Neuromythes

ce qu'ils sont et ce qu'on peut en apprendre

ARL – Association des Responsables de Laboratoire de Suisse romande
Journée Scientifique
Hôtel la Prairie, Yverdon, 1.10.2026
Sebastian Dieguez
Université de Fribourg
sebastian.dieguez@unifr.ch

Mythes scientifiques

(rumeurs, légendes urbaines, idées reçues...)

Les dromadaires conservent de l'eau dans leur bosse

Il ne faut pas se baigner moins de deux heures après avoir mangé

Les épinards sont particulièrement riches en fer

On attrape un rhume à cause du froid

Les phases de la Lune sont dues à l'ombre de la Terre

Mythes scientifiques

Academic urban legends

Social Studies of Science
2014, Vol. 44(4) 638–654
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DOI: 10.1177/0306312714535679
sss.sagepub.com
SAGE

Ole Bjørn Rekdal
Faculty of Health and Soc
Bergen, Norway.



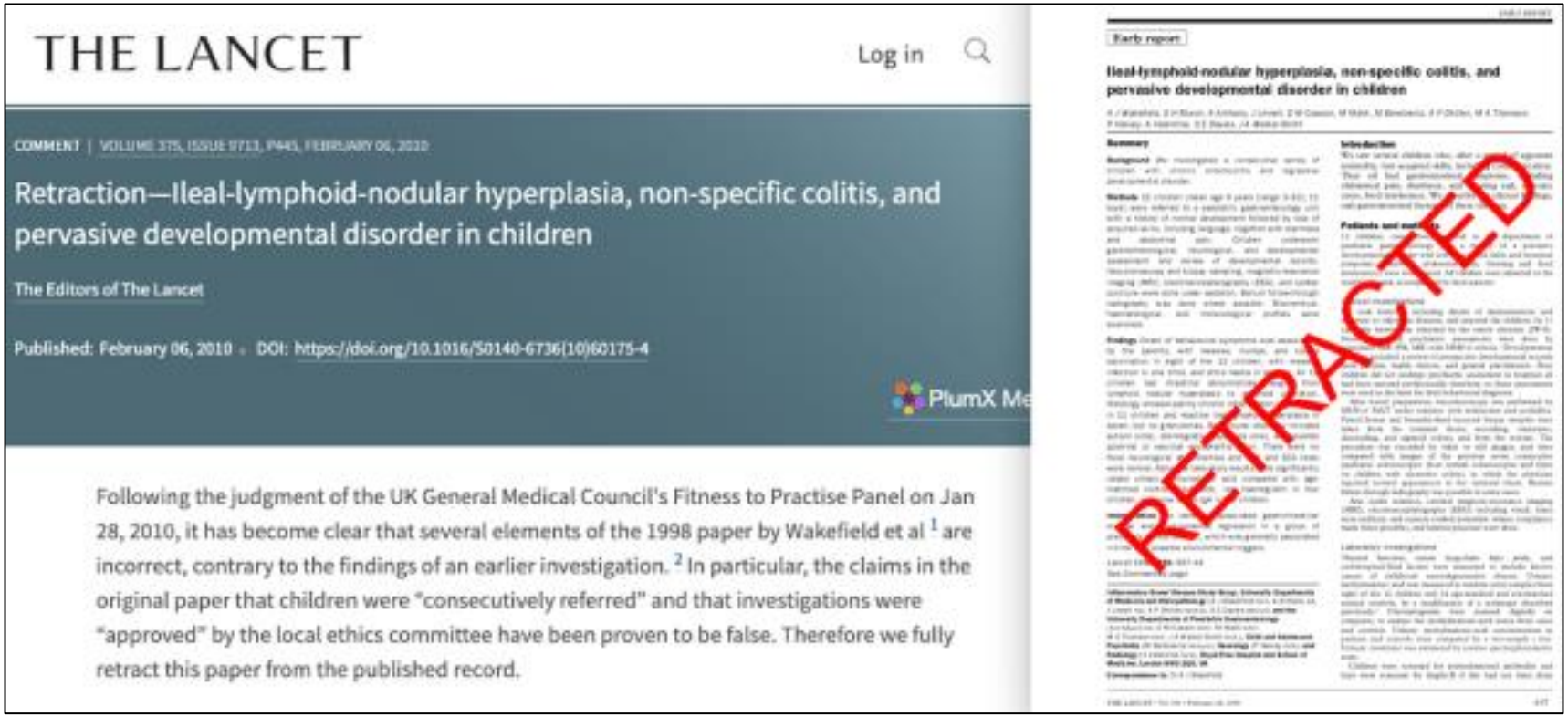
Spinach in Blunderland: How the myth that spinach is rich in iron became an urban academic legend

Michael Mielewczik & Janine Moll

Ann Hist Phil Biol, 2016

- Les épinards sont-ils spécialement riches en fer? Quelques indications que l'idée était populaire dès les années 1840
- **Un problème de décimale mal placée?**
  - Terence Hamblin: BMJ 1981
  - Arnold Bender: 1972-1982
- Mais aucune source pour ce *mythe de l'erreur de décimale*!
- **Popeye**: 1930s (mais Vitamine A)
- Au fond, quel est le problème?

Pseudoscience, fake news, théories du complot, propagande...



THE LANCET

Log in

COMMENT | VOLUME 375, ISSUE 9713, P445, FEBRUARY 06, 2010

Retraction—Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

The Editors of The Lancet

Published: February 06, 2010 DOI: https://doi.org/10.1016/S0140-6736(10)60175-4

PlumX Me

Following the judgment of the UK General Medical Council's Fitness to Practise Panel on Jan 28, 2010, it has become clear that several elements of the 1998 paper by Wakefield et al [1] are incorrect, contrary to the findings of an earlier investigation. [2] In particular, the claims in the original paper that children were "consecutively referred" and that investigations were "approved" by the local ethics committee have been proven to be false. Therefore we fully retract this paper from the published record.

Early report

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

RETRACTED

Wakefield *et al.*, 1998

Retracted in... 2010

Neuromythes: définitions

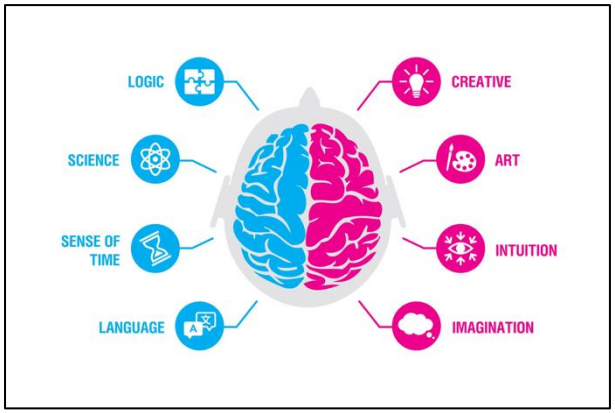
- "**Distortions, oversimplifications, or abusive extrapolations** of well-established neuroscientific facts" (Pasquinelli, 2012);
- "Neuromyths are **mistaken beliefs** about the human brain and its development, some based on a very **loose extrapolation** of sound scientific theory to unwarranted conclusions, others simply resulting from **misinformation or misunderstanding**" (Kim & Sankey, 2018);
- "**False beliefs** about the brain and/or its functioning […] that can limit human potential" (Tokuhama-Espinosa, 2018);
- "A **misconception** generated by a **misunderstanding or misreading** or a **misquoting** of facts scientifically established (by brain research) to make a case for the use of brain research in **education or other contexts**" (OCDE, 2002)

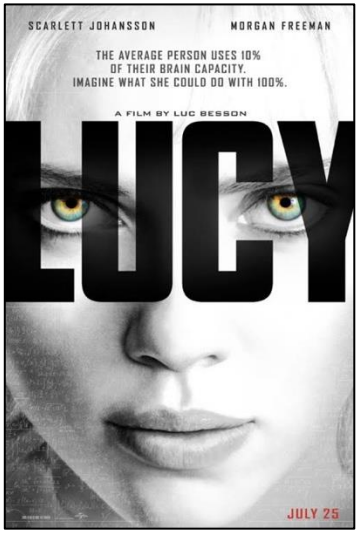
Neuromythes: définitions

- "**Distortions, oversimplifications, or abusive extrapolations** of well-established neuroscientific facts" (Pasquinelli, 2012);
- "Neuromyths are **mistaken beliefs** about the human brain and its development, some based on a very **loose extrapolation** of sound scientific theory to unwarranted conclusions, others simply resulting from **misinformation or misunderstanding**" (Kim & Sankey, 2018);
- "**False beliefs** about the brain and/or its functioning […] that can limit human potential" (Tokuhama-Espinosa, 2018);
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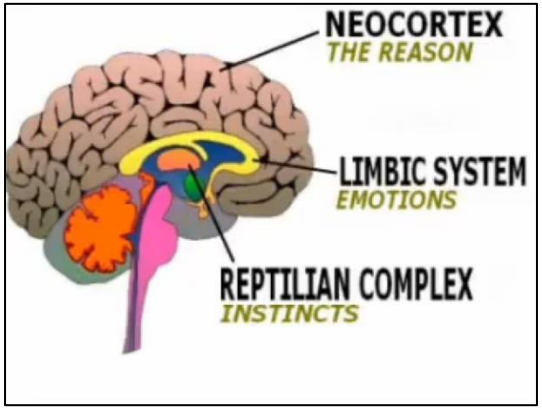
- Faux, improbable, trompeur, ambigu, vague, simpliste
- Répandu, tenace (dans le grand public)
- Intuitif, "inspirant"
- Adaptatif, "utile" dans certains domaines
- Associé au cerveau?

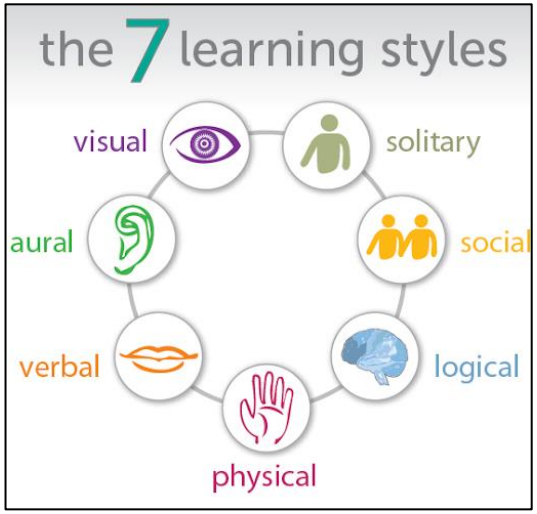
Neuromythes célèbres





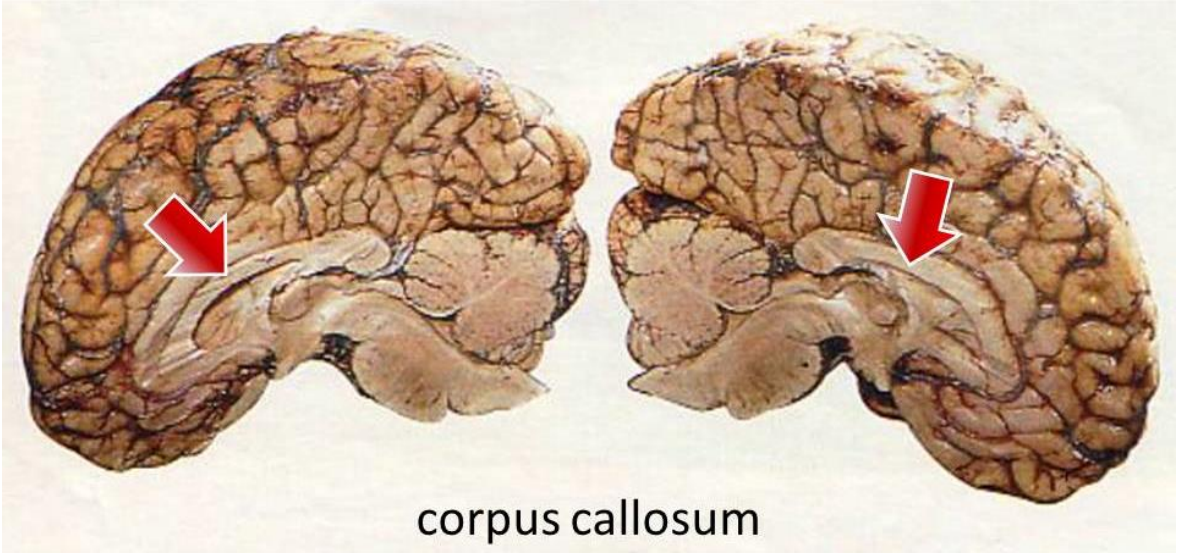


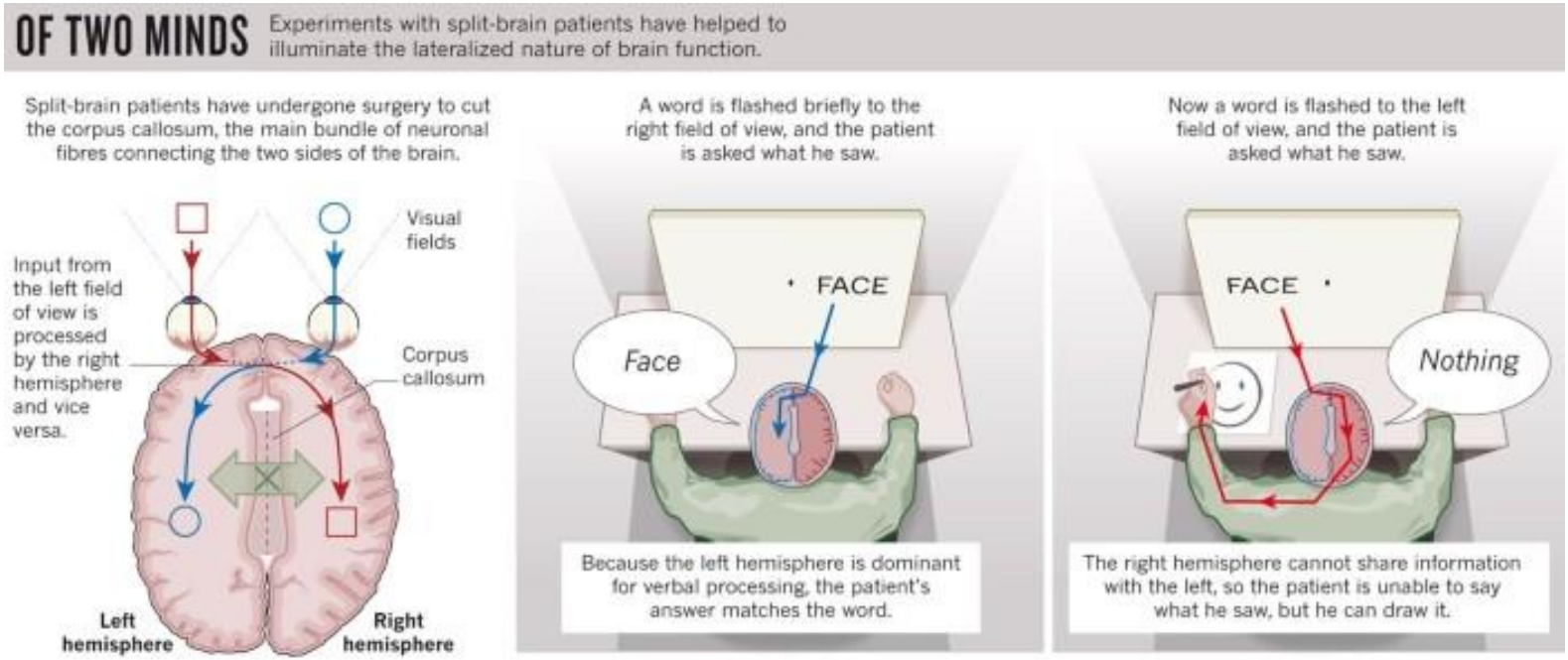






Cerveau gauche – Cerveau droit





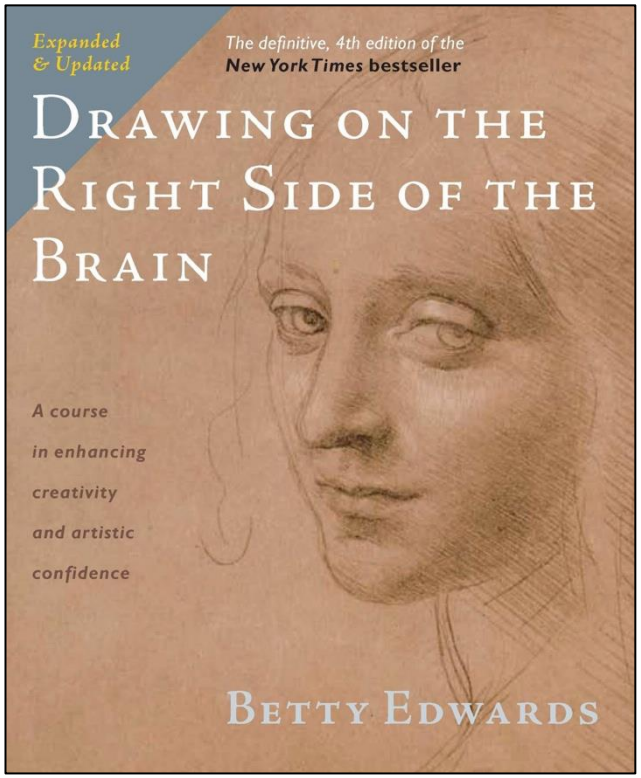
Cerveau gauche – Cerveau droit



Planning on the Left Side and Managing on the Right

Henry Mintzberg

HARVARD BUSINESS REVIEW July–August 1976



1979

Gauche-droite / Hommes-Femmes...

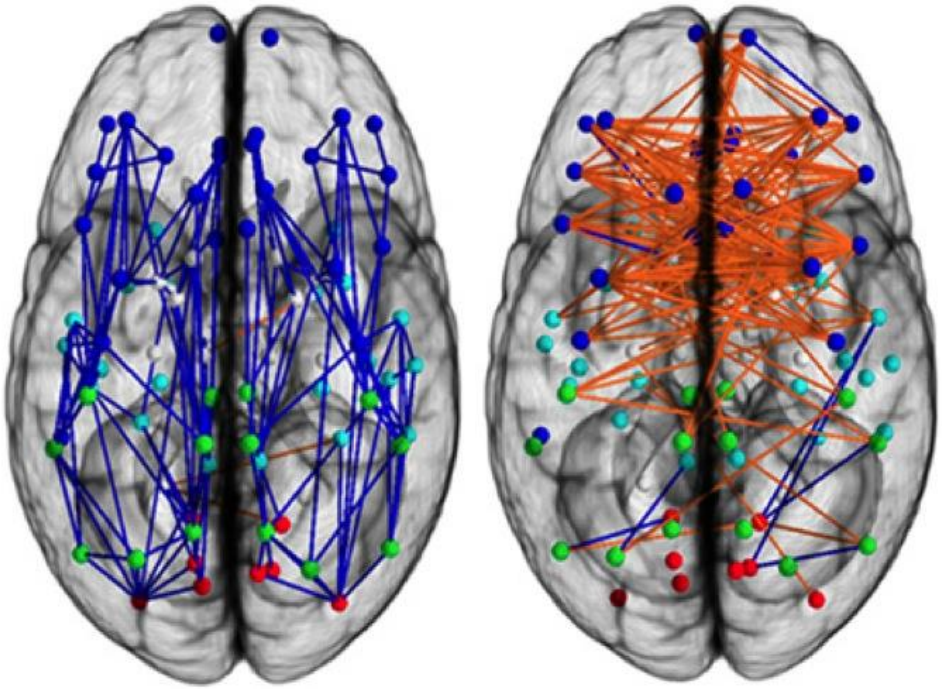
PNAS

Sex differences in the structural connectome of the human brain

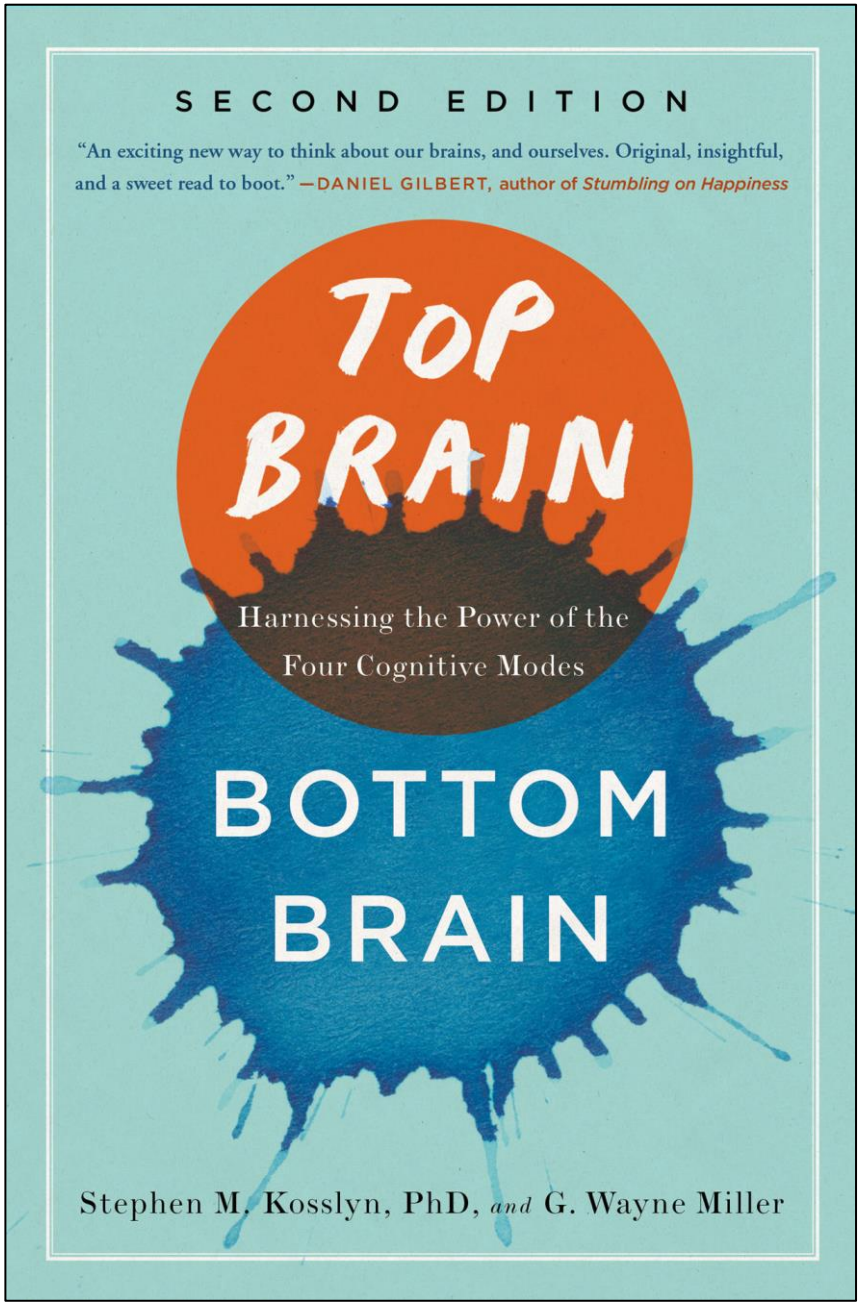
Madhura Ingalhalikar[a,1], Alex Smith[a,1], Drew Parker[a], Theodore D. Satterthwaite[b], Mark A. Elliott[c], Kosha Ruparel[b], Hakon Hakonarson[d], Raquel E. Gur[b], Ruben C. Gur[b], and Ragini Verma[a,2]

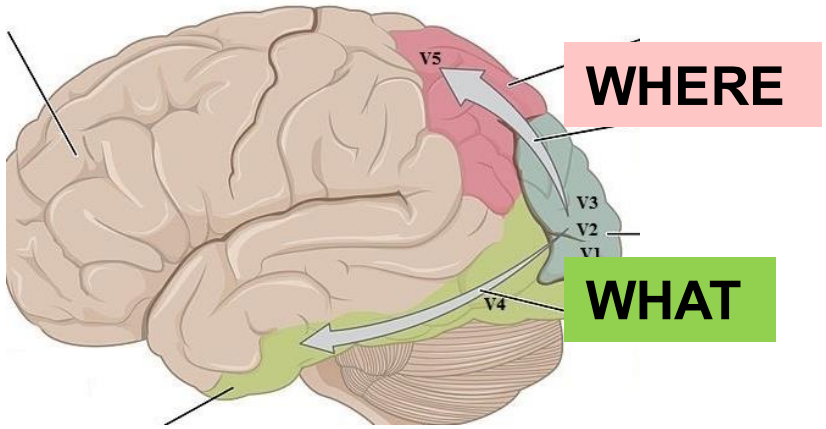
[a]Section of Biomedical Image Analysis and [c]Center for Magnetic Resonance and Optical Imaging, Department of Radiology, and [b]Department of Neuropsychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA 19104; and [d]Center for Applied Genomics, Children's Hospital of Philadelphia, Philadelphia, PA 19104

Edited by Charles Gross, Princeton University, Princeton, NJ, and approved November 1, 2013 (received for review September 9, 2013)



Ingalhalikar et al., *PNAS*, 2013





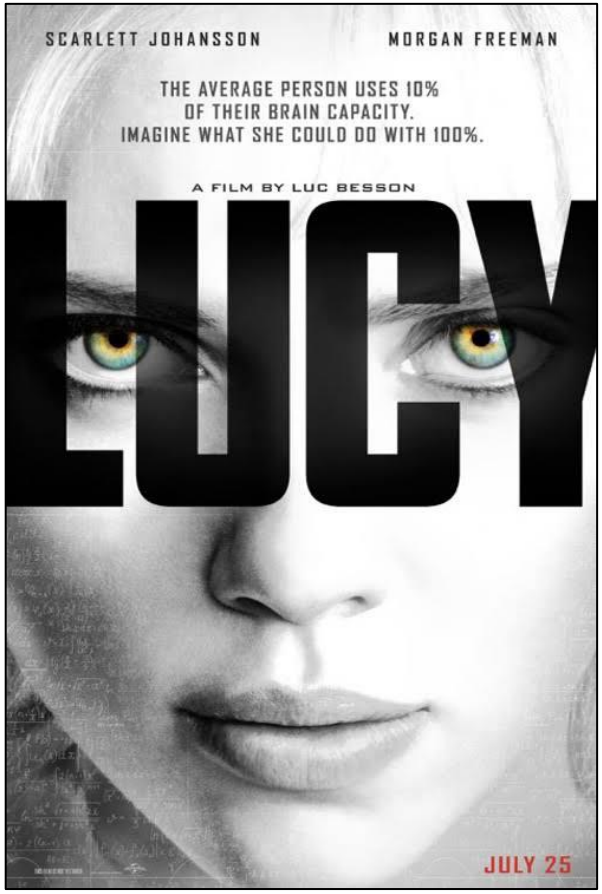
	Top Brain	Bottom Brain
Mover	+	+
Stimulator	+	-
Perceiver	-	+
Adaptor	-	-

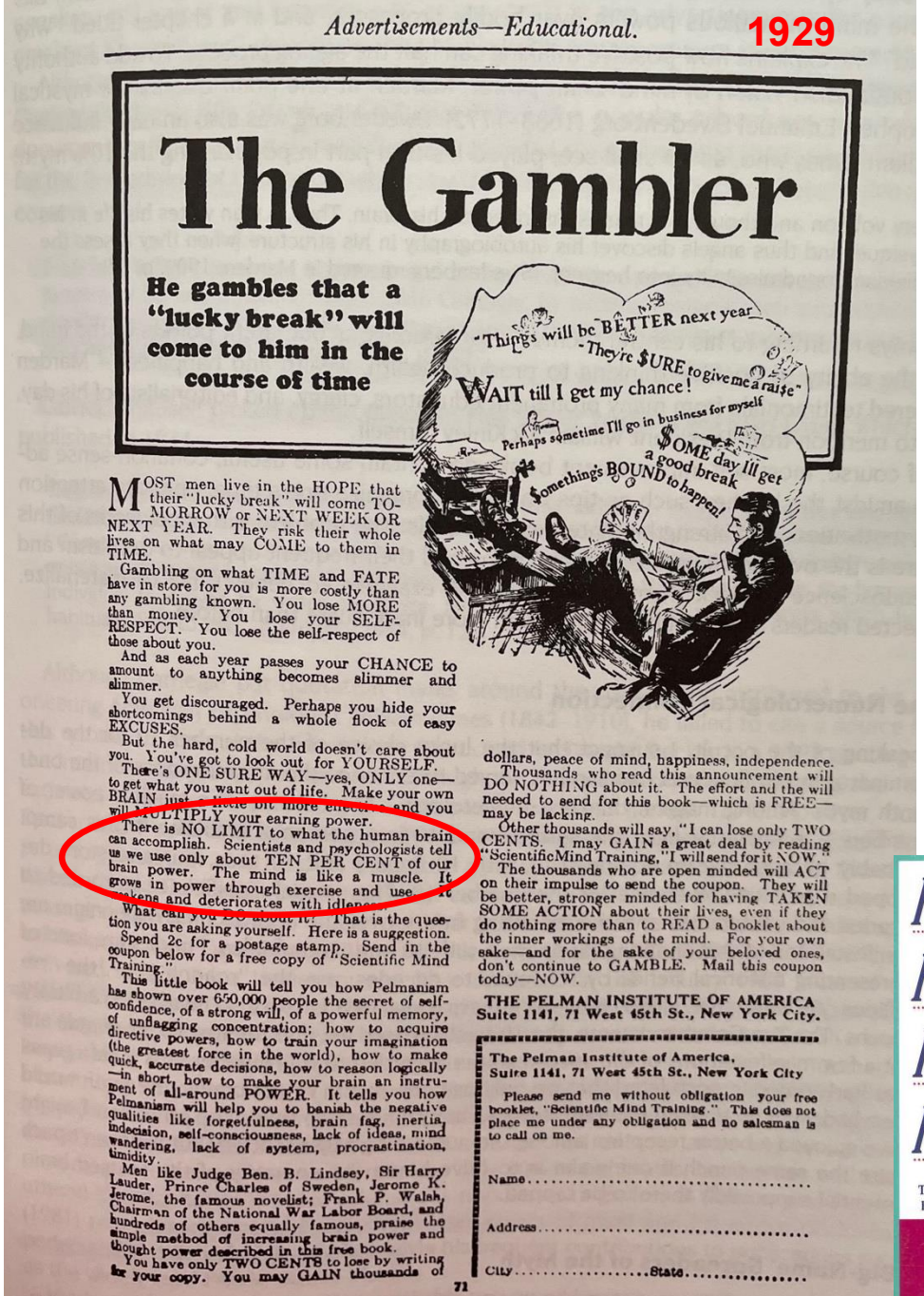
2013

Le roi des neuromythes:

«Nous n'utilisons que 10% de notre cerveau»

- **D'où sort cette idée?**
- **Pourquoi est-elle si populaire?**





Advertisements—Educational. 1929

The Gambler

He gambles that a "lucky break" will come to him in the course of time

MOST men live in the HOPE that their "lucky break" will come TO-MORROW or NEXT WEEK OR NEXT YEAR. They risk their whole lives on what may COME to them in TIME.

Gambling on what TIME and FATE have in store for you is more costly than any gambling known. You lose MORE than money. You lose your SELF-RESPECT. You lose the self-respect of those about you.

And as each year passes your CHANCE to amount to anything becomes slimmer and slimmer.

You get discouraged. Perhaps you hide your shortcomings behind a whole flock of easy EXCUSES.

But the hard, cold world doesn't care about you. You've got to look out for YOURSELF.

There's ONE SURE WAY—yes, ONLY one—to get what you want out of life. Make your own BRAIN just a little bit more effective and you will MULTIPLY your earning power.

There is NO LIMIT to what the human brain can accomplish. Scientists and psychologists tell us we use only about TEN PER CENT of our brain power. The mind is like a muscle. It grows in power through exercise and use. It weakens and deteriorates with idleness.

What can you do about it? That is the question you are asking yourself. Here is a suggestion. Spend 2c for a postage stamp. Send in the coupon below for a free copy of "Scientific Mind Training."

This little book will tell you how Pelmanism has shown over 650,000 people the secret of self-confidence, of a strong will, of a powerful memory, of unflagging concentration; how to acquire directive powers, how to train your imagination (the greatest force in the world), how to make quick, accurate decisions, how to reason logically—in short, how to make your brain an instrument of all-around POWER. It tells you how Pelmanism will help you to banish the negative qualities like forgetfulness, brain fag, inertia, indecision, self-consciousness, lack of ideas, mind wandering, lack of system, procrastination, timidity.

Men like Judge Ben. B. Lindsey, Sir Harry Lauder, Prince Charles of Sweden, Jerome K. Jerome, the famous novelist; Frank P. Walsh, Chairman of the National War Labor Board, and hundreds of others equally famous, praise the simple method of increasing brain power and thought power described in this free book.

You have only TWO CENTS to lose by writing for your copy. You may GAIN thousands of dollars, peace of mind, happiness, independence.

Thousands who read this announcement will DO NOTHING about it. The effort and the will needed to send for this book—which is FREE—may be lacking.

Other thousands will say, "I can lose only TWO CENTS. I may GAIN a great deal by reading "ScientificMind Training," I will send for it NOW."

The thousands who are open minded will ACT on their impulse to send the coupon. They will be better, stronger minded for having TAKEN SOME ACTION about their lives, even if they do nothing more than to READ a booklet about the inner workings of the mind. For your own sake—and for the sake of your beloved ones, don't continue to GAMBLE. Mail this coupon today—NOW.

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The Pelman Institute of America,
Suite 1141, 71 West 45th St., New York City

Please send me without obligation your free booklet, "Scientific Mind Training." This does not place me under any obligation and no salesman is to call on me.

Name.....

Address.....

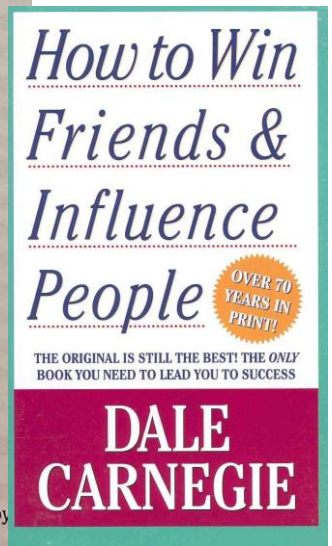
City.....State.....

71

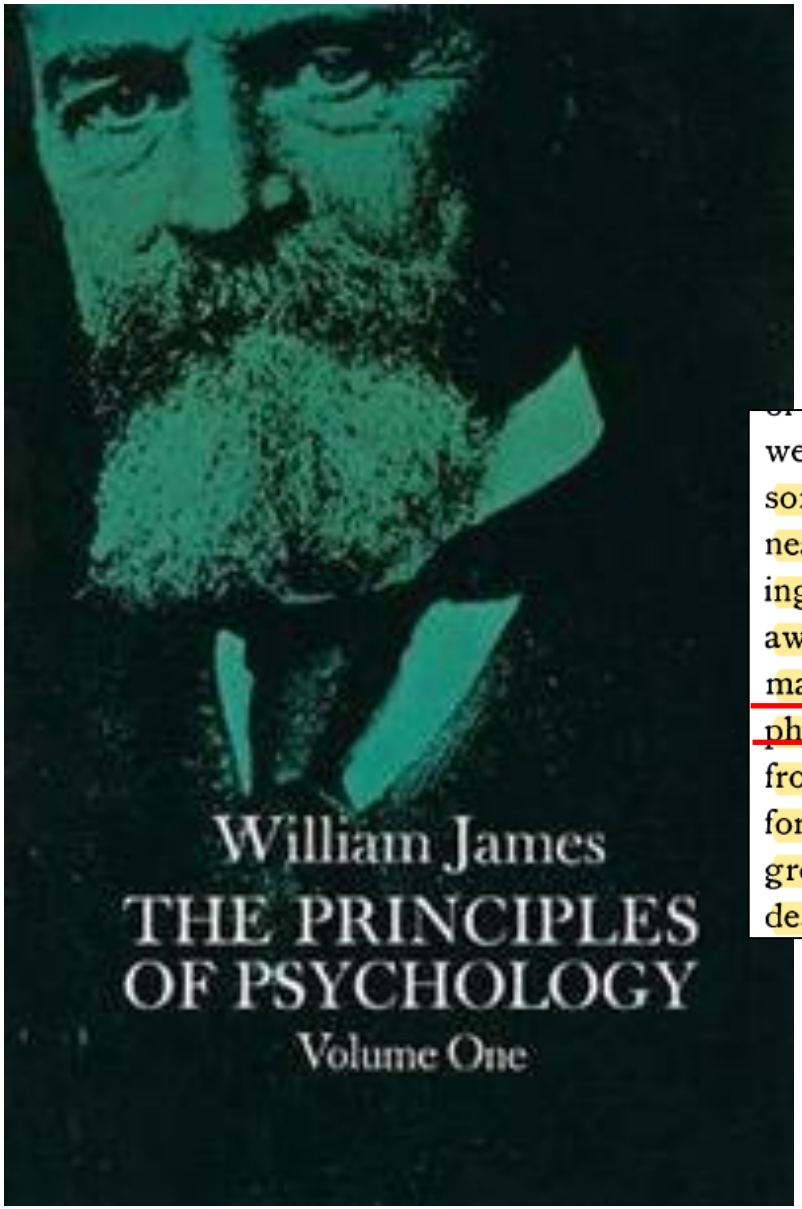
Figure 1.2 A reproduction from the 1929 *World Almanac*, showing how the 10% myth was spread by the self-improvement industry.

LE MYTHE DES 10%

- Origines obscures
- Mouvement «pensée positive»
- **Institut Pelman (Pelmanism: «the science of right thinking»)**
- Pouvoirs cachés de l'Homme
- Paranormal
- Inconscient, régions associatives
- Plasticité
- Transhumanisme



Préface 1936, attribué à William James 1906.
Puis Albert Einstein



Volume XVI. *January, 1907.* *Whole*
Number 1. *Number 91.*

THE

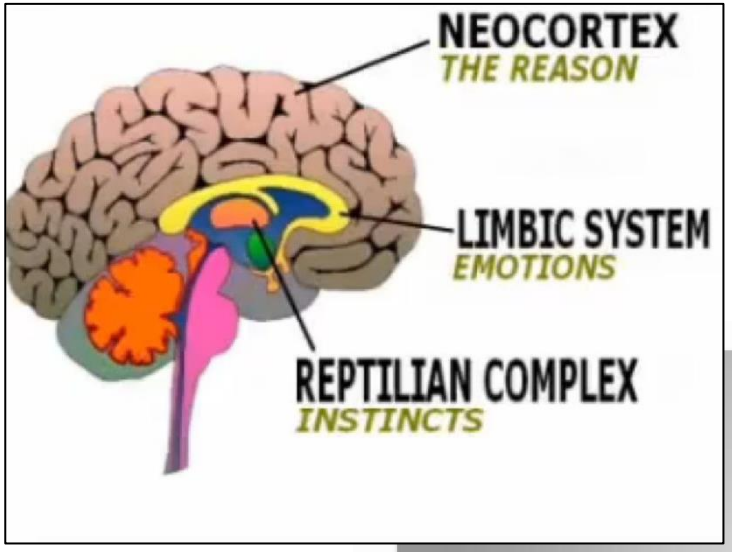
PHILOSOPHICAL REVIEW.

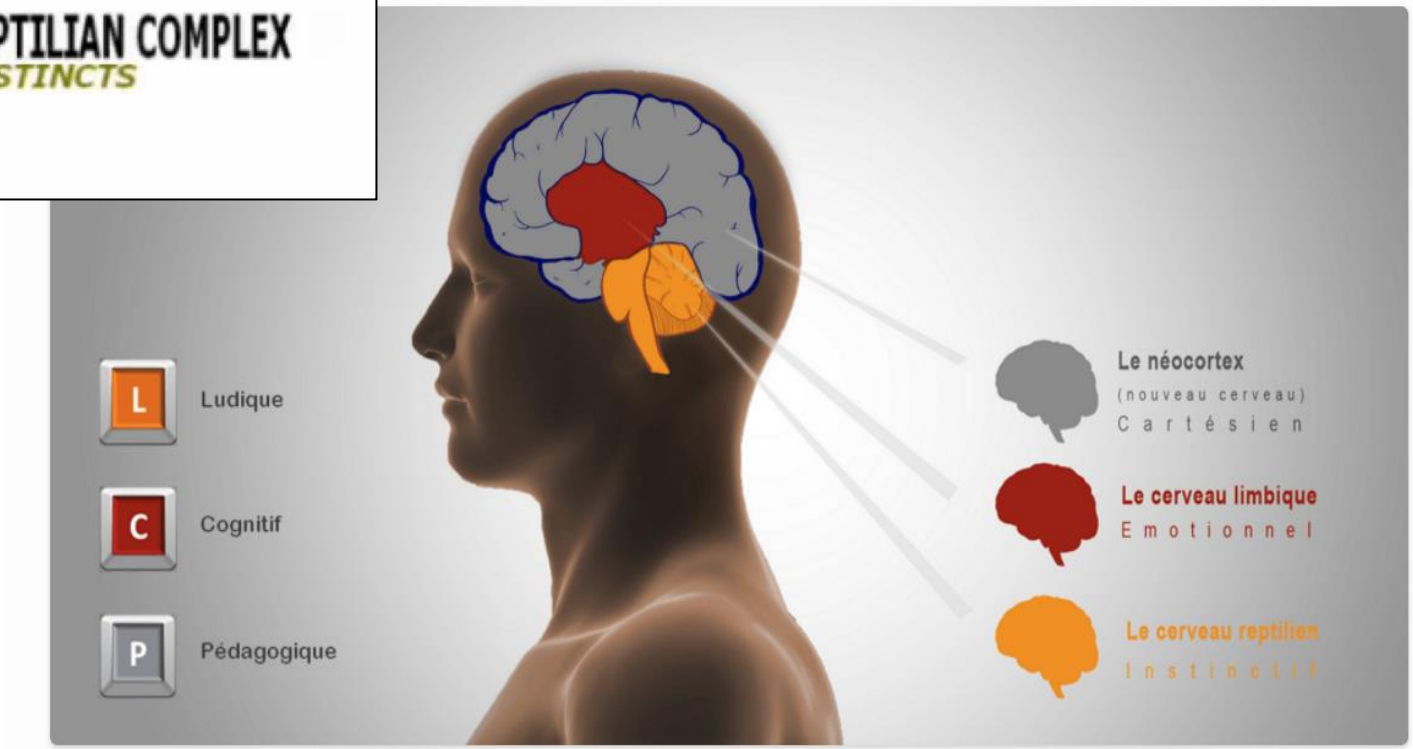
THE ENERGIES OF MEN.[1]

were greater. Most of us feel as if we lived habitually with a sort of cloud weighing on us, below our highest notch of clearness in discernment, sureness in reasoning, or firmness in deciding. Compared with what we ought to be, we are only half-awake. Our fires are damped, our drafts are checked. We are making use of only a small part of our possible mental and physical resources. In some persons this sense of being cut off from their rightful resources is extreme, and we then get the formidable neurasthenic and psychasthenic conditions, with life grown into one tissue of impossibilities, that the medical books describe.

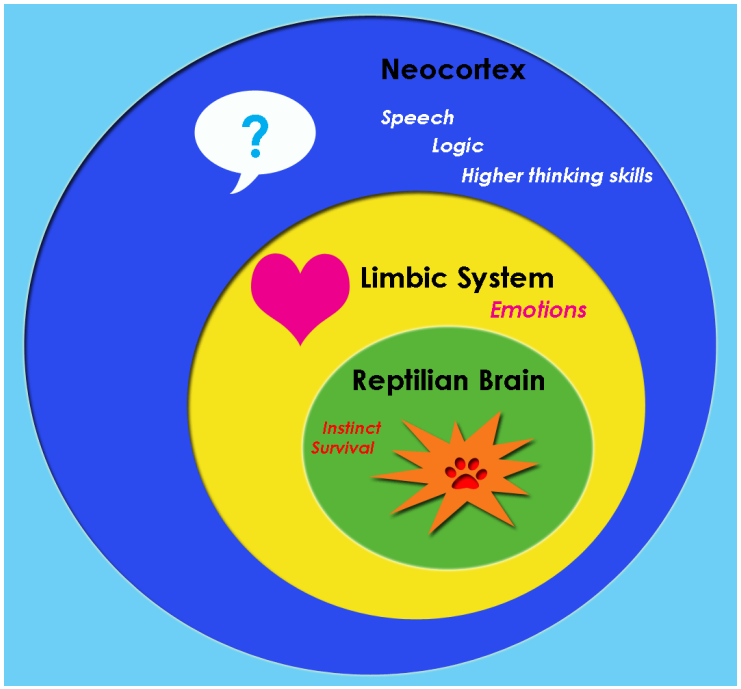
- Hauts et bas
- Inhibition
- Interférence
- Regains d'énergie
- Dépassement de soi

Le mythe du « cerveau reptilien »





Le mythe du « cerveau reptilien »



Why can't we stop scrolling or eating Haribo? Blame the lizard brain

Eli Goldstone

Opinion
Psychology

My life is a constant struggle against the primitive part of my brain – and the forces designed to exploit it

Sun 9 Jan 2022 13.00 CET



"I visualise my reptilian brain quite literally as the lizard-like baby from Eraserhead.' Photograph: Photo 12/Alamy

https://nicholaraihani.substack.com/p/three-brain-myths-that-need-to-die

https://www.theguardian.com/commentisfree/2022/jan/09/scrolling-lizard-brain-primitive-mechanisms

Origines

Paul D. MacLean (1913-2007):

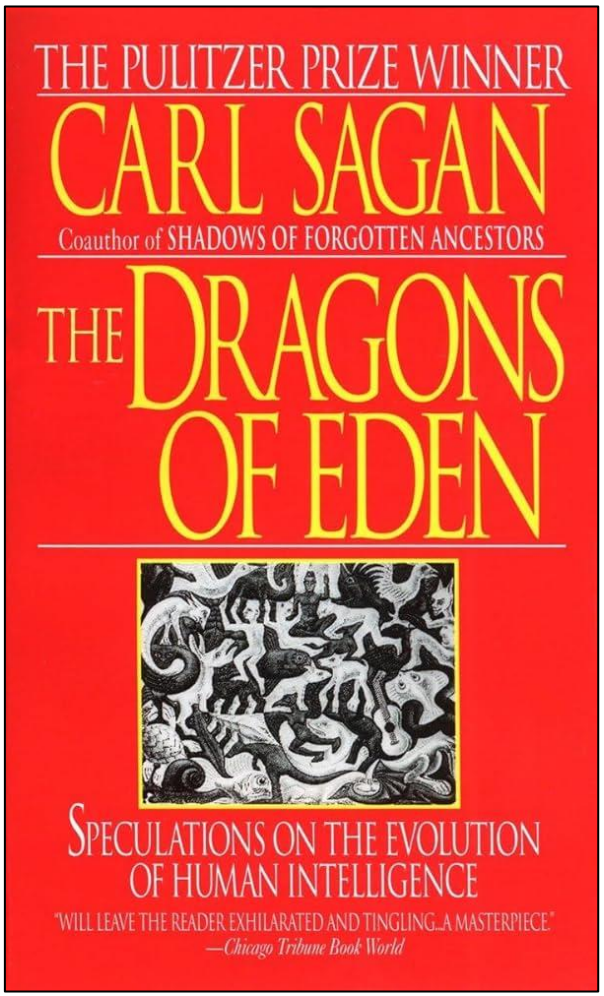
- Système limbique, Cerveau viscéral, instincts
- Communication grand public
- **"Cerveau Triunique"**: reptilien, paléo-mammalien, néo-mammalien
- Additif, directionel, hiérarchique
- Conflits intrasubjectifs
- Répandu en psychologie (manuels, personnalité, attention, pathologie, moralité…)
- Education, management, marketing, économie, divertissement, politique, sports, coaching…



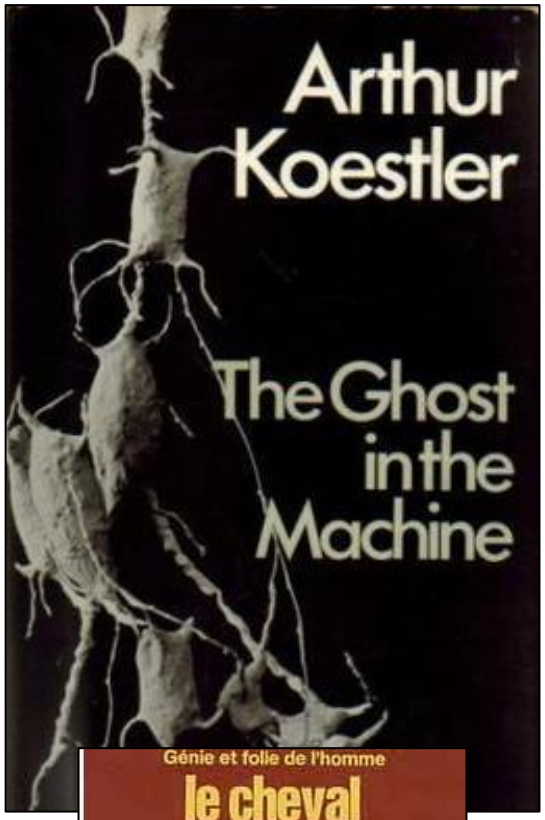
"Man (…) has inherited essentially three brains. Frugal Nature in developing her paragon threw nothing away. The oldest of his brains is basically reptilian; the second has been inherited from lower mammals; and the third and newest brain is a late mammalian development which **reaches a pinnacle in man and gives him his unique power of symbolic language**." (1964)

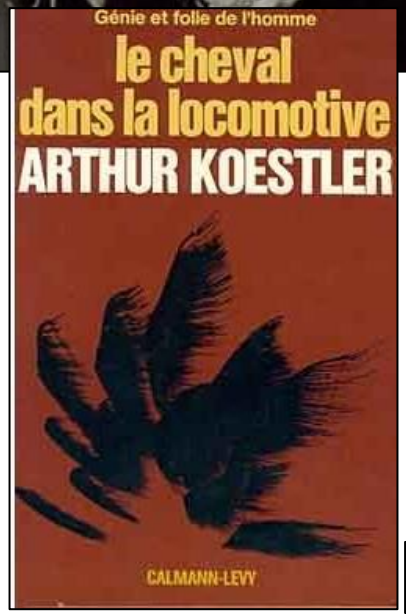


2021



1977





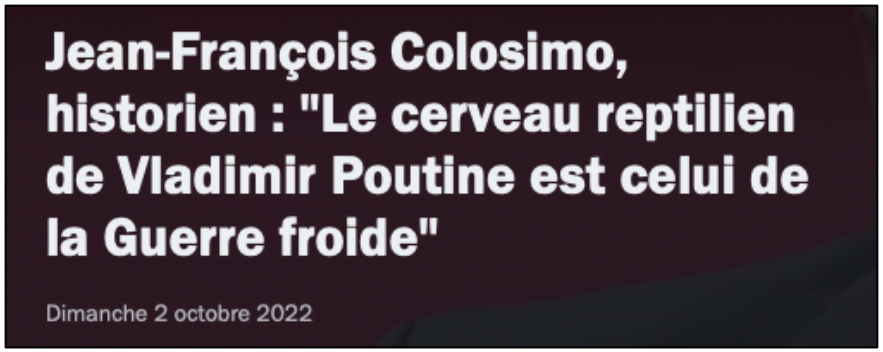
1967



1980

« Les plateformes, comme Facebook, stimulent notre cerveau reptilien pour des raisons financières, c'est immoral »

20 Minutes (20.09.2019)



France Inter (2.10.2022)

Comment enrayer la montée de l'extrême-droite – ou comment remettre à sa place le cerveau reptilien

28 avril 2019 René Longet Non classé

Le Temps Blogs (28.04.2019)

TRIBUNE

Bernard Stiegler, philosophe

Ces abominables tueries peuvent s'expliquer par la dérive de nos sociétés

Toute chose a sa raison, c'est-à-dire sa cause – y compris les choses les plus déraisonnables, folles et meurtrières.

Publié le 29 mars 2012 à 14h11, modifié le 29 mars 2012 à 14h11 | Lecture 5 min.

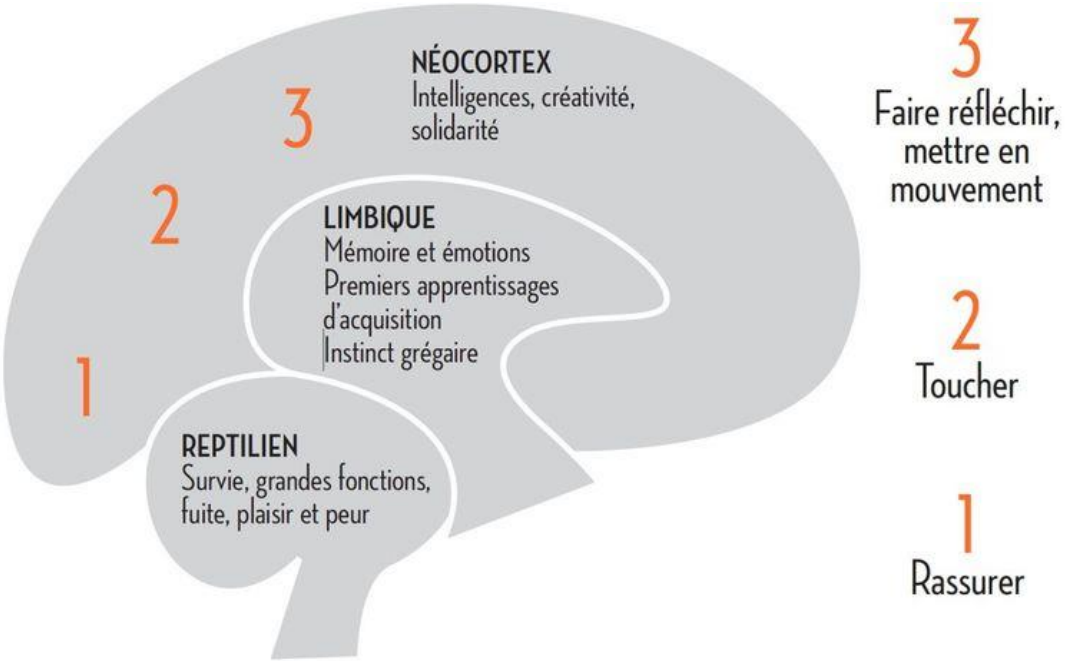
La captation massive du temps de cerveau disponible a détruit la conscience, et le neuromarketing exploite désormais l'imagerie cérébrale pour solliciter directement les automatismes comportementaux basés sur les couches du cerveau que l'on a dit "reptilien". Il s'agit ainsi de court-circuiter les apprentissages inhibiteurs élaborés à travers les interactions entre le néocortex et la société - dans un dialogue entre générations fondé sur des millénaires de culture et de civilité que l'éducation récapitule et inscrit dans notre plasticité cérébrale.

https://www.lemonde.fr/idees/article/2012/03/29/ces-abominables-tueries-peuvent-s-expliquer-par-la-derive-de-nos-societes_1677650_3232.html

***Les Echos Entrepreneurs* (15.08.2019)**

Pitch : séduire les trois cerveaux

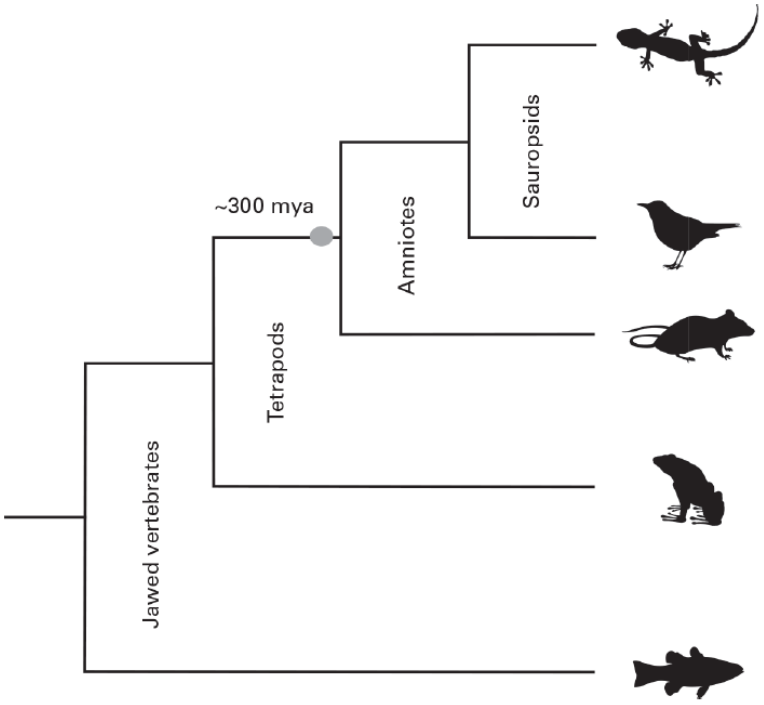
En 1969, Paul MacLean, neurobiologiste américain, a mis en lumière, pour la première fois, la structure du cerveau humain et, ainsi, la façon dont réagit n'importe quel être humain à de nouvelles situations. Cette théorie permet de déterminer la succession de trois étapes dans le processus de conviction.



Your Brain Is Not an Onion With a Tiny Reptile Inside

Current Directions in Psychological Science
1–6
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sagepub.com/journals-permissions
DOI: 10.1177/0963721420917687
www.psychologicalscience.org/CDPS
SAGE

Joseph Cesario[1], David J. Johnson[2], and Heather L. Eisthen[3,4]



- Reptiles et mammifères ont divergé il y a ~300mya
- Vertebrés partagent la même structure cérébrale
- Les “trois cerveaux” ont le même âge
- Le cerveau est un tout imbriqué
- Les reptiles présentent des comportements et des décisions complexes
- Les comportements impulsifs dépendent du contexte
- Le cortex n’est pas (toujours) “rationnel”!

Quelques caractéristiques des neuromythes

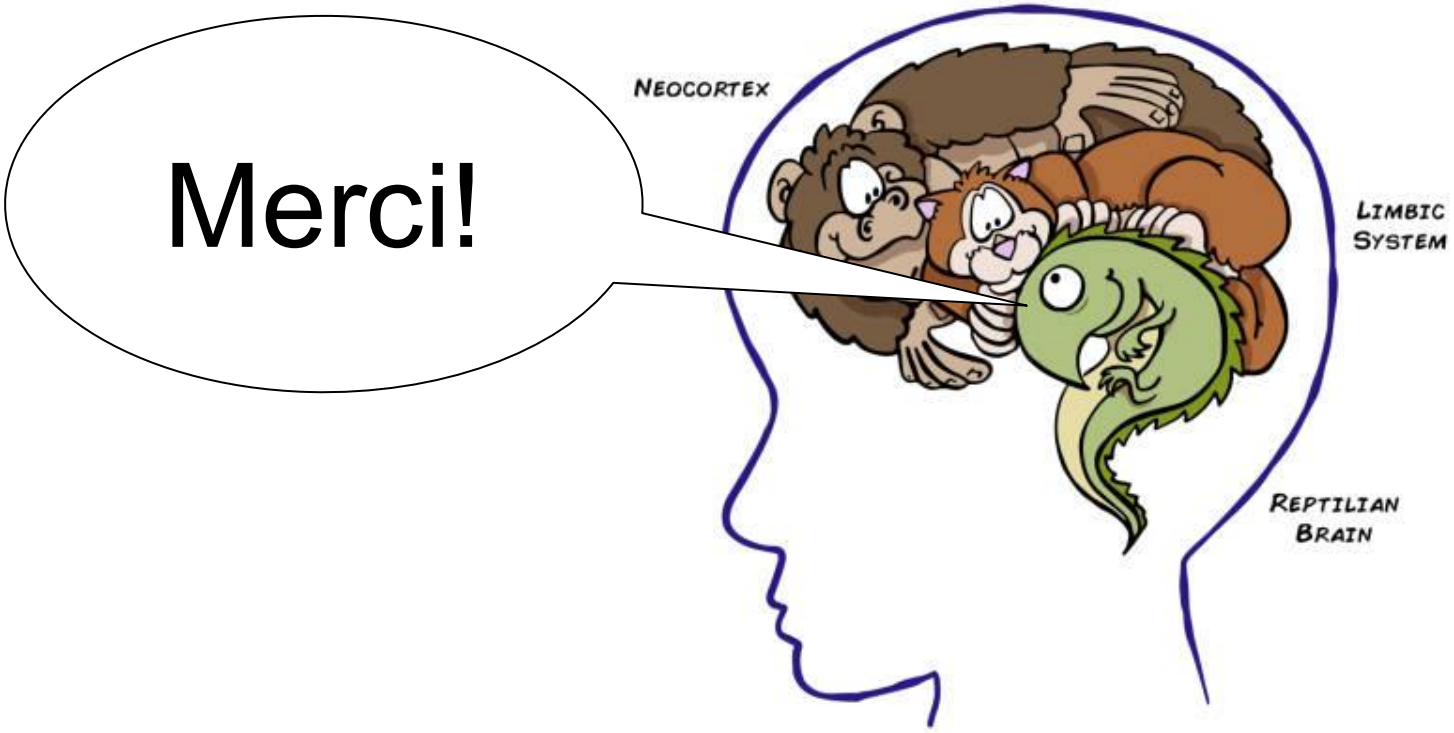
- Base scientifique rapidement évacuée
- Association à autres domaines
- Réduction explicative
- Prestige des neurosciences

- Essentialisation de la »nature humaine»
- Conflits intrapsychiques et sociaux
- Développement et dépassement de soi

- Responsabilité des chercheurs et neuroscientifiques
- Responsabilité des médias
- Explications et solutions «neuro» à des problèmes complexes
- Autorité et prestige des neurosciences
- Ambiguïté entre prétentions théoriques, causales et métaphoriques

Au-delà de l'erreur, vers une théorie des neuromythes?

- ***Folk neuroscience***: comment les gens se représentent-ils « le cerveau », quels sont les usages sociaux des « neurosciences »?
- **Récursivité:** N'utilisons-nous que 10% de notre cerveau gauche reptilien en style visuel?
- **Ambiguïté et caractère métaphorique** permet aux neuromythes de converger vers une vision implicite de l'individu, comme dépositaire de son propre destin (cérébral).
- Le « cerveau » y prend une place purement **opportuniste**, un objet abstrait où se projettent une idéologie de la performance, une théorie des errements humains, et un fantasme de transcendance.
- Ces caractéristiques rendent ces « idées » **faciles à transmettre et à « appliquer »**, et expliquent leur longévité (et indestructibilité?)
- Le concept même de **cerveau** est-il incompréhensible, et doit-on nécessairement recourir à des abstractions, narrations et idéalisations particulières pour en appréhender le fonctionnement?


Merci!
NEOCORTEX
LIMBIC SYSTEM
REPTILIAN BRAIN