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Special
Issue:

ANNALS OF

IMPROBABLE RESEARCH

MUMMIES, ZOMBIES & BAGELS

Mummy Medicaments,
Zombie Movie Statistics,
New York Bagel Specs...



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"When all other contingencies fail, whatever remains, however improbable, must be the truth."—*Sherlock Holmes*

"Science is the belief in the ignorance of experts."—*Richard Feynman*

May We Recommend

Items that merit a trip to the library

compiled by Stephen Drew, Improbable Research staff

Glasses and Personality: A New View

"Myopia and Personality: The Genes in Myopia (GEM) Personality Study" Robert van de Berg, Mohamed Dirani, Christine Y. Chen, Nicholas Haslam, and Paul N. Baird, *Investigative Ophthalmology and Visual Science*, vol. 49, March 2008, pp. 882–6. (Thanks to Kristine Danowski for bringing this to our attention.) The authors report:

A long-held view among the medical and broader community is that people who are short-sighted (myopic persons) have distinctive personality characteristics such as introversion

and conscientiousness. However, existing research on this question is flawed, and its findings are inconsistent. The authors therefore aimed to determine whether myopia and personality are associated. The authors examined twins recruited through the Australian Twin Registry and a clinical-based family sample through a proband from a Melbourne Excimer Laser Clinic....

The long-held view that myopic persons are introverted and conscientious may reflect intelligence-related stereotypes rather than real correlations.

Myopia and Personality: The Genes in Myopia (GEM) Personality Study

Robert van de Berg,^{1,2} Mohamed Dirani,^{1,2} Christine Y. Chen,^{1,3} Nicholas Haslam,¹ and Paul N. Baird^{1,2}

¹ University of Melbourne, Victoria, Australia; ² Melbourne Eye Institute, Victoria, Australia; ³ University of Melbourne, Victoria, Australia

In brief, individuals with GEM were approached for participation in a previously reported link between intelligence quotient (IQ) and myopia. Unlike this study, this one examined personality traits in addition to IQ.

Contents

The features marked with a star (*) are based entirely on material taken straight from standard research (and other Official and Therefore Always Correct) literature. Many of the other articles are genuine, too, but we don't know which ones.

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On the Front Cover

Thematic decoration or does Uncle Henry just want a bagel?
Photo by Andrew Beierle.



On the Back Cover

A Buddha's Hand citron (*Citrus medica var. sarcodactylus*).
Photo by Geri Sullivan.

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Ig Nobel Tour of the UK — March 6–15, 2009

SciFest Africa, Grahamstown, Eastern Cape, South Africa — March 25–26, 2009

Ig Nobel Tour of Denmark — April 23–25, 2009

Cambridge — May 2, 2009

Pittsburgh — May 4 & 6, 2009

(see WWW.IMPROBABLE.COM for details of these and other events)



AIR Vents

Exhalations from our readers

NOTE: The opinions expressed here represent the opinions of the authors and do not necessarily represent the opinions of those who hold other opinions.

Coca-Cola Contraceptive: Another View

Regarding Dr. Deborah Anderson and the other doctors who did the research that won the 2008 Ig Nobel prize in chemistry: I heard Dr. Anderson interviewed on the radio. She mentioned that one of many reasons people should not use

Coca-Cola as a contraceptive is that that “misplaced bottle caps can cause serious medical problems.” Yikes. It made me realize that Coca-Cola doesn’t provide just a douche, they also give you a diaphragm. Which likely works about as well as the Coke douche.

*Julia Robins
Menarchie, LA*

More About the Suit Nut

I am outraged by your publication of D.R. Lange’s diatribe (*AIR Vents* 14:7) against my book “Sued By

a Nut.” Lange says he is the subject not just of one of the stories in the book, but of all of them. As the book itself explains, I changed the names and circumstantial details in every story, for obvious reasons. Having been sued by a nut, I have no desire to be again sued by that nut or by any other. I make it an ironclad rule not to discuss the identity of the nuts in the book. Therefore I will not comment on Mr. Lange’s wild, untruthful, entirely-concocted, vile, illogical, irrational allegations nor will I in any other way address the ridiculous assertion that he is the nut or a nut in my book.

*L.I. Balaboramin
Eastwont, NY*

A Man of His Words

There was a typographical error in the sixth paragraph, ninth word in your version of my informative letter (*AIR Vents* 14:7) about the book “Sued By a Nut.” Please correct it or I shall be forced to take action that is appropriate.

*D.R. Lange
Porphyry, Wales*

Of Shrews

Thank you for publishing the article “The Tasting of the Shrew” (*AIR* 14:5). We who love shrews salute you.

*G. Mortenson Acloque,
N. Benson-Framm, and T. Drake
Milt, UK*



Isaac Newton Stamp, Stamp, Stamp, Stamp

Are you aware that the following countries/entities have issued stamps honoring Isaac Newton for his many achievements? Ajman, Ascension Islands, Benin, Britain, Bulgaria, Burundi, Central African Republic, Guinea, Chad, Democratic Peoples Republic of Korea (North Korea), Djibouti Dubai, France, Germany, Ghana, Grenada, Guinea, Hungary, Laos, Malawi Maldives Islands, Mali, Mongolia, Mozambique, Nevis, Nicaragua, Niger Paraguay, People’s Republic of the Congo, Poland, Redonda, Republic of the Congo, San Marino, Sierra Leone, Soviet Union, St. Vincent and the Grenadines, Togo, Uganda, Uruguay, Viet Nam, Yemen. Here is my favorite, from the Congo. I don’t know what achievement this one honors.

*Simon Montoya Testile
Collections Director
Philatelist Society of South America
Chiclayo, Peru*



Maybe Mel, Pointedly

The famous Mel misidentification problem rears its head again. Thank you for publishing my letter (*AIR Vents* 14:6) and reproducing one of our new photographic treasures. The arrow stamped on the original image, which I implied might be pointing to Mel, in fact is not. If, as we believe, Mel is in the crowd visible in the photograph, he is more likely to be at the position indicated in this corrected (by hand, by my assistant Vasillia) here. You may publish this revised version, please.

*Lheal Chormnast
TRPNOF Archives
Moldavia*



More About Solvay's Head

I am writing on behalf of all the members of the Solvay Conference of 1911 Appreciators Club. We have just finished our annual gathering in the Metropole Hotel in Brussels, site of that historic conference. We find the photograph of Solvay's head, defaced as it is and ever the subject of speculation as to whether the head and/or the body are indeed Solvay's, to be historically distressing. Gimpelson's rash letter (*AIR* Vents 14:6) suggesting you Photoshop the head is more disturbing than you can probably imagine unless you are an historian who specializes in the period.

Normand Vresse
Bruxelles, Belgium

Every Day
Read something new and improbable every weekday on the Improbable Research blog, on our web site:
WWW.IMPROBABLE.COM



Maybe Mel, Echoed

I report something strange. Like Lheal Chormnast of the TRPNOF Archives in Moldavia (*AIR* Vents 14:6), our museum also recently did purchase a large quantity of photographs at auction that included several boxes marked "Mel." And like the Moldavians we have no information other than was in the very boxes. Our guess is that: Yes! They do probably pertain to the Mel who so often appears, or appears to appear, in your letters column. We would be grateful for any clarifying information anyone (except the Moldavians) could provide. Our charter prevents us from making direct contact with the Moldavians, a fact that saddens us.

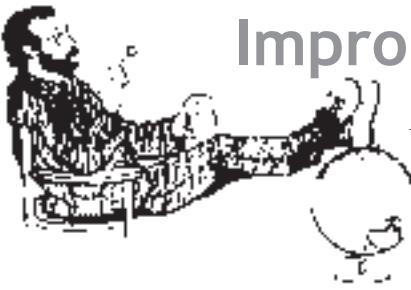
Flenn Gresch, D.TrW.
Drebner Museum of History
Blarverton, Wronsk

Mouthblown in China, Further Considered

When I wrote my letter (*AIR* Vents 14:6) about finding another example of glassware produced in China and marked "Mouthblown in China." I was sorry I had not included it as part of my study ("Mouthblown in China," *AIR* 13:7). In the letter and in the study, I discussed how such objects are ambiguous in their meaning insofar as having the phrase "Mouthblown in China" stamped on them. I have made further investigation into the intended use of the objects, and as to whether they are (a) sacred or (b) strikingly profane. The investigations have led to certain adventures that are both scientific and personal, and, may I say, exhilarating. If I were to write them up, would you be willing to consider them for publication?

Sarah Junovsky
Research Analyst
Kyoto History of Science and Society Society
Kyoto, Japan





Improbable Research Review

Improbable theories, experiments, and conclusions

compiled by Dirk Manley, Improbable Research staff

Physics of Flying Tigers

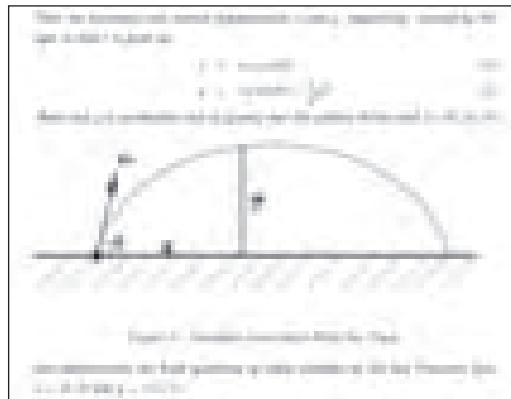
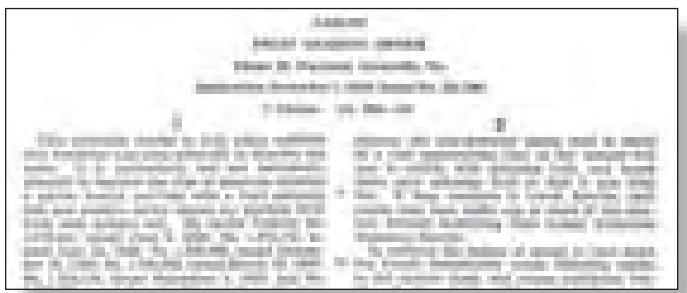
“Tiger Tales: A Critical Examination of the Tiger’s Enclosure at the San Francisco Zoo,” Erica Walker and Raza M. Syed, arXiv:0801.4407, 2008. The authors, who are respectively at Boston Architectural College and at Northeastern University, Boston, Massachusetts, explain:

Given the recent tragedy involving a 350 pound Siberian Tiger and the death of teenager Carlos Souza Jr., one must ask a fundamental question: Can a tiger overcome an obstacle that is thirty-three feet away and twelve and a half feet tall? Are these dimensions sufficient enough to protect the zoo-visitors from a potential escape and/or attack? To answer these questions we use simple two-dimensional projectile motion to find the minimum velocity a tiger needs in order to clear the obstacle. With our results we conclude that it is highly likely that the tiger was able to leap over the obstacle with ease!

Physics of Spinning Apples (1953)

“Fruit Grading Device,” U.S. patent 2630222, issued March 3, 1953 to Edwin M. Wayland of Covington, Virginia. The document includes this passage:

There is some tendency of the fruit to pile up at the entrance end of the trough. Such piling up, particularly when the machine is being heavily fed, is apt to jam two or three apples together so that they cannot spin, with the result that certain apples, particularly in the case of relatively flat apples short in their axial dimensions, travel down the trough riding flat against the spinner-belt. Under such circumstances, the non-spinning apples tend to travel at a rate approaching that of the spinner-belt and to collide with spinning fruit, and knock down such spinning fruit...

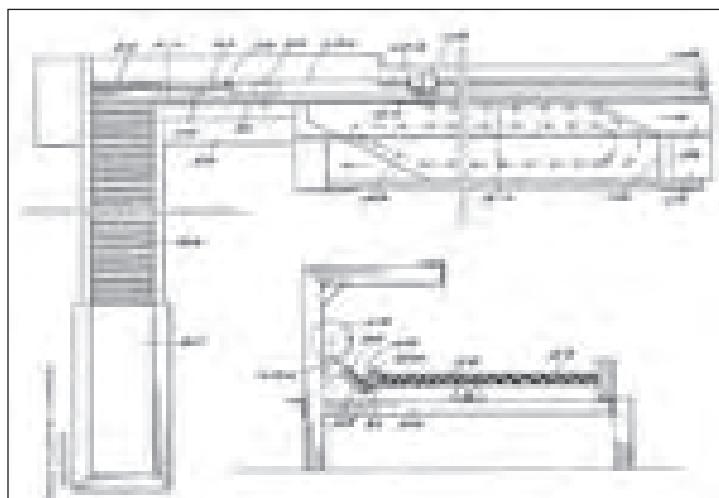


Detail from Walker and Syed’s study “Tiger Tales: A Critical Examination of the Tiger’s Enclosure at the San Francisco Zoo.”

Physics of Spinning Apples (2008)

“Theoretical Analysis of Stability of Axially Symmetric Rotating Objects with Regard to Orienting Apples,” P. Narayanan, A.M. Lefcourt, U. Tasch, R. Rostamian, A. Grinblat, and M.S. Kim, *Transactions of the ASABE*, vol. 51, no. 4, 2008, pp. 1353–64. (Thanks to Adrian Smith for bringing this to our attention.) The authors report:

This study introduces the novel use of action integrals to examine stability, and the results provide testable predictions that round apples as compared to elongated or squat apples and larger elongated apples will need to travel farther before orientation is favored.



Technical drawing from Edwin M. Wayland’s 1953 fruit-grading device patent.



Improbable Medical Review

Improbable diagnoses, techniques, and research

compiled by Bertha Vanatian, *Improbable Research* staff

Plastic Surgeons (1): Bear?

"The Culprit: Grizzly Bear or Plastic Surgeon?", T.G. Evans and S.J. Burgert, *Clinical Infectious Diseases*, vol. 17, no. 6, December 1993, pp. 1067–8.

The Culprit: Grizzly Bear or Plastic Surgeon?

See—While one might expect considerable danger when embarking on a hunting expedition in the wilds of Alaska, a hunter encountered considerably more trouble than he bargained for. A healthy 45-year-old man and his colleague shot and killed a grizzly bear while on a hunting trip in Alaska. While removing the tongue of the dead bear, the man scratched his left index finger on one of the bear's teeth. The following day he noted mild swelling of the scratched finger. After 2 weeks of treatment

Acne or Apnea

"Dermatology as She Is Spoke: Sleep Acne," Hobart W. Walling, *Journal of the American Academy of Dermatology*, vol. 58, no. 6, June 2008, p. 1050. The author reports:

After completing a routine skin check on a gentleman in his 60s, I asked if there was anything else I could do for him. He paused a moment and said, "What do you know about sleep acne?" I replied that I was unfamiliar with that particular variant of acne. "My lung doctor says I got it, wants me to wear a breathing mask at night. I haven't had any problems with acne since I was a teenager." I suggested that he let me know if he had any inflammatory papules arise where the CPAP mask contacted his skin.

Plastic Surgeons (2): Napoleon on Patients' Personalities

"The Presentation of Personalities in Plastic Surgery," Anthony Napoleon, *Annals of Plastic Surgery*, vol. 31, no. 3, 1993, pp. 193–208. The author explains:

This research was of 133 plastic surgery patients over a 1.5-year period.... Patients were categorized according to their similarity to the personality disorder descriptions found within the Diagnostic and Statistical Manual of Mental Disorders... This research identified those personality types most likely to be dissatisfied, along with those personalities who tended to withhold their approval of an excellent surgical result.

Tenderizing the Phytobezoar

"Resolution of a Phytobezoar with Aldoph's Meat Tenderizer," Erica L. Baker, William L. Baker, and David J. Cloney, *Pharmacotherapy*, vol. 27, no. 2, February 1, 2007, pp. 299–302. (Thanks to Kristine Danowski for bringing this to our attention.) The authors, at Hartford Hospital in Hartford, Connecticut, report:

A 58-year-old man went to his physician with complaints of midepigastric pain, flatulence, belching, and shortness of breath. During a physical examination, the patient was in no acute distress. The patient underwent an ultrasound examination, which revealed cholelithiasis, a laparoscopic cholecystectomy, which revealed chronic gallbladder disease, and esophagogastroduodenoscopy, which revealed gastritis, a hiatal hernia, and a phytobezoar. To treat the bezoar, the patient was given Adolph's Meat Tenderizer 1 teaspoonful in 8 oz of water before each meal for 7 days.... Although a few other agents are used to treat phytobezoars, little clinical data exist on their safety and effectiveness. Adolph's Meat Tenderizer appears to be a safe and effective treatment for patients with a phytobezoar.

Dermatology as she is spoke: Sleep acne

After completing a routine skin check on a gentleman in his 60s, I asked if there was anything else I could do for him. He paused a moment and said, "What do you know about sleep acne?" I replied that I was unfamiliar with that particular variant of acne. "My lung doctor says I got it, wants me to wear a breathing mask at night. I haven't had any problems with acne since I was a teenager." I suggested that he let me know if he

We welcome your suggestions for this and other columns. Please enclose the full citation (no abbreviations!) and, if possible, a copy of the paper.



“What, Not How”: The Case of Specifications of the New York Bagel

Daniel M. Berry

Cheriton School of Computer Science, University of Waterloo
Waterloo, Ontario, Canada

In software engineering, we are told that a software requirements specification should specify what the desired software should do, not how the software should do it. This is often summarized as “What, not how.” This paper explores the validity of the advice to specify “What, not how” for requirements, including quality requirements. In the domain of the New York bagel, it may be necessary to explain *how* in order to make the *what* precise enough.

In general, there are two ways to specify any system, software or otherwise:

1. a “what” specification describing what the system does, or
2. a “how” specification describing how the system does what it does.

Above: Figure 1. Three genuine, mouth-watering New York bagels from Waterloo, Ontario’s Rise and Shine bagel store. One is shown as baked, and the other two are shown having been used to implement lox, cream cheese, and bagel sandwiches. Photo: Vic DiCicco.

A system may also be described by tests that are satisfied by the desired system.

A “what” specification and a test share the property that each leaves the question of *how* to implement the system up to the implementer. The freedom accorded to the implementer allows him or her to find the best technology to achieve the desired “what” or testing success.

Note that there can be no test specification for any but the most trivial systems, because no finite set of test cases can thoroughly test a non-trivial system for compliance to its requirements. Edsger Dijkstra once said, “Program testing can be used to show the presence of bugs, but never to show their absence!”¹

While the “what, not how” mantra seems clear enough, in practice it may be very difficult to separate the *hows* from the *whats*. Indeed, for some requirements, it may be impossible to specify “what” without saying something about “how.” There are also requirements, usually called quality requirements, for which the “what” specification is

simply not very useful, e.g., "The output shall look good," "The user interface shall be easy to use," or "The response time shall be fast." In some of these cases, the only way to make the requirement precise enough to be tested is to say something about how it will be met.

A prime example of a product requiring a detailed "how" specification is none other than the New York bagel, examples of which are shown in figure 1.²

New York Bagels

How many readers have ever really had one? A New York bagel, such as what you get at Zabar's, H&H, or Rise & Shine, is not just a baked good with a hole in it, despite the widespread proliferation of places that make a bread with a hole and call it a bagel in order to profit from the current bagelmania.³ A donut is another baked good with a hole in it, and we all know that a bagel and donut have little in common except the hole; indeed, a bagel and a donut have literally nothing in common.⁴

"What" Specification of a Bagel

A "what" specification of any object consists of a textual description of the object, often accompanied by diagrams. If, unlike software, the object has physical dimensions, the diagrams may include what are commonly called blueprints.

A bagel is a baked good in the approximate shape of a symmetric, regular torus. The torus has approximately a 4 inch (≈ 10 cm) outer diameter, a 1 inch (≈ 2.5 cm) inner diameter, and a 1.5 inch (≈ 3.8 cm) ring diameter. The interior of the bagel has air holes. Most of the outside surface of the bagel is a golden brown crust that is approximately .0625 inch (≈ 1.6 mm) thick. The part of the outside surface that comes in contact with the baking surface is dark brown and pockmarked.

Figure 2 shows a blueprint⁵ formed out of 5 photographs of various views of genuine New York bagels. Considering a bagel as it lies flat on a plate viewed from above the plate, the plan view is in the upper left-hand corner of the blueprint, and the elevation view is in the upper right-hand corner of the blueprint. The Line A-A in the plan view defines Section A-A shown in the lower left-hand corner of

THE NEW YORK BAGEL



Figure 2. Blueprint for the New York bagel.

the blueprint, and the Line B-B in the elevation view defines Section B-B shown in the lower right-hand corner of the blueprint. The middle left-hand side of the blueprint shows Detail 1A-A, a blowup of the part of Section A-A that is delimited by a dashed-line rectangle in the section's left-hand side.

A donut satisfies the physical dimensions given in the blueprint, but a donut is not a bagel. To distinguish a New York bagel from any other baked good with a hole, Detail 1A-A of the blueprint, shown in Figure 3, has

specifications of the elasticity of the surface and the moisture content of the interior. The surface should withstand 45 pounds per square inch (≈ 3.17 kg per square cm), and the interior should have 20 to 25 percent moisture content. The surface elasticity and inner moisture content specifications together specify the chewiness of a New York bagel. A donut does not satisfy this chewiness specification. A piece of ordinary bread shaped into a ring of the right size also does not satisfy this chewiness specification.

continued >

Figure 3. Detail 1A-A from blueprint in Figure 2.

Is this chewiness an essential, functional requirement of a New York bagel? Some think so, because without the chewiness, the baked good with a hole

in it is not a New York bagel. It is a bread with a hole, a donut, or perhaps another kind of bagel entirely, such as the Montréal bagel.

"How" Specification of a Bagel

A "how" specification of a bagel is a recipe for making bagels:

1. Use high-gluten flour dough that has risen.
2. Make a ring with outer diameter 4 inches (≈ 10 cm) and inner diameter 1 inch (≈ 2.5 cm) and with a cross section of 1.5 inches (≈ 3.8 cm) in diameter.
3. Put the ring into boiling water for 30 seconds.⁶
4. Bake the ring on a corn-meal covered surface in a 400°F ($\approx 200^\circ\text{C}$) oven until golden brown, usually for about 10 minutes.

The step that is left out or changed by the making of most poor imitations of New York bagels and of other kinds of bagels is Step 3.

This "how" specification, a recipe, is clearly an algorithm.⁷

Testing Properties of a Bagel

A test gives one way to determine whether a candidate system has the tested property. A standard test for New York bagelhood is that a proper genuine New York bagel can be used by a baby for teething for at least 10 minutes without disintegrating into a ball of mush.⁸ A donut clearly fails this test. In fact, all baked goods with holes that fail to meet the surface yield and interior moisture content specification fail this test. All the so-called bagels, including the steamed ones, described below, made without boiling fail this test.

Another test is that chewing a genuine New York bagel burns almost as many calories as are ingested by eating the bagel, particularly if the bagel is taken from someone else's plate.⁸

Still another test is that only a genuine New York bagel stands up to and does not get squished by the Bagel Biter™ bagel cutting guillotine depicted in Figure 4. A steamed bagel gets crushed into a wad before the blade begins to cut.

Still another test is that if you bite down on a sandwich made with a genuine New York bagel, the filling squishes out. With a steamed bagel, the sandwich filling does not squish out; thus, a steamed bagel makes a great bun.

As mentioned, a test is similar to a "what" specification in the sense that it allows any implementation that achieves the test. Therefore, from here on, this paper compares only "what" and "how" specifications.

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Harry Lipkin, Weizmann Inst.

Douglas Osheroff*, Stanford U.

Frank Wilczek*, MIT

Political Science

Richard G. Neimark****, Rochester, NY

Psychiatry and Neurology

Robert Hoffman, Daly City, CA

Psychology

Dan Ariely*****^{*}, Duke U

Louis G. Lippman, Western Wash. U.

G. Neil Martin, Middlesex U., UK

Chris McManus*****^{*}, University Coll.

London

Neil J. Salkind, U. of Kansas

Pulmonary Medicine

Traian Mihaescu, Iasi, Romania

Science Policy

Al Teich, American Assn for the Advancement of Science

Stochastic Processes

(selected at random from amongst our subscribers)

Georgios Ouzounis, Alexandroupoli, Greece

Women's Health

Andrea Dunaif, Northwestern U.

JoAnn Manson, Brigham & Women's Hosp.

A Guide to the Stars

* Nobel Laureate

** world's highest IQ

*** convicted felon

**** misspelled

***** sibling rivalry

***** six stars

***** Ig Nobel Winner

What, Not How

As mentioned above, a “what” specification is normally preferred to a “how” specification because the “what” specification says only what is desired and allows the implementer the freedom to achieve the requirements in any way he or she can. It spurs competition to find more efficient ways to achieve what is specified than originally conceived.

Some of the companies that fail to make genuine New York bagels do so because they have decided to make different kind of bagels. These companies include the makers of Montréal bagels, a different kind of bagel with its own fans.

Others that fail to make genuine New York bagels do so because they have decided that the high-gluten flour and the boiling are unnecessary. These bakers do not get the proper surface yield or interior moisture content. They make bread with a hole. Many supermarket-made bagels are in this category.

Some who do use high-gluten flour, e.g. McDonald’s, have tried steaming in place of boiling. It almost works, but the surface yield is not high enough and the interior moisture content is too high. These steamed so-called bagels are clearly examples of trying to find a cheaper way to achieve the “what” specification than can be done by following the standard “how” method, or recipe. However, to date no recipe other than the standard recipe has succeeded in achieving the desired “what” specification. Saekel et al. 1995¹⁰ quote Gary Goldstein, co-owner of the Bay Area’s Holey Bagel, as insisting, “Steaming is for dry cleaning, not bagels.” Even on the other side of the globe, the slogan of the Bagel House in Sydney, NSW, Australia, says it all: “If it’s not boiled, it’s not a bagel.”

Others who boil their bagels before baking still fail to achieve the required chewiness because their flour does not have enough gluten. While the resulting bagels have the required surface strength, the interior is noticeably less moist. Thus, the chewiness is limited to the initial, surface-piercing bite, and does not extend to the interior. This author believes that most of the bagel houses in Israel make this kind of low-gluten bagels. Note that gluten cannot be eliminated entirely, because without some gluten, a ring of dough would simply disintegrate during its boiling.¹¹

Finally, there are at least two companies whose bagels taste to this author like they have been steamed, namely Tim Hortons’s and Noah’s Bagels. A search for reviews confirms that others have come to the same conclusion regarding

Noah’s Bagels’s bagels.^{12,13,14} Nevertheless, e-mail from an official of each company says that the company’s bagels are boiled.^{11,15} Further investigation shows that Tim Hortons practices par-baking. At a central factory, high-gluten flour rings are boiled, baked to 85–90% of completion, and then frozen for delivery to individual stores. Each store then finishes off the baking locally. These bagels do have a freshly baked aroma, flavor, and feel, but they taste to this author like steamed bagels, with too soft a surface and too moist an interior. Perhaps the time lag between the two baking steps, during which the bagels are sent frozen from the central factory to the stores, accounts for the surface tension decrease and the interior moisture increase from those characteristic of boiled bagels to those characteristic of steamed bagels.

Figure 4. The Bagel Biter™ bagel cutting guillotine is one of several commercially-produced bagel slicing devices that can be used in testing whether a bagel has been built properly.



Thus, a bagel is an example of a project for which a “how” specification may be better than a “what” specification. A “how” specification is certainly simpler in the sense that

it is easier to tell what needs to be done. In opting for this “how” specification, one is discouraging innovation. However, in the case of the New York bagel, perhaps innovation should be discouraged.

Could an expert baker deduce from the blueprint or an actual bagel that using high-gluten flour and boiling before baking is necessary? That is, can a domain expert deduce what is not explicit in a “what” specification so that it is not necessary to give “how” information? The answer to this question is probably “yes.” This author is a sufficiently expert eater that he can tell from feeling or biting on a candidate bagel whether it has been boiled, and can tell by chewing it whether it has enough gluten. Moreover, he can tell when another kind of bread, e.g., the German Laugenbrot or Pletzl, has a lot of gluten and has been boiled before baking. Additionally, it is hard to imagine a baking expert who has not learned about the use of gluten and boiling before baking as a technique for achieving certain effects, namely those exhibited by New York bagels. More generally, the recipient of a specification must be considered when deciding what to leave implicit.

continued >

An algorithmic description is the clearest, simplest specification for a New York bagel. While it does prescribe how to make it, in principle anything that tastes and feels the same will be accepted as a bagel. Unfortunately for those who wish to optimize on the time to produce a bagel and to eliminate the need for high-gluten flour, for a boiling vat, or both, all other ways tried so far have yet to produce exactly the desired taste and feel.

Conclusion

This paper has considered one situation in which design and implementation details are necessary to resolve issues that should be resolved during specification. Space does not permit the exploration of other examples such as text formatters; robust, safe, secure, and survivable systems; and varying telephonic systems. The conclusion after consideration of these examples is that sometimes, a “how” specification is significantly more clear or brief than a “what” specification, and that sometimes, a “how” specification is needed for information that is not available in a “what” specification. Also, sometimes, a “how” specification is needed to make a quality requirement precise enough to be tested. Therefore, when it is appropriate to use a “how” specification, do so without guilt and in good health.

Acknowledgments

I thank Martin Feather for pointing out that the Bruegger’s Bagel Bakery blueprint on my T-shirt, on which the blueprint of Figure 2 is based, constituted a “what” specification of bagels and that sometimes a “how” specification is better. I thank Michael Jackson for an interesting e-mail discussion on “what” vs. “how.” I thank Brian Burechails and Renée deHerrera-Brooks for teaching me some things about bagel making. I thank Vic DiCiccio for the mouth-watering photograph of the bagels. Finally, I thank Jo Atlee, Gunnar Begersen, Brian Berenbach, Nancy Day, Merlin Dorfman, Martin Feather, Mike Godfrey, and Leah Goldin for valuable comments on earlier drafts of this paper or during lecture presentations of the material in this paper.



References and notes

- ¹ “Notes on Structured Programming,” E.W. Dijkstra, in *Structured Programming*, O.-J. Dahl, E. W. Dijkstra, and C. A. R. Hoare, eds., Academic Press, London, 1972, ISBN 0122005503.
- ² The subject bagels of the photograph of Figure 1 were so mouth-watering that the author and the photographer ended up eating the subjects immediately after the photograph was taken.
- ³ *Bagelmania: The Hole Story*, C. Berman and S. Munshower, HP Books, Tucson, 1987, ISBN 0895866242.
- ⁴ When the Israeli branches of Dunkin Donuts began to sell bagels as well as their traditional donuts, the author remarked that Dunkin Donuts was diversifying into other holey products in the Holy Land, even though its business was not wholly holey products.
- ⁵ This blueprint is modeled after a document entitled “Building a Better Bagel,” produced by Bruegger’s Bagel Bakery and, until a few years ago, used in their promotional activities. Breugger’s Enterprises, Inc. declined a request for permission to publish a copy of that blueprint in this scholarly article.
- ⁶ The duration may have to be altered if atmospheric pressure differs substantially from that at sea level. In Denver, Colorado, USA, which is a mile (≈ 1.6 km) high, the ring must be boiled for 90 seconds.
- ⁷ There are a (w)hole host of details ignored in one or both of these specifications:
 - a) boiling time as a function of the altitude of the place of baking,
 - b) possible toppings, e.g., garlic, onion, poppy seed, salt, and sesame seed, and when and how to apply them, and
 - c) emotional issues⁹; after all, this paper does get a bit emotional about how a bagel is made.
- ⁸ Not really!
- ⁹ “Is Emotion Relevant to Requirements Engineering?” I. Ramos and D. M. Berry, *Requirements Engineering Journal*, vol. 10, no. 3, 2005, pp. 238–242.
- ¹⁰ “What’s New,” K. Saekel, M. Cianci, and M. A. Mariner, *San Francisco Chronicle*, April 19, 1995, <http://www.sfgate.info/cgi-bin/article.cgi?f=c/a/1995/04/19/FD52141.DTL>.
- ¹¹ R. deHerrera-Brooks, Einstein Noah Restaurant Group, Inc., private communication by e-mail, August 2008.
- ¹² “Noah’s Bagels — Redwood City, CA,” Yelp.com, <http://www.yelp.com/biz/noahs-bagels-redwood-city>.
- ¹³ “Restaurant Review: Bagels: blurring the line between tradition and innovation,” M. C. Peterson, Palo Alto Online, May 23, 1997, http://www.paloaltoonline.com/weekly/morgue/restaurants/1997_May_23.EATOUT23.html.
- ¹⁴ “Noah’s Bagels”, Davis Wiki, http://daviswiki.org/Noah%27s_Bagels.
- ¹⁵ A. Ziemski, Tim Hortons (TDL Group Corp.), private communication by e-mail, August 2008.

Bagel Research Review

Research studies about or on bagels

by Stephen Drew, *Improbable Research staff*



Todd Jones, bagel philosopher. Portrait by Nan Swift, *Improbable Research staff*.

The Philosopher's Bagel Question

"How Many New Yorkers Need to Like Bagels Before You Can Say 'New Yorkers Like Bagels?' Understanding Collective Ascription," Todd Jones, *Philosophical Forum*, vol. 36, no. 3, Fall 2005, pp. 279–306, DOI:10.1111/j.1467-9191.2005.00204.x. The author, at University of Nevada at Las Vegas, explains:

Using this phrase tells people *that* it is the case that large numbers of New York City dwellers eat bagels regularly. The context of the conversation often lets a listener know that the speaker is telling her *which* group compared to others, we'll find large numbers of Y-doers in. Now this context doesn't explain what the percentage of Y-doers in this X group is. So such a phrase does run some risk of misleading listeners, if it is interpreted as meaning that most New Yorkers eat lots of bagels. To avoid potential misleadingness a speaker could say "New Yorkers eat a higher percentage of bagels than people in other cities—though it's not clear that people who eat a lot of bagels are really a majority in New York." But it is difficult and time-consuming to sift through ones knowledge and come up with this idea. And it's awkward and time-consuming to speak this way. "New Yorkers really like to eat bagels," is quicker and easier.

HOW MANY NEW YORKERS NEED TO LIKE BAGELS BEFORE YOU CAN SAY "NEW YORKERS LIKE BAGELS?" UNDERSTANDING COLLECTIVE ASRIPTION

TODD JONES

INTRODUCTION

Using election season the frequency of certain types of phrases increases dramatically.

Over and over we hear phrases like:

- "The American people believe that the money they earn is theirs to keep."
- "The American people know that we can do better than this."
- "The American people think it's time for a change."
- "The American people want to do all they can to stop the spread of AIDS."
- "It's what America wants, not what Bush or [Democrat] wants, that we should be interested in."

The politicians uttering these phrases, one will notice, are speaking about the beliefs, desires, and actions of *entire groups*. They are not speaking of Bill, Hillary, or Jean's desire for change, but the desire of some amorphous entity they call "the American people." Politicians, of course, are not the only people that speak like this. Pundits and journalists are forever speaking about "what

continued >

False-Positive Urine Drug Screen: Beware the Poppy Seed Bagel

To the Editor:

In the general practice of caring for my chronic pain patients who use opioid analgesics as a part of their treatment regimen, I request that they provide random urine for toxicology. The purpose of these evaluations is to clarify that the patient is taking the drug prescribed and is not taking other substances (either illicit or legal drugs prescribed by another physician). One needs to be aware,

Methods

The patient was requested to not eat any poppy seed bagels or poppy seed-containing food for a period of 2 weeks.¹⁻⁴ She was requested to come to my office on April 22, 1997, with a poppy seed bagel. A urine sample was obtained from the patient at 9:00 AM on April 22, 1997, before her ingesting the poppy seed bagel. The patient was then observed eating one half of a poppy seed bagel and was observed during the intervals between testing the urine. At 2 hours and 5 hours after eating the bagel, urine samples were re-purified.⁵ A

Bagel-Aided Intoxication

"Niacin Intoxication from Pumpernickel Bagels—New York," Centers for Disease Control (CDC), *MMWR Morbidity and Mortality Weekly Report*, vol. 32, no. 23, June 17, 1983, p. 305. The report explains:

On April 27, 1983, 14 (20%) of 69 persons attending a brunch had acute onset of rash, pruritis, and sensation of warmth.... Of 25 persons who ate the bagels, 14 (56%) became ill, whereas none of the 44 persons who did not eat pumpernickel bagels became ill. The bagels had been produced at a local bagel factory from a batch of dough originally prepared on April 23.

Because the pumpernickel bagels were very light in color, the ingredients were suspected. Investigation revealed that, in an attempt to enrich the pumpernickel flour, a large quantity of niacin had been added, apparently from an improperly labeled container. Laboratory studies revealed 60 times the normal level of niacin in the pumpernickel flour. On the basis of these data, each bagel contained approximately 190 mg of niacin; the recommended dietary allowance for niacin is 6.6 mg/1000 calories or about 13 mg/day for the average adult.

Poppy Seed Bagel-Aided Drug-Testing Risk (1996)

"False-Positive Urine Drug Screen: Beware the Poppy Seed Bagel," E.J. Narcessian and H.J. Yoon, *Journal of Pain and Symptom Management*, vol. 14, no. 5, November 1997, pp. 261-3. The authors report:

The patient denied any use of illicit substances and denied obtaining medication from any other sources. Her pharmacy confirmed that I was the only doctor prescribing Schedule II medications.

The patient was then questioned about her diet. She reported that her diet consisted predominantly of oatmeal cereal and bagels....

The patient was requested to not eat any poppy seed bagels or poppy seed-containing food for a period of 2 weeks. She was requested to come to my office on April 22, 1997, with a poppy seed bagel. A urine sample was obtained from the patient at 9:00 AM on April 22, 1997, before her ingesting the poppy seed bagel. The patient was then observed eating one half of a poppy seed bagel and was observed during the intervals between testing the urine....

[The] results confirmed that ingestion of poppy seeds can result in a positive urine toxicology for morphine. The urines may remain positive from 24 to 48 hours after ingestion.

Poppy Seed Bagel-Aided Drug-Testing Risk (1997)

"Poppy Seeds: Differences in Morphine and Codeine Content and Variation in Inter- and Intra-individual Excretion," M.G. Pelders and J.J. Ros. *Journal of Forensic Sciences*, vol. 41, no. 2, March 1996, pp. 209-12. The authors, at the Dutch Laboratory for Drugs and Doping, Hospital Pharmacy Midden-Brabant, the Netherlands, report:

Poppy seeds from seven different origins (Dutch, Australian, Hungarian, Spanish, Czech, and two Turkish) were analyzed for the amount of opiates present. Four grams of each kind of seeds, equivalent to the amount of seeds on two bagels, were ingested by volunteers.... After ingestion a large interindividual variation of excretion of opiates exists.... Several kinds of poppy seeds can give positive testing results (Australian, Hungarian, Spanish and one kind of Turkish seeds).

Yummy Mummies for Good Health

The medicinal uses of powdered mummy

by A.S. Kaswell, *Improbable Research staff*

Nowadays, powdered mummy may not be everyone's cup of tea, but for many years it was just what the doctor ordered. That's one of the takeaway messages of Richard Sugg's study "Good Physic but Bad Food": Early Modern Attitudes to Medicinal Cannibalism and its Suppliers.

Dr. Sugg is a Research Fellow in Literature and Medicine at Durham University. He begins his monograph with an astute observation: "The subject of medicinal cannibalism in mainstream western medicine has received surprisingly little historical attention."

Sugg tells us that mummy, generally in powdered form, "having originally been a natural mixture of pitch and asphalt, came in the twelfth century to be associated with preserved Egyptian corpses."

It then "emerged as a mainstream western medicine" and remained a standard-issue drug until "opinion began to turn against it in the eighteenth century." Physicians prescribed powdered mummy for diverse ailments. An English pharmacopeia published in 1721 specifies two ounces of mummy as the proper amount to



Ambroise Paré, 16th century royal surgeon and expert on mummy powder.

make a "plaster against ruptures." Ambroise Paré, royal surgeon to sixteenth century French kings, proclaimed mummy to be "the very first and last medicine of almost all our practitioners" against bruising.

Dr. Paré harbored doubts about the drug's efficacy, lamenting that "wee are ... compelled both foolishly and cruelly to devour the mangled and putrid particles of the carcasses of the basest people of Egypt, or such as are hanged." But Dr. Paré was an unusually driven doubting Thomas — he lamented having "tried mummy 'an hundred times' without success."

The Sugg study explains that "mummy was an important commodity. It is often seen in long lists of merchants' wares and prices." The marketplace attracted counterfeiters. Sugg supplies an anecdote: "Tellingly, when Samuel Pepys saw a mummy it was in a merchant's warehouse; while 'the abuses of mummy dealers in selling inferior wares' were especially widespread and notorious by the end of the seventeenth century."

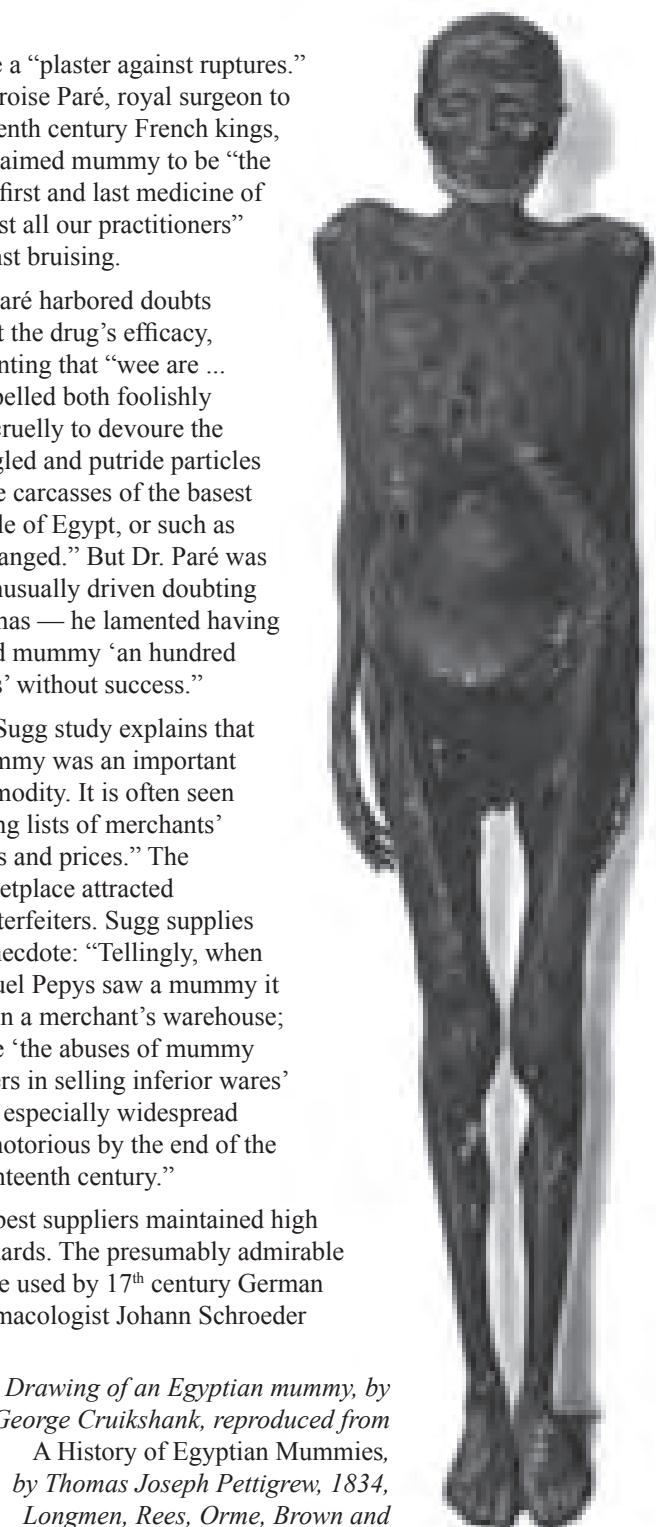
The best suppliers maintained high standards. The presumably admirable recipe used by 17th century German pharmacologist Johann Schroeder

"Good Physic but Bad Food": Early Modern Attitudes to Medicinal Cannibalism and its Suppliers

Richard Sugg*

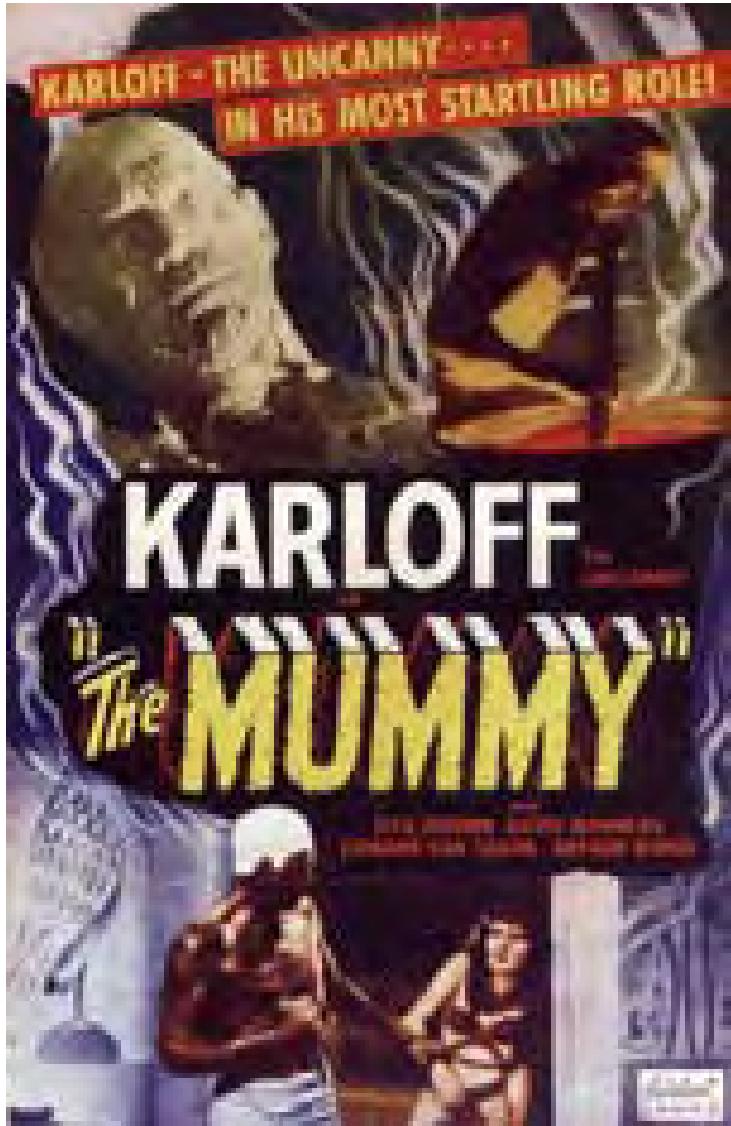
*Sugg's 2006 study on mummy medicine. This article, all rights reserved. To reproduce, permission must be obtained from Improbable Research. No part of this article may be reproduced, stored in a retrieval system, or transmitted, in whole or in part, by means of electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the author and publisher.

Sugg's 2006 study on mummy medicine.



Drawing of an Egyptian mummy, by George Cruikshank, reproduced from A History of Egyptian Mummies, by Thomas Joseph Pettigrew, 1834, Longmen, Rees, Orme, Brown and Longman publishers, London

continued >



The popular movie *The Mummy* did not fully explore the medical and pharmacological uses of mummy powder.

Noble's 2003 study about Shakespeare's take on mummy powder.

included: "the cadaver of a reddish man (because in such a man the blood is believed lighter and so the flesh is better), whole, fresh without blemish, of around twenty-four years of age, dead of a violent death (not of illness), exposed to the moon's rays for one day and night, but with a clear sky. Cut the muscular flesh of this man and sprinkle it with powder of myrrh and at least a little bit of aloe, then soak it." And so forth.

This study removes some, if not all, of the horror from the Stephen Sondheim musical "Sweeney Todd," in which a London barber of yesteryear murders his customers and recycles them as stuffing for yummy meat pies. Thanks to Dr. Sugg's research, the play's main love song gains a soupçon of innocence, especially in its cheerful refrain: "The history of the world, my sweet, is who gets eaten and who gets to eat."

Mummy Powder and Shakespeare

Louise Noble of the University of New England looked at how Shakespeare looked at mummy medicine. Her 2003 study "And Make Two Pasties of Your Shameful Heads": Medicinal Cannibalism and Healing the Body Politic in *Titus Andronicus*" presents copious details and analysis.

Noble introduces her subject by reprinting this "astonishingly explicit" recipe from Oswald Croll's 1609 book *Bazilica Chymica and Praxis Chymiatricae or Royal and Practical Chymistry* (translated by John Hartman in 1670), which no doubt inspired Dr. Schroeder:

Chuse the Carcase of a red Man (because in them the blood is more sincere, and gentle and therefore more excellent) whole (not maimed) clear without blemishes, of the age of twenty four years, that hath been Hanged, Broke upon a Wheel, or Thrust-through, having been for one day and night exposed to the open Air, in a serene time. This Mumy (that

"AND MAKE TWO PASTIES OF YOUR SHAMEFUL HEADS": MEDICINAL CANNIBALISM AND HEALING THE BODY POLITIC IN *TITUS ANDRONICUS*

BY LOUISE NOBLE

Early modern pharmacopoeia abound with references to the pharmaceutical excellence of mumiæ, or mummy, the remains of an embalmed corpse often prepared according to recipes, such as this astonishingly explicit one offered by Oswald Croll:

Chuse the Carcase of a red Man (because in them the blood is more sincere, and gentle and therefore more excellent) whole (not maimed) clear without blemishes, of the age of twenty four years, that hath

is, Musculous flesh, of the Thighs, Breasts, Armes, and other parts) from the two Luminaries, once illuminate and constellate, cut into small pieces or slices and sprinkle on them Powder of Myrrh, and of Aloes, but a very little (otherwise it will be too bitter) afterward by Macerating, Imbibe them for certain days in Spirit of Wine, hang them up a little, and again imbibe them, then hang them up to dry in the Air, this so dried will be like Flesh hardened in Smoak, and be without stink.

At the end of her study—which after all centers on the play *Titus Andronicus*—Noble concludes that

The elaborate rhetorical juggling of medicine and cannibalism in the play is an inevitable consequence of a cultural behavior, wherein the socially accepted medical consumption of human bodies and the foreign, abjected, and forbidden act of eating human flesh are profoundly implicated in one another.

Acknowledgment

Thanks to the Chemical Heritage Foundation for bringing mummy powder to our attention.



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- “‘Good Physic but Bad Food’: Early Modern Attitudes to Medicinal Cannibalism and its Suppliers,” Richard Sugg, *Social History of Medicine*, vol. 19, no. 2, 2006, pp. 225–40.
- “And Make Two Pasties of Your Shameful Heads”: Medicinal Cannibalism and Healing the Body Politic in *Titus Andronicus*,” Louise Noble, *English Literary History*, vol. 70, no. 3, Fall 2003, pp. 677–708.



AIR Teachers' Guide

Three out of five teachers agree: curiosity is a dangerous thing, especially in students. If you are one of the other two teachers, *AIR* and *mini-AIR* can be powerful tools. Choose your favorite h*AIR*-raising article and give copies to your students. The approach is simple. The scientist thinks that he (or she, or whatever), of all people, has discovered something about how the universe behaves. So:

- Is this scientist right—and what does “right” mean, anyway?
- Can you think of even one different explanation that works as well or better?
- Did the test really, really, truly, unquestionably, completely test what the author thought he was testing?
- Is the scientist ruthlessly honest with himself about how well his idea explains everything, or could he be suffering from wishful thinking?
- Some people might say this is foolish. Should you take their word for it?
- Other people might say this is absolutely correct and important. Should you take their word for it?

Kids are naturally good scientists. Help them stay that way.

War and Social Upheaval Cause Spikes in Zombie Movie Production

by Annalee Newitz

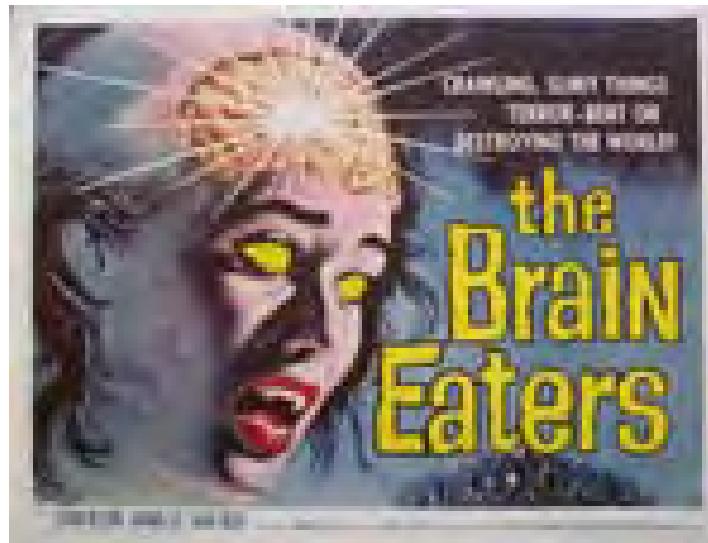
Editor, io9

San Francisco, California

Chart by Stephanie Fox. Additional reporting by Katharine Duckett.

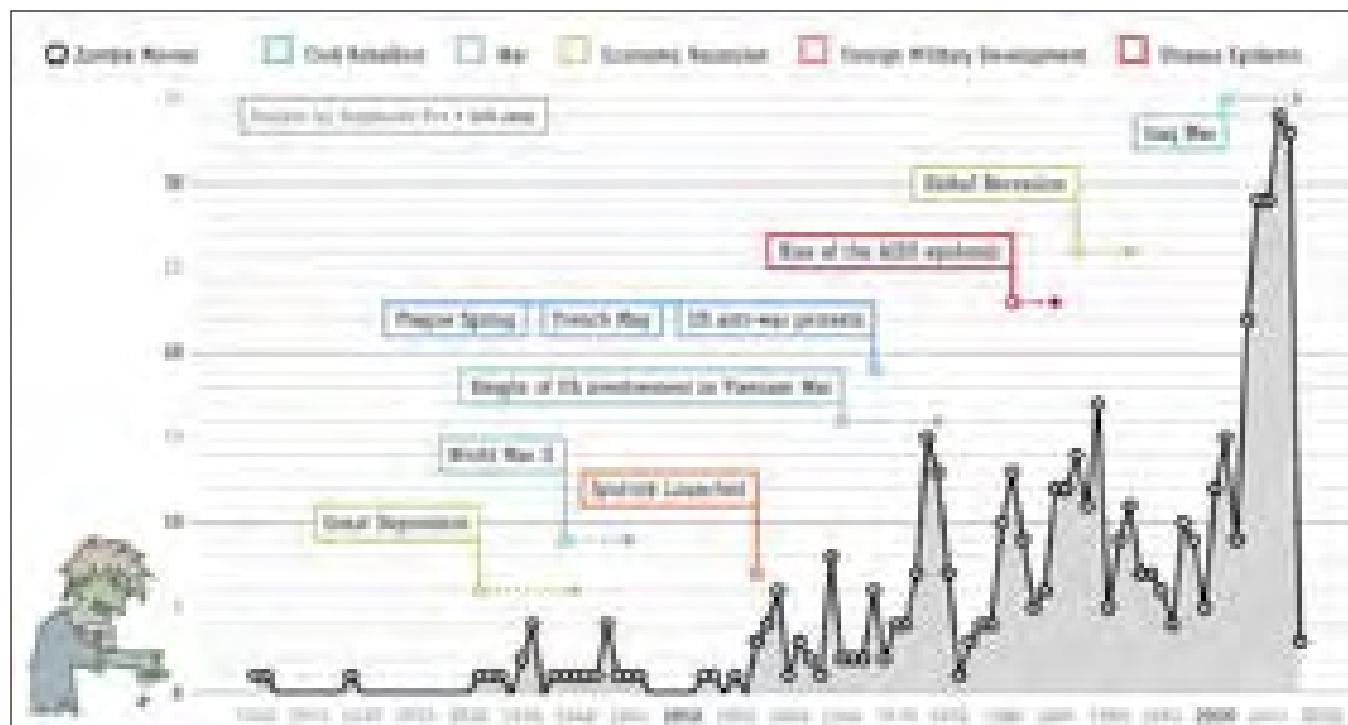
There's been a huge spike in the production of zombie movies lately, and many of them seem to be inspired by war. Everything from *28 Days Later...* to *Zombie Strippers* makes explicit reference to wartime, as did seminal 1968 zombie flick *Night of the Living Dead*. Is there really a connection between zombie movies and social unrest? We decided to do some research and find out. The result is a line graph showing the number of zombie movies coming out in the West each year since 1910, and there are definite spikes during certain years, which always seem to happen eerily close to historical events involving war or social upheaval.

Mostly we've focused on movies from the U.S. and Europe, and we've included mummies but not vampires and ghosts. It's necessary to correct somewhat for the fact that more movies are being made as we get closer to the present, and (more importantly) there are better records of those movies with better tagging. So it's easier to research movies with zombies in them if you're looking at productions from the



1980s onward. In addition, there's been a huge boom in indie and low-budget horror movies over the past ten years, and that undoubtedly accounts somewhat for the giant spike you see during the last 8 years or so.

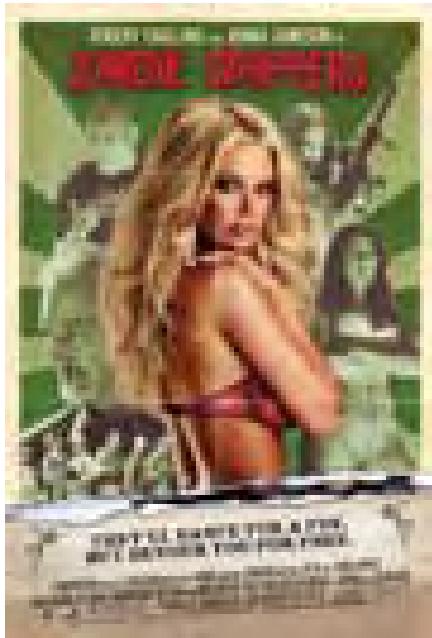
If you're going to look at these historical correlations, you have to consider that movies inspired by a real-life event aren't going to show up in theaters for at least six months to a year, so we've accounted for that. Still, even correcting for these factors, there are distinctive spikes in zombie popularity, and they always seem to fall slightly after a huge political or social event has caused mass fear, chaos, or suffering. World War II, Vietnam, and the current Iraq War are all followed by a zombie rush at theaters, as are other periods of trauma such as the AIDS epidemic. Is there a causal connection, or is it just coincidence? You be the judge.



Appendix: Zombie Movies We Included in This Study

1910: 1	1959: 6	1971: 4	
• <i>Frankenstein</i>	<ul style="list-style-type: none"> • <i>Invisible Invaders</i> • <i>Teenage Zombies</i> • <i>The Mummy</i> • <i>Plan 9 from Outer Space</i> • <i>The Four Skulls of Jonathan Drake</i> • <i>Night of the Ghouls</i> 	<ul style="list-style-type: none"> • <i>La muerte viviente (Island of the Snake People)</i> • <i>La noche del terror ciego (Tombs of the Blind Dead)</i> • <i>Escape</i> • <i>The Resurrection of Zachary Wheeler</i> 	
1911: 1	1960: 1	1972: 7	
• <i>The Mummy</i>	• <i>Creature of the Walking Dead</i>	<ul style="list-style-type: none"> • <i>Gli orrori del castello di Norimberga (The Torture Chamber of Baron Blood)</i> • <i>L'Etrusco uccide ancora (The Dead Are Alive)</i> • <i>La Notte dei diavoli (Night of the Devils)</i> • <i>Blood of Ghastly Horror</i> • <i>Children Shouldn't Play With Dead Things</i> • <i>Tales From the Crypt</i> • <i>Las momias de Guanajuato (The Mummies of Guanajuato)</i> 	
1919: 1	1961: 3	1973: 15	
• <i>J'accuse!</i>	<ul style="list-style-type: none"> • <i>Muñecos infernales (The Curse of the Doll People)</i> • <i>The Dead One</i> • <i>Dr. Blood's Coffin</i> 	<ul style="list-style-type: none"> • <i>El espanto surge de la tumba (Horror Rises From the Tomb)</i> • <i>La invasión de los muertos (Invasion of the Dead)</i> • <i>La orgía de los muertos (Beyond the Living Dead)</i> • <i>El ataque de los muertos sin ojos (Attack of the Blind Dead)</i> • <i>Christina, princesse de l'érotisme (A Virgin Among the Living Dead)</i> • <i>El castillo de las momias de Guanajuato (Castle of the Mummies of Guanajuato)</i> • <i>Horror Express</i> • <i>Dead People</i> • <i>La noche de los brujos (Night of the Sorcerors)</i> • <i>La rebelión de las muertas (Vengeance of the Zombies)</i> • <i>Psychomania</i> • <i>Flesh for Frankenstein</i> • <i>Santo contra la magia negra (Santo vs. Black Magic Woman)</i> • <i>House of the Living Dead</i> • <i>Vudu sangriento (Voodoo Black Exorcist)</i> 	
1931: 1	1962: 2	1975: 7	
• <i>Frankenstein</i>	<ul style="list-style-type: none"> • <i>Carnival of Souls</i> • <i>Santo contra los zombies (Invasion of the Zombies)</i> 	<ul style="list-style-type: none"> • <i>Macchie Solari (Autopsy)</i> • <i>The Dead Don't Die</i> • <i>Frozen Scream</i> • <i>La noche de las gaviotas (Night of the Death Cult)</i> • <i>Lord Shango</i> • <i>Shivers</i> • <i>La Perversa caricia de Sátan (The Wicked Caresses of Satan)</i> 	
1932: 1	1963: 1	1976: 1	
• <i>White Zombie</i>	<ul style="list-style-type: none"> • <i>They Saved Hitler's Brain</i> 	<ul style="list-style-type: none"> • <i>Gou hun jiang tou (Black Magic II)</i> 	
1933: 1	1964: 8	1977: 3	
• <i>The Ghoul</i>	<ul style="list-style-type: none"> • <i>Roma contro Roma (War of the Zombies)</i> • <i>The Curse of the Living Corpse</i> • <i>El Secreto del Dr. Orloff (The Secret of Dr. Orloff)</i> • <i>The Last Man on Earth</i> • <i>Monstrosity</i> • <i>Zombies</i> • <i>The Incredibly Strange Creatures Who Stopped Living and Became Mixed-up Zombies</i> • <i>Der Chef wünscht keine Zeugun (No Survivors, Please)</i> 	<ul style="list-style-type: none"> • <i>Horror Express</i> • <i>Dead People</i> • <i>La noche de los brujos (Night of the Sorcerors)</i> • <i>La rebelión de las muertas (Vengeance of the Zombies)</i> • <i>Psychomania</i> • <i>Flesh for Frankenstein</i> • <i>Santo contra la magia negra (Santo vs. Black Magic Woman)</i> • <i>House of the Living Dead</i> • <i>Vudu sangriento (Voodoo Black Exorcist)</i> 	
1935: 2	1965: 3	1978: 4	
• <i>The Lost City</i>	<ul style="list-style-type: none"> • <i>Earth Dies Screaming</i> • <i>Terrore nello spazio (Planet of the Vampires)</i> • <i>Cinque tombe per un medium (Terror Creatures from the Grave)</i> 	<ul style="list-style-type: none"> • <i>Dawn of the Dead</i> • <i>Les raisins de la mort (Grapes of Death)</i> • <i>Salinnabaleul ggottneun yeoja (Living Dead Girl)</i> • <i>Within the Woods</i> 	
• <i>Bride of Frankenstein</i>	1966: 2	1979: 4	
1936: 4	<ul style="list-style-type: none"> • <i>The Walking Dead</i> 	<ul style="list-style-type: none"> • <i>Zombi 2</i> • <i>Io Zombo, Tu Zombi, Lei Zomba (I Am a Zombie, You Are A Zombie, She Is A Zombie)</i> • <i>Phantasm</i> • <i>The Day It Came to Earth</i> 	
1938: 1	1967: 2	1980: 10	
• <i>J'accuse!</i>	<ul style="list-style-type: none"> • <i>The Plague of the Zombies</i> • <i>The Death Curse of Tartu</i> 	<ul style="list-style-type: none"> • <i>Zombi Holocaust</i> • <i>John Carpenter's The Fog</i> • <i>Alien Dead</i> • <i>The Children</i> • <i>Bloodeaters</i> • <i>Paura nella città dei morti viventi (City of the Living Dead)</i> • <i>Fiend</i> • <i>Virus</i> • <i>Incubo sulla città contaminata (City of the Walking Dead)</i> • <i>Más allá del terror (Further Than Fear)</i> 	
1939: 1	1968: 3		
• <i>Son of Frankenstein</i>	<ul style="list-style-type: none"> • <i>They Came From Beyond Space</i> • <i>Dr. Terror's Gallery of Horrors</i> 		
1940: 1	1969: 1		
• <i>The Ghost Breakers</i>	<ul style="list-style-type: none"> • <i>Astro-Zombies</i> • <i>Blue Demon contra cerebros infernales (Blue Demon vs. El Crimen)</i> • <i>Autopsia de un fantasma (Autopsy of a Ghost)</i> 		
1941: 1	1970: 4		
• <i>King of the Zombies</i>	<ul style="list-style-type: none"> • <i>Frankenstein Must Be Destroyed</i> 		
1942: 1	1971: 13		
• <i>Bowery at Midnight</i>	<ul style="list-style-type: none"> • <i>Night Slaves</i> • <i>Dream No Evil</i> • <i>El mundo de los muertos (Land of the Dead)</i> • <i>Santo el enmascarado de plata y Blue Demon contra los monstruos (Santo and Blue Demon Against the Monsters)</i> 		
1943: 5	1972: 13		
<ul style="list-style-type: none"> • <i>Dead Men Walk</i> • <i>I Walked With a Zombie</i> • <i>Revenge of the Zombies</i> • <i>Frankenstein Meets the Wolf Man</i> • <i>The Mad Ghoul</i> 	<ul style="list-style-type: none"> • <i>Non si deve profanare il sonno dei morti (Let Sleeping Corpses Lie)</i> • <i>Shanks</i> • <i>Sugar Hill</i> • <i>El buque mandito (Horror of the Zombies)</i> • <i>El pantano de los cuervos (Swamp of the Ravens)</i> • <i>Young Frankenstein</i> • <i>Kung bakit dugong kulay ng gabi (Night of the Zombies)</i> 		
1944: 1	1973: 13		
• <i>Voodoo Man</i>	<ul style="list-style-type: none"> • <i>They Came From Beyond Space</i> • <i>Dr. Terror's Gallery of Horrors</i> 		
1945: 1	1974: 13		
• <i>Zombies on Broadway</i>	<ul style="list-style-type: none"> • <i>Astro-Zombies</i> • <i>Blue Demon contra cerebros infernales (Blue Demon vs. El Crimen)</i> • <i>Autopsia de un fantasma (Autopsy of a Ghost)</i> 		
1946: 1	1975: 13		
• <i>Valley of the Zombies</i>	<ul style="list-style-type: none"> • <i>They Came From Beyond Space</i> • <i>Dr. Terror's Gallery of Horrors</i> 		
1952: 1	1976: 13		
<ul style="list-style-type: none"> • <i>Zombies of the Stratosphere</i> (note: this movie contains no actual zombies) 	<ul style="list-style-type: none"> • <i>Dead of Night (Deathdream)</i> • <i>Garden of the Dead</i> • <i>Corpse Eaters</i> • <i>House of Seven Corpses</i> • <i>House on Skull Mountain</i> • <i>Legend of the 7 Golden Vampires</i> • <i>Non si deve profanare il sonno dei morti (Let Sleeping Corpses Lie)</i> • <i>Shanks</i> • <i>Sugar Hill</i> • <i>El buque mandito (Horror of the Zombies)</i> • <i>El pantano de los cuervos (Swamp of the Ravens)</i> • <i>Young Frankenstein</i> • <i>Kung bakit dugong kulay ng gabi (Night of the Zombies)</i> 		
1953: 1	1977: 13		
• <i>Scared Stiff</i>	<ul style="list-style-type: none"> • <i>They Came From Beyond Space</i> • <i>Dr. Terror's Gallery of Horrors</i> 		
1955: 1	1978: 13		
• <i>Creature with the Atom Brain</i>	<ul style="list-style-type: none"> • <i>Astro-Zombies</i> • <i>Blue Demon contra cerebros infernales (Blue Demon vs. El Crimen)</i> • <i>Autopsia de un fantasma (Autopsy of a Ghost)</i> 		
1957: 3	1979: 13		
<ul style="list-style-type: none"> • <i>The Zombies of Mora Tau</i> • <i>Voodoo Island</i> • <i>The Unearthly</i> 	<ul style="list-style-type: none"> • <i>They Came From Beyond Space</i> • <i>Dr. Terror's Gallery of Horrors</i> 		
1958: 4	1980: 13		
<ul style="list-style-type: none"> • <i>Woman-eater</i> • <i>The Revenge of Frankenstein</i> • <i>The Brain Eaters</i> • <i>Misterios de la magia negra (Mysteries of Black Magic)</i> 	<ul style="list-style-type: none"> • <i>Dead of Night (Deathdream)</i> • <i>Garden of the Dead</i> • <i>Corpse Eaters</i> • <i>House of Seven Corpses</i> • <i>House on Skull Mountain</i> • <i>Legend of the 7 Golden Vampires</i> • <i>Non si deve profanare il sonno dei morti (Let Sleeping Corpses Lie)</i> • <i>Shanks</i> • <i>Sugar Hill</i> • <i>El buque mandito (Horror of the Zombies)</i> • <i>El pantano de los cuervos (Swamp of the Ravens)</i> • <i>Young Frankenstein</i> • <i>Kung bakit dugong kulay ng gabi (Night of the Zombies)</i> 		




1981: 13

- *Night of the Zombies*
- *L'aldilà e tu vivrai nel terrore (The Beyond)*
- *Heavy Metal*
- *Quella villa accanto al cimitero (The House Outside the Cemetery)*
- *Le notti del terrore (Burial Ground)*
- *Dawn of the Mummy*
- *Dead & Buried*
- *Le lac des morts vivants (Zombie Lake)*
- *Frankenstein Island*
- *L'abîme des morts vivants (Bloodsucking Nazi Zombies)*
- *Kiss Daddy Goodbye*
- *Evil Dead*
- *Rosso Sangue (Absurd)*

1982: 9

- *Aftermath*
- *Creepshow*
- *Raw Force*
- *I was a Zombie for the F.B.I.*
- *Wu long tian shi zhao ji gu (Kung Fu Zombie)*
- *O segredo da Múmia (The Secret of the Mummy)*
- *Pengabdi setan (Satan's Slave)*
- *The Curse of the Screaming Dead*
- *Revenge in the House of Usher*

1983: 5

- *Frightmare*
- *Natas: The Reflection*
- *One Dark Night*
- *Sole Survivor*
- *Zeder*

1984: 6

- *Surf II*
- *Night Shadows*
- *Night of the Comet*
- *Zombie Island Massacre*
- *Frankenstein 90*
- *Rocktober Blood*

1985: 12

- *Hard Rock Zombies*
- *Return of the Living Dead*
- *Re-Animator*
- *The Midnight Hour*
- *The Dark Power*
- *Attack of the Beast Creatures*
- *Dead End*
- *La mansión de los muertos vivantes (Mansion of the Living Dead)*
- *Day of the Dead*
- *Lifeforce*
- *Warning Sign*
- *Cementerio del terror (Zombie Apocalypse)*

1986: 12

- *Zombie Brigade*
- *Zombiethon*
- *The Supernaturals*
- *Loves of the Living Dead*
- *Diamond Ninja Force*
- *Deadly Friend*
- *Nightmare Weekend*
- *Goremek: Zombie Chef From Hell*
- *Night of the Creeps*
- *Raiders of the Living Dead*
- *Zombie Nightmare*
- *Abracadabra*

1987: 14

- *Bad Taste*
- *Evil Dead 2*
- *I Was a Teenage Zombie*
- *Dak Bangla*
- *The Gate*
- *Zombie 5: Killing Birds*
- *Redneck Zombies*
- *Killing Spree*
- *La revanche des mortes vivantes (Revenge of the Living Dead Girls)*
- *Zombie High*
- *Video Dead*
- *Zombie Vs. Ninja*
- *Night of the Living Babes*
- *Una notte al cimitero (Graveyard Disturbance)*

1988: 11

- *The Serpent and the Rainbow*
- *Return of the Living Dead Part II*
- *Dead Heat*
- *Waxwork*
- *Phantasm II*
- *Zombi 3*
- *FleshEater*
- *Zombie 4*
- *Pet Semetary*
- *Meng gui xue tang (The Haunted Cop Shop II)*
- *Curse of the Blue Lights*

1989: 17

- *The Laughing Dead*
- *The Dead Next Door*
- *The Vineyard*
- *Curse of the Zombie*
- *Beverly Hills Bodysnatchers*
- *The Chilling*
- *The Dead Pit*
- *Blood Nasty*
- *Zombie Rampage*
- *Hellgate*

1989: (continued)

- *Zombie Party*
- *Working Stiffs*
- *The Nutzoids at Cannibal Cove*
- *From the Dead of Night*
- *Ginseng King*
- *Monster High*
- *Night Life*

1990: 5

- *Bride of Re-Animator*
- *Night of the Living Dead*
- *Voodoo Dawn*
- *Demon Wind*
- *Linnea Quigley's Horror Workout*

1991: 9

- *Chopper Chicks in Zombietown*
- *The Boneyard*
- *Demoni 3*
- *Nudist Colony of the Dead*
- *Teenage Exorcist*
- *Zombie ja Kummitusjuna (Zombie and the Ghost Train)*
- *Zombie Army*
- *Zombie Cop*
- *Zombie '90: Extreme Pestilence*

1992: 11

- *Brain Dead*
- *Batoru garu (Battle Girl)*
- *Netherworld*
- *Waxwork II*
- *Zombie Rampage 3*
- *Pet Semetary II*
- *Death Becomes Her*
- *Army of Darkness*
- *Urban Scumbags vs. Countryside Zombies*
- *Dead is Dead*
- *Zombie Rampage 2*

1993: 7

- *My Boyfriend's Back*
- *Return of the Living Dead 3*
- *Zombie Bloodbath*
- *Space Zombie Bingo!!!*
- *The Killing Box*
- *Zombie Genocide*
- *Drag*

1994: 7

- *Mary Shelley's Frankenstein*
- *Shatter Dead*
- *Shrunken Heads*
- *Phantasm III: Lord of the Dead*
- *Twilight Zone: Rod Serling's Lost Classics*
- *Dellamore Dellamore*
- *Gore Whore*

1995: 6

- *La Cage aux Zombies*
- *Legion of the Night*
- *Zombi I*
- *Zombie Bloodbath 2: Rage of the Undead*
- *Voodoo*
- *Zombie Holocaust*

1996: 4

- *Living a Zombie Dream*
- *Zombi vs. Mardi Gras*
- *Avaruuden teurastajat (Space Butchers)*
- *Frankenstein and Me*

1997: 10

- *Plaga Zombie*
- *Premutos: Lord of the Living Dead*
- *Uncle Sam*
- *The Necro Files*
- *Night of the Living*
- *Le Zombi de Cap-Rouge*
- *Zombie Ninja Gangbusters*
- *Striker Bob*
- *Bryllupsnatten (The Wedding Night)*
- *The Vicious Sweet*

1998: 9

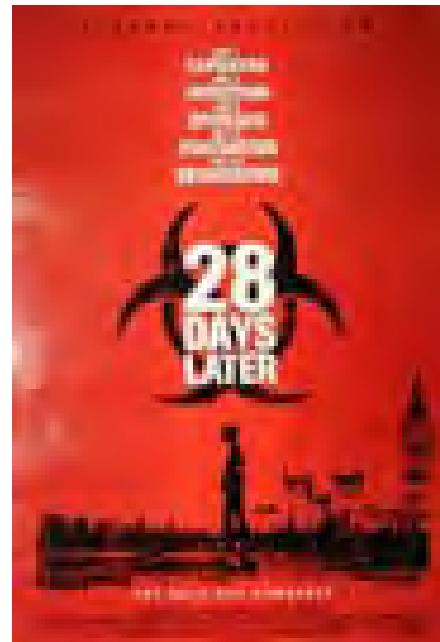
- *Bio Zombie*
- *I, Zombie: A Chronicle of Pain*
- *Zombie Cult Massacre*
- *Laughing Dead*
- *Tale of the Mummy*
- *Into the Woods...*
- *The Cabin*
- *Hollywood Mortuary*
- *Zombie Toxin*

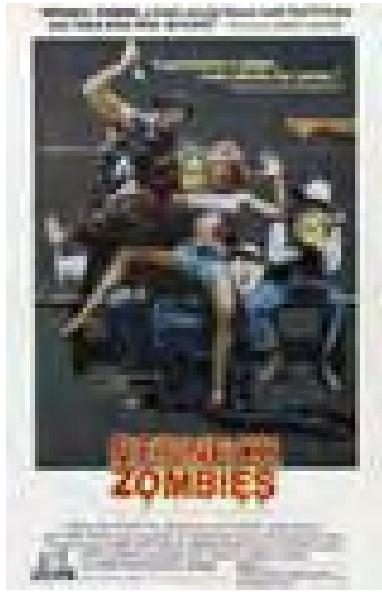
1999: 5

- *Hot Wax Zombies On Wheels*
- *The Mummy*
- *VS3: Infantry of Doom*
- *Mutation*
- *The Collegians Are Go!!*

2000: 12

- *The Dead Hate the Living!*
- *Flesh Freaks*
- *Junk: Shiryō-gari*
- *Meat Market*
- *Prison of the Dead*
- *Versus*
- *Wild Zero*
- *Zombie Bloodbath 3: Zombie Armageddon*
- *Teenage Zombie House Massacre*
- *Reign of the Dead*
- *Heavy Metal 2000*
- *The Horrible Dr. Bones*





2001: 15

- Cremains
- Mulva: Zombie Ass-Kicker!
- Biohazardous
- Dead in America
- Stacy
- Meat Market 2
- Zombie (zero)
- Biker Zombies
- Children of the Living Dead
- Plaga Zombie: Zona Mutants
- The Mummy Returns
- Zombie Chronicles
- Night of a Thousand Screams
- R.I.P.
- The Resurrection Game

2002: 10

- Bubba Ho-Tep
- Deadline
- Cremaster 3
- Mark of the Astro-Zombies
- Necropolis Awakened
- Resident Evil
- Zombie Campout
- Roni vs. Lincoln
- Evil Night
- 28 Days Later...

2003: 21

- House of the Dead
- Beyond Re-Animator
- Cadaver Bay
- Flesh For the Beast
- Maplewoods
- Mummy's Kiss
- Xombie: Dead on Arrival
- Undead
- Graveyard
- Corpses Are Forever
- Noctem
- Zombie Beach Party
- I'll See You in My Dreams
- Gory Gory Hallelujah
- Zombiegoddon
- Night of A Thousand Screams 2
- Necro Files 2
- Zombie Night
- Exhumed
- Wiseguys vs. Zombies
- The Mental Dead

2004: 29

- Jigoku kôshien (*Battlefield Baseball*)
- Dawn of the Dead
- Dead and Breakfast
- Shaun of the Dead
- Choking Hazard
- Les Revenants
- Resident Evil: Apocalypse
- Vampires vs. Zombies
- Beaster
- Zombie Vegetarians
- Dawn of the Friend
- Corpses
- Angry and Moist: An Undead Chronicle
- Bad Friend
- Bone Sickness
- Curse of the Maya
- Dead & Breakfast
- Feeding the Masses
- Ghost Lake
- Hide and Creep
- Hunting Creatures
- Night of the Living Dorks
- Rotten Shaolin Zombies
- Khun krabii hiroh (SARS Wars)
- Shadows of the Dead
- Shao Lin jiang shi (*Shaolin vs. Evil Dead*)
- Zombie Honeymoon
- Zombie Nation
- Zombie Planet

2005: 29

- Day of the Dead 2: Contagium
- Land of the Dead
- The Wicked
- Zombiez
- Boy Eats Girl
- Bubba's Chili Parlor
- Day X
- Dead at the Box Office
- Dead Creek
- Dead Life
- Dead Men Walking
- Die You Zombie Bastards!
- Die Zombiejäger
- Le divan vert
- Doom
- Hood of the Living Dead
- House of the Dead 2
- Livelihood
- Living Dead Lock Up
- Pot Zombies
- Raiders of the Damned
- Return of the Living Dead 4: Necropolis
- Return of the Living Dead 5: Rave to the Grave
- Rise of the Undead
- The Roost
- Severed
- The Stink of Flesh
- Swamp Zombies
- Tôkyô zonbi (*Tokyo Zombie*)

2006: 34

- After Sundown
- Awaken the Dead
- Automaton Transfusion
- Awakening
- City of Rott
- Dead & Deader
- Dead in the Water
- The Dead Live

2006: (continued)

- Deadlands: The Rising
- Die and Let Live
- Doomed to Consume
- Dorm of the Dead
- Electric Zombies
- Enter the Zombie
- Fido
- Gangs of the Dead
- L'isola dei morti viventi (*Island of the Living Dead*)
- Last Rites of the Dead
- Meat Market 3
- Mortuary
- Night of the Dead: Leben Tod
- Night of the Living Dead 3-D
- The Plague
- The Quick and the Undead
- Shadow: Dead Riot
- The Slaughter
- Slither
- Special Dead
- Storm of the Dead
- Stoned Dead
- War of the Dead
- Wicked Little Things
- The Zombie Diaries
- Zombies by Design

2007: 33

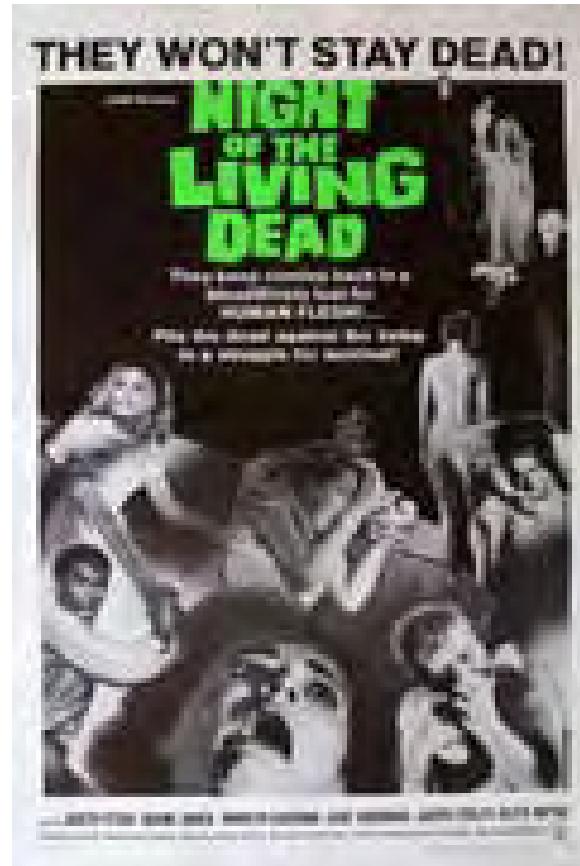
- 28 Weeks Later
- American Zombie
- Awaken the Dead
- Beneath the Surface
- Brain Blockers
- Days of Darkness
- Dead Heist
- Dead Moon Rising
- The Dead Undead

2007: (continued)

- Evil Keg
- Flight of the Living Dead: Outbreak on a Plane
- Forest of the Dead
- Forever Dead
- Living Dead Lock Up 2: March of the Dead
- The Mad
- Motocross Zombies from Hell
- Mutation-Annihilation
- Otto; or Up With Dead People
- Planet Terror
- The Rage
- REC
- Resident Evil: Extinction
- Risen
- Street Team Massacre
- Undead or Alive
- Undead Ted
- Wasting Away
- Z: A Zombie Musical
- Zibakhana-Hell's Ground
- Zombie Farm
- Zombie Town
- Zombies Gone Wild
- Zombi: La creazione (*Zombies: The Beginning*)

2008: 9

- Quarantine
- Day of the Dead
- Diary of the Dead
- Outpost
- Sabbath
- Retardead
- House of the Damned
- Zombie Strippers
- Zombies! Zombies! Zombies!



Zombies and Inverse Zombies

Classics from the zombie and inverse zombie research literature

Compiled by Alice S. Kaswell, Improbable Research staff



Noted 1980s zombie researcher Wade Davis. Portrait by Nan Swift, Improbable Research staff.

Zombi(e)s (1)

"The Ethnobiology of the Haitian Zombi," E. Wade Davis, *Journal of Ethnopharmacology*, vol. 9, no. 1, November 1983, pp. 85–104. The author, at Harvard University, reports:

For many years students of Haitian society have suggested that there is an ethnopharmacological basis for the notorious zombies, the living dead of folklore. The recent surfacing of three zombies, one of whom may represent the first verifiable case, has focused scientific attention on the reported zombie drug.

Zombi(e)s (2)

"Preparation of the Haitian Zombi Poison," E. Wade Davis, *Botanical Museum Leaflets*, Harvard University, 1983.

Inverse zombies, anesthesia awareness, and the hard problem of unconsciousness

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Unconsciousness
Anesthetic awareness
Anesthetics during general anesthesia

Editorial review by:

Philosophical (p-) zombies are entities that possess all of the behavioral features and responses of a normal human being, yet are not conscious. If zombies are ultimately related to the hard problem of consciousness and have been provided as arguments against physicalism, what if we were to invert the characteristics of zombies? Such an inverted (i-) zombie would possess all of the behavioral features and responses of an insentient being, yet would themselves be conscious.

Such zombies are logically possible but morally impossible, as approximations of them are actually exist, individuals experiencing what is referred to as "anesthesia awareness." Patients under general anesthesia may be awakened (presenting specific), denatured (presenting insentience), and reawakened (presenting response to noxious stimuli). Thus, they appear and typically communicate in a very basic manner, however, patients may be aware of inconsequential stimuli, sometimes without any objective indices. Furthermore, a much higher percentage of patients (3%) in a recent study, may have the subjective experience of dreaming during general anesthesia.

If zombies conflict w/ the hard problem of consciousness, then do not explain the presence of qualia? zombies present a more practical problem—how do we detect the

Zombies (3)

Passage of Darkness: The Ethnobiology of the Haitian Zombie, E. Wade Davis, University of North Carolina Press, 1988, ISBN 0807817767. The author explains:

Evidence suggests that zombification is a form of social sanction imposed by recognized corporate bodies--the poorly known and clandestine secret Bizango societies—as one means of maintaining order and control in local communities....

“Critically, absence of evidence is not evidence of absence. Of greater interest is the empirical observation that the bokor [the people who are doing the zombification] recognize the toxicity of these fish [puffer fish] and include them in the powders, and that at certain times of the year these fish contain a toxin known to have induced apparent death.”

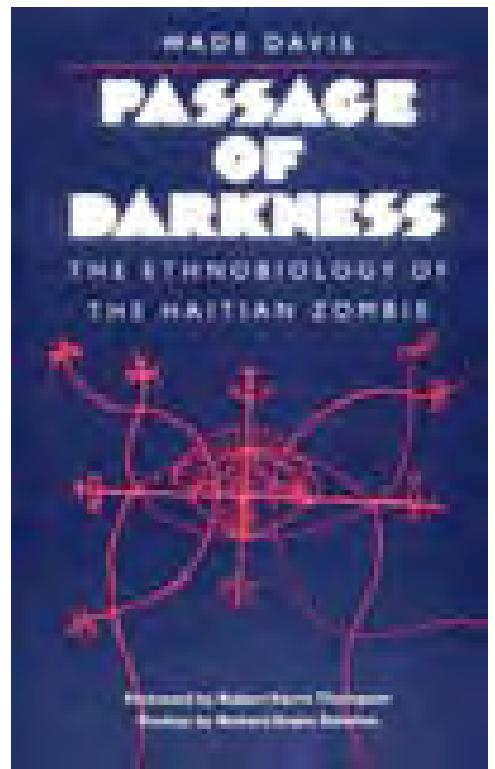
Inverse Zombies

“Inverse Zombies, Anesthesia Awareness, and the Hard Problem of Unconsciousness,” George A. Mashour, and Eric LaRock, *Consciousness and Cognition*, vol. 17, no. 4, December 2008, pp. 1163–68, DOI:10.1016/j.concog.2008.06.004. (Thanks to Lee Odent for bringing this to our attention.) The authors, who are respectively at University of Michigan Medical School and at Oakland University in Rochester, Michigan, explain:

Philosophical (p-) zombies are constructs that possess all of the behavioral features and responses of a sentient human being, yet are not conscious.... But what if we were to invert the characteristics of p-zombies? Such an inverse (i-) zombie would possess all of the behavioral features and responses of an insensate being, yet would nonetheless be conscious.

While p-zombies are logically possible but naturally improbable, an approximation of i-zombies actually exists: individuals experiencing what is referred to as “anesthesia awareness.” Patients under general anesthesia may be intubated (preventing speech), paralyzed (preventing movement), and narcotized (minimizing response to nociceptive stimuli). Thus, they appear—and typically are—unconscious....

The current investigation compares p-zombies to i-zombies and explores the “hard problem” of unconsciousness with a focus on anesthesia awareness.



are currently being analyzed at the Massachusetts Institute of Technology and at the University of Louisville, Kentucky. Initial experiments with rats and primates conducted by Dr. Lewis Kavalali at the New York State Psychiatric Institute have been most promising. Typical applications to the shared body of a monkey produced brief coma, particularly when the skin had been abraded by the technician. Injected intraperitoneally into rats in stages of flagrantly body art, the poison induced a cataleptic



Fig. A. Preparing the poison -- giving cemetery materials.
Fig. B. Preparing the poison -- the master and pot.

A snippet of Davis's study “*The Ethnobiology of the Haitian Zombie*” shows how the zombie poison is prepared.

A thumbnail image of a study abstract from the Annals of Improbable Research. The abstract is titled "Anesthesia Awareness: Human or Animal?" and is authored by George A. Mashour and Eric LaRock. It discusses the concept of inverse zombies and anesthesia awareness. The abstract is presented in a standard academic format with a header, author information, and a detailed text section.

More Scientists Join Gangs

by Tenzing Terwilliger; Improbable Research staff

More and more, more and more scientists are ganging up to write research studies. It's no longer unusual to see a paper that lists more than 500 co-authors.

The journal *Science Watch* tracks statistics about which scientists publish where, when, and how often. Every few years *Science Watch* makes a brave plunge into the sea of so-called "multi-author papers."^{1,2} Their most recent look shows increasing numbers of papers that have more than 50, 100, 200, and 500 authors.

The most gaudy, of course, are the papers credited to more than 500 co-authors. During the year 2003, only (only!) 40 of these giganti-group efforts were published. Then came a growth spurt. The year 2005 saw the publication of 131 of them, and subsequent years have seen production hold about steady.

If there were a prize for largest number of co-authors, it would have gone to the 2512 people credited with writing a paper called "Precision Electroweak Measurements on the Z Resonance,"

the Z Resonance," which appeared in the journal *Physics Reports* in the year 2006.³ That's a mild elevation from the previous record of 2458 co-authors, attained just two years earlier when the *Circulation Journal* published a paper called "Design and Baseline Characteristic of a Study of Primary Prevention of Coronary Events with Pravastatin Among Japanese with Mildly Elevated Cholesterol Levels."⁴

In fact, at least one prize has been awarded for highest number of co-authors. In the year 2003, the Ig Nobel Prize for literature went to the approximately 976 co-authors of a medical study published in the *New England Journal of Medicine*.⁵

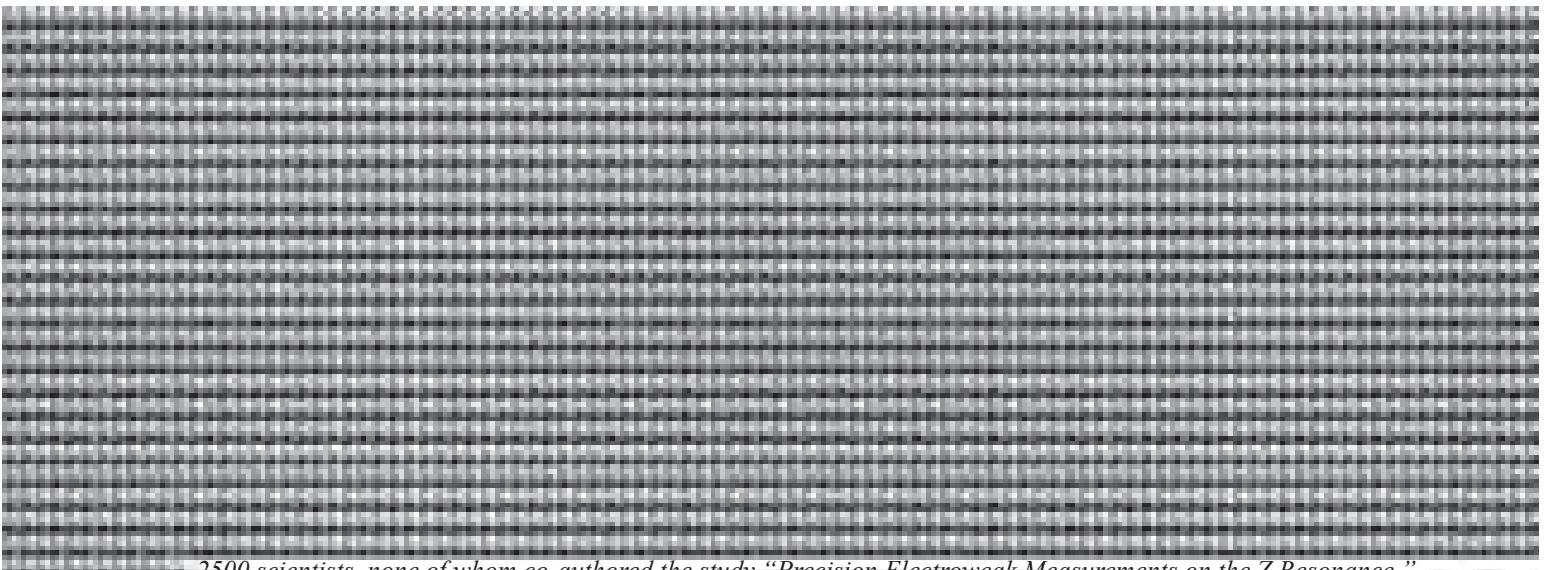
In the new record-holder, the list of 2512 authors stretches over 14 pages. These hard-writing individuals come from more than 100 different institutions in the UK, Germany, Canada, Italy, Hungary, France, Switzerland, Canada, Israel, Japan, Poland, China, Belgium, Australia, the Netherlands, the Czech Republic, and Sweden, among others.



The beginning of the study with 2512 co-authors.



A page listing a small fraction of the 2512 co-authors.



2500 scientists, none of whom co-authored the study “Precision Electroweak Measurements on the Z Resonance.”

They appear to be a sociable bunch. The very first word in their paper is “we”, and the paper’s final section elaborates on that same theme: “We would like to thank the CERN accelerator divisions... The SLD collaboration would like to thank the SLAC accelerator department... We would also like to thank members of the CDF, D], NuTeV and E-158 Collaborations...” And so on.

The paper’s “references” section lists 264 papers that in some way influenced the new research. Nearly all of those referenced papers have author lists too long to be, well, listed in the new paper. Each list is credited only in abbreviated fashion: “F.J. Hasert, et al.” “G. Arnison, et al.” “M. Banner, et al.” And so forth.

It seems cold to discuss a group of 2512 authors without mentioning any of their names, but space here is limited. Space there is limited, too—no first names are given, only initials. So suffice it to say that the final author in the group is J. Zhou.

References

1. “Multiauthor Papers Redux: A New Peak at New Peaks,” Christopher King, *Science Watch*, November–December 2007.
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3. “Precision Electroweak Measurements on the Z Resonance,” Aleph Collaboration et al., *Physics Reports*, vol. 427, 2006, pp. 257–454.
4. “Design and Baseline Characteristic of a Study of Primary Prevention of Coronary Events with Pravastatin Among Japanese with Mildly Elevated Cholesterol Levels,” MEGA Study Group, *Circulation Journal*, vol. 68, no. 9, 2004, pp. 860–7.
5. “An International Randomized Trial Comparing Four Thrombolytic Strategies for Acute Myocardial Infarction,” E. Topol et al., *New England Journal of Medicine*, vol. 329, no. 10, September 2, 1993, pp. 673–82.

THE AUTHOR (PHOTO: J.L. GRODZINSKI) IS A COLLABORATOR IN PHYSICS RESEARCH AT THE UNIVERSITY OF TORONTO.

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- [1] F.J. Hasert, et al., CERN-SLAC-DIS Collaboration, *Phys. Lett. B* 36 (1973) 103.
- [2] G. Arnison, et al., [SLD Collaboration], *Phys. Lett. B* 122 (1983) 395.
- [3] M. Banner, et al., [NA3 Collaboration], *Phys. Lett. B* 122 (1983) 479.
- [4] G. Arnison, et al., [SLD Collaboration], *Phys. Lett. B* 129 (1983) 399.
- [5] M. Banner, et al., [NA3 Collaboration], *Phys. Lett. B* 139 (1983) 163.

The beginning of the study’s lengthy list of papers it references. Most of the references, like the ones shown here, are for studies that themselves have multiple co-authors.



Boys Will Be Boys

Research by and for adolescent males of all ages and sexes

compiled by Katherine Lee, Improbable Research staff

Failure Engineering: How Columns Collapse

“Biomechanics of Male Erectile Function,” Daniel Udelson, *Journal of The Royal Society Interface*, vol. 4, no. 17, December 22, 2007, pp. 1031–48. (*Thanks to investigator Betsy Devine for bringing this to our attention.*) The author, at Boston University, reports:

Two major branches of engineering mechanics are fluid mechanics and structural mechanics, with many practical problems involving the effect of the first on the second. An example is the design of an aircraft's wings to bend within reasonable limits without breaking under the action of lift forces exerted by the air flowing over them; another is the maintenance of the structural integrity of a dam designed to hold back a water reservoir which

*A snippet from
Udelson's study
"Biomechanics
of Male Erectile
Function."*

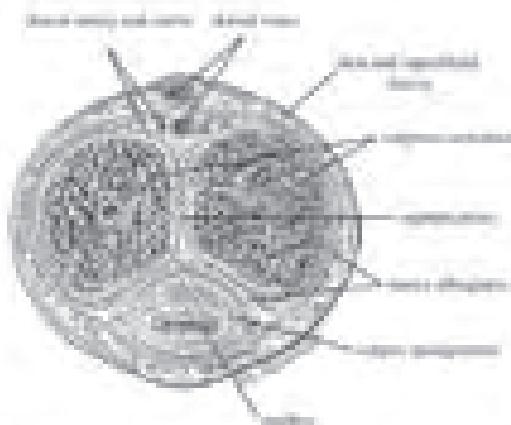


Figure 2. Description of the group (Petterson et al., 2005).

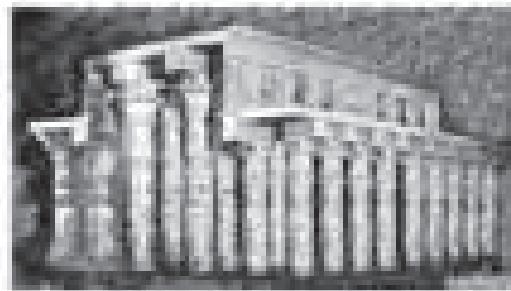


Figure 3. Model of the Bayesian Bimodality Method (BBM) (see Eq. 2).

metacarpal, Caudal Rule (1770-1780). Below that, large building structures were supported by many residential buildings, presumably because there was no room above them.

Mechanics of male erectile function

Page 10 of 10

*Department of Botany and Microbiology, University of Wyoming, and
Department of Zoology, University of Wyoming, Laramie, Wyoming, 82071-3588,
U.S.A.*

Because family size is negatively correlated with average educational attainment, this model allows for cross-sectional heterogeneity in educational attainment by the degree of one's poverty. Given the fact that average educational attainment increases sharply with income, it is likely that the cross-sectional heterogeneity in the educational attainment of a household is best captured by a linear function of income.

would exert very large forces on it. Similarly, fluid and structural mechanics are involved in the engineering analysis of erectile function: it is the hydraulic action of increased blood flow into the corpora cavernosa that creates the structural rigidity necessary to prevent collapse of the penile column.



Figure 2. Model of the United Positions by Allianz Group
 (2000-2001).

Books are required originally mostly as a guide
would which includes the following categories:

- (i) the positive shell has a steeper cylindrical shape,
 - (ii) the central axis lies on the diameter,
 - (iii) the modulus of elasticity, E , is the same in the axial and radial directions, i.e. the fibre is isotropic,
 - (iv) the modulus of elasticity, E , of the positive zone is the same as that of the negative zone,
 - (v) the same is true of the ratios of the yield values, σ_y/σ_n , and
 - (vi) the reduction factor of length to basal length is the same in the axial and radial directions, i.e. $L/L_0 = 10.2\%$.

The responses resulted in the following problem-solving levels (Linton et al., 1996):

$$f_{\text{max}} = \frac{2\pi^2}{3} (2n+1) \left(\frac{\pi}{2}\right)^2 \frac{(D_0 d)}{3}$$

$$= \left(\left(\frac{D_0}{D_1}\right)_0 + \left(1 - \frac{D_0}{D_1}\right)_0 \right) e^{-\pi D_0 d}$$

Long Time Coming

“Male Sexual Dysfunction in Unconsummated Marriage: Long-Term Outcome in 417 Patients,” Javaad Zargooshi, *Journal of Sexual Medicine*, vol. 5, no. 12, September 25, 2008, pp. 2895–903. (*Thanks to Ig Nobel Prize winner Richard Wassersug for bringing this to our attention.*) The author, at Kermanshah University of Medical Sciences, Iran, reports:

Introduction. Little research has been conducted about unconsummated marriage (UCM).

Methods. From 1997 to 2008, 417 couples presented to the author with UCM. The mean UCM duration ranged from 1 hour to 8 years. The median follow-up was 78.5 months.

Results. In 177 cases, UCM was due to erectile dysfunction (ED) (86), premature ejaculation (PE) (89), performance anxiety (25), vaginismus (34), hypodesire disorder (6), not knowing the coital technique (8).... In the remaining 240 cases, UCM was due to being under social pressure to have a quick intercourse while relatives waited behind the door to confirm and celebrate coitus by checking a handkerchief that was placed beneath the bride to become bloody by hymen perforation.... Fourteen grooms who did not respond to treatments later consummated spontaneously.

population of approximately one million people.... This study replicates that study a decade later. The research for this current study was conducted at five gentlemen’s clubs, three of which were included in the earlier study, and two additional clubs that were currently considered the most exclusive gentlemen’s clubs in the city. Our findings, while different in specifics, were generally quite consistent with those a decade earlier.

managing the stigma of topless dancing: a decade later

William E. Thompson, Jack L. Harred, and Barbara E. Burks
Texas A&M University—Commerce
Commerce, Texas, USA

A decade ago we (Thompson and Harred 1992) conducted ethnographic interviews with over 40 topless dancers in seven Gentlemen’s Clubs in a major metropolitan city in the Southwest with a

Managing the Stigma of Topless Dancing (Again)

“Managing the Stigma of Topless Dancing: A Decade Later,” W.E. Thompson, J.L. Harred, and B.E. Burks, *Deviant Behavior*, vol. 24, no. 6, November–December 2003, pp. 551–70. (*Thanks to Kristine Danowski for bringing this to our attention.*) The authors, who are at Texas A&M University-Commerce, explain that:

A decade ago we (Thompson and Harred 1992) conducted ethnographic interviews with over 40 topless dancers in seven Gentlemen’s Clubs in a major metropolitan city in the Southwest with a

Investigations on the use of chromium oxide as an inert external marker in captive Asian elephants (*Elephas maximus*): passage and recovery rates

Abstract

Approximately one-third of the elephants that are kept in zoos are often supplemented by food that the animals of long, which is usually offered to the whole group, cannot be removed by an individual long. This problem can be solved by using a dietary marker mixed with the animal’s usual food material. An experiment was conducted to determine whether

Ins and Outs in the Elephant (1972)

“Defaecation by African Elephants (*Loxodonta africana africana* (Blumenbach)).” Malcolm Coe, *African Journal of Ecology*, vol. 10, no. 3, 1972, pp. 165–74. (*Thanks to Sylvie Coyaud for bringing this and the next item to our attention.*) The author, at Animal Ecology Research Group, Oxford, UK, reports:

A study of defaecation in the African elephant was carried out at the Voi headquarters of the Tsavo (East) National Park... Analysis has shown that the amount of dung produced with each defaecation bears a similar characteristic to that of the growth curve of these animals. The rate of defaecation does not vary significantly with age.... Records of defaecation arranged by time demonstrate an apparent periodicity with a low peak mid-morning and a high peak mid-afternoon.

Ins and Outs in the Elephant (2003)

“Investigations on the Use of Chromium Oxide as an Inert, External Marker in Captive Asian Elephants (*Elephas maximus*): Passage and recovery rates,” W. Loehlein, E. Kienzle, H. Wiesner, and M. Clauss, in *Zoo Animal Nutrition Vol. II*, A. Fidgett, M. Clauss, U. Ganslosser, J.M. Hatt, and J. Nijboer, eds., Fürth, Filander Verlag, 2003, ISBN 3930831511, pp. 223–32.



Ao. Univ. Prof.
Dr. Siegfried Peer

Peer Review: Bits of Bat in the Sky

Research selected and reviewed by a truly hereditary Peer

by Siegfried Peer, MD, LFHCfS

Professor of Radiology

Innsbruck Medical University

Innsbruck, Austria

"Indirect Flight of an African Bat to Israel: An Example of the Potential for Zoonotic Pathogens to Move between Continents," Noam Leader, Ofer Mokady, and Yoram Yom-Tov, *Vector-Borne and Zoonotic Diseases*, vol. 6, no. 4, 2006, pp. 347–50.

The transmission of harmful pathogens during commercial air flights is an increasing health concern. A potential, yet relatively overlooked source of zoonotic infectious diseases involves collisions of birds and bats with aircraft and long distance transport of their carcasses. We report a case of aerial transportation of the remains of an African fruit bat over three continents, following a collision with an aircraft...

Since the plane took-off and landed during daytime, it is unlikely that it collided with a nocturnal bat during daytime. The finding of this particular bat is therefore puzzling under these circumstances. After inquiring with the IAA as to the whereabouts of the aircraft prior to its departure from the United Kingdom, it was discovered that the aircraft had departed the night before from Kotoka International Airport in Accra, Ghana on the West Coast of Africa ($05^{\circ}35'04''\text{N } 00^{\circ}10'12''\text{W}$). After 6 h 45 min of flying time, the plane arrived at Heathrow and, following a 2-h stop, continued to Israel (4 h 45 min of flying time). Ghana is home to 13 of Africa's 17 megachiropteran bat species (Mickleburgh 2002), and *E. helvum* is among the most abundant species.

The bat study.

Indirect Flight of an African Bat to Israel: An Example of the Potential for Zoonotic Pathogens to Move between Continents

NOAM LEADER, OFER MOKADY, and YORAM YOM-TOV

ABSTRACT

The transmission of harmful pathogens during commercial air flights is an increasing health concern. A potential, yet relatively overlooked source of zoonotic infectious diseases involves collisions of birds and bats with aircraft and long distance transport of their carcasses. We report a case of aerial transportation of the remains of an African fruit bat over three continents, following a collision with an aircraft, and demonstrate the relative ease with which zoonotic pathogens, such as rabies virus or other viruses associated with bats, may cross national boundaries and continents given appropriate handling and disposal of animal remains by airport personnel, even had no exposure of both humans and local fauna to exotic pathogens. This is the first report of zoonotic and potentially devastating results. Key Words: Bat—Air collision—Zoonotic pathogens—Long range transportation—Avian-borne diseases

INTRODUCTION

Bats are not mammals rare and attackability of air transportation, the possibility that agents of infectious diseases can be transmitted during commercial air travel has been

addressed during commercial air travel and potential methods by which to minimize them is currently unknown. However, these have concentrated on those agents which are potentially transported within the aircraft cabin environment (air-borne, food-borne, and vector-borne, such as

Puzzling Solutions

Solution to Last Month's Puzzler

by Emil Filterbag, *Improbable Research* staff



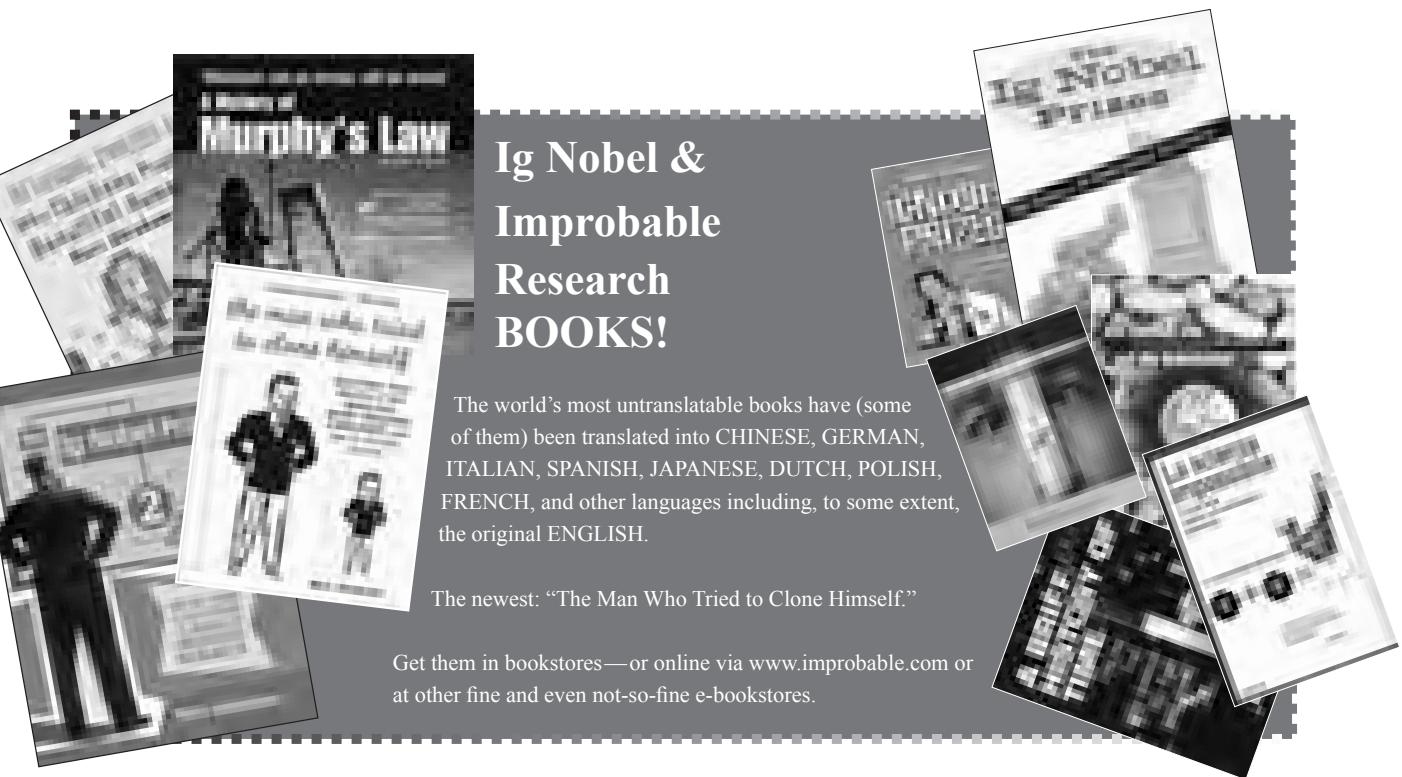
**The rector in the foreground had plastic surgery.
The little rector in the rear did not, nor did the dog.**

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Further evidence why the “soft” sciences are the hardest to do well

compiled by Alice Shirrell Kaswell and Bissell Mango, Improbable Research staff

The Shoelace Experiments

“The Shoe-lace Breaching Experiment,” Ingo Moerth, *Figurations: Newsletter of the Norbert Elias Foundation*, issue 2, no. 27, June 2007, pp. 4–6. (Thanks to Bella Plouffe for bringing this to our attention.) The author reports:

Norbert Elias started a series of breaching experiments, beginning ad hoc, and ending in various situations in Spain, France, England, Germany, and Switzerland. He strolled around in all these contexts with intentionally untied and trailing shoe-laces. The results of these purposefully conducted breaching experiments are reported.

Do Textbooks Cause Anorexia?

“Societal Influences on a Thinner Body Size in Children,” J. Davis and R. Oswalt, *Perceptual and Motor Skills*, vol. 74, no. 3, part 1, June 1992, pp. 697–8. (Thanks to Thomas E. Rayleigh for bringing this to our attention.) The authors, who are at Skidmore College, Saratoga Springs, NY, report that:

This study was designed to examine whether educational textbook illustrations portray children thinner since the turn of the century. 50 undergraduates each rated 54 third-grade text pictures (3 of boys and 3 of girls in each decade since 1900) on a thinness scale. Analysis indicated a significant trend in thinness for girls but not for boys. Concerns are raised about a connection between educational illustrations of children and eating disorders.

Men Like Women Who Say They Like Them

“Integrating Cues of Social Interest and Voice Pitch in Men’s Preferences for Women’s Voices,” Benedict C. Jones, David R. Feinberg, Lisa M. DeBruine, Anthony C. Little, and Jovana Vukovic, *Biology Letters*, DOI 10.1098/rsbl.2007.0626. The authors, at McMaster University, Hamilton, Ontario, Canada and at the University of Stirling, Scotland, report:

We examine the content of vocalizations in interaction with such physical traits, finding that vocal cues of social interest modulate the strength of men’s preferences for raised pitch in women’s voices. Men showed stronger preferences for raised pitch when judging the voices of women who appeared interested in the listener than when judging the voices of women who appeared relatively disinterested in the listener....

Men’s preferences for raised pitch were stronger in the interested condition (“I really like you”) than in the disinterested condition (“I don’t really like you”).

■ THE SHOE-LACE BREACHING EXPERIMENT: NORBERT ELIAS AS ETHNOMETHODOLOGIST

An almost unknown text on a breaching experiment
Ingo Moerth
Johannes Kepler University, Linz,
Austria

In November 1907 a short article by Norbert Elias was published in German in the popular travel section of the German weekly journal *Die Welt*. It is entitled “Der Schuhseide und die Schuhknöpfe” (“The way of the shoe-laces”), and until recently it has remained rather unknown – at least in the sense that it has not been cited.

Integrating cues of social interest and voice pitch in men’s preferences for women’s voices

Benedict C. Jones¹*, David R. Feinberg²,
Lisa M. DeBruine¹, Anthony C. Little¹
and Jovana Vukovic¹

¹University of Stirling, School of Psychology, Stirling FK9 4LA, United Kingdom
²McMaster University, Department of Psychology, Hamilton, Ontario, L8S 4M4, Canada

Men’s voice pitch modulates social interest and voice pitch have been found to predict men’s physical attractiveness judgments of women and vice versa. However, combining the content of vocalizations as communicated with body postural traits, showing that social interest modulates the strength of men’s preferences for raised pitch in women’s voices. When asked to rate women’s voices, men showed stronger preferences for raised pitch when judging the voices of women who appeared interested in the listener than when judging the voices of women who appeared relatively disinterested in the listener. These findings show that pitch preferences are not determined solely by physical properties of voices, and that social information influences which voice pitch gain the

Strangers Are Unfamiliar with Strange Lands

"Cognitive Maps of Nature-Based Tourists," Martin Young, *Annals of Tourism Research*, vol. 26, no. 4, October 1999, pp. 817–39. The author, who is at James Cook University, Australia, explains that:

[T]his study explored sketch-maps drawn by a sample of 403 nature-based tourists visiting the Daintree and Cape Tribulation area, Australia.

Multivariate comparisons of the *style* and *content* of sketch-maps revealed that visitors possessed a relatively limited spatial knowledge of the area, and that this knowledge varied according to the mode of travel, previous visitation, length of stay in the area, and the origin, age and gender of visitors.

Sarcasm, Carefully Listened to

"On the Perception of Sarcasm in Dichotic Listening," D. Voyer, A. Bowes, and C. Techentin, *Neuropsychology*, vol. 22, no. 3, May 2008, pp. 390–9. The authors, at the University of New Brunswick, Canada, explain:

The purpose of the present study was to investigate the processing of sincere and sarcastic statements by the cerebral hemispheres. Forty right-handed students were asked to localize sincere and sarcastic

COGNITIVE MAPS OF NATURE-BASED TOURISTS

Martin Young
James Cook University, Australia

Abstract: This research examined cognitive mapping of the natural environment by adult tourists to different destinations in a range of 100 countries through sketching during the Daintree and Cape Tribulation area, Australia. Multivariate comparisons of the *style* and *content* of sketch-maps revealed that visitors possessed a relatively limited spatial knowledge of the area, and that this knowledge varied according to the mode of travel, previous visitation, length of stay in the area, and the origin, age and gender of visitors.

statements presented dichotically. Participants either indicated the ear that perceived the sarcastic statement or the ear that perceived the sincere statement in counterbalanced blocks of trials. As expected, results revealed a left ear advantage for sarcastic statements and a right ear advantage for sincere statements. In addition, participants showed faster response time when localizing targets (both sarcastic and sincere) to the left ear compared to the right. Finally, a significant negative correlation between laterality effects in the two tasks provided support for causal hemispheric complementarity. Results are discussed with reference to the contribution of the right and left hemispheres to language processing. Their implications for models of sarcasm perception are also discussed.

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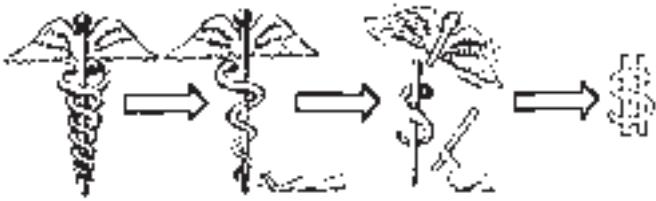
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of Ig Nobel
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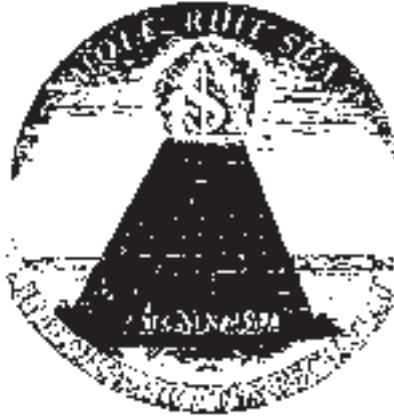


Some of the 2008 winners celebrate as the ceremony concludes. Photo: Kees Moeliker.

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