resources to give facts a fighting chance against misinformation

Bärbel Winkler and John Cook

EGU24 – EOS1.8 – Tuesday April 16, 2024



THE UNIVERSITY OF  
MELBOURNE

# Why resources to fight misinformation are needed





# Skeptical Science

<https://skepticalscience.com>

registered non-profit science education organization

Website with international reach

founded by John Cook in 2007

debunk misconceptions about human-caused climate change

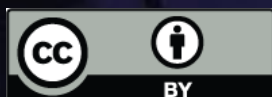
database with over 200 rebuttals

employ science-based effective communications

The screenshot shows the Skeptical Science website homepage. At the top, there is a navigation bar with links for Home, Arguments, Software, Resources, Comments, The Consensus Project, Translations, About, and Support. Below the navigation bar is a search bar and social media icons for Twitter, Facebook, YouTube, and MeWe. The main content area features a large article titled "Explaining climate change science & rebutting global warming misinformation" with a sub-headline "Global warming is real and human-caused. It is leading to large-scale climate change. Under the guise of climate 'skepticism', the public is bombarded with misinformation that casts doubt on the reality of human-caused global warming. This website gets skeptical about global warming 'skepticism'." Below this article are three featured sections: "Newcomers, start here", "History of Climate Science" (with a timeline from 1930 to 1960), and "The Big Picture". To the right of the main content is a sidebar featuring a smartphone graphic with the text "Cranky Uncle: Critical thinking about climate change" and a cartoon character. Below this is a badge for "Winner of the 2011 Australian museum Eureka Prize Advancement of climate change knowledge". At the bottom of the page, there are links for "IPCC FACTS" and "Guide to RCPS".

For detailed information about Skeptical Science please check the display presented at EGU2020

<https://sks.to/egu2020-display>

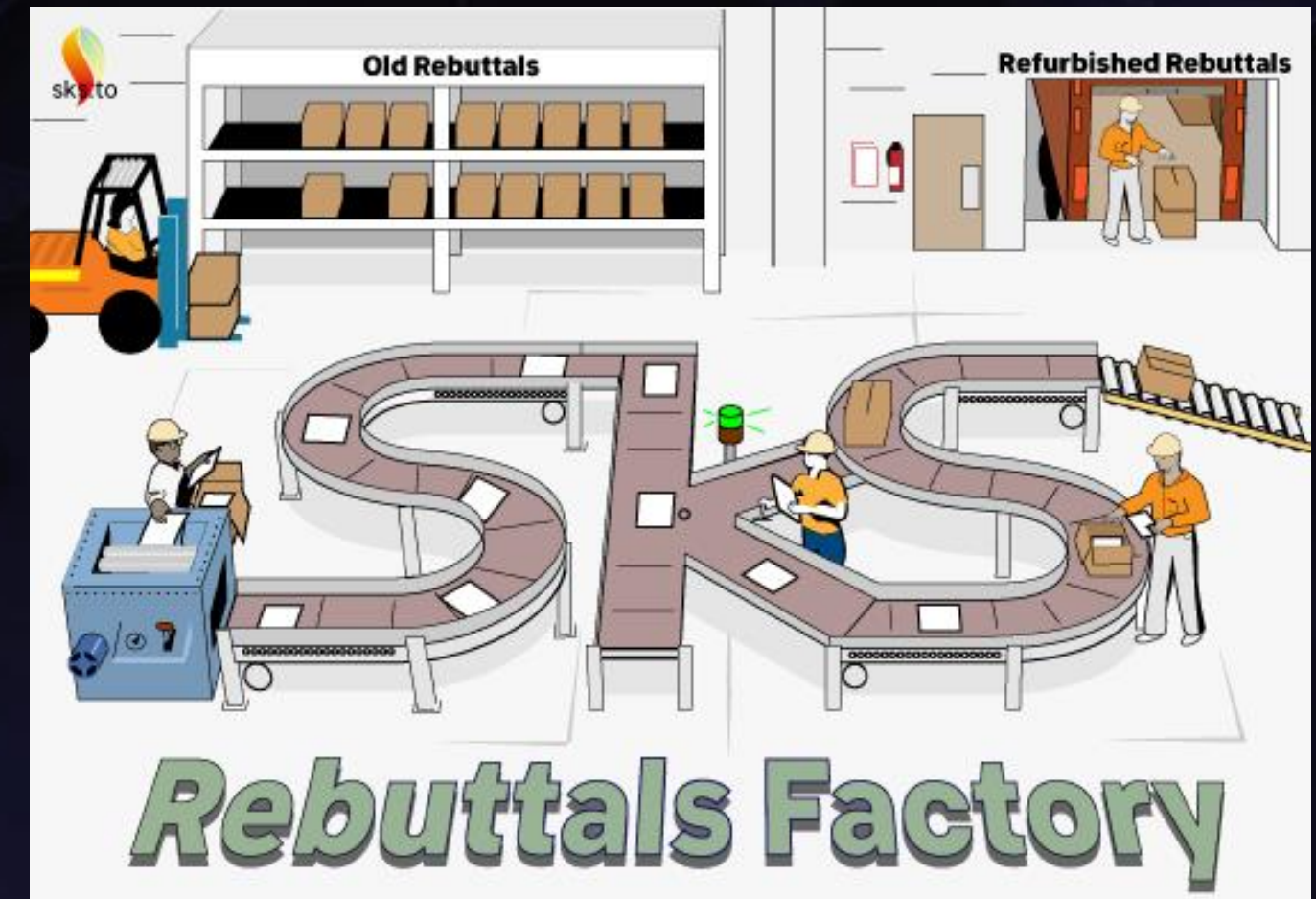




# Skeptical Science – Rebuttal Updates

Project started in February 2023

Over 60 rebuttals now feature an at-a-glance section



For detailed information about our rebuttal updates please check the display presented at EGU2023

<https://sks.to/egu23-abstract-1>

<https://sks.to/at-a-glance>



# Skeptical Science – Rapid Debunking

<https://sks.to/hotmess>

„Climate – the Movie: a hot mess with (c)old myths!“ – 25 of them to be exact!



*Climate - the Movie:* Skeptical Science Myth Rebuttals Online *a hot mess of (c)old myths!*

<http://sks.to/keyword> Use "http://sks.to/" plus the keyword listed in the table to access the complete rebuttal on SkepticalScience.com

#1 sun ✓	#2 past ✓	#3 consensus	#4 cooling	#5 model ✓	#6 temp ✓	#7 1998	#8 1970s ✓	#9 iceage	#10 antarctica
#11 lag ✓	#12 impacts	#13 gore	#14 cosmic ✓	#15 cold ✓	#16 hurricane ✓	#17 1934 ✓	#18 hockey	#19 mars	#20 uhi ✓
#21 1500cycle	#22 arcticcycle	#23 sealevel	#24 vapor	#25 planets	#26 green	#27 oceanheat	#28 climategate	#29 co2	#30 sensitivity
#31 greenhouse ✓	#32 lia ✓	#33 midcentury	#34 glacier	#35 pre1940	#36 evidence	#37 bear ✓	#38 troposphere ✓	#39 kilimanjaro	#40 underestimat
#41 extreme	#42 pollutant	#43 correlat. ✓	#44 greenland	#45 pastco2 ✓	#46 weather	#47 hotspot	#48 neptune	#49 jupiter	#50 pdo
#51 saturate	#52 pluto	#53 icecollapse	#54 volcano	#55 species	#56 wmp ✓	#57 co2data	#58 ocean	#59 elnino	#60 arctic
#61 schulte	#62 dropped	#63 slc	#64 aerosols	#65 microsite	#66 residence	#67 shift	#68 thermo	#69 significant	#70 warming
#71 falsify	#72 landuse	#73 settled	#74 winter	#75 methane	#76 500	#77 decline	#78 himalaya	#79 acid	#80 seapredict
#81 oreskes	#82 1995	#83 icemelt	#84 oceanco2	#85 agw	#86 co2up	#87 albedo	#88 snowfall	#89 hansen1988	#90 lindzenchoi
#91 acrim	#92 solarcycle	#93 spring	#94 oism	#95 watersun	#96 amazon	#97 chaos	#98 stratosphere	#99 searetract	#100 mauna
#101 driver	#102 trenberth	#103 ordovician	#104 southice	#105 amplify	#106 stopped	#107 diverge	#108 hulme	#109 cfc	#110 volcanodrop
#111 co2conc	#112 bright	#113 warmco2	#114 ozone	#115 microwave	#116 industrial	#117 icefraction	#118 toocold	#119 waste	#120 plant ✓
#124 greatlake	#125 runaway	#127 trace ✓	#128 overestimate	#129 breath	#130 iceloss	#131 royalsoc	#132 dmi	#133 fewdegrees	#134 humidity
#136 cycle	#137 fewdegrees	#139 toohard	#140 economy	#141 baseload	#143 cloud ✓	#144 tamper	#145 peerreview	#146 ipccskeptic	#147 foi
#148 bleach	#151 futurecool	#152 stomata	#153 name	#155 soares	#157 seaice	#158 linear	#159 snowcover	#160 atoll	#161 inertia
#162 trends	#163 10000	#164 ipccmwp	#168 ljungqvist	#169 limits	#170 highway	#171 removeco2	#172 urgent	#174 soot	#175 poor
#176 arctic1940	#177 expensive	#178 sealevelrise	#179 venus	#180 variable	#181 limitscool	#182 searise	#183 jobs	#185 gbr ✓	#186 negspencer
#187 loehle	#188 salby	#189 co2increase	#190 postma	#191 CERN ✓	#195 slr2010	#197 underground	#198 galileo	#199 northwest	#200 stepfunction
#201 tuvalu	#202 best	#204 planetary	#205 schmittner	#206 iris	#207 uah ✓	#209 santer	#210 accelerate	#211 ipccnatural	#212 thermostat
#213 survived	#214 himalayagrow	#215 pal	#216 nuclear	#217 seaice1940	#218 pastarctic	#219 arcticstorm	#220 sandy	#222 16years	#223 longtail
#225 solarminimum	#226 robust97	#227 akasofu	#228 confidence	#229 projections	#230 ipccpause	#232 heatwave	#233 fringe	#234 damagecosts	#235 adaptcheap
#236 meat	#237 satellite	#238 money	#239 holistic	#240 wildfires ✓					

(Available at : <http://skepticalscience.com/keyword.php>)

sks.to

Compared to other blog posts „hot mess“ has gone viral with over 60K views!



# The Debunking Handbook 2020

<https://sks.to/debunk2020>

consensus document written by 19 co-authors

lead authors Stephan Lewandowsky, John Cook  
and Ullrich Ecker

explains what mis- and disinformation is



why it can cause substantial harm

why it is often sticky and therefore hard to dislodge

why pre-bunking can be more effective than de-bunking



# The Debunking Handbook 2020



## The elusive backfire effects

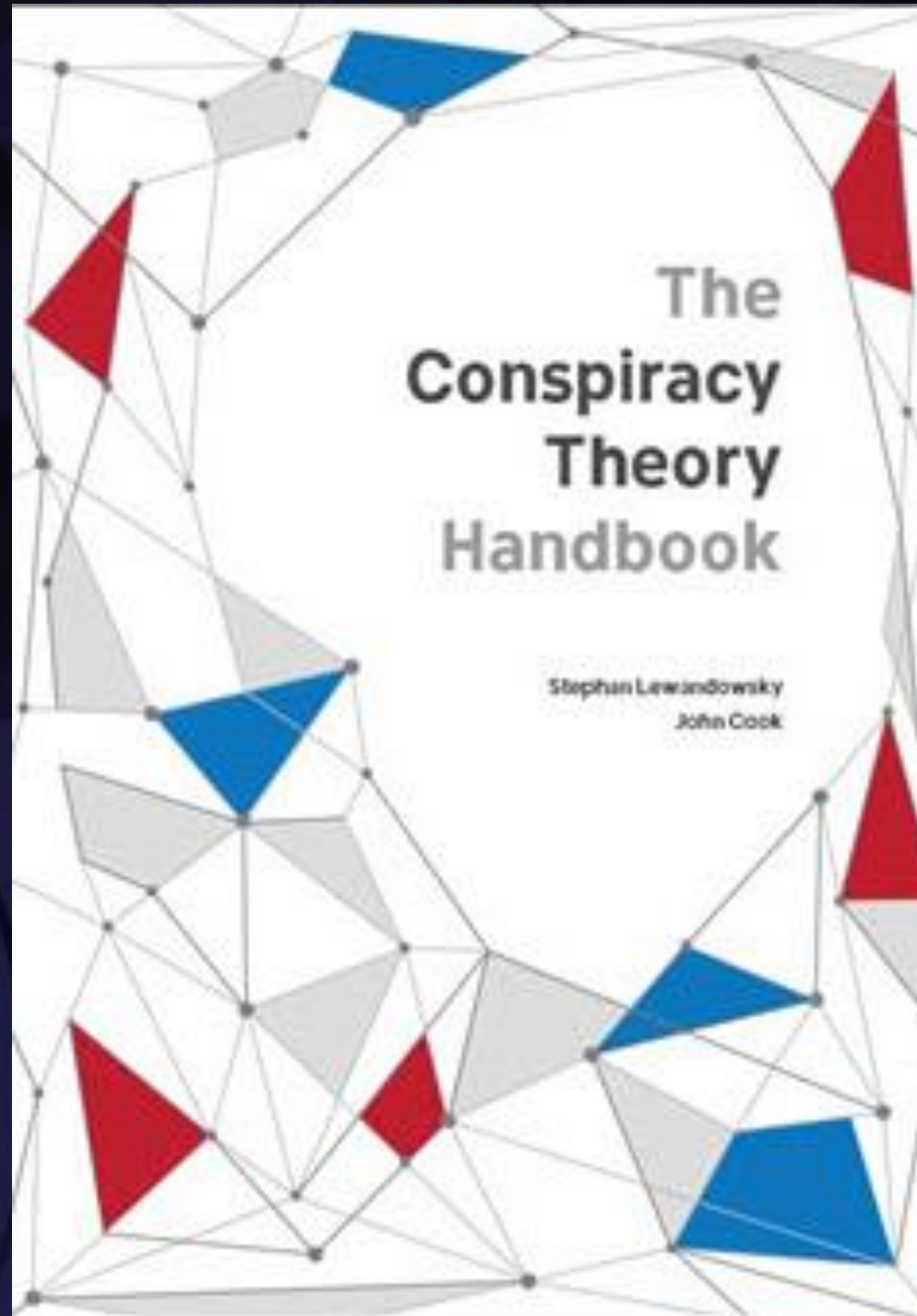
*“On balance, recent evidence provides no reason to avoid debunking for fear of a backfire effect. Debunking is likely to be at least partially effective, except for some limited circumstances when people’s worldviews are being challenged.”*

<https://sks.to/debunk2020-part3>



# The Conspiracy Theory Handbook

<https://sks.to/conspiracy>



Conspiracy Theories attempt to explain events as the secretive plots of powerful people

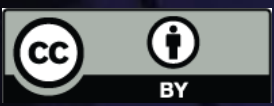
... damage society in a number of ways because they erode trust in official institutions

Written by Stephan Lewandowsky and John Cook

Explains popularity of conspiracy theories

Identification of traits of conspiratorial thinking

Lists effective response strategies





# The seven traits of conspiratorial thinking

## TRAITS OF CONSPIRATORIAL THINKING



### Contradictory



Conspiracy theorists can simultaneously believe in ideas that are mutually contradictory. For example, believing the theory that Princess Diana was murdered but also believing that she faked her own death.<sup>30</sup> This is because the theorists' commitment to disbelieving the "official" account is so absolute, it doesn't matter if their belief system is incoherent.

### Overriding suspicion



Conspiratorial thinking involves a nihilistic degree of skepticism towards the official account.<sup>31</sup> This extreme degree of suspicion prevents belief in anything that doesn't fit into the conspiracy theory.

### Nefarious intent



The motivations behind any presumed conspiracy are invariably assumed to be nefarious.<sup>31</sup> Conspiracy theories never propose that the presumed conspirators have benign motivations.

### Something must be wrong



Although conspiracy theorists may occasionally abandon specific ideas when they become untenable, those revisions don't change their overall conclusion that "something must be wrong" and the official account is based on deception.<sup>24,30</sup>

### Persecuted victim



Conspiracy theorists perceive and present themselves as the victim of organized persecution.<sup>29</sup> At the same time, they see themselves as brave antagonists taking on the villainous conspirators. Conspiratorial thinking involves a self-perception of simultaneously being a victim and a hero.

### Immune to evidence



Conspiracy theories are inherently self-sealing—evidence that counters a theory is re-interpreted as originating from the conspiracy.<sup>31,32,33</sup> This reflects the belief that the stronger the evidence against a conspiracy (e.g., the FBI exonerating a politician from allegations of misusing a personal email server), the more the conspirators must want people to believe their version of events (e.g., the FBI was part of the conspiracy to protect that politician).

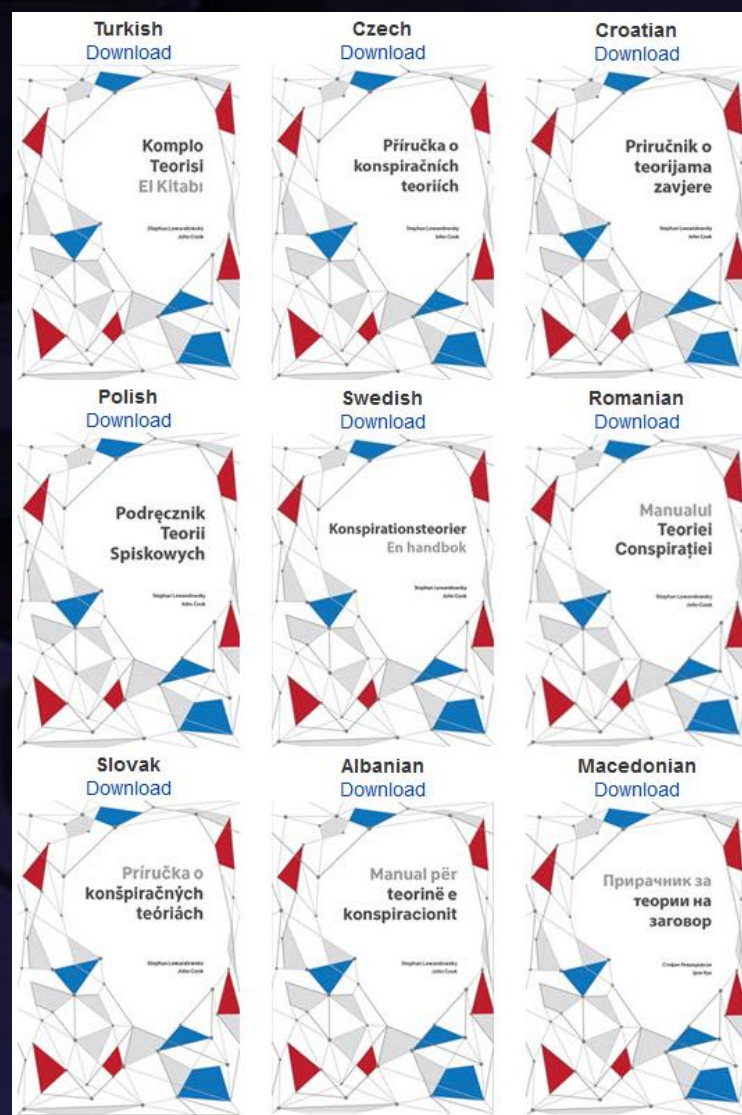
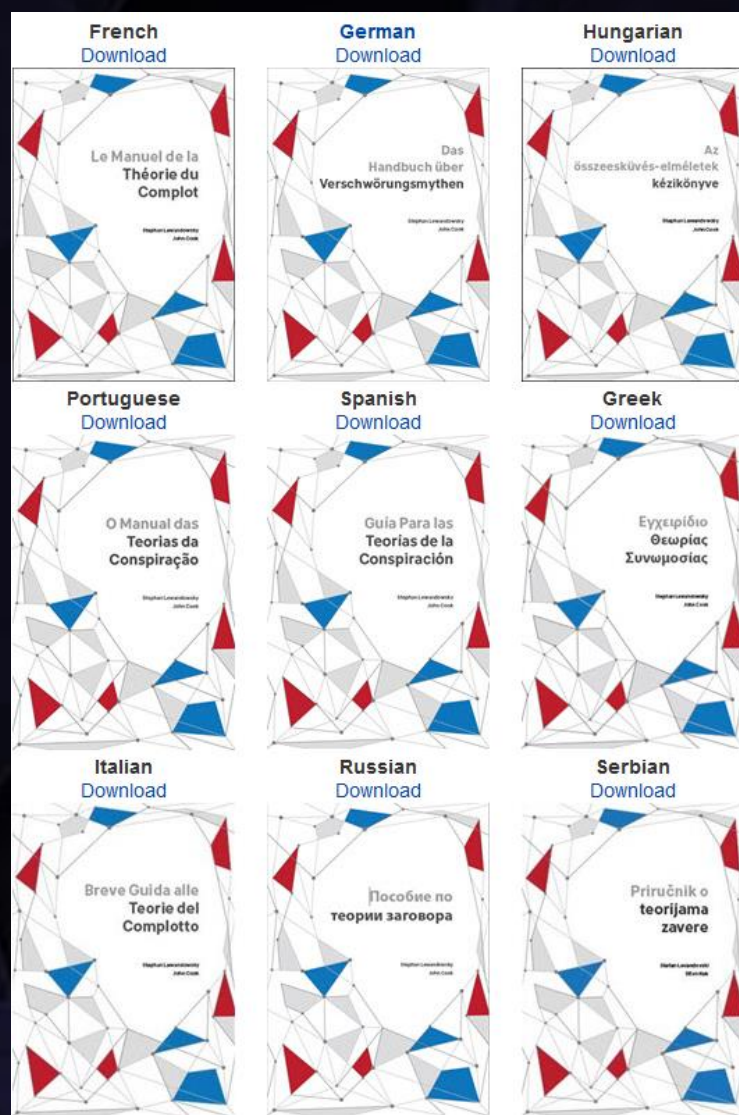
### Re-interpreting randomness



The overriding suspicion found in conspiratorial thinking frequently results in the belief that nothing occurs by accident.<sup>34</sup> Small random events, such as intact windows in the Pentagon after the 9/11 attacks, are re-interpreted as being caused by the conspiracy (because if an airliner had hit the Pentagon, then all windows would have shattered<sup>35</sup>) and are woven into a broader, interconnected pattern.



# Translations



Both handbooks have been translated by volunteers into at least 18 languages by now!



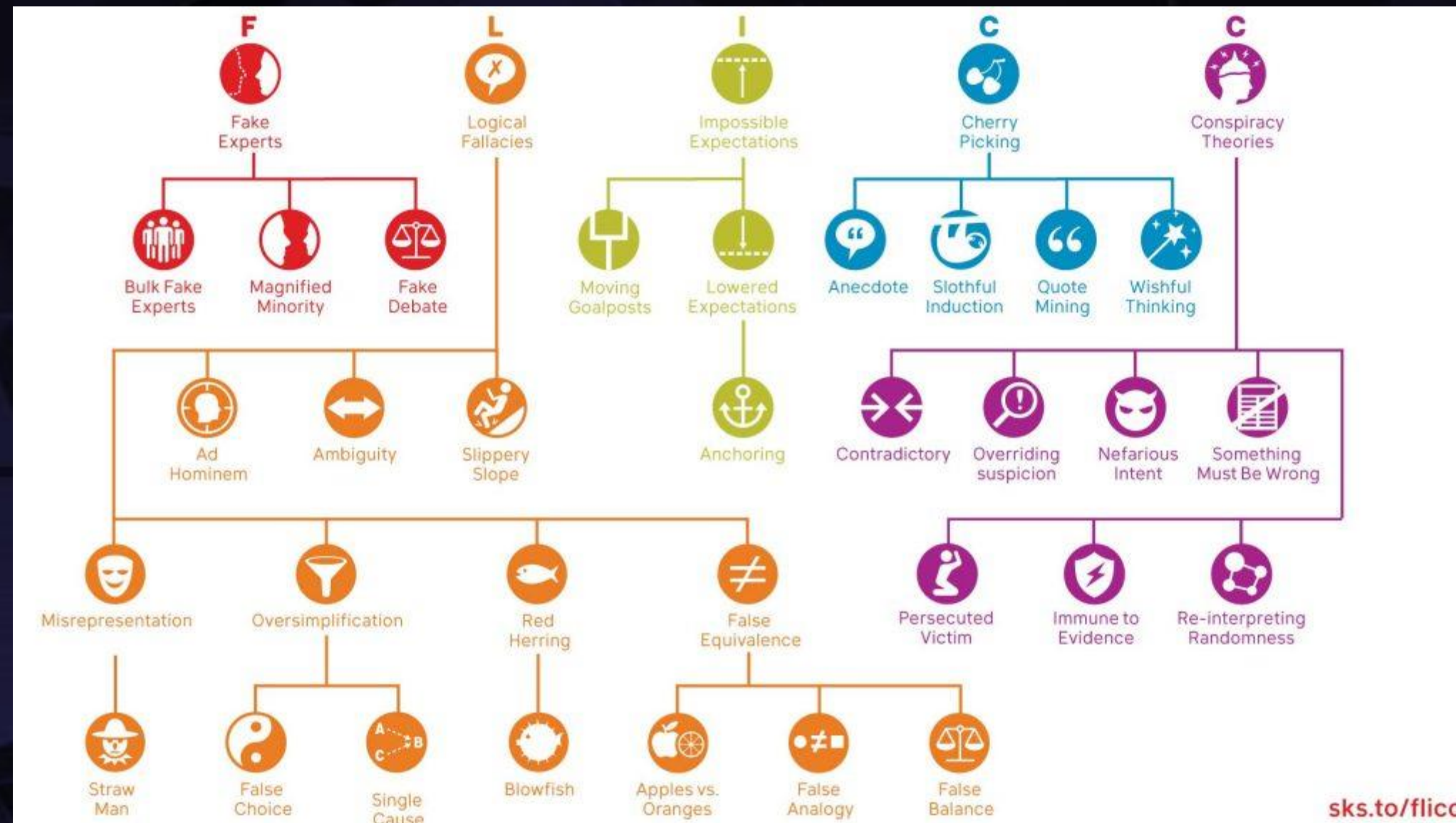
# Explain the techniques used to distort the facts





# FLICC – the techniques of science denial

<https://sks.to/flicc-sks>





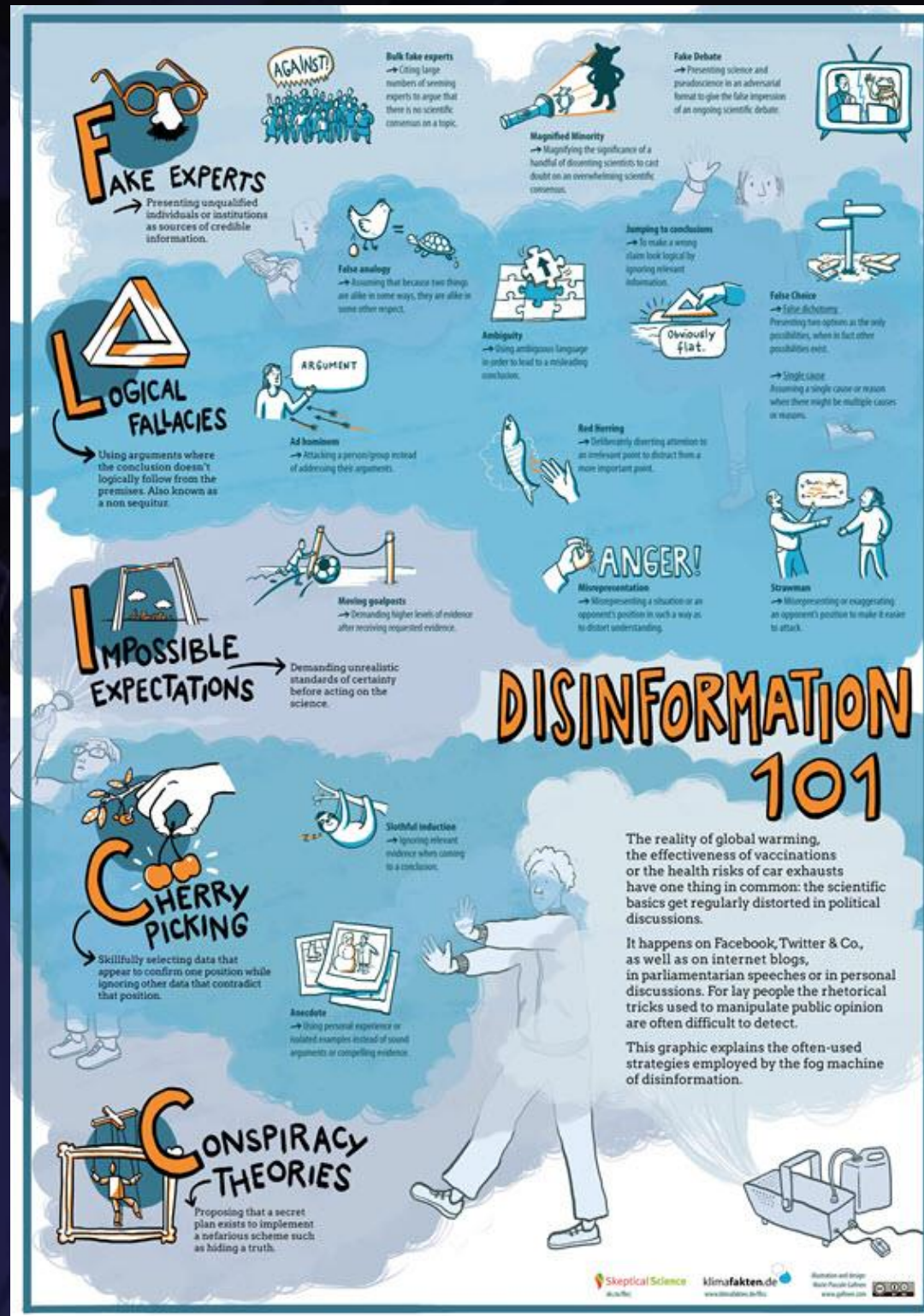
# The FLICC Poster

<https://sks.to/flicc-poster>

Successful collaboration with our German partner website Klimafakten.de

First version in German and English

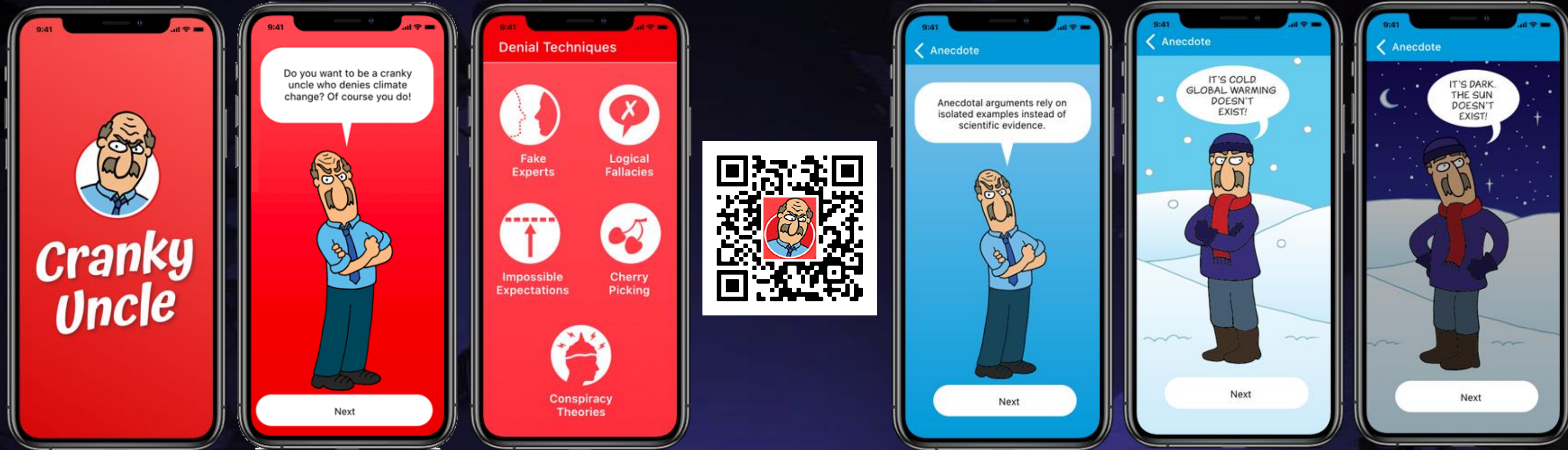
Translated into 7 languages thus far with 2 more currently in the works





# Cranky Uncle Game

Building public resilience against misinformation by explaining the techniques of science denial



<https://crankyuncle.com/game>



# Cranky Uncle Game



sks.to/crankyiphone



sks.to/crankyandroid



sks.to/crankybrowser

Translations  
<https://sks.to/crankyml>





# The Teachers' Guide to Cranky Uncle

<https://sks.to/crankyguide>

Explains the science behind the game

Contains resources and suggestions for various class activities

Translated into 6 languages thus far

## the Teachers' Guide to Cranky Uncle

I PREFER  
OLD SCHOOL!



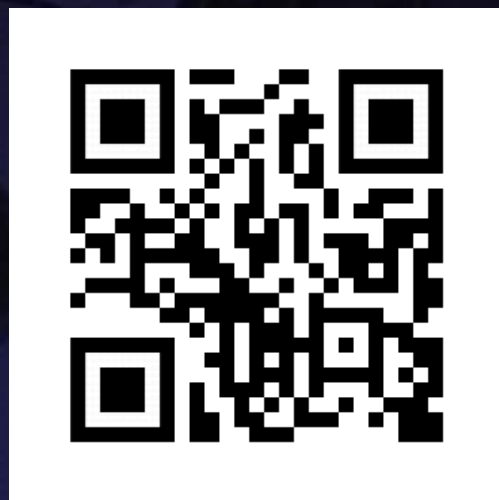
JOHN COOK





# Bärbel Winkler

## Skeptical Science



[baerbelw@skepticalscience.com](mailto:baerbelw@skepticalscience.com)

<https://sks.to/BaerbelW>

# John Cook



[john@skepticalscience.com](mailto:john@skepticalscience.com)

<https://sks.to/JohnCook>



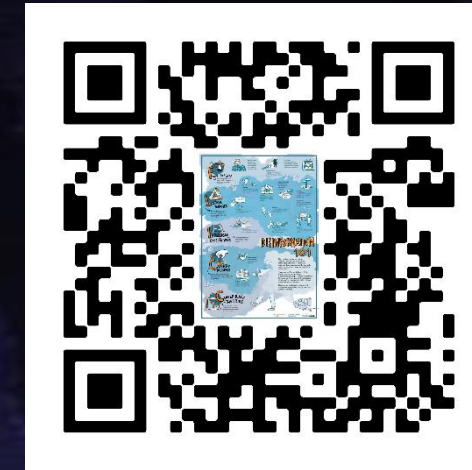
# QR-Codes to some resources



Website Skeptical  
Science



John Cook's Cranky  
Uncle website



FLICC Poster



The Debunking  
Handbook 2020



The Conspiracy  
Theory Handbook



History of FLICC



# Resources & References

Lewandowsky, S., & Cook, J. (2020). The Conspiracy Theory Handbook. Available at <https://sks.to/conspiracy>

Lewandowsky, S., Cook, J., Ecker, U. K. H., Albarracín, D., Amazeen, M. A., Kendeou, P., Lombardi, D., Newman, E. J., Pennycook, G., Porter, E. Rand, D. G., Rapp, D. N., Reifler, J., Roozenbeek, J., Schmid, P., Seifert, C. M., Sinatra, G. M., Swire-Thompson, B., van der Linden, S., Vraga, E. K., Wood, T. J., Zaragoza, M. S. (2020). The Debunking Handbook 2020. Available at <https://sks.to/db2020>. DOI:10.17910/b7.1182

Cook (2020). Deconstructing climate science denial. In Holmes, D. & Richardson, L. M. (Eds.) Research Handbook on Communicating Climate Change. Cheltenham, UK: Edward Elgar Publishing. <https://doi.org/10.4337/9781789900408.00014>

Cook, J. (2021). Cranky Uncle: a game building resilience against climate misinformation. Plus Lucis, 3(2021), 13-16



# Resources to give facts a fighting chance against misinformation

Bärbel Winkler and John Cook  
EGU24 – EOS1.8 – Tuesday April 16, 2024



THE UNIVERSITY OF  
MELBOURNE