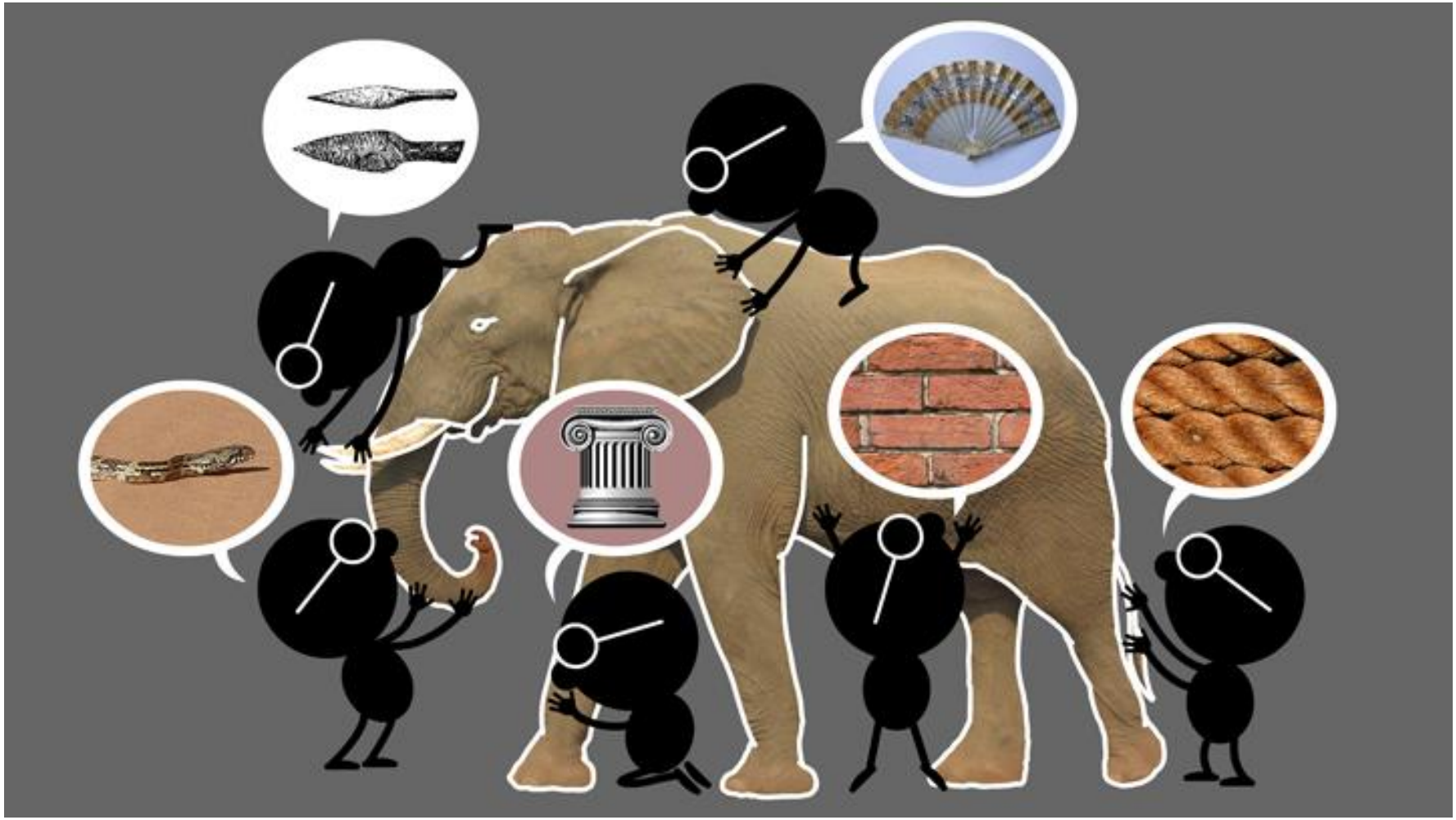
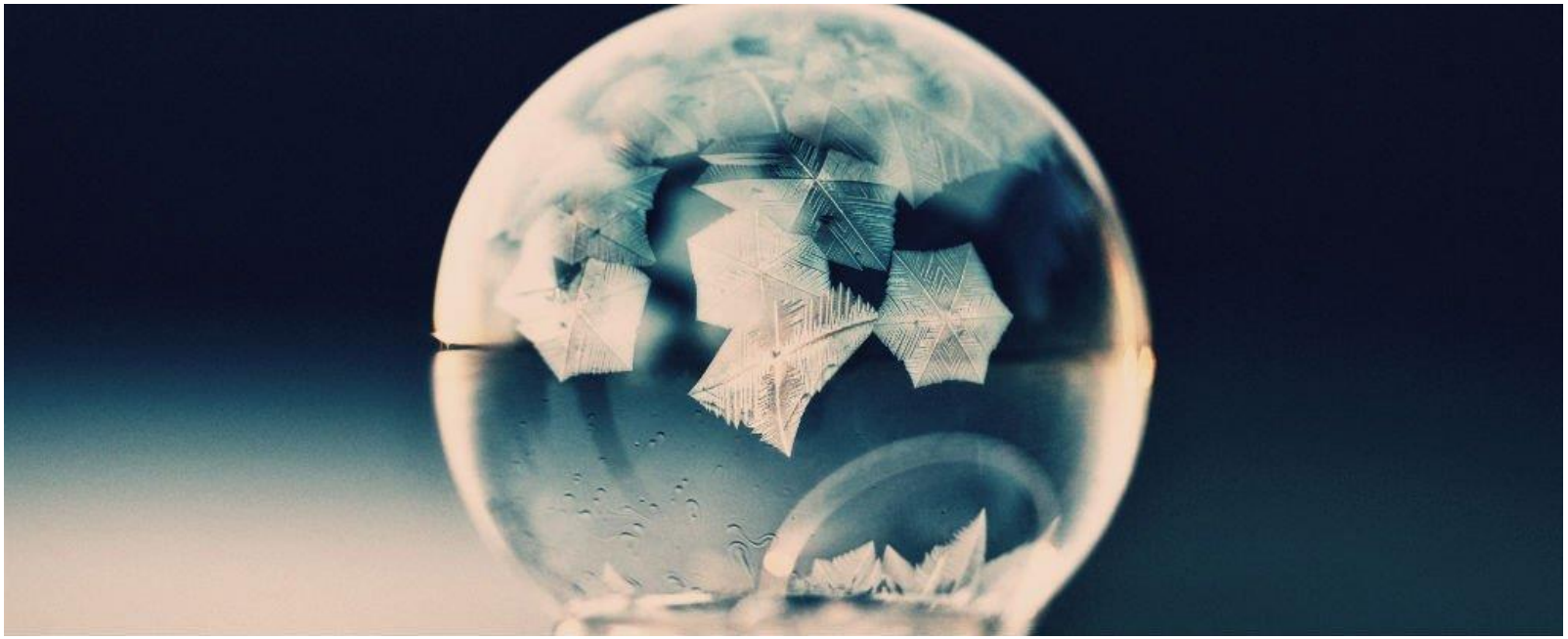
Sztuka dziwienia się

Piotr Garbaczewski
Instytut Fizyki Uniwersytetu Opolskiego

. Koń jaki jest, każdy widzi
Benedykt Chmielowski (1700-1763)
"Nowe Ateny" (1746)

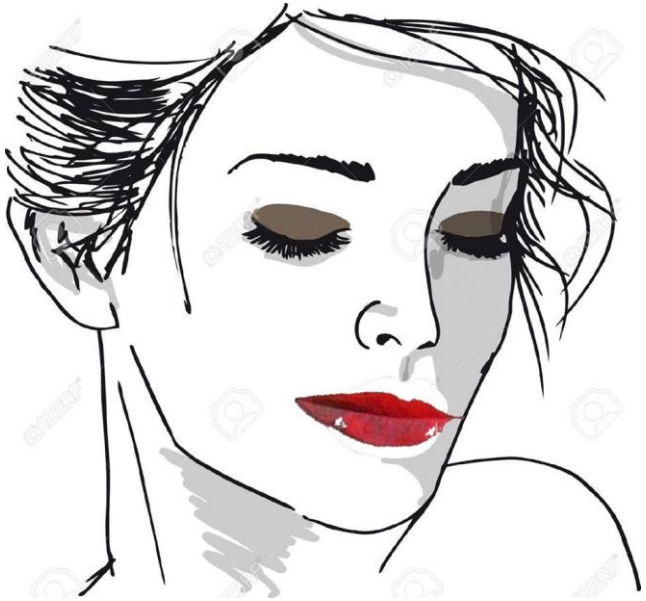


Słoń jest jak każdy widzi - **a co to jest, jeśli nikt nie widzi ?**



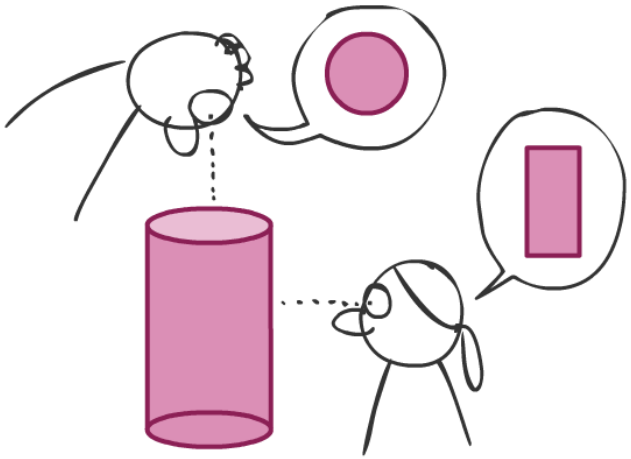
Watching this bubble freeze is way too... - The Forbidden Highlands _ Facebook.mp4

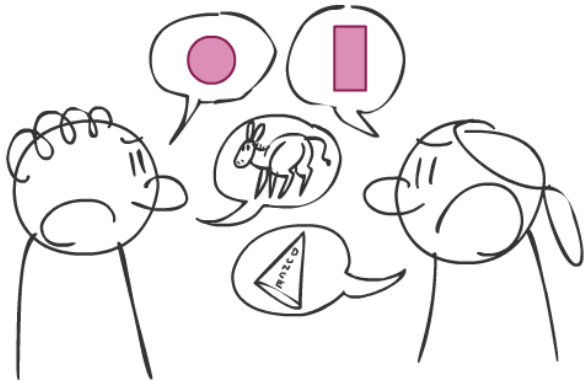
Co właściwie widzimy ?



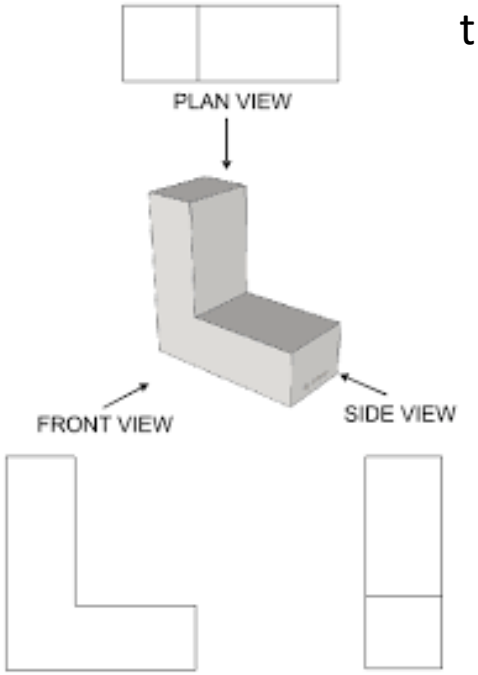
Męski punkt widzenia ?

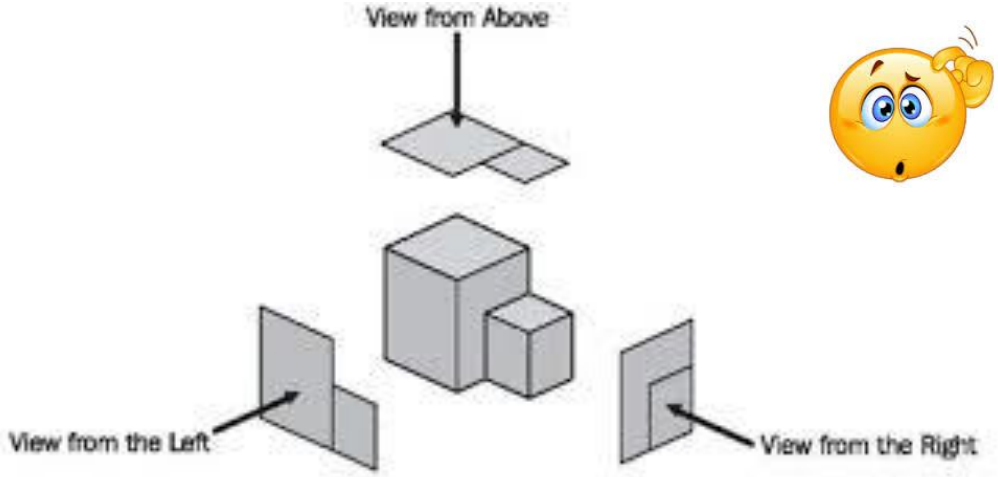
Co właściwie widzimy ? (Punkty widzenia …)

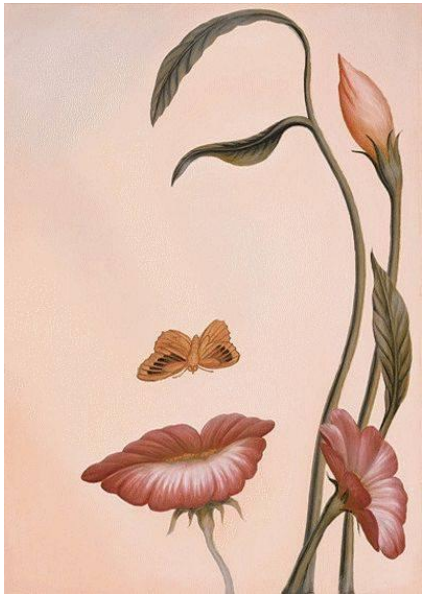




Pułapki dogmatycznej jednostronnosci. Ks. Józef Tischner: „Są trzy *prawdy*: świento *prawda*, tys *prawda* i gówno *prawda* „

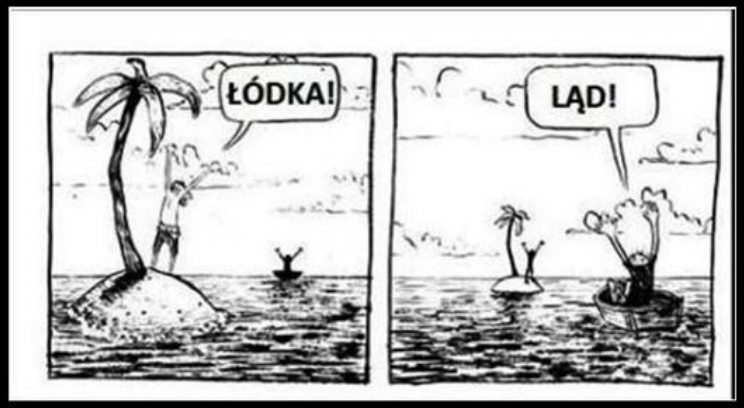







PM 4:34 23/JAN/2014

Punkt widzenia zależy od punktu siedzenia ?

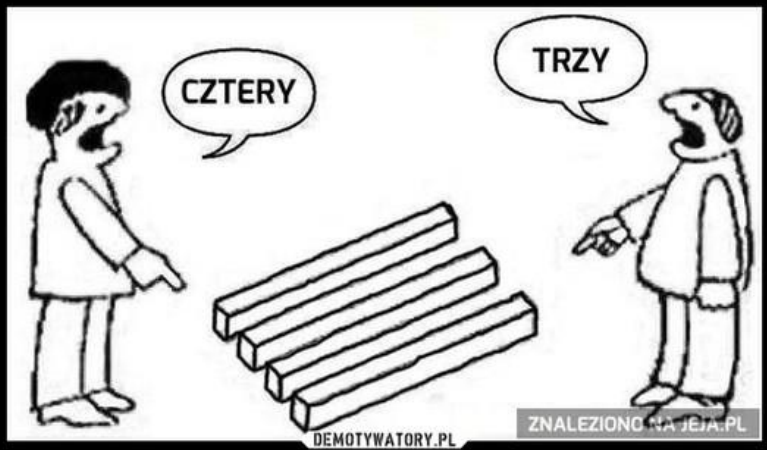


"Punkt widzenia zależy od punktu siedzenia"

www.demotywatory.pl

Wystarczy zmienić punkt widzenia

by zmieniła się perspektywa



Punkt widzenia
zależy od punktu siedzenia

Punkt widzenia

zależy od punktu siedzenia

Zachwyt, zdziwienie, ciekawość ? Wielokrotna tęcza, Jak to możliwe ?

zacmienie_10fps.mp4

A może coś nas tutaj zdziwi ?

Group of Fish.mp4

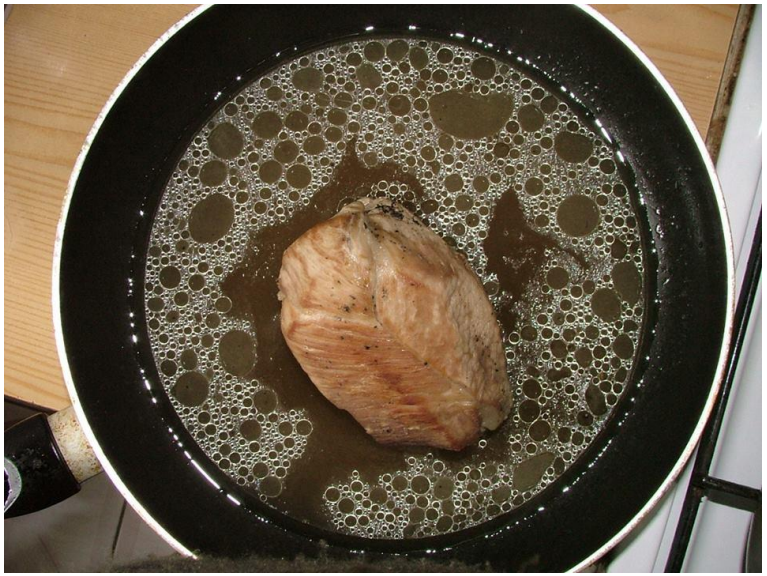
Birds Swarm Over Sunset ...mp4

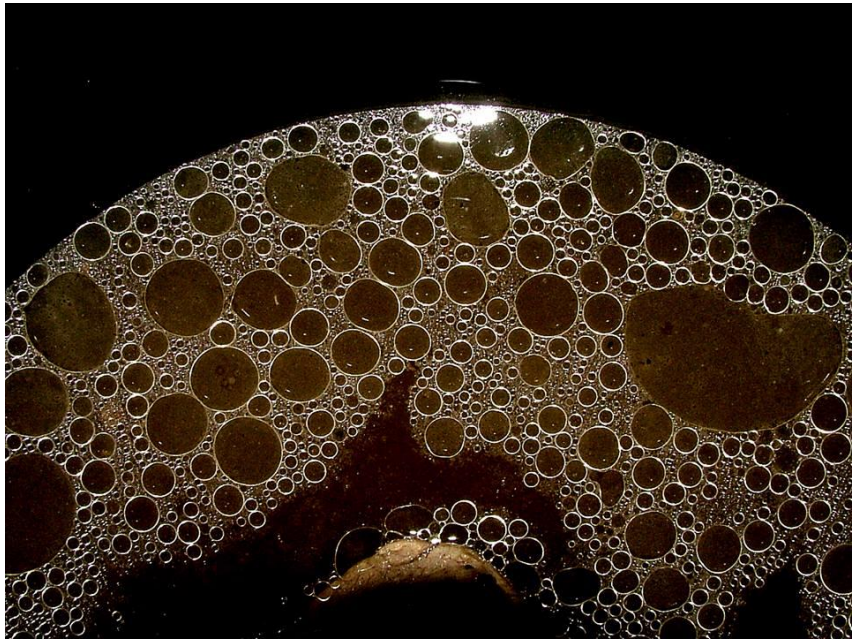
Bach - Toccata and Fugue in D minor.mp4

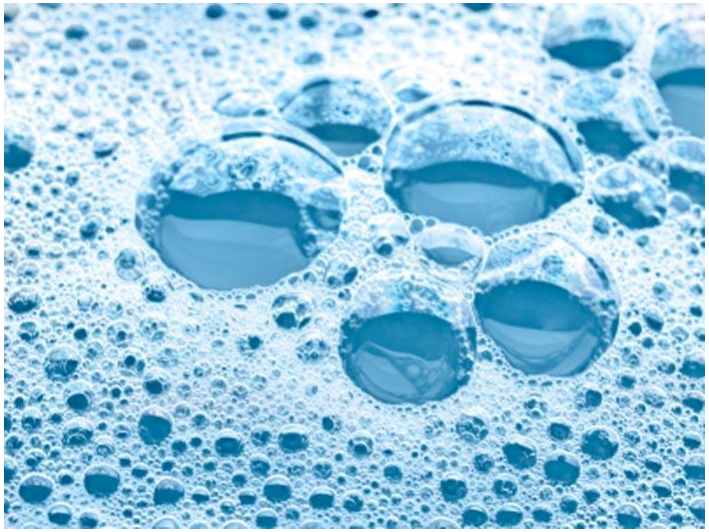
KATICA_ILLENYI_-_Once_Upon_a_Time_in_the_West_-_Th.mp4

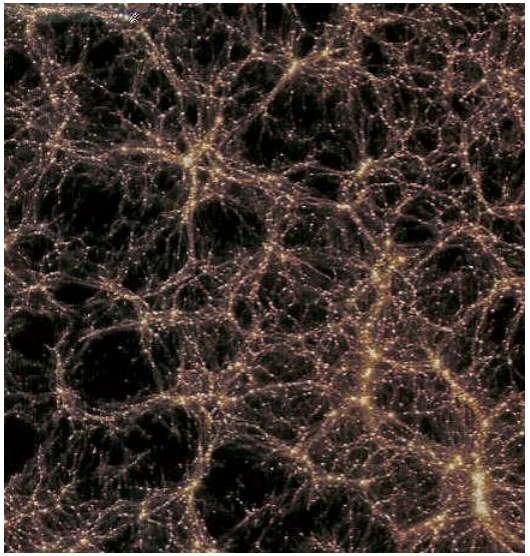
??????? ????? - ?????????? ?????? ????????! _ Facebook.mp4

Czy jest tu coś zaskakujacego ?

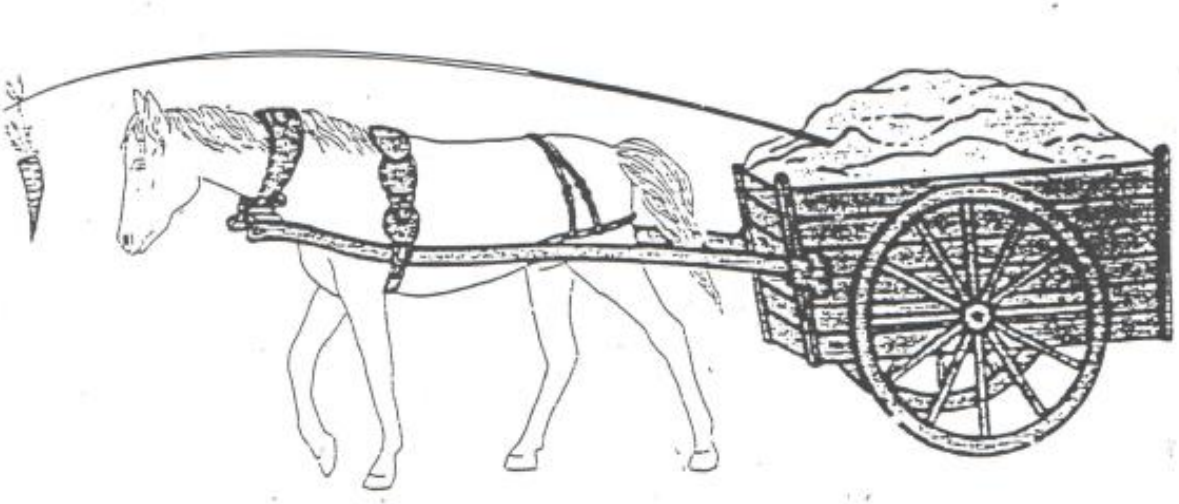


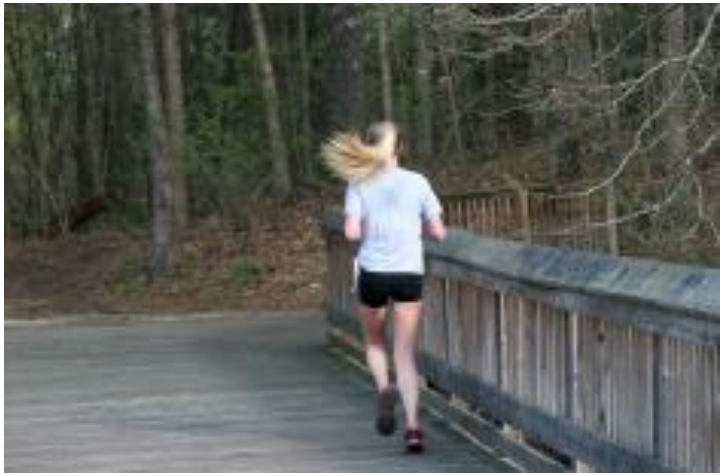






Spieniony
Wszechświat ?

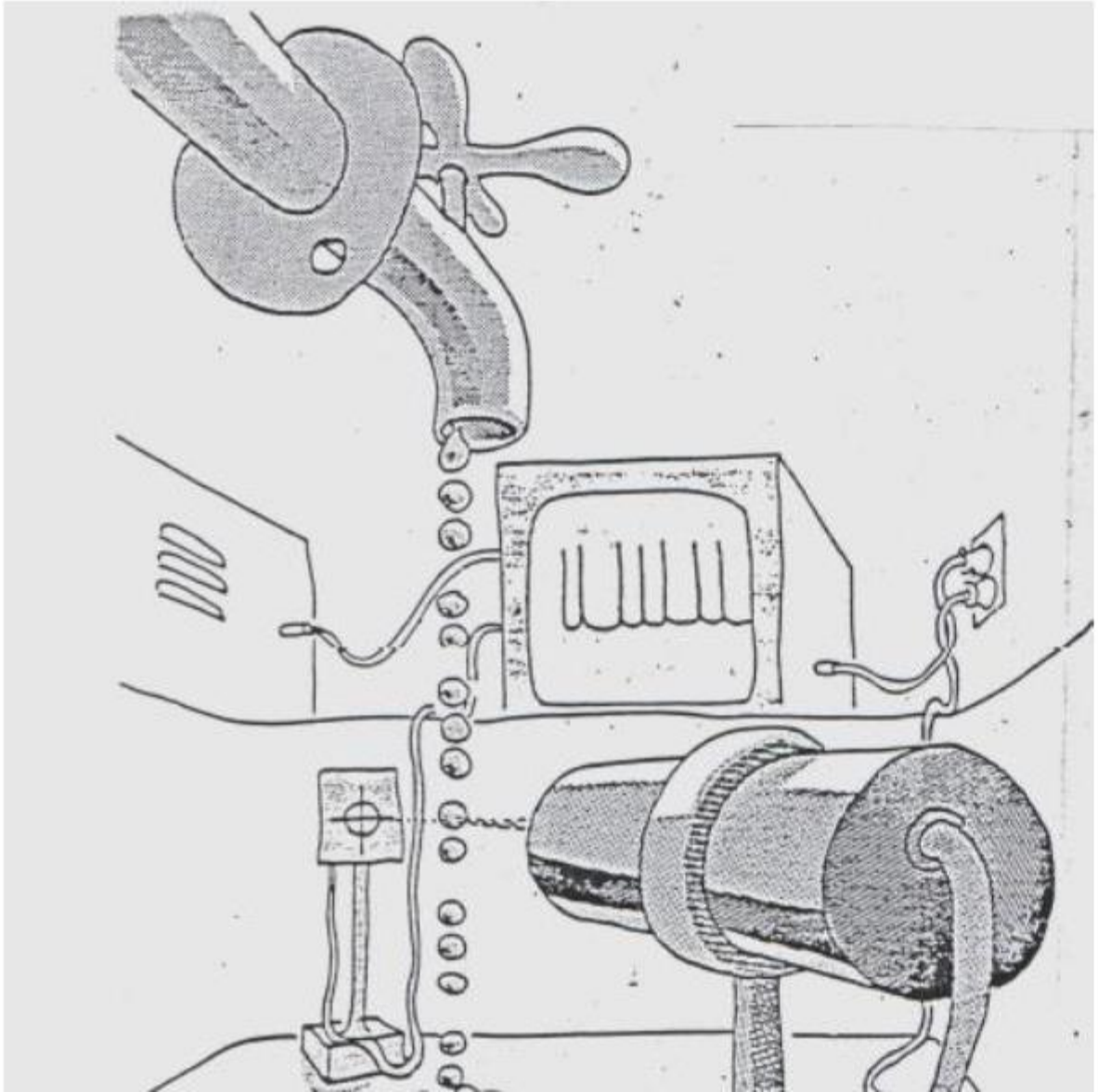




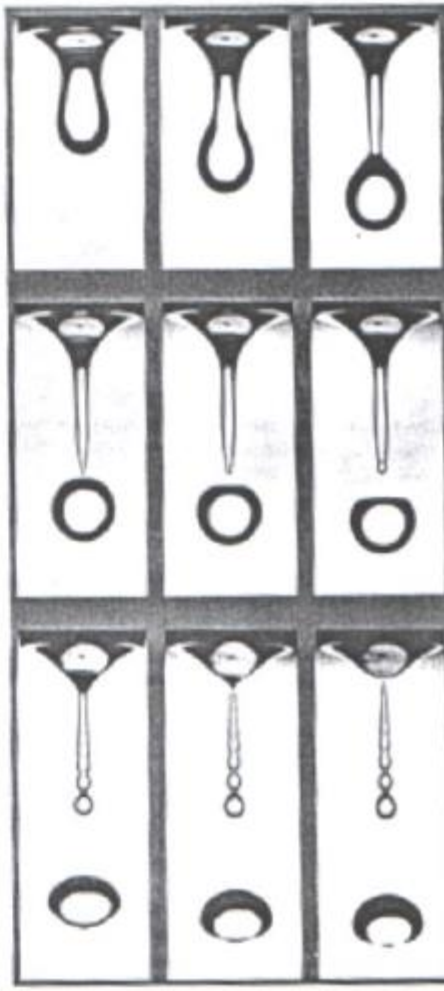
Co ma kucyk (koński ogon) biegaczki do głodnego (!) kucyka zaprzężonego w dwukółkę ? (Nie chodzi tu o ogon kucyka.)

Cieknący kran - banalne, oczywiste, nieciekawe, co najwyżej irytujące. Czy banalne ?

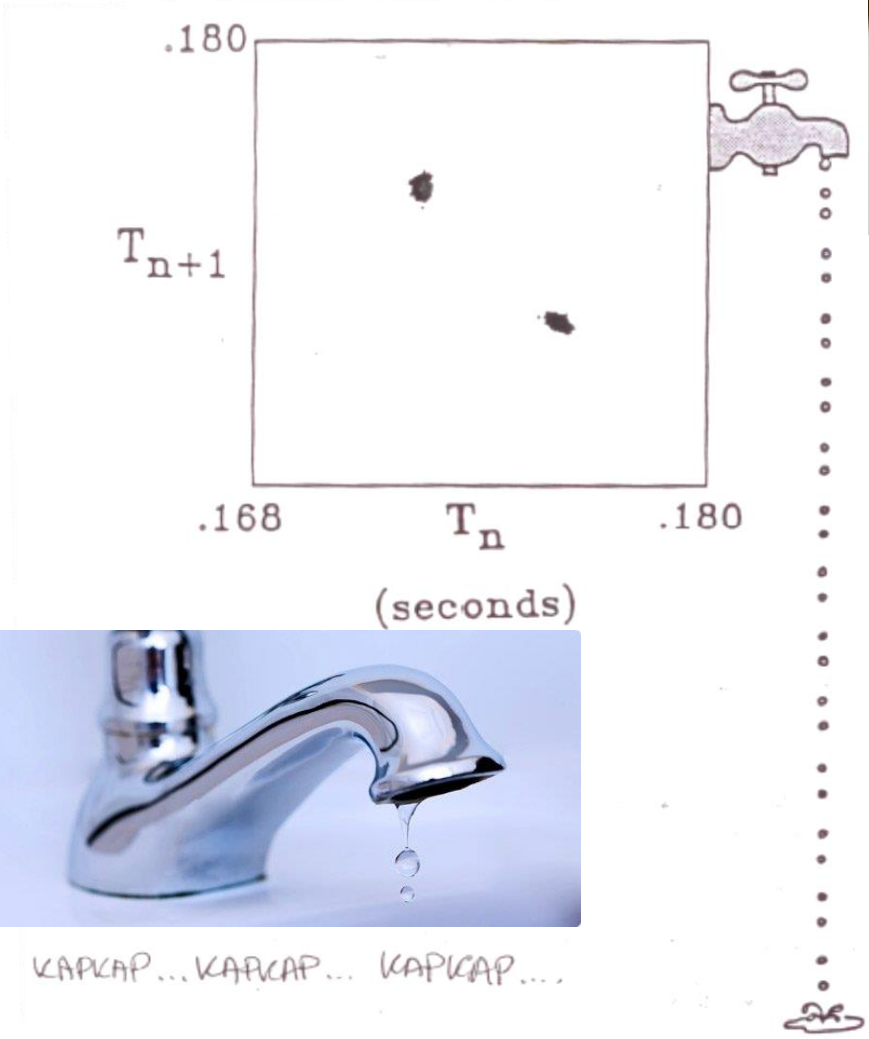
Czy cieknący kran jest urządzeniem w pełni przewidywalnym ? „Chińs
tortura” w pokoju pracy doktoranta Uniwersytetu Santa Cruz- 1984

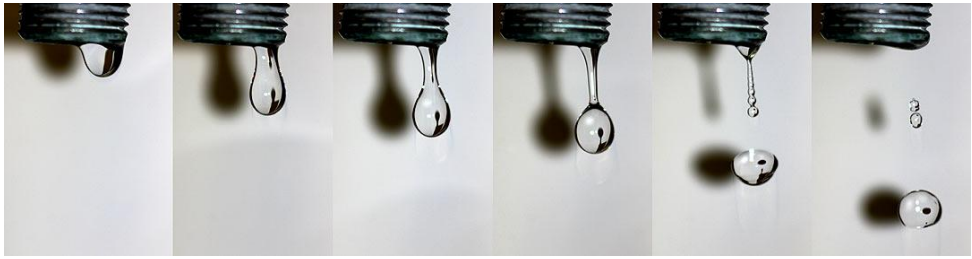


Jak tworzy się i odrywa

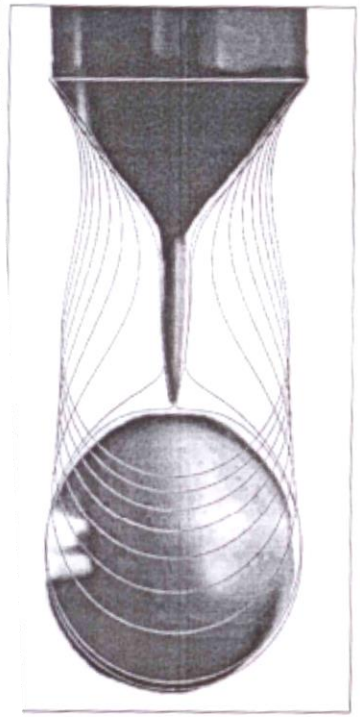


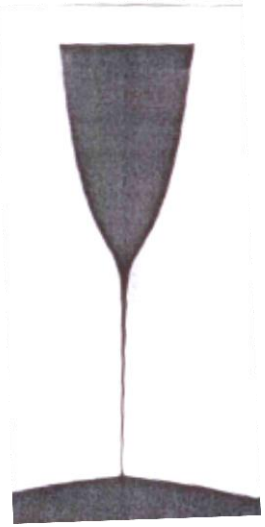
Okres dwa – krople pojawiają się parami





a tak się odrywają

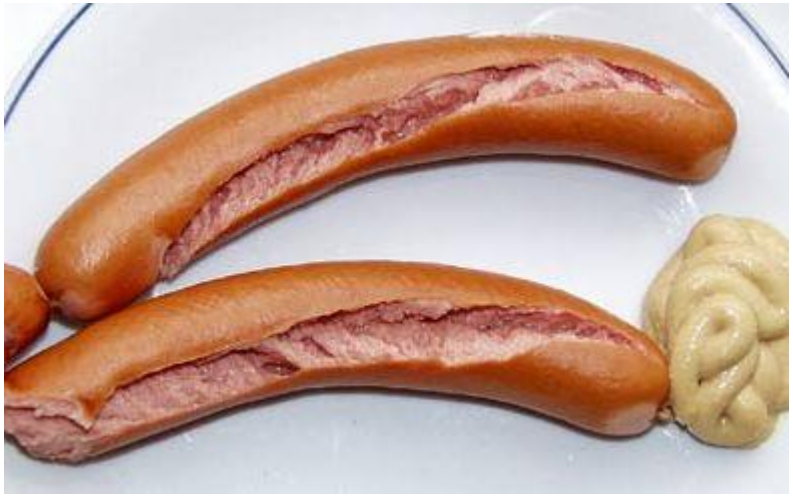




Fizyka dla dociekliwych: sztuka dziwienia się to sztuka spostrzegania i zadawania pytań

5-Minute Crafts - Here are some truly wonderful... _ Facebook.mp4

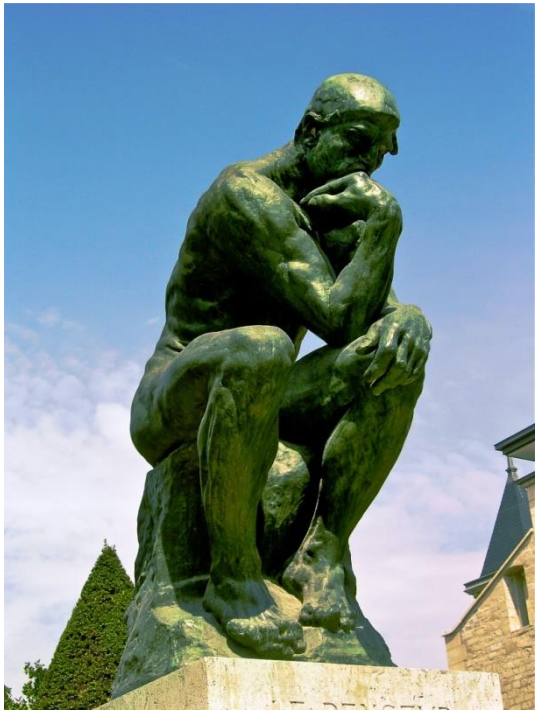
5-Minute Crafts - Might of magnets.????_bit.ly_2dTwLxU _ Facebook.mp4



Aerial_View_of_Big_Beach_in_Hawaii_by_Mrdanielhan_.mp4

Czy istnieje nauka poważna i „niepoważna” ?

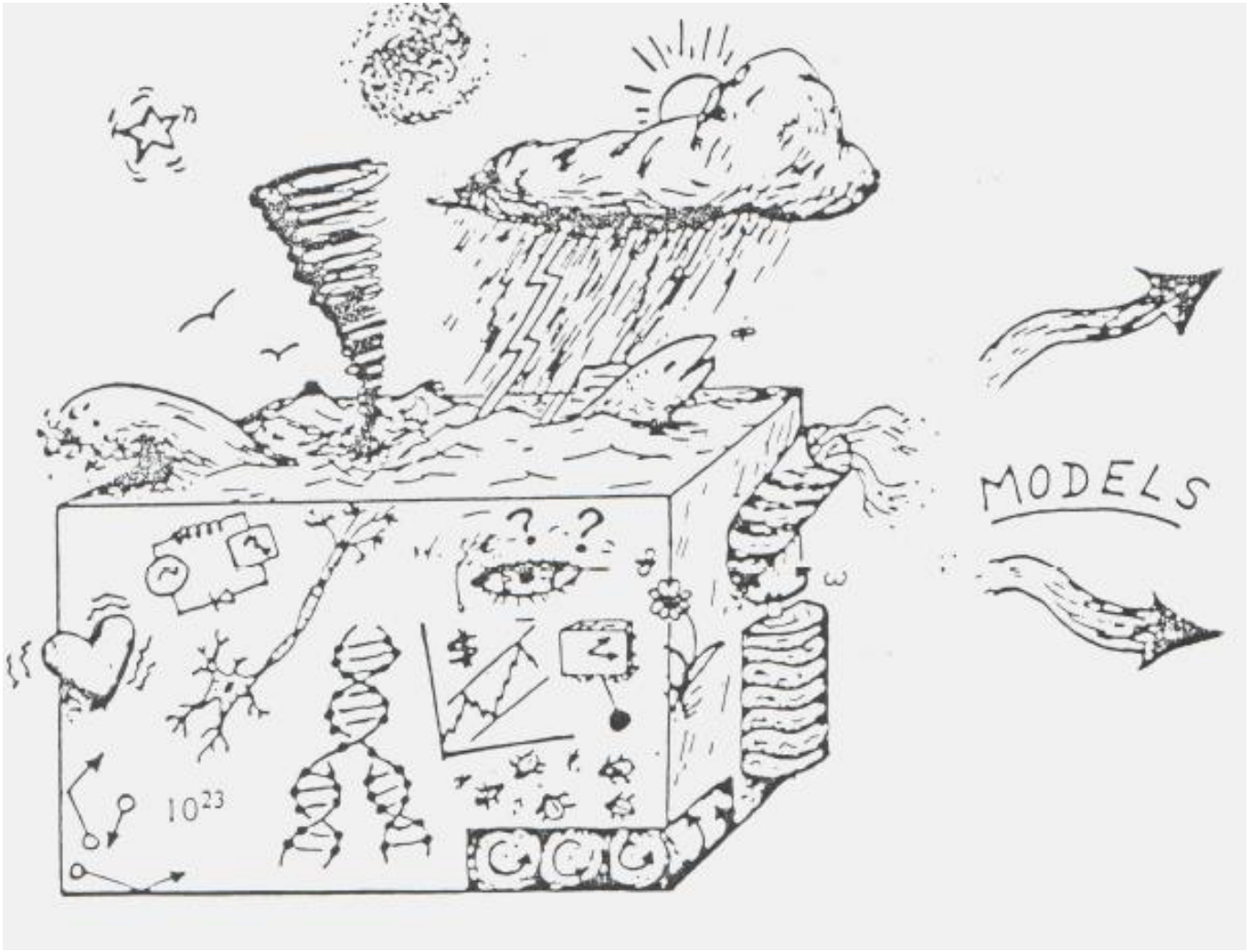
(odsyłacz muzyczny : Ludwig van Beethoven vs Zenek Martyniuk)



Dla starożytnych filozofów pytanie o pierwszeństwo jajka bądź kury prowadziło bezpośrednio do pytania o sam początek życia i wszechświata[

W teologii: „I rzekł Bóg: Niech hojnie wywiodą wody płaz duszy żywiącej; a ptactwo niech lata nad ziemią”

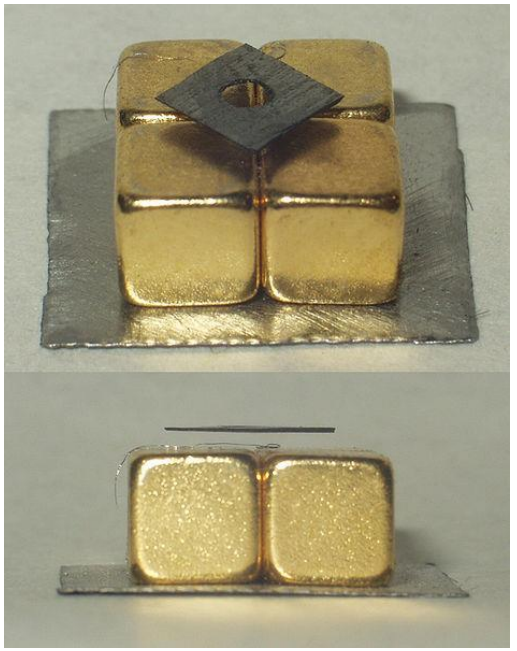
Sztuka dziwienia się jako ciekawość poznawcza i głód pytań (bez odpowiedzi ?)



Modele zjawisk

Świat fizyka i jego (zapewne zbyt) dalekosiężne ambicje poznawcze**:**
jeśli Wszechświat jest odpowiedzią to jakie jest pytanie ?

Historia nagród **Ig Noble** z fizyki



Nagroda Nobla z fizyki 2010, za odkrycie grafenu, Sir Andre Geim oraz Konstantin Novoselov

Lewitacja (dia)magnetyczna żywej zaby.
Nagroda **Ig Nobel** z fizyki 2000,
Sir Andre Geim oraz Sir Michael Berry

Co było pierwsze ? Oczywiście **Ig Nobel**

(ignoble = niecny, niegodziwy, haniebny…)

Ig Nobel physics, 1991: Thomas Kyle, for his discovery of "the heaviest element in the universe, Administratium".

Ig Nobel Physics, 1992: David Chorley and Doug Bower, lions of low-energy physics, for their circular contributions to **field theory** based on the **geometrical destruction of English crops**.

Tajemnice kręgów zbożowych ?

Mniej więcej 10 lat po brytyjskiej "epidemii" dwie osoby (Doug Bower i Dave Chorley) ogłosiły publicznie, że większość z kręgów, które rozpoczęły tę modę, było ich dziełem. Wyjaśnili oni dokładnie, jak tworzyli te kręgi, zaprezentowali proste przyrządy, przy pomocy których je wykonywali[3] oraz wykonali kilka z nich na zamówienie. Twierdzili oni, że pierwszy z kręgów wykonali dla zabawy, a później kontynuowali ich tworzenie rozbawieni popularnością medialną, jaką osiągnęło ich pierwsze dzieło. Twierdzili również, że znają przypadki rolników, którzy tworzyli tego rodzaju kręgi, aby zarobić na turystach i zdobyć rozgłos. Ich wyznanie jest jednak kwestionowane przez zwolenników UFO.

IgNobel Physics, 1995: Presented to Dominique M.R. Georget, R. Parker, and Andrew C. Smith of Norwich, England, for their **rigorous analysis of soggy breakfast cereal**. It was published in the report entitled ""[

Proces namakania i zmniejszania objętości płatków kukurydzianych (sniadaniowych) w zalezności od ilości wody .

IgNoble Physics, 1996: Presented to Robert Matthews of Aston University, England, for his studies of Murphy's Law, and especially for demonstrating that **toast often falls on the buttered side.**[1]

Jeżeli coś może *się nie udać – nie uda się* na *pewno*

(**Anything that can possibly go wrong, does**)

Nigdy nie kłóć się z głupcem – ludzie mogą nie dostrzec różnicy.

To, czego szukasz, znajdziesz w ostatnim spośród możliwych miejsc.

O kromce z masłem, która zwykle ląduje na podłodze „masłem w dół”

A closer look at tumbling toast

M. E. Bacon, George Heald, and Matt James
Department of Physics, Thiel College, 75 College Avenue, Greenville, Pennsylvania 16125

(Received 14 February 2000; accepted 31 May 2000)

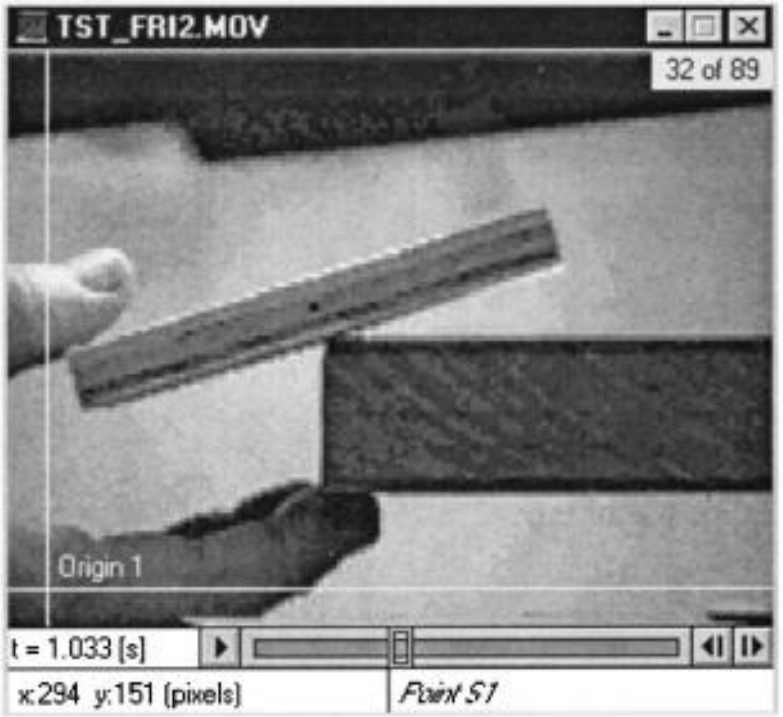


Fig. 2. Typical video frame used to measure the coefficient of static frict
for a tumbling board in contact with an edge. The thumb is used to con
the gentle tilting of the board. Generally the video clip contains a number of
slipping frames as the experimenter gets a feel for controlling the board.

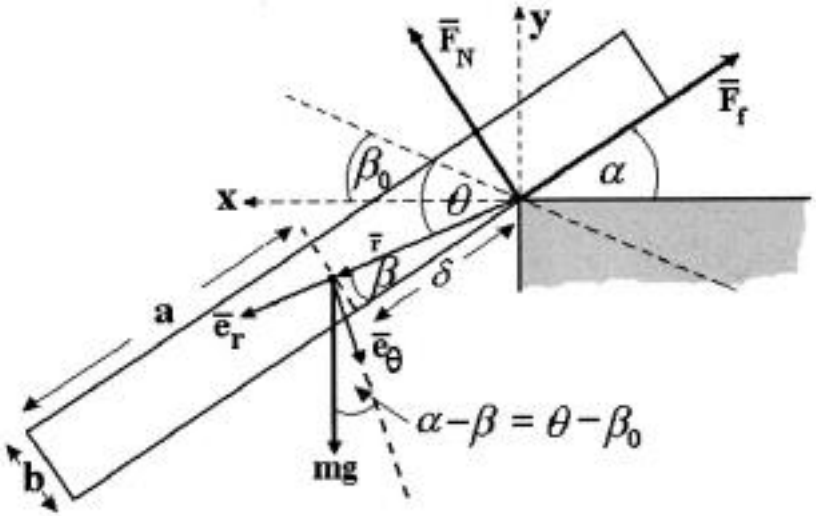
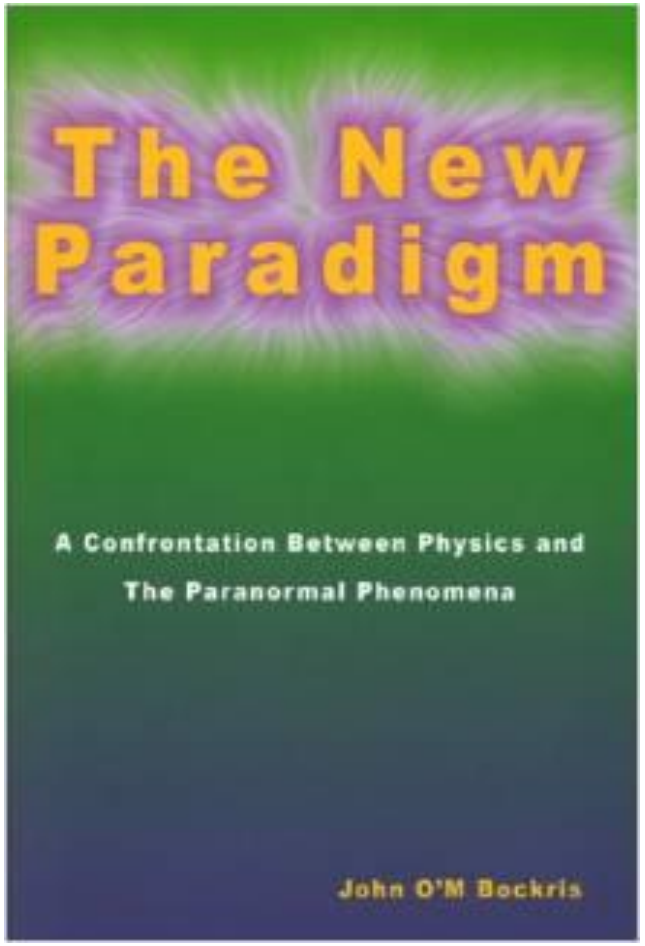


Fig. 1. Coordinate system (r,θ) and geometry for the tumbling board.

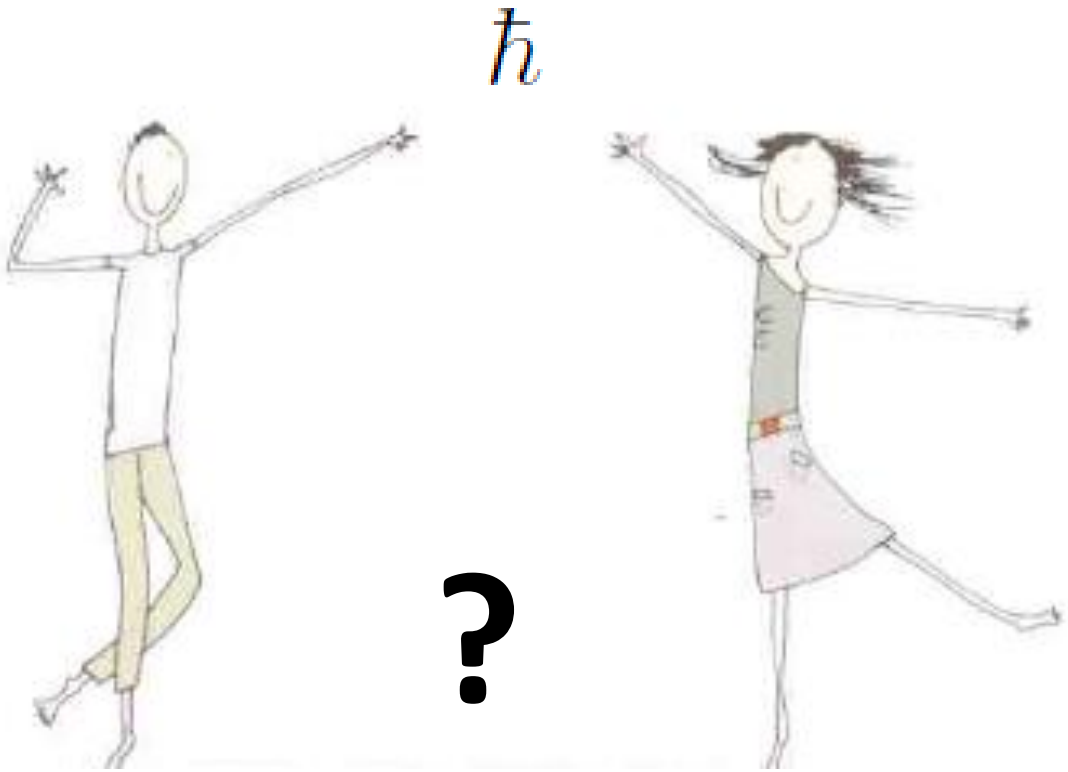
Ig Nobel Physics, 1997: Presented to John Bockris of Texas A&M University, for his achievements in cold fusion, in the **transmutation of base elements into gold,** and in the electrochemical incineration of domestic rubbish.

Alchemia i nieodparty urok zjawisk paranormalnych, potrafią pokonać nawet skądinąd poważnego naukowca. (o paradygmacie para-normalności)

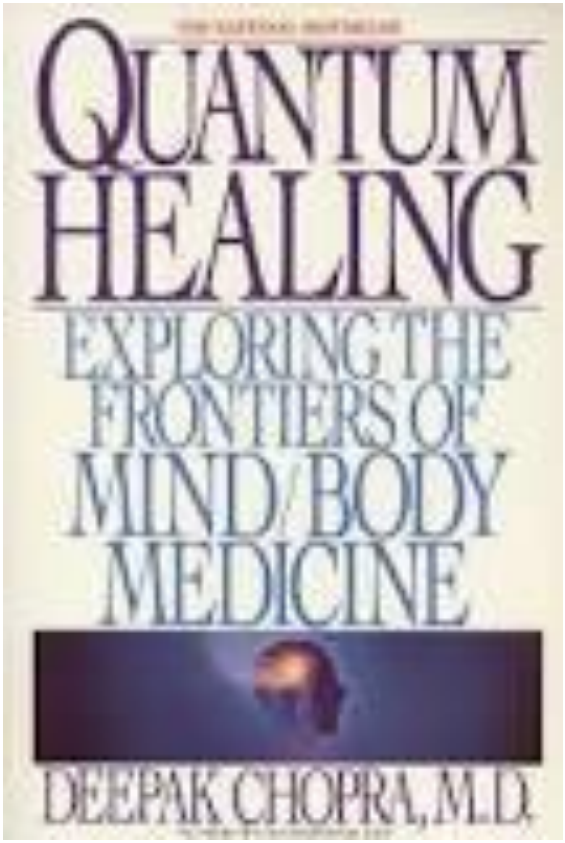


Bernhardt Patrick John O'Mara Bockris (born 5 January 1923 [1] died 7 July 2013) was a professor in the physical sciences, chiefly electrochemistry. Among wide ranging contributions to physical chemistry, Bockris is best known for his creation of physical electrochemistry, taking an old and decayed subject into modern times (1950 to 1970);

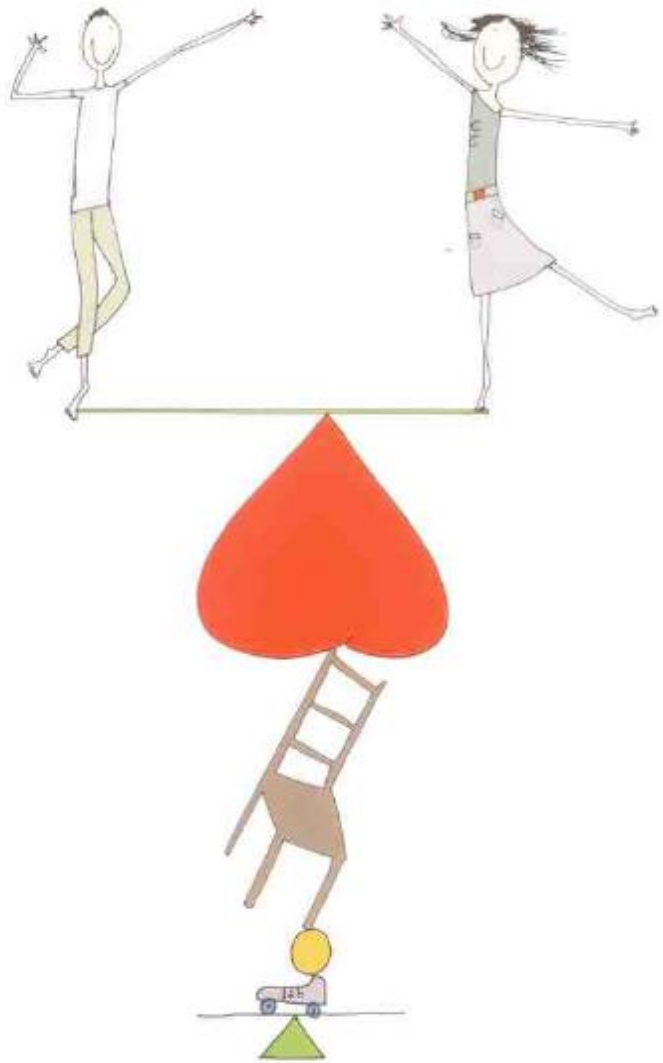
Ig Nobel Physics, 1998: Presented to Deepak Chopra of The Chopra Center for Well Being, La Jolla, California, for his unique interpretation of **quantum physics as it applies to life, liberty, and the pursuit of economic happiness**.



Kwantowe uzdrawianie

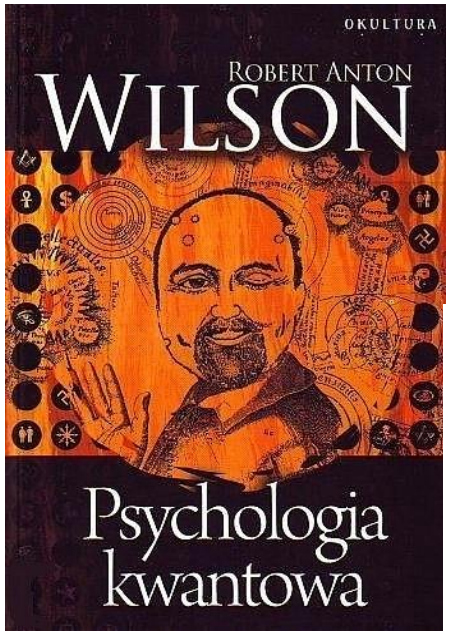


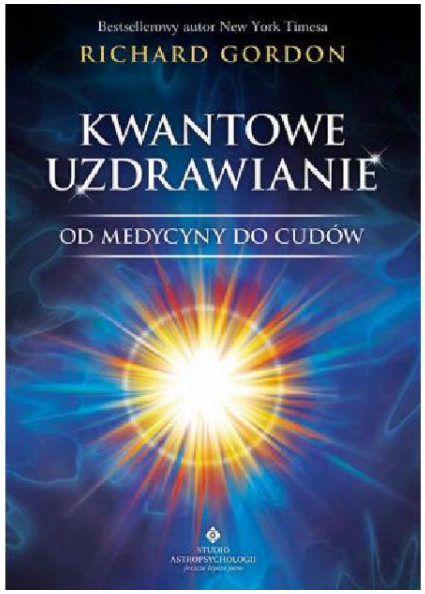
„Pogoń za szczęściem we dwoje” niekwantowo - życie codzienne w języku fizyki klasycznej: niestabilnosc, nierównowaga i niepewność, a jednak ….



dwoje na raz.mp4

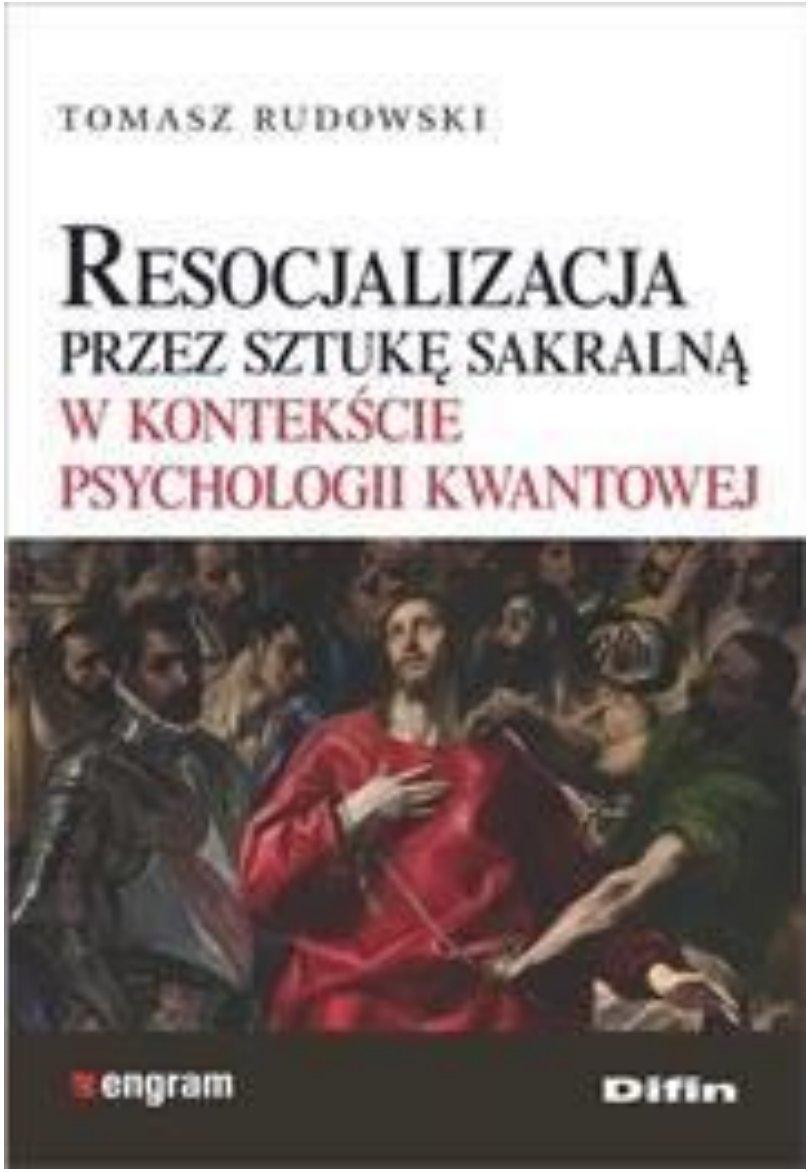
Kwantowe drogi do szczęścia ? Raczej drogi donikąd.



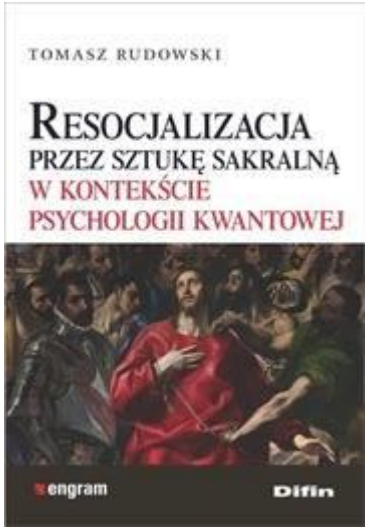


Można spróbować „kwantowo”, ale odradzam przesadne zaangażowanie. Zalecam głęboki sceptycyzm. Podobnie w kwestii „nanostrukturalnych powłok” w patelniach i brytfankach o niebotycznie wysokiej cenie.

Najnowsze, jeszcze ciepłe osiągnięcie „kwantowej myśli twórczej” – obawiam się ze jest to erupcja pompatycznych bzdetów.



Wydanie książki zostało dofinansowane ze środków Uniwersytetu Warszawskiego, otrzymała również dwie pozytywne recenzje wydawnicze, oczywiście od profesorów socjologii. Z niepokojem czekam na papierowy egzemplarz (e-booka niestety nie ma), bo sam tytuł wskazuje na to, że albo w Polsce dokonano (w głębokiej tajemnicy przed światem) przełomowych odkryć na miarę XXI wieku, **albo mamy do czynienia z przekrętem polegającym na marnotrawieniu pieniędzy podatników na absurdalny pseudonaukowy bełkot**. Czy ktoś już obcował z tym dziełem?



Opis ksiazki ze strony wydawnictwa: K**siążka o charakterze wybitnie naukowym** jest pionierską pracą w Polsce. Wymaga od czytelnika **nie tyle specjalistycznego przygotowania, co zaangażowania** w przyswojenie określonych treści i pojęć z zakresu **psychologii rozwojowej, podstaw fizyki kwantowej oraz teorii sztuki.** Materiały naukowe w niej zawarte są autorskimi rozwiązaniami prof. Tomasza Rudowskiego, które ściśle korespondują z tematyką książki. Prezentowane w niej myśli, obrazy, wrażenia i wyobrażenia **wyrażające się w bytach świadomości kwantowej** nawiązują do sztuki sakralnej oraz modlitwy medytacyjno-kontemplacyjnej. **Dzięki ich rozpoznaniu** sztuka sakralna wraz z modlitwą medytacyjną stały się inspiracją do prowadzenia badań nad resocjalizacją przez sztukę sakralną z udziałem studentów Instytutu Profilaktyki Społecznej i Resocjalizacji Uniwersytetu Warszawskiego, a także słuchaczy studiów podyplomowych Instytutu Edukacji Artystycznej Akademii Pedagogiki Specjalnej w Warszawie".

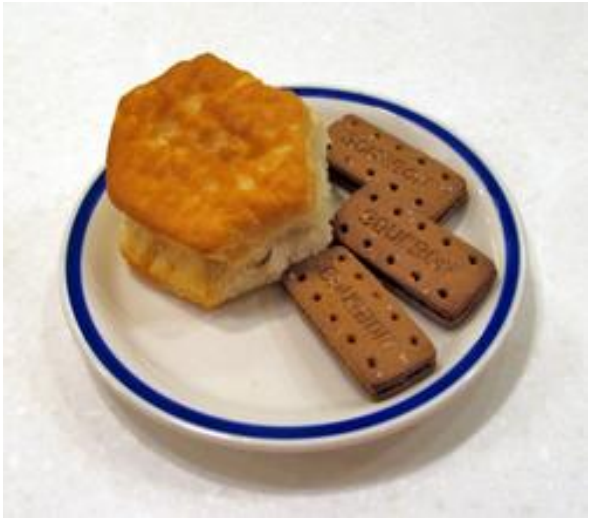
The 1996 Ig Nobel Prize for literature was awarded to the **editors of the journal *Social Text***, for eagerly publishing research that they could not understand, that the author said was meaningless, and which claimed that reality does not exist. The "research" paper was "Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity," written by Alan Sokal, published in *Social Text* in Spring/Summer 1996, pp. 217-252. Ig Nobel Prizes, of course, are for achievements that make people laugh, then think.

The publication of that **intentionally nonsensical paper** — and the fervent defense, by the editors who published it, of the paper's **nonexistent meaning** — became known as "The Sokal Hoax".

Sokal revealed that he didn't believe a word of what he'd written. It was all a **big joke,** but one motivated by a serious intention: to expose the sloppiness, absurd relativism, and intellectual arrogance of 'certain precincts of the academic humanities.'

Ig Nobel Physics, 1999: Presented to Dr. Len Fisher of Bath, England and Sydney, Australia for calculating the optimal way to dunk a biscuit.[42] Also, to Professor Jean-Marc Vanden-Broeck of the University of East Anglia, England, and Belgium, for calculating **how to make a teapot spout that does not drip** (shared with J. B. Keller).

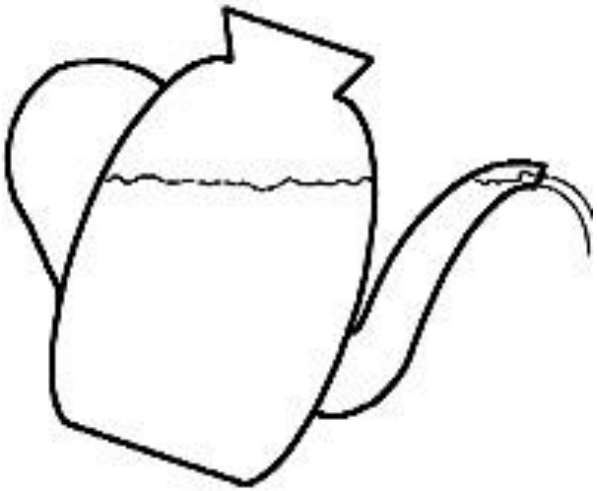
Optymalne moczenie biszkoptu



Czajnik niekapek do herbaty

Washburn's equation describes capillary flow in a bundle of parallel cylindrical tubes

Czajniki „kapki” i przemysł „ochroniarski”



Dwukrotny Ig Noblista J. B. Keller !

“If the teapot spout points up and then straight down at the pouring end, then the tea will flow back into the pot when the pot is turned upright again and a drip would be almost impossible.”

“Tea from a less full pot will flow with greater velocity. The faster the flow, the less likely it is that the tea will cling to the lip

Dr. Keller showed that it was air pressure, not surface tension – that causes drips. “It is simply that at the pouring lip the pressure in the liquid is lower than the pressure in the surrounding air, so air pressure pushes the tea against the lip and against the outside of the spout.”

In 1999, he and his colleague Jean-Marc Vanden-Broeck described the final act in the drippy teapot scenario when **they calculated where gravity makes the drop fall off the pot.** For this, Keller won his **first** Ig Nobel Prize Award. His **second** Ig Nobel Prize was awarded in 2012 for calculating why a jogger’s pony tail swings side-to-side while her head is moving up and down.)

Walka z „tea-pot effect” („kapliwościa”): użycie materiałów hydrofobowych (niezwilżalnych)

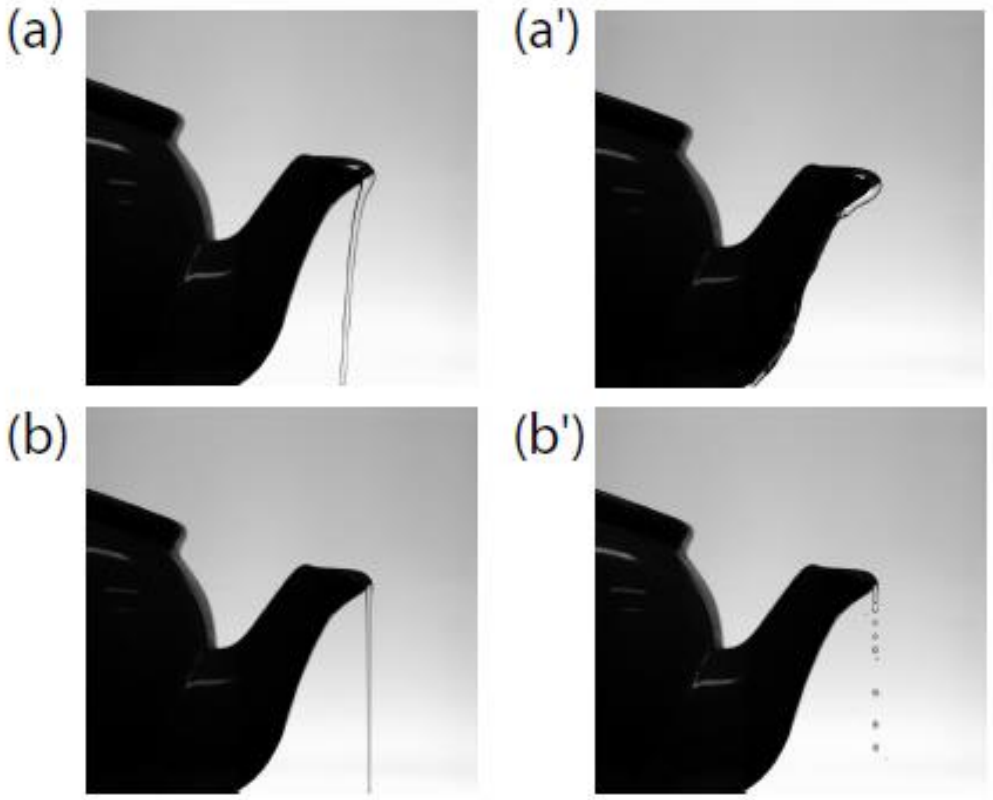
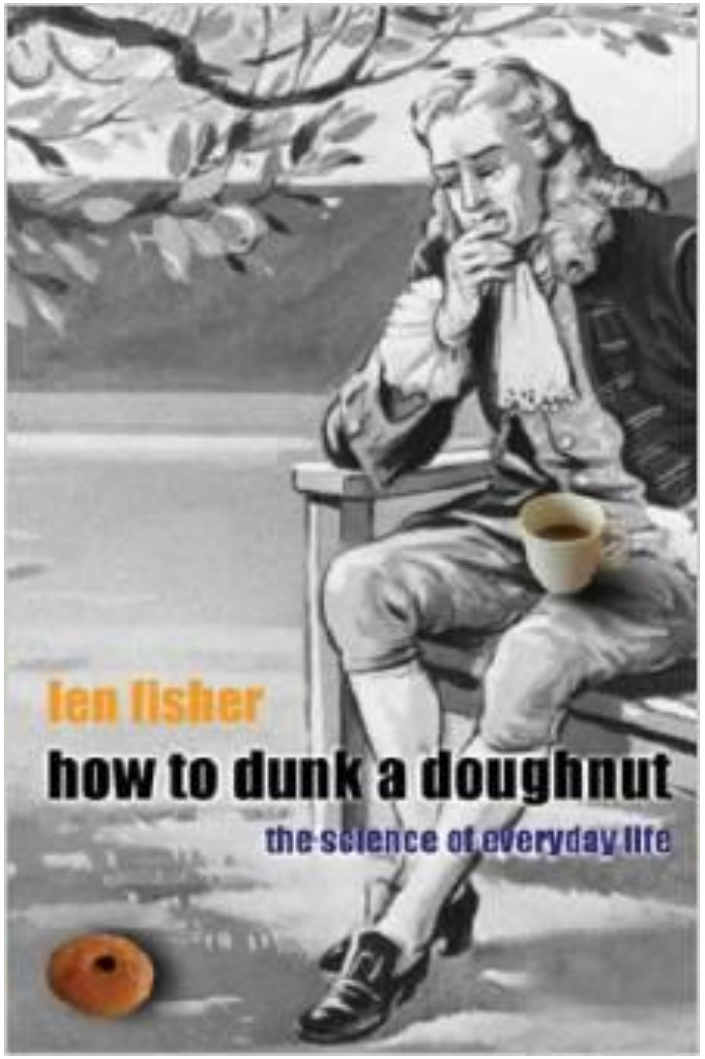


FIG. 1: Beating the teapot effect with a superhydrophobic coating. *Top*: water flow under the spout of an (hydrophilic) teapot, exhibiting a bending of the streamlines (a), and dripping as the water flow decreases (a'). *Bottom*: In contrast, a teapot with a spout coated by a superhydrophobic coating (here black soot) fully avoids dripping (b and b').

Jak efektywnie moczyć herbatnik w herbacie lub kawie (równanie Washburna)

Nauka o życiu codziennym



In 1998 Len Fisher attracted world-wide attention with his experiments on the physics of biscuit dunking. These won him a spoof 'IgNobel Prize,. In this funny, fascinating and accessible book the author tells the true stories , taking a scientific look at the familiar and the everday as a way of opening the door to science, and showing, from an insider's viewpoint, what it feels like to be a scientist, what things scientists do, why they do it and how they go about it.

Physics takes the biscuit

Why did a light-hearted experiment attract so much attention from the media? The episode is an interesting lesson for those wanting to explain science to the wider public – equations do not always scare people away.

Len Fisher

Scientists wanting to share their picture of the world with a wider audience have a familiar problem — the knowledge gap. One doesn't need to be a writer to read and understand a novel, or know how to paint before being able to appreciate a picture. Some knowledge of what science is about, though, is a prerequisite for both understanding and appreciation.

Our intended audiences can often be trained on the spot, if we can persuade them to stay around for long enough. One effective approach is to use the 'science of the familiar', exemplified by my recent exercise on the physics of biscuit (or cookie) dunking. The project was a publicity agent's idea, and the results were presented at a press conference in London on "National Biscuit Dunking Day". Local publicity, fuelled initially by the eccentricity of the story, rapidly spread worldwide — I am still receiving requests for radio and TV interviews from countries as far away as Australia and South Africa.

What gave the story such global appeal? Even the Nobel prizes don't receive such coverage. Yet this minor bit of science is on everyone's lips, metaphorically speaking. Its success, I believe, reflects a hunger for accessible science. The lessons from this success, some of them surprising, are important for those who wish to share more serious science with a wide audience.

What is dunking? It is simply dipping your biscuit, cookie, doughnut or pastry into a drink such as tea or coffee, a process shown by chemists at Firmenich (Switzerland) to enhance flavour release by up to ten times. Although scientifically acceptable, dunking is often socially frowned upon, which is probably part of its attraction.

The physics of dunking is straightforward. A biscuit is porous, with interconnecting hollow channels between the crumbs. When the biscuit is dunked, capillary action draws the liquid into these channels: a similar process occurs when a piece of blotting paper is dipped into ink, or when ring stains form from dried liquid drops[1].

The problem for serious dunkers is that the wetted part of the biscuit becomes very soft, especially when the tea or coffee is hot. A biscuit is basically dried-up starch grains glued together with sugar: the hot liquid swells and softens the starch grains and dissolves the sugar. The wetted biscuit eventually becomes so soft that it collapses under its own weight.

The physicist's answer to this problem is to dunk the biscuit so that part of it can remain dry (and mechanically strong) and support the weight of the wet bit. Hence, instead of holding the biscuit vertically when dunking, a physicist grips it at the edge, sliding it into the tea or coffee at a shallow angle, so that the lower surface is wetted but the upper surface remains dry. This explanation is so simple that I was able to talk radio interviewers through it, and have them perform experiments on air. Yet simplicity alone cannot explain the high degree of interest.

I decided to ask the interviewers themselves why they found the story so interesting. An important criterion for most was that the topic is slightly daring, but the scientific gloss added an objectivity that legitimized public discussion. Most interviewers confessed to a strong interest in science, coupled with a fear of looking foolish when asking questions. This fear barrier is much lower when discussing the science of the familiar, as the questioner feels on a more equal footing with the scientist.

These criteria are well known to experienced science popularizers, but there was another attraction that seemed counter-intuitive. Journalists were enthralled to discover that there is an equation to describe biscuit dunking. Newspapers published it; TV programmes showed it. More than one radio interviewer even insisted I describe it on air.

All I had done, in fact, was to write down the Washburn equation, derived[2] in 1921 to describe capillary flow in porous materials:

$$L^2 = \frac{\gamma D t}{4\eta}$$

where t is the time for a liquid of viscosity η and surface tension γ to penetrate a distance L into a fully wettable, porous material whose average pore diameter is D. The equation is strictly true only for capillary flow in a single cylindrical tube in the absence of gravitational effects, but can be extremely accurate for more complex materials, including, as I found experimentally, biscuits. Why this should be so is a very interesting question. In practice, I could use the Washburn equation to predict how long different biscuits could be safely dunked by the physicist's method, the longest dunkers generally giving the best flavour release (to my palate at least).

Washburn will be turning in his grave to learn that the media have renamed his work the "Fisher equation". The equation was published in almost every major UK newspaper. The journalists who published it took great care to get it right, some telephoning several times to check. Some even did their own experiments, extending my results. Only one journalist published without checking, provoking the following letter: "Dear Sir, I think there is something wrong with your biscuit dunking equation. Please send me some biscuits for noticing this. Chao Quan (aged 12)."

Such excitement over an equation contradicts the normal publisher's advice to authors — that every additional equation halves the sales of a popular-science book. Why was this so? Let me suggest an answer, relevant to the sharing of more serious science. Scientists are seen by many as the inheritors of the ancient priestly power of the keys, the owners and controllers of seemingly forbidden knowledge. Equations are one key to that knowledge. The excitement of journalists in gaining control of a key was surely a major factor in their sympathetic promotion of the story. By making the Washburn equation accessible, I was able to ensure that journalists unfamiliar with science could use the key to unlock Pandora's box. □

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e-mail: Len.Fisher@bristol.ac.uk

1. Deegen, R. D. *et al. Nature* **389**, 827–829 (1997).
2. Washburn, E. W. *Phys. Rev.* **17**, 374–375 (1921).

RODNEY FORTE

All I had done, in fact, was to write down the Washburn equation, derived[2] in 1921 to describe capillary flow in porous materials:

$$L^2 = \frac{\gamma D t}{4\eta}$$

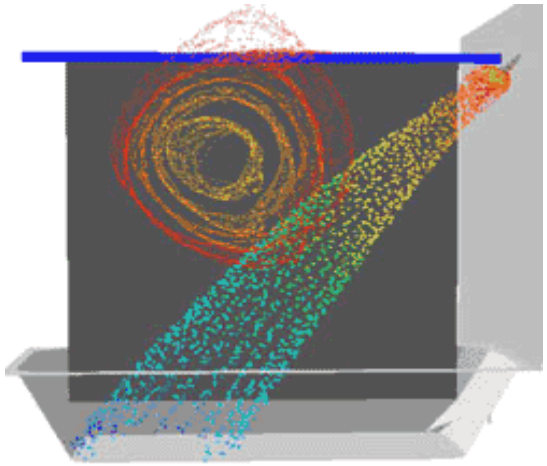
where t is the time for a liquid of viscosity η and surface tension γ to penetrate a distance L into a fully wettable, porous material

could use the Washburn equation to predict how long different biscuits could be safely dunked by the physicist's method, the longest dunkers generally giving the best flavour release (to my palate at least).

Ig Nobel Physics, 2001: Presented to David Schmidt of the University of Massachusetts, for his partial explanation of the shower-curtain effect: a shower curtain tends to billow inwards while a shower is being taken

In physics, the **shower-curtain effect** is the phenomenon in which a shower curtain gets blown inward with a running shower. The problem of the cause of this effect has been featured in Scientific American magazine, with several theories given to explain the phenomenon but no definite conclusion.

Dlaczego zasłonka prysznicowa przesuwa się w kierunku strumienia wody ?



SHOWER SIMULATION shows how a vortex forms, creating a pressure drop and sucking the curtain toward the water.

Ig Nobel Physics, 2002: Presented to Arnd Leike of the Ludwig Maximilian University of Munich, for demonstrating that **beer froth obeys the mathematical law of exponential decay.**

Matematyczne prawo zaniku warstwy pianki na piwie.

Igv Nobel Physics, 2004: Presented jointly to Ramesh Balasubramaniam of the University of Ottawa, and Michael Turvey of the University of Connecticut and Haskins Laboratory, for exploring and explaining the **dynamics of hula-hooping**.

Modele teoretyczne dynamiki kółka hula-hoop: koordynacja struktur wielosegmentowych

- **Ig Nobel Physics, 2006:** Presented jointly to John Mainstone and Thomas Parnell of the University of Queensland, Australia, for patiently conducting the so-called pitch drop experiment that began in the year 1927 — in which a glob of congealed black tar pitch has been slowly dripping through a funnel, at a rate of approximately one drop every nine years.

The University of Queensland pitch drop experiment, featuring its current custodian, Professor John Mainstone (taken two years into the eighth drop).
2013 9ta kropla !

Date	Event	Duration (Months)	Duration (Years)
1927	Experiment set up		
1930	The stem was cut		
December 1938	1st drop fell	96-107	8.0-8.9
February 1947	2nd drop fell	99	8.3
April 1954	3rd drop fell	86	7.2
May 1962	4th drop fell	97	8.1
August 1970	5th drop fell	99	8.3
April 1979	6th drop fell	104	8.7
July 1988	7th drop fell	111	9.3
28 November 2000	8th drop fell	148	12.3

Fascynujące wideo, w którym nie dzieje się NIC !

Pitch-Tar Drop, School of Physics, Trinity College Dublin.mp4

Based on the results from this experiment, the Trinity College physicists estimated that the viscosity of the pitch is about two million times that of honey, or about 20 billion times the viscosity of water

IgNoble Physics, 2007: L. Mahadevan and Enrique Cerda Villablanca for their theoretical study of **how sheets become wrinkled (marszcząca się pościel, albo kurtyna z grafenu !)**

Cerda, E.; Mahadevan, L. (1998). "Conical Surfaces and Crescent Singularities in Crumpled Sheets". *Physical Review letters* **80** (11): 2358.

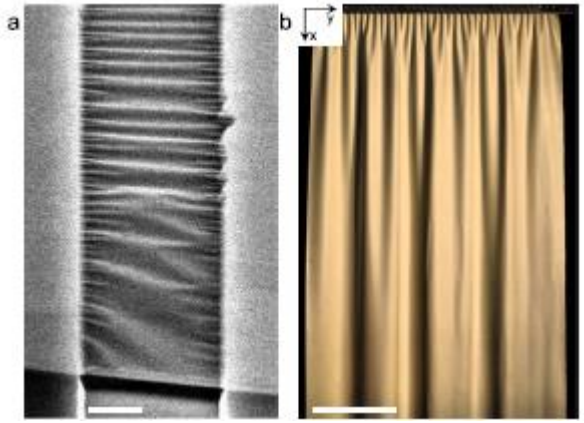


FIG. 1 (color online). (a) Scanning electron microscopy image of suspended graphene bilayer (scale bar is 1 μm). (b) Pattern of folds obtained for a rubber curtain (scale bar is 25 cm).

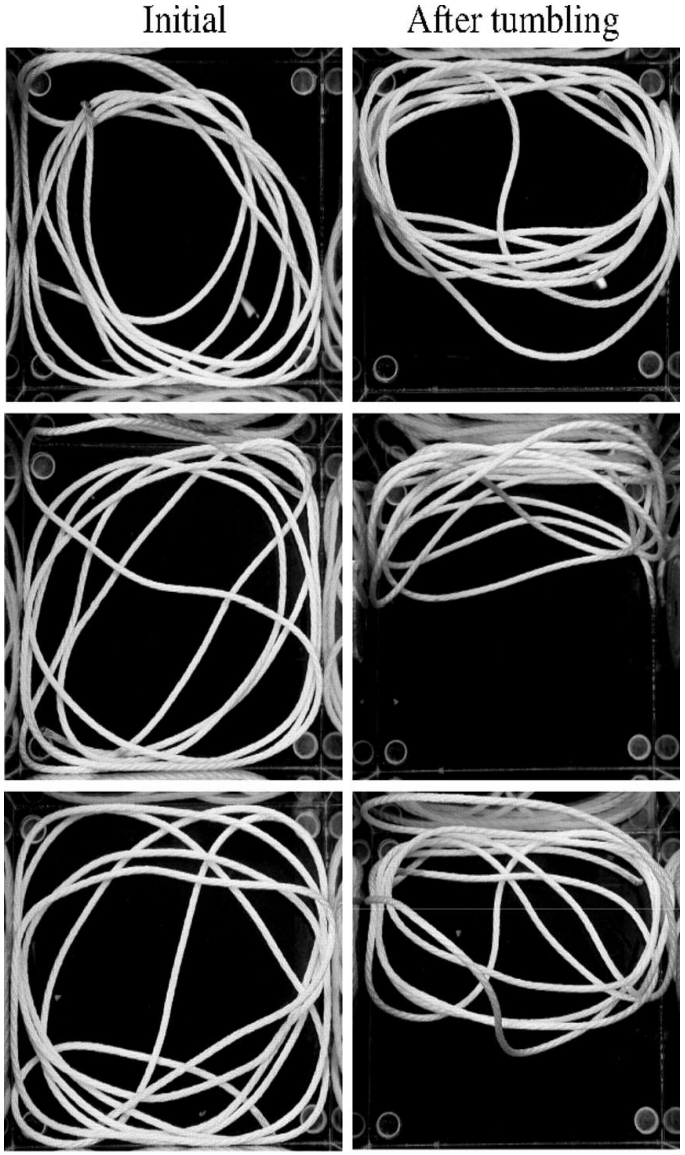
PRL 106, 224301 (2011)

Wrinkling Hierarchy in Constrained Thin Sheets from Suspended Graphene to Curtains

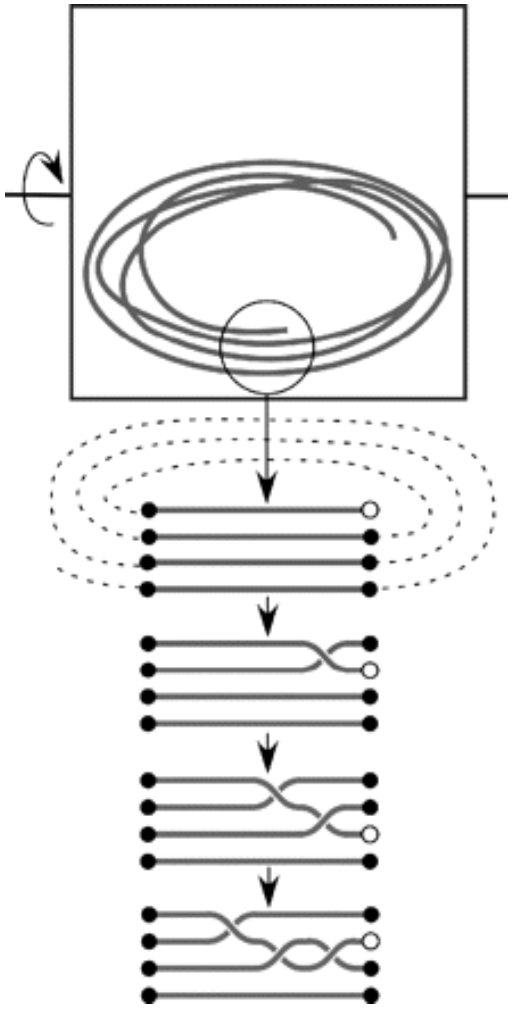
IgNoble Physics, 2008: Dorian Raymer and Douglas Smith, for proving that heaps of string or **hair will inevitably tangle.**

Raymer, Dorian M.; Smith, Douglas E. (16 October 2007). "Spontaneous knotting of an agitated string". *PNAS* (National Academy of Sciences) **104** (42): pp. 16432–7.

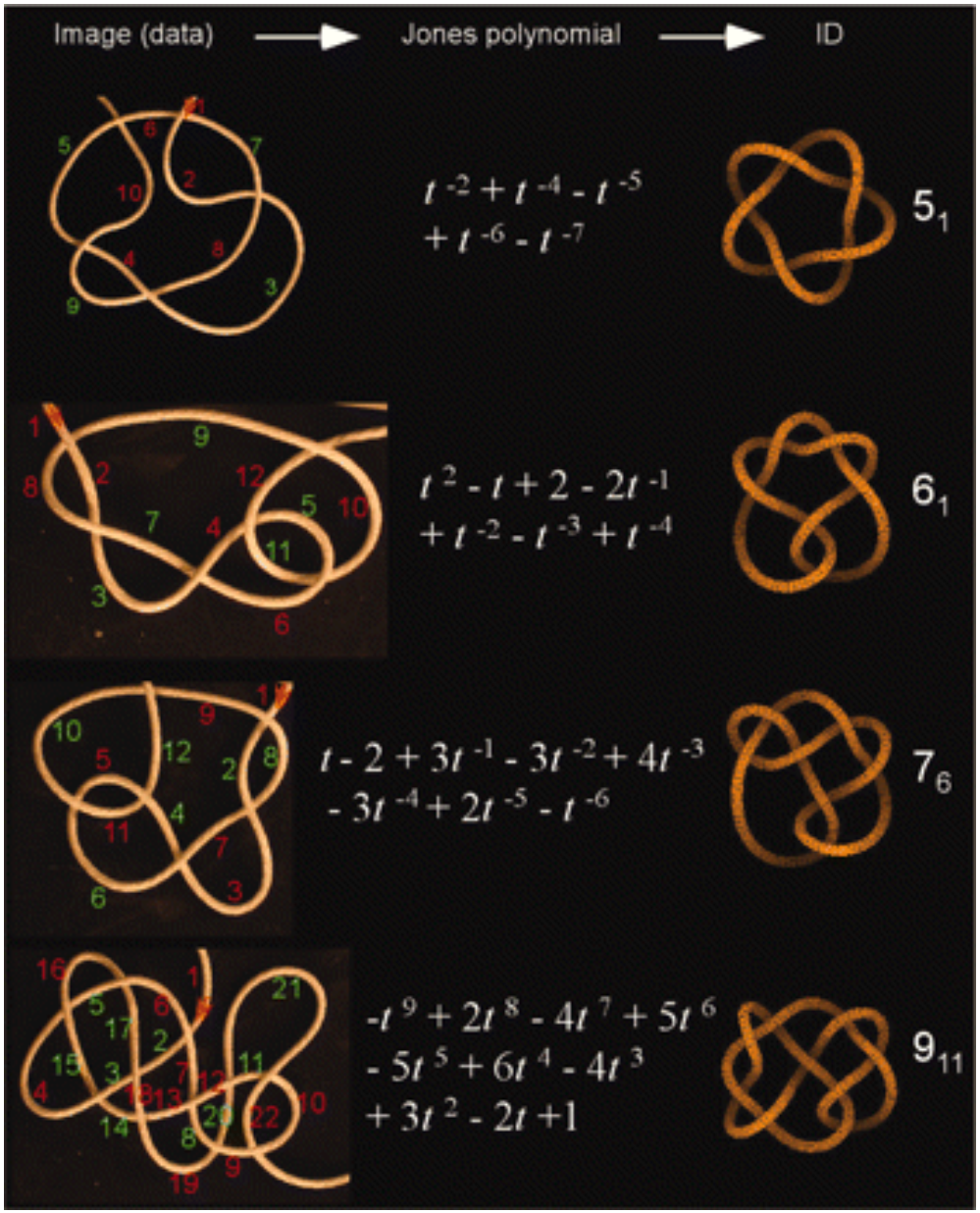
Spontaniczne splatanie się włosów, sznurków i linek



Jak to się plącze – fizyka i matematyka splotów



Rozmaite węzły i ich wielomiany Jonesa



IgNoble Physics, 2009: Katherine K. Whitcome of the University of Cincinnati, Daniel E Lieberman of Harvard University, and Liza J. Shapiro of the University of Texas, all in the US, for analytically determining why pregnant women **do not tip over**

Whitcome, Katherine K.; Shapiro, Liza J.; Lieberman, Daniel E. (2007). "Fetal load and the evolution of lumbar lordosis in bipedal hominins". *Nature* **450** (7172): 1075–1078.

Kobiety w ciąży tak się nie przewracają, naukowe uzasadnienie niemożności

Jak uniknąć posliźnięcia się na oblodzonej zima drodze ?

IgNoble Physics, 2010: Lianne Parkin, Sheila Williams, and Patricia Priest of the University of Otago, for demonstrating that, on icy footpaths in wintertime, people slip and fall less often **if they wear socks on the outside of their shoes.**

N Z Med J. 2009 Jul 3;122(1298):31-8.

Preventing winter falls: a randomised controlled trial of a novel intervention.

Parkin L, Williams SM, Priest P.

Abstract

AIM:

To investigate the hypothesis that wearing socks over shoes improves traction on icy footpaths.

METHODS:

Randomised controlled trial involving 30 pedestrians (median age 21 years, range 18-70) travelling in a downhill direction on icy public footpaths at two sites in Dunedin, New Zealand. Intervention: different coloured socks applied over normal footwear or usual practice (unadulterated footwear). Primary outcome: difference in mean self-reported slipperiness on a 5-point scale. Secondary outcomes: falls, observer-rated slipperiness, observer-rated confidence, time to descend study slope.

CONCLUSION:

Wearing socks over shoes appears to be an effective and inexpensive method to reduce the likelihood of slipping on icy footpaths.

Rada: noś skarpetki na obuwiu, zamiast wewnątrz

Auto-skarpeta, tekstylne łańcuchy śniegowe – hit 2010

www.autosock.com.pl

Ig Nobel 2011; złożony problem zawrotów głowy (i ewentualnych mdłości) dlaczego jedni je mają a inni niekoniecznie ?

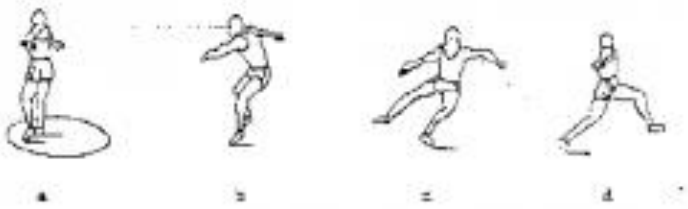
Fizyka: dysk kontra młot (sportowo).

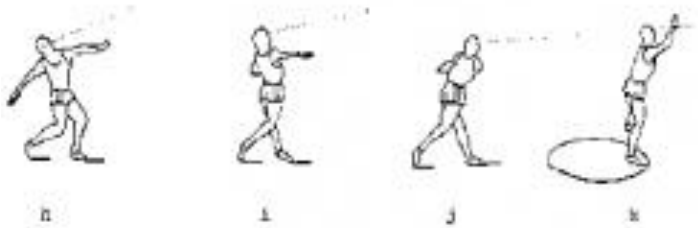
Laury zdobył francusko-holenderski zespół za wyjaśnienie, dlaczego zawodnicy rzucający dyskiem często doznają zawrotów głowy, tak jak w chorobie morskiej, ale praktycznie nie zdarza się to rzucającym młotem. Mimo że oba sporty polegają w dużym stopniu na kręceniu się wkoło. Z przebadanych 22 wysokiej klasy zawodowców na dolegliwości skarżyło się aż 59 proc. dyskoboli i żaden młociarz. Naukowcy tłumaczą to nieco inną techniką rzutu. Młociarze podczas obrotów mogą łatwiej zatrzymywać wzrok na jednym punkcie (mózg nie traci orientacji), a także doświadczają słabszej siły Coriolisa, która pojawia się jako skutek ruchu w układzie nieinercjalnym (wirującym).

Insight Ballet Glossary - Spotting.mp4

Dizziness in discus throwers is related to motion sickness generated while spinning.

Perrin P, Perrot C, Deviterne D, Ragaru B, Kingma H.





Olympics 2004- Hammer Throw.mp4

Discus Throw Technique.mp4

Jak to jest z piruetami Łyżwiarzy figurowych ?

Round and round Mao Asada of Japan goes, in a multiple-exposure image of her short program performance in Sochi on Feb. 8, 2014.

Dancers avoid dizziness when pirouetting by keeping their eyes locked on a fixed point and then whipping their head around quickly when they can't twist their neck any further.

Ice skating spins are much too fast for this to be possible or safe, though. Instead it's mainly a question of keeping the eyes horizontal, so the view only spins around one axis, and gradually training to overcome the dizziness through long practice.

Many figure skaters will incorporate a dance move at the end of a long spin that is designed to provide a breather while the dizziness passes.

Shape of a Ponytail and the Statistical Physics of Hair Fiber Bundles **(Kucyk !)**

Raymond E. Goldstein, Patrick B. Warren, and Robin C. Ball

Phys. Rev. Lett. **108**, 078101 (2012)

Ig Nobel Physics 2012

PONYTAIL MOTION*

JOSEPH B. KELLER†

SIAM J. APPL. MATH.
Vol. 70, No. 7, pp. 2667–2672

1. Introduction. The ponytail of a running jogger sways from side to side, but the jogger's head generally does not move from side to side. The head just moves up and down, so the ponytail also moves up and down with it. But, as we shall show, this vertical motion of the hanging ponytail is unstable to lateral perturbations. The resulting lateral motion, the swaying, is an example of parametric excitation, a phenomenon which is common in oscillating mechanical and electrical systems.

Czy ukształtowanie włosów (fryzura) lub ich naturalne układy mogą być interesujące jako obiekt badań naukowych ?

Why study the shape of hair?

- Hair has fascinated artists and scientists for centuries:
  - "Observe the motion of the surface of the water which resembles that of hair, and has two motions, of which one goes on with the flow of the surface, the other forms the lines of the eddies..." - Leonardo Da Vinci[1]
  - "Rapunzel, Rapunzel, let down your hair, so that I may climb the golden stair." - The Witch
- Studies on ponytail motion have modeled the ponytail as a pendulum or flexible string[2]. But a ponytail is not a piece of string.

1. *The Notebooks of Leonardo da Vinci*, edited by J. P. Richter (Dover, London, 1989).
2. J. B. Keller, SIAM J. Appl. Math. 70, 2667 (2010).
http://imgc.allpostersimages.com/images/P-473-488-90/62/6291/CVV5100Z/posters/leonardo-da-vinci-head-hair-and-costume-studies-for-leda-art-poster-print.jpg

Jak tysiące pojedynczych włosów określają kształty (fryzurę) ? Koński ogon (kucyk) powraca - jak to jest z przycinaniem ?

How do individual fibers determine the shape of a ponytail?

- This is a problem of statistical mechanics: There are $O(10^5)$ hairs...

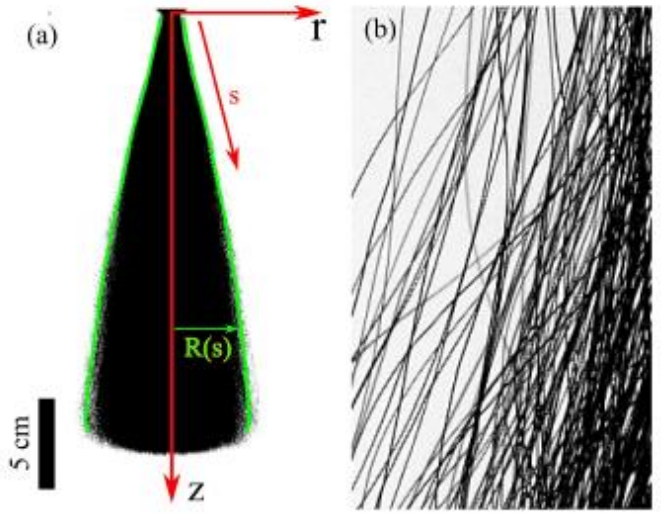


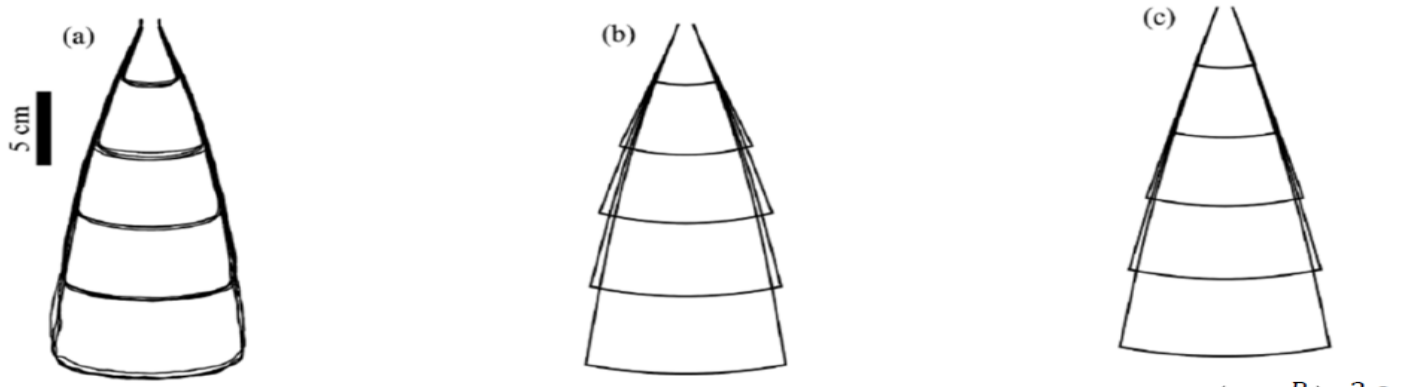
FIG. 1: (color online) A ponytail. (a) Rotationally-averaged image of a switch of $N \approx 9500$ fibers, approximately 25 cm long. Coordinate system for envelope shape $R(s)$ in terms of arc length $s(z)$. (b) Meanderings of hairs near ponytail edge.

Answering the Question

- General continuum theory for the distribution of hairs in a bundle
- Consider envelope rather than individual hairs
- Consider combined effects of gravity, elasticity, orientational disorder and tension
- Experimentally determine an equation of state

Raymond Goldstein of the University of Cambridge, UK, and his colleagues obtained human hair switches (a type of commercially available hairpiece) and measured the random curvature (or curliness) of a sample of individual hairs. They then assembled different ponytails all about 25centimeters long and recorded the average shape. This data helped in the formulation of an equation of state that balanced four competing effects: gravity, tension, an elastic restoring force, and a swelling pressure coming from the curliness. The model correctly predicted the shape of ponytails as the lengths of the switches were progressively shortened. The authors believe their surprisingly simple equation of state could be used to study other hair styles, as well as dynamic problems like a swinging ponytail.

Verification of the Theory for Varying Length



Hair Switches

Ponytail envelope versus length cut down from 25 cm in steps of 5 cm. A) Experimental envelope shape. B) Predicted envelope and C) with extra compactification.

2013 Ig Nobel PHYSICS: Alberto Minetti [ITALY, UK, DENMARK, SWITZERLAND], Yuri Ivanenko [ITALY, RUSSIA, FRANCE], Germana Cappellini [ITALY], Nadia Dominici [ITALY, SWITZERLAND], and Francesco Lacquaniti [ITALY], for discovering that some people would be physically capable of running across the surface of a pond — if those people and that pond were on the moon.

REFERENCE: "Humans Running in Place on Water at Simulated Reduced Gravity," Alberto E. Minetti, Yuri P. Ivanenko, Germana Cappellini, Nadia Dominici, Francesco Lacquaniti, PLoS ONE, vol. 7, no. 7, 2012, e37300.

Człowiek może zgodnie z prawami fizyki spacerować po powierzchni wody w basenie. Jest jeden warunek: spacerowicz i basen muszą być na Księżycu.

2013 FLUID DYNAMICS PRIZE: Rouslan Krechetnikov [USA, RUSSIA, CANADA] and Hans Mayer [USA] for studying the dynamics of liquid-sloshing, to learn what happens when a person walks while carrying a cup of coffee.

REFERENCE: "Walking With Coffee: Why Does It Spill?" Hans C. Mayer and Rouslan Krechetnikov, Physical Review E, vol. 85, 2012, 046117

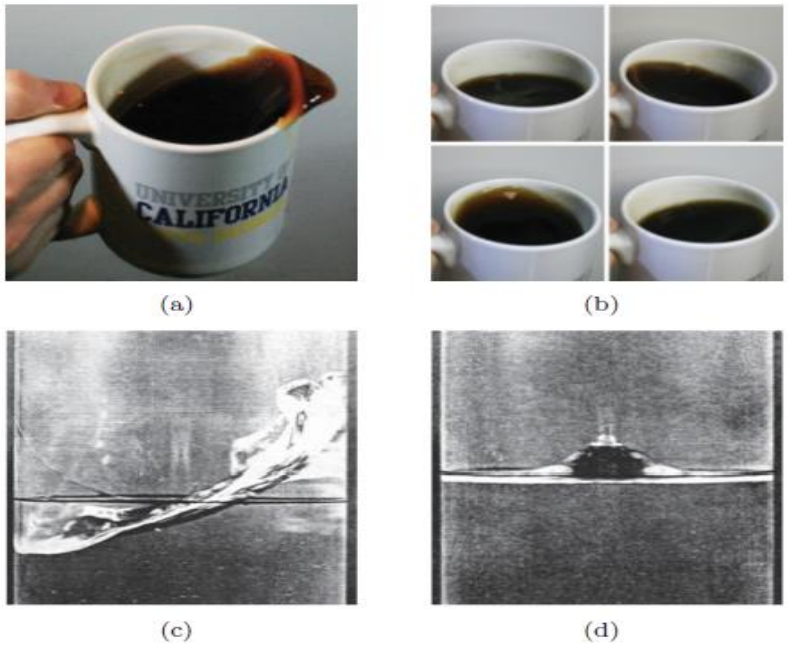


FIG. 1. (Color online) Coffee spill and key liquid motions in an excited cup. (a) Representative image of coffee spilling. (b) Rotational liquid motion in clockwise direction: top left–top right–bottom left–bottom right. (c) Back-and-forth liquid oscillations (photograph from [1]). (d) Vertical liquid oscillations (photograph from [1]).

Spacer z kawą: dlaczego kawa tak łatwo się wylewa ?

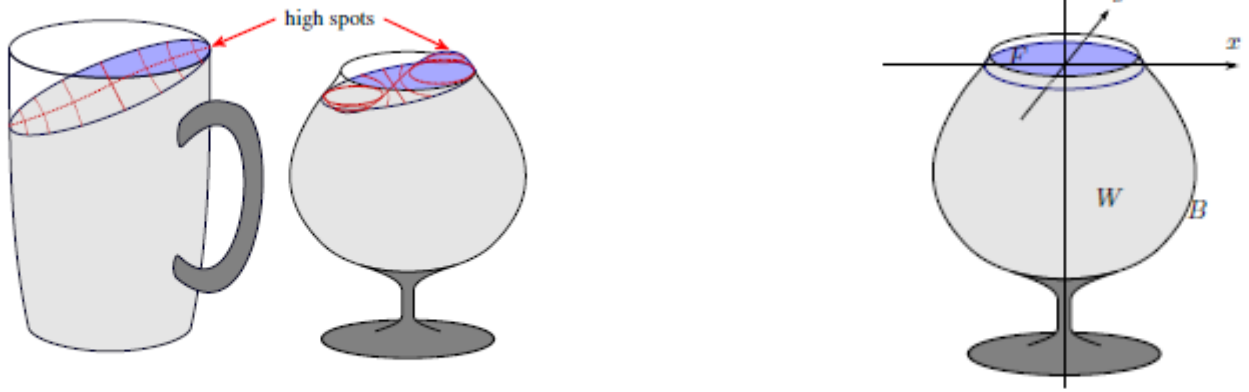
SPILLING FROM A COGNAC GLASS

TADEUSZ KULCZYCKI, MATEUSZ KWAŚNICKI, AND BARTŁOMIEJ SIUDEJA

1. INTRODUCTION

The 2012 Ig Nobel Fluid Dynamics Prize was awarded to R. Krechetnikov and H. Mayer for their study of people walking while carrying a filled coffee mug [25]. They show that coffee spills so often because the sloshing mode with the lowest-frequency (most noticeable in practice) in a typical coffee mug tends to get excited during walking. Authors model oscillations of the coffee as appropriate mixed Steklov problem.

However, there is another reason for spilling from a mug: *high spot* on the boundary. The maximal elevation of the lowest-frequency liquid oscillation in a typical coffee mug is located on the boundary (see Figure 1a). This effect, proved rigorously by Kulczycki and Kwaśnicki [22], makes spilling even easier. On the other hand, in a bulbous snifter the lowest-frequency sloshing mode attains its maximal elevation (high spot) inside a snifter [22], reducing the risk of spilling (see Figure 1b).



(A) A cup. (B) A snifter.

FIGURE 1. High spots in a coffee cup and a snifter.

Studium utrudnień w ulewania się koniaku z kieliszka (ale koneserzy tak koniaku nie pija !).

2014 Ig Nobel PHYSICS [JAPAN]: Kiyoshi Mabuchi, Kensei Tanaka, Daichi Uchijima and Rina Sakai, for measuring the amount of friction between a shoe and a banana skin, and between a banana skin and the floor, when a person steps on a banana skin that's on the floor.

REFERENCE: "Frictional Coefficient under Banana Skin," Kiyoshi Mabuchi, Kensei Tanaka, Daichi Uchijima and

ślizganie się na bananie – studium przypadku

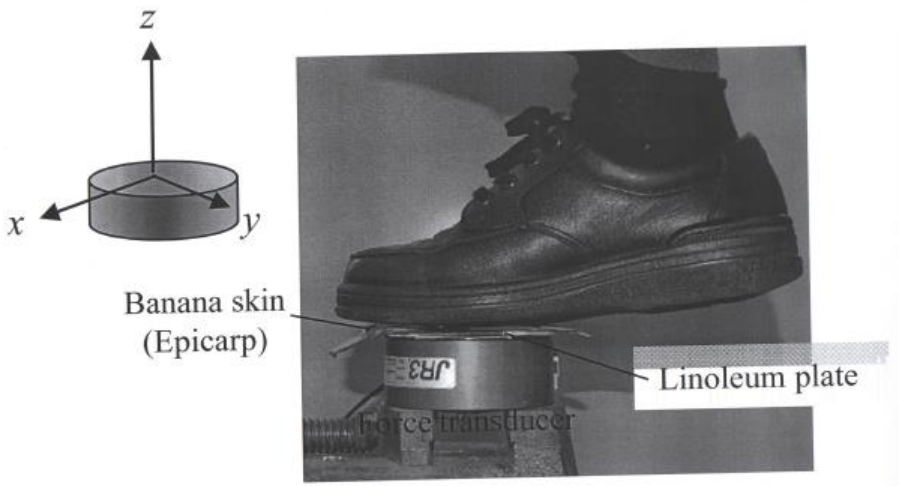
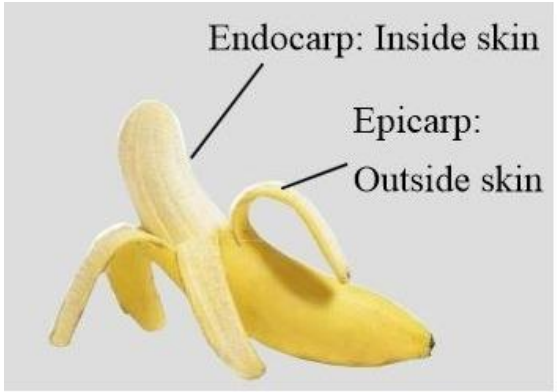
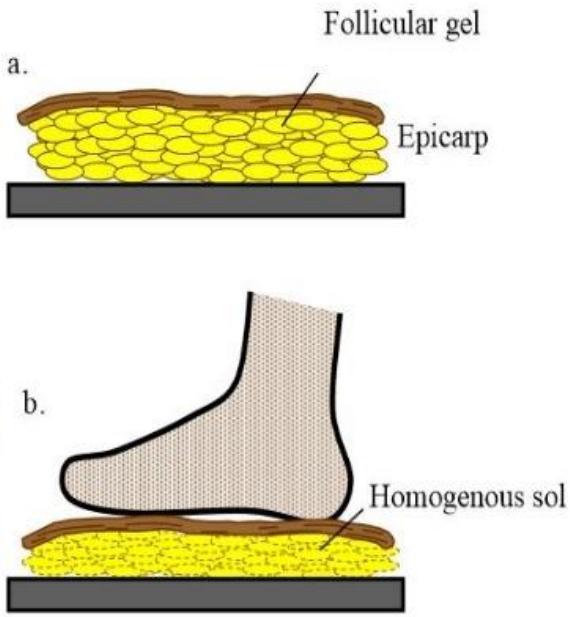


Fig. 2 Experimental set up with the coordinate of the detected forces





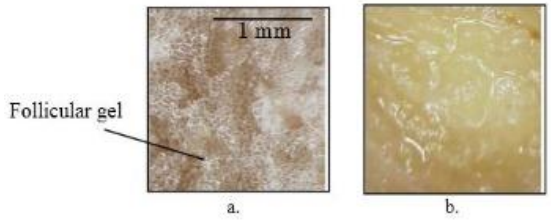
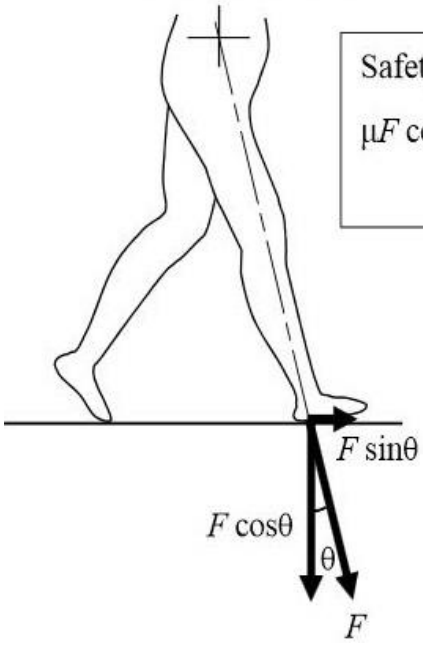


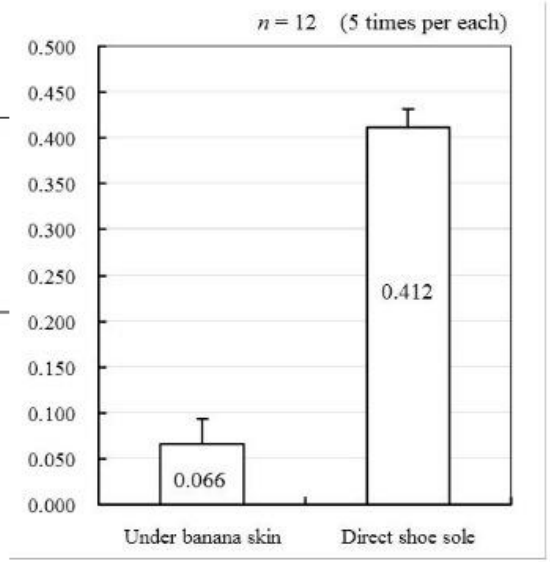
Fig.10 Microscopic image of banana skin
a. Fresh, b. After crush



Safety condition:

$\mu F \cos\theta > F \sin\theta$

$\mu > \tan\theta$

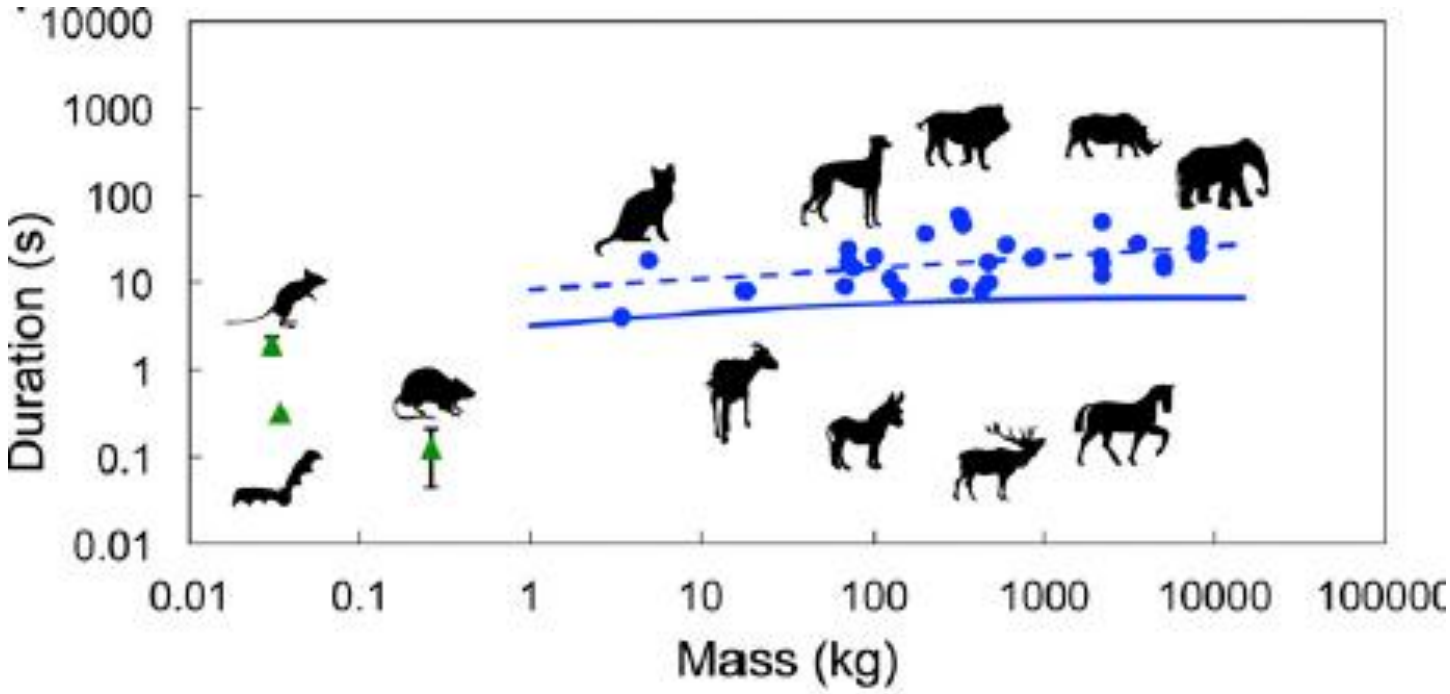


Frictional coefficient under banana skin measured on a linoleum plate
(Error bar is the standard deviation.)

Ig Nobel 2015:

Duration of urination does not change with body size (Czas opróżnianie pęcherza jest niezależny od wielkości posiadacza pęcherza).

11932–11937 | PNAS | August 19, 2014 | vol. 111 | no. 33

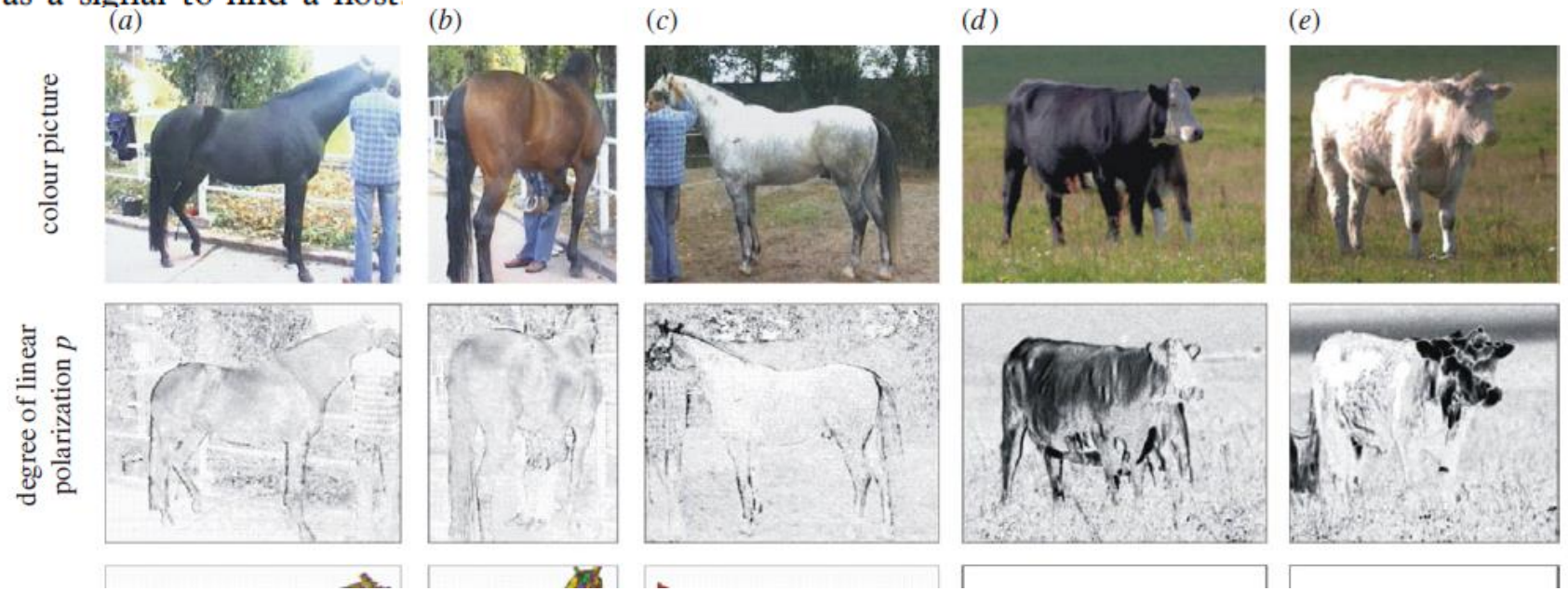


Ig Noble 2016

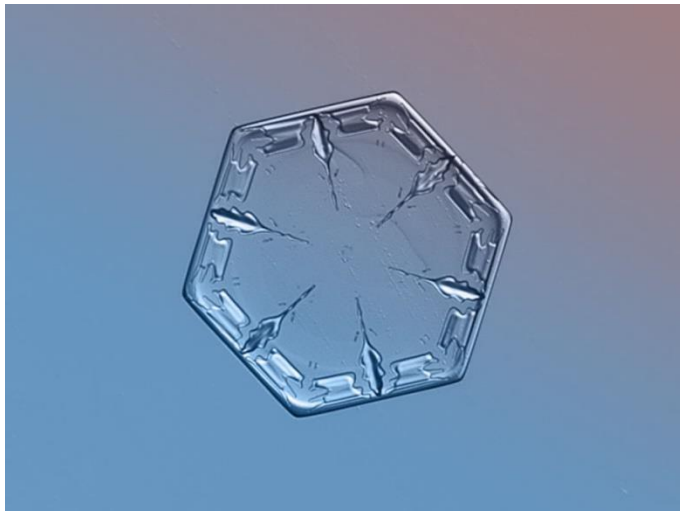
An unexpected advantage of whiteness in horses: the most horsefly-proof horse has a depolarizing white coat (pewne pożytki z bycia (odpowiednio) białym koniem)

Proc. R. Soc. B (2010) 277, 1643–1650

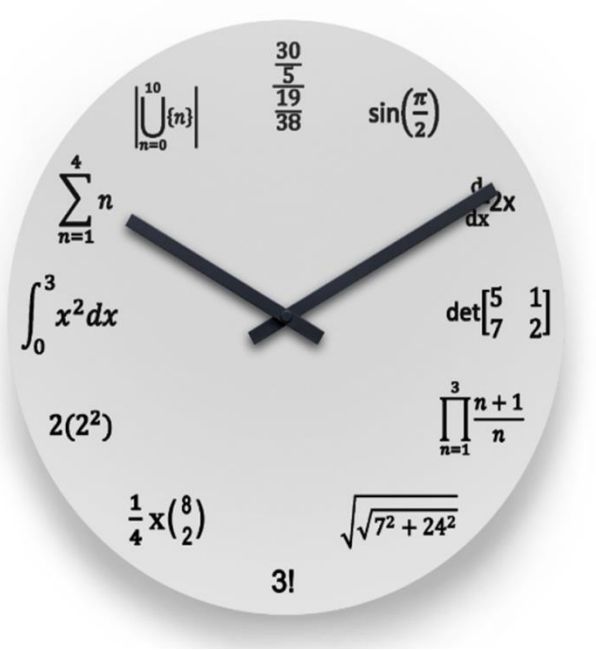
White horses frequently suffer from malign skin cancer and visual deficiencies owing to their high sensitivity to the ultraviolet solar radiation. Furthermore, in the wild, white horses suffer a larger predation risk than dark individuals because they can more easily be detected. In spite of their greater vulnerability, white horses have been highly appreciated for centuries owing to their natural rarity. Here, we show that blood-sucking tabanid flies, known to transmit disease agents to mammals, are less attracted to white than dark horses. We also demonstrate that tabanids use reflected polarized light from the coat as a signal to find a host



Poezja kształtów; wszędzie pojawia się liczba 6 !



Coś nas tu dziwi ?



A tutaj ?

NeUUspE_converted.mp4

To może jeszcze to ?

Iluzja_lewitacja_.mp4

Sztuka dziwienia się = ciekawość poznawcza + sztuka pytania + sztuka znajdowania odpowiedzi

Dziękuję za uwagę

Zgryźliwy komentarz pesymisty…. moron (ang.) = głupiec, (lub dosadniej, kretyn).
Dopuśćmy jednak, choćby niewielką domieszkę ludzi myślących !