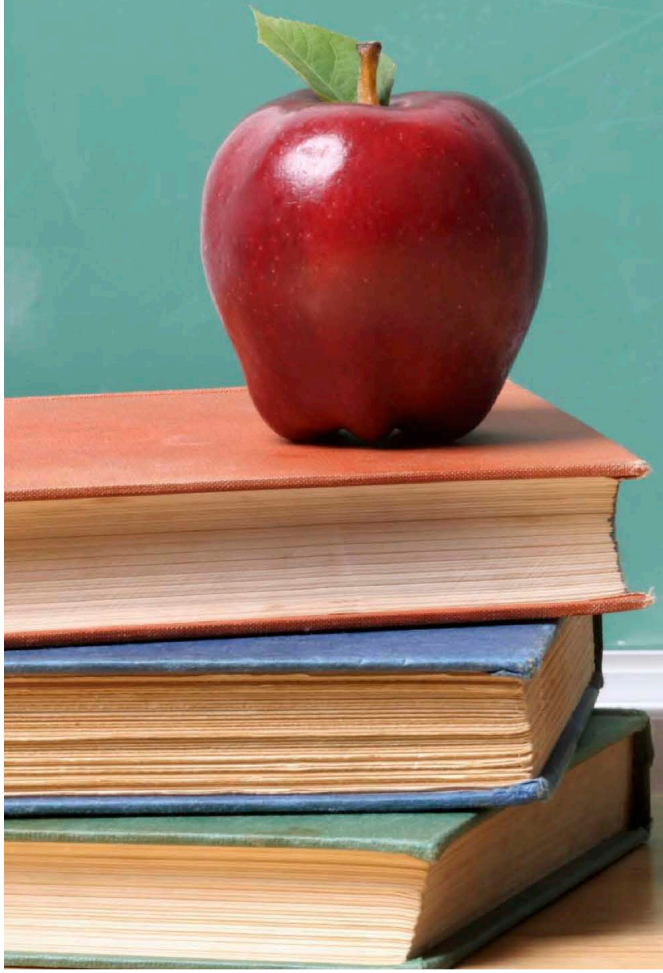
per il diritto

allo studio e alla ricerca



Giuseppe De Nicolao

Università di Pavia

Università degli Studi di Napoli Federico II
Aula Pessina, Corso Umberto I
11 febbraio 2016, ore 9

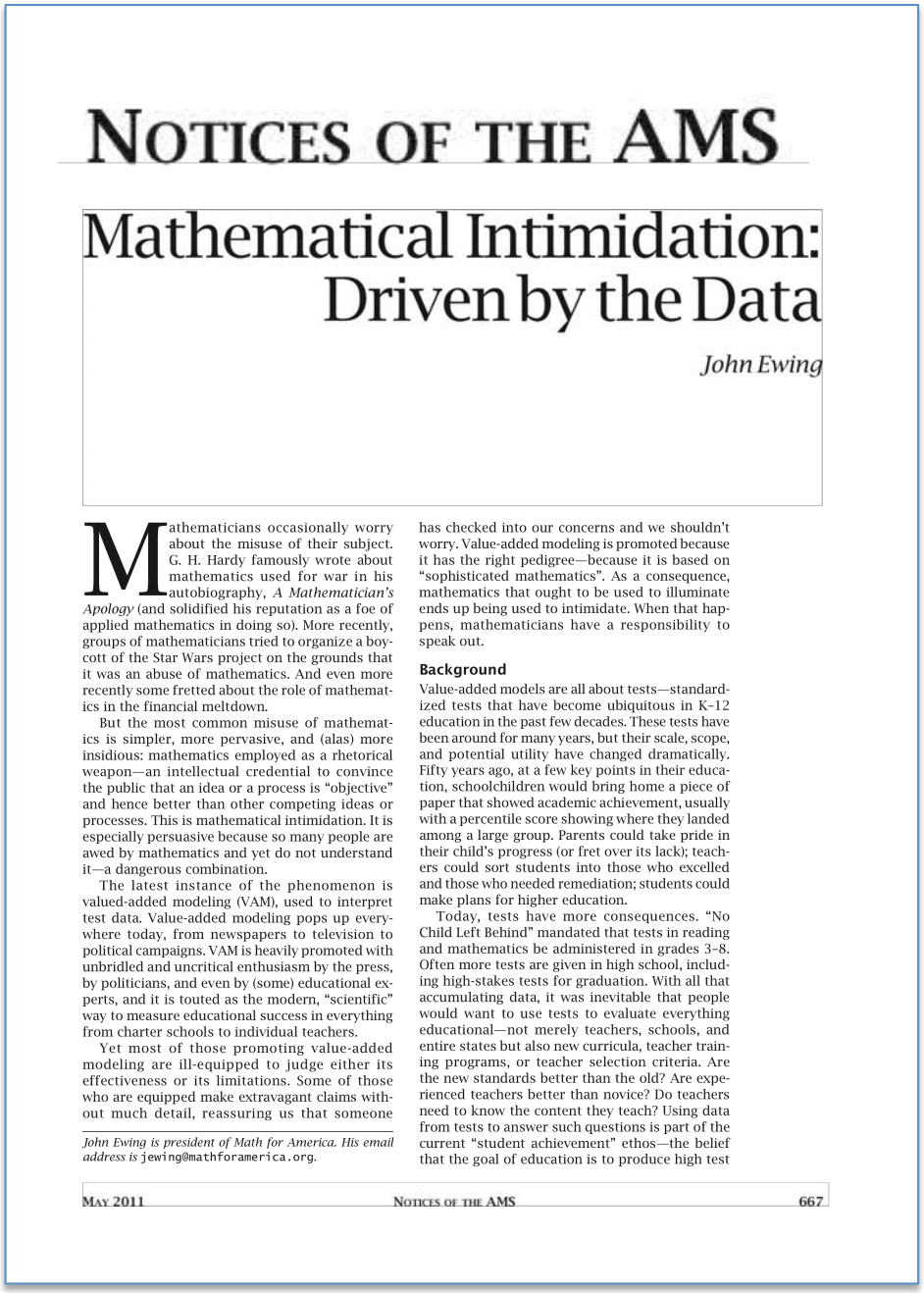
Mathematical Intimidation: Driven by the Data

John Ewing

NOTICES OF THE AMS

MAY 2011

... mathematics employed as a rhetorical weapon—an intellectual credential to convince the public that an idea or a process is "**objective**" and hence better than other competing ideas or processes. **This is mathematical intimidation**. It is especially persuasive because so many people are awed by mathematics and yet do not understand it—a dangerous combination.



NOTICES OF THE AMS

Mathematical Intimidation: Driven by the Data

John Ewing

Mathematicians occasionally worry about the misuse of their subject. G. H. Hardy famously wrote about mathematics used for war in his autobiography, *A Mathematician's Apology* (and solidified his reputation as a foe of applied mathematics in doing so). More recently, groups of mathematicians tried to organize a boycott of the Star Wars project on the grounds that it was an abuse of mathematics. And even more recently some fretted about the role of mathematics in the financial meltdown.

But the most common misuse of mathematics is simpler, more pervasive, and (alas) more insidious: mathematics employed as a rhetorical weapon—an intellectual credential to convince the public that an idea or a process is "objective" and hence better than other competing ideas or processes. This is mathematical intimidation. It is especially persuasive because so many people are awed by mathematics and yet do not understand it—a dangerous combination.

The latest instance of the phenomenon is valued-added modeling (VAM), used to interpret test data. Value-added modeling pops up everywhere today, from newspapers to television to political campaigns. VAM is heavily promoted with unbridled and uncritical enthusiasm by the press, by politicians, and even by (some) educational experts, and it is touted as the modern, "scientific" way to measure educational success in everything from charter schools to individual teachers.

Yet most of those promoting value-added modeling are ill-equipped to judge either its effectiveness or its limitations. Some of those who are equipped make extravagant claims without much detail, reassuring us that someone has checked into our concerns and we shouldn't worry. Value-added modeling is promoted because it has the right pedigree—because it is based on "sophisticated mathematics". As a consequence, mathematics that ought to be used to illuminate ends up being used to intimidate. When that happens, mathematicians have a responsibility to speak out.

John Ewing is president of Math for America. His email address is jewing@mathforamerica.org.

Background

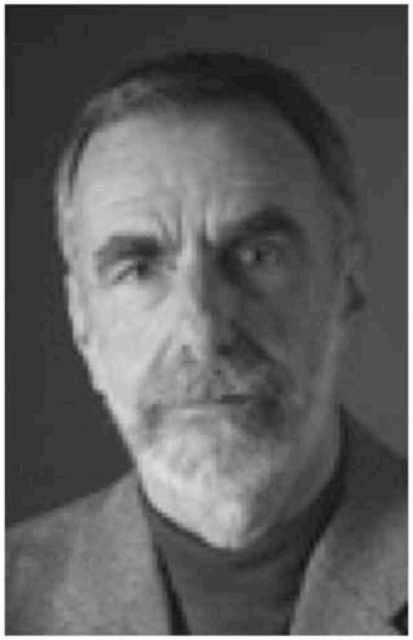
Value-added models are all about tests—standardized tests that have become ubiquitous in K–12 education in the past few decades. These tests have been around for many years, but their scale, scope, and potential utility have changed dramatically. Fifty years ago, at a few key points in their education, schoolchildren would bring home a piece of paper that showed academic achievement, usually with a percentile score showing where they landed among a large group. Parents could take pride in their child's progress (or fret over its lack); teachers could sort students into those who excelled and those who needed remediation; students could make plans for higher education.

Today, tests have more consequences. "No Child Left Behind" mandated that tests in reading and mathematics be administered in grades 3–8. Often more tests are given in high school, including high-stakes tests for graduation. With all that accumulating data, it was inevitable that people would want to use tests to evaluate everything educational—not merely teachers, schools, and entire states but also new curricula, teacher training programs, or teacher selection criteria. Are the new standards better than the old? Are experienced teachers better than novice? Do teachers need to know the content they teach? Using data from tests to answer such questions is part of the current "student achievement" ethos—the belief that the goal of education is to produce high test

Cosa di più oggettivo di pagelle e classifiche?

"DAREMO LE PAGELLE AI PROFESSORI PER FARE LA CLASSIFICA DELLE UNIVERSITÀ"

la Repubblica



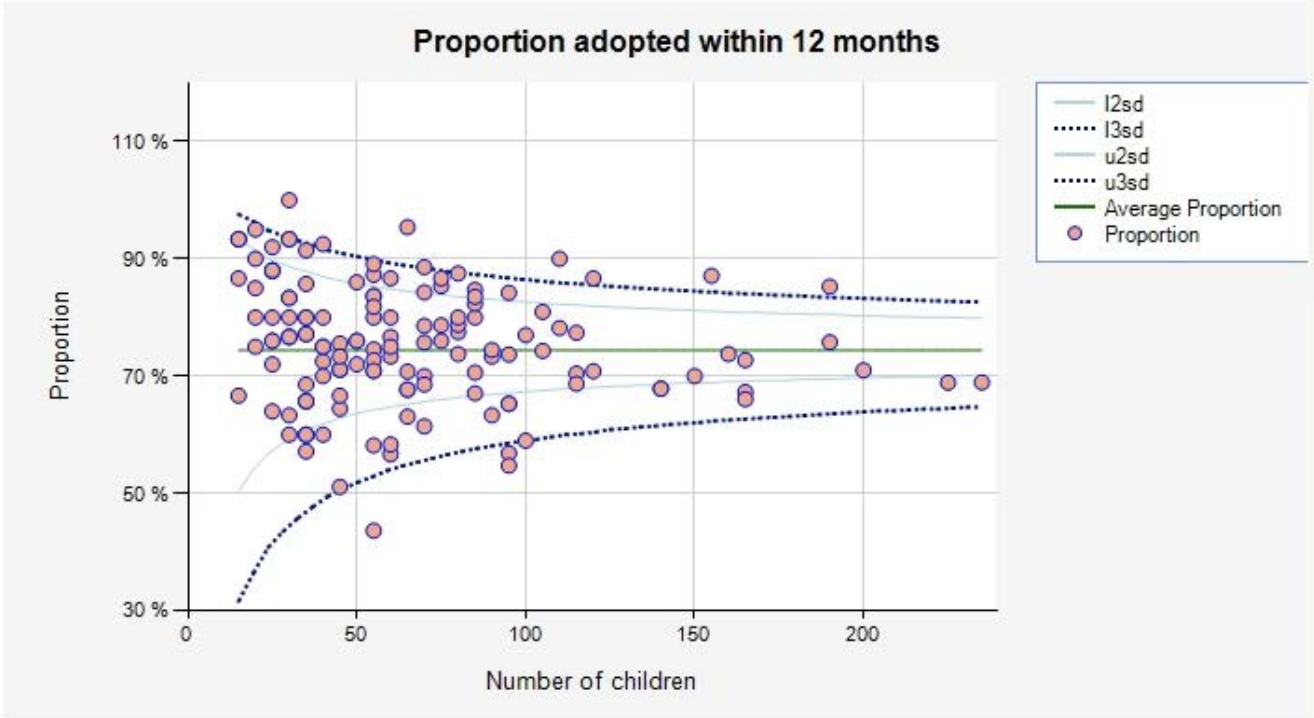
SERGIO BENEDETTO
(CONSIGLIO DIRETTIVO ANVUR)

«Tutte le università dovranno ripartire da zero. E quando la valutazione sarà conclusa, avremo la distinzione tra *researching university* e *teaching university*. Ad alcune si potrà dire: tu fai solo il corso di laurea triennale. E qualche sede dovrà essere chiusa. Ora rivedremo anche i corsi di dottorato, con criteri che porteranno a una diminuzione molto netta».

4–02–2012

Submitted by david on Tue, 01/11/2011 - 12:13pm

Another doubtful league table?



Most of the local authorities (LAs) lie within the 95% (2SD) funnel and so their variation is essentially indistinguishable from chance. Many of the more extreme authorities handle low numbers (eg York was top of the table but only handles around 10 adoption a year): many of those at the top of the league table are similarly small and have performance that is not significantly different from average.

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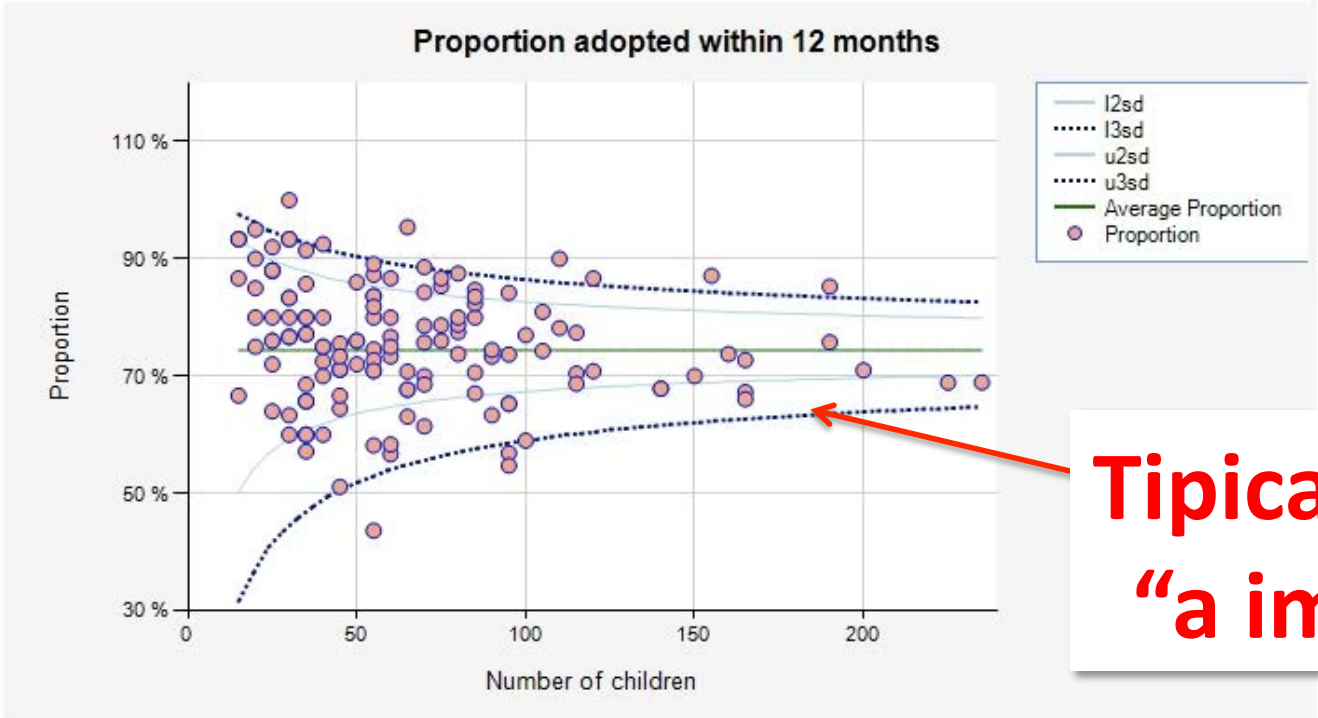

Tipica forma "a imbuto"

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Niente a che fare con la VQR?

Evaluation of Research Quality

Valutazione Qualità della Ricerca

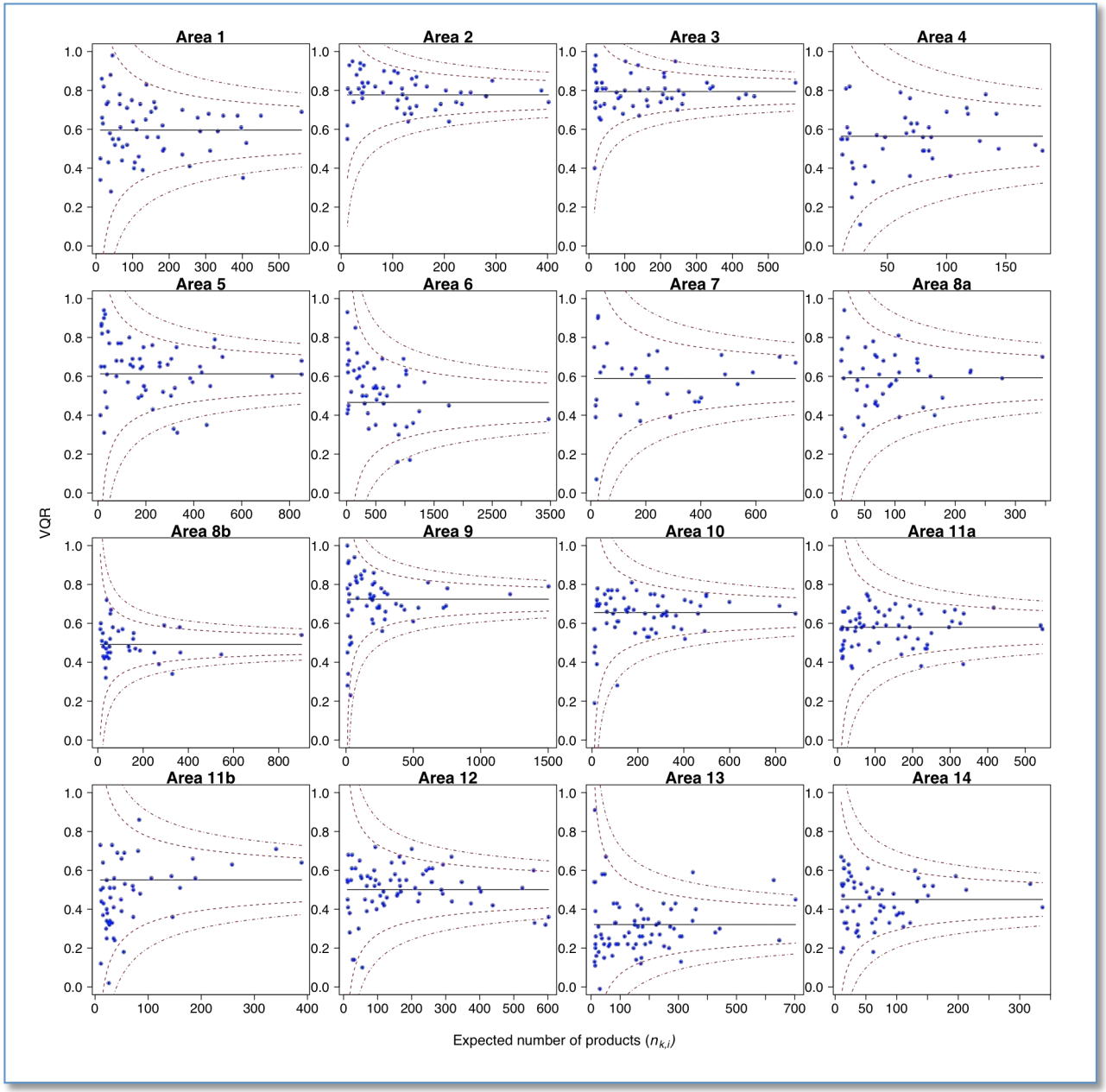
giudicate voi ...

Evaluation of Research Quality

VQR

Valutazione Qualità della Ricerca

Area	Name
1	Mathematics and informatics
2	Physics
3	Chemistry
4	Earth sciences
5	Biology
6	Medicine
7	Agricultural and veterinary sciences
8a	Civil engineering
8b	Architecture
9	Industrial and information engineering
10	Antiquities, philology, literary studies, art history
11a	History, philosophy, pedagogy
11b	Psychology
12	Law
13	Economics and statistics
14	Political and social science



ROARS
Return On Academic ReSearch

VQR

L'ANVUR, la classifica degli atenei della VQR e la legge dell'imbuto

di Giuseppe De Nicolao × 16 luglio 2013 ore 08:59 × 88 commenti Edit

È opinione comune che l'era della valutazione della ricerca abbia inizio nel 1986, quando sotto il governo della Thatcher venne varata la prima edizione del RAE (Research Assessment Exercise). Tuttavia, la verità storica potrebbe essere ben diversa. Da poco, sono stati resi accessibili gli archivi pre-1989 della polizia segreta della […]

ANVUR: I don't care!

S. Fantoni (presidente ANVUR):

«*il Paese possiede una fotografia* ***dettagliatissima e, soprattutto, certificata*** *della qualità della ricerca italiana*»

(ANSA, 17.7.2013)

S. Benedetto, R. Torrini (ANVUR):

«***Il caso non ha dunque nulla a che fare*** *con i risultati della Vqr*»

S. Fantoni (presidente ANVUR): «*il Paese possiede una fotografia* ***dettagliatissima e, soprattutto, certificata*** *della qualità della ricerca italiana*» (ANSA, 17.7.2013)

S. Benedetto, R. Torrini (ANVUR):

«**Il caso non ha dunque nulla a che fare** con i risultati della Vqr

("Una valutazione molto chiara", lavoce.info, 7 agosto 2013)

National Agency for the Evaluation of Universities and Research Institutes

anvur

Agenzia Nazionale di Valutazione del sistema Universitario e della Ricerca

Evaluation of Research Quality

vQr

Valutazione Qualità della Ricerca

Area	Ateneo	somma punteggi (v)	# prodotti attesi (n)	%E (#E/attesi)	voto medio (I=v/n)	R	Pos. grad. comp.	Num. Comp.

Area 8b: Architettura

MESSINA 12°

MILANO POLITECNICO 13°

8.b	Messina	12,10	22	22,73	0,55	1,12	12	39
8.b	Milano Politecnico	486,80	901	8,88	0,54	1,10	13	39

Area 9: Ingegneria Industriale e dell'informazione

MESSINA 10°

MILANO POLITECNICO 16°

9	Messina	61,70	75	64,00	0,82	1,14	10	56
9	Milano	30,35	45	51,11	0,67	0,93	40	56
9	Milano Bicocca	17,40	33	45,45	0,53	0,73	50	56
9	Milano Politecnico	1189,20	1503	61,54	0,79	1,09	16	56

ma nella VQR 2.0 faranno tesoro degli errori e questa volta andrà meglio, no?

Valutazione VQR basata sui percentili

National Agency for the Evaluation of Universities and Research Institutes

anvur

Agenzia Nazionale di Valutazione del sistema Universitario e della Ricerca

Evaluation of Research Quality

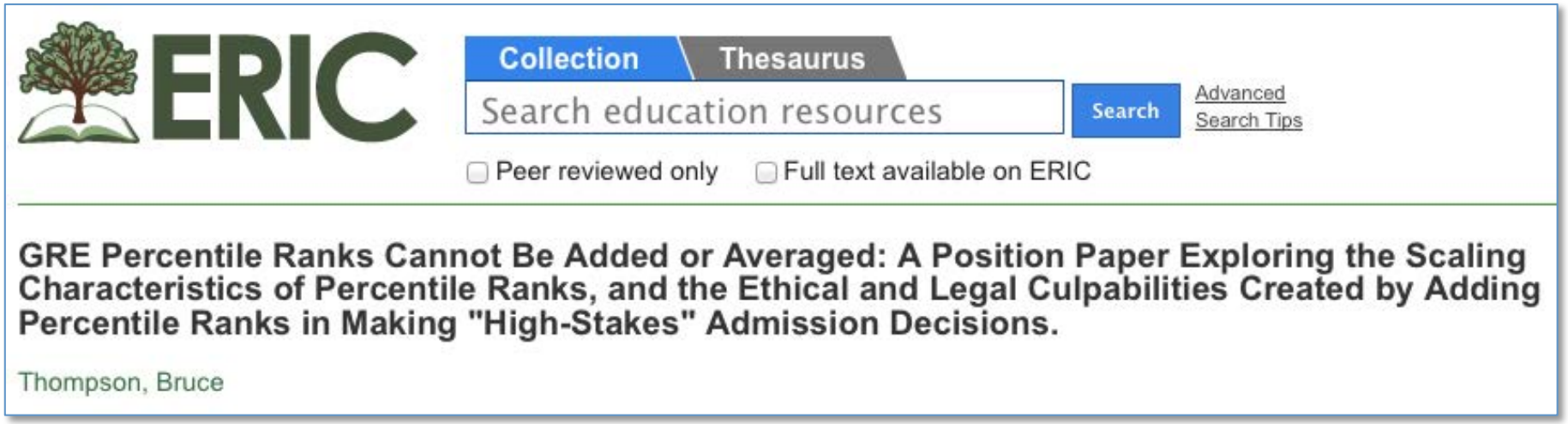
VQR

Valutazione Qualità della Ricerca

appartenenti alla SC individuata e si assegna un percentile ad ognuno degli articoli. Al termine della procedura ogni articolo avrà dunque due percentili associati (percentile rivista e percentile citazioni). I due percentili ottenuti individuano un punto nella regione Q = [0,1]x[0,1] del piano cartesiano, delimitato dal percentile della JM della rivista (asse X) e dal percentile delle citazioni CIT (asse Y). Si suddivide quindi Q in cinque zone o regioni tali per cui siano rispettate le percentuali di articoli appartenenti a ciascuna regione definite nel bando VQR.

Tale suddivisione si realizza mediante semplici rette individuate da:

$$CIT = A \cdot JM + B_n$$



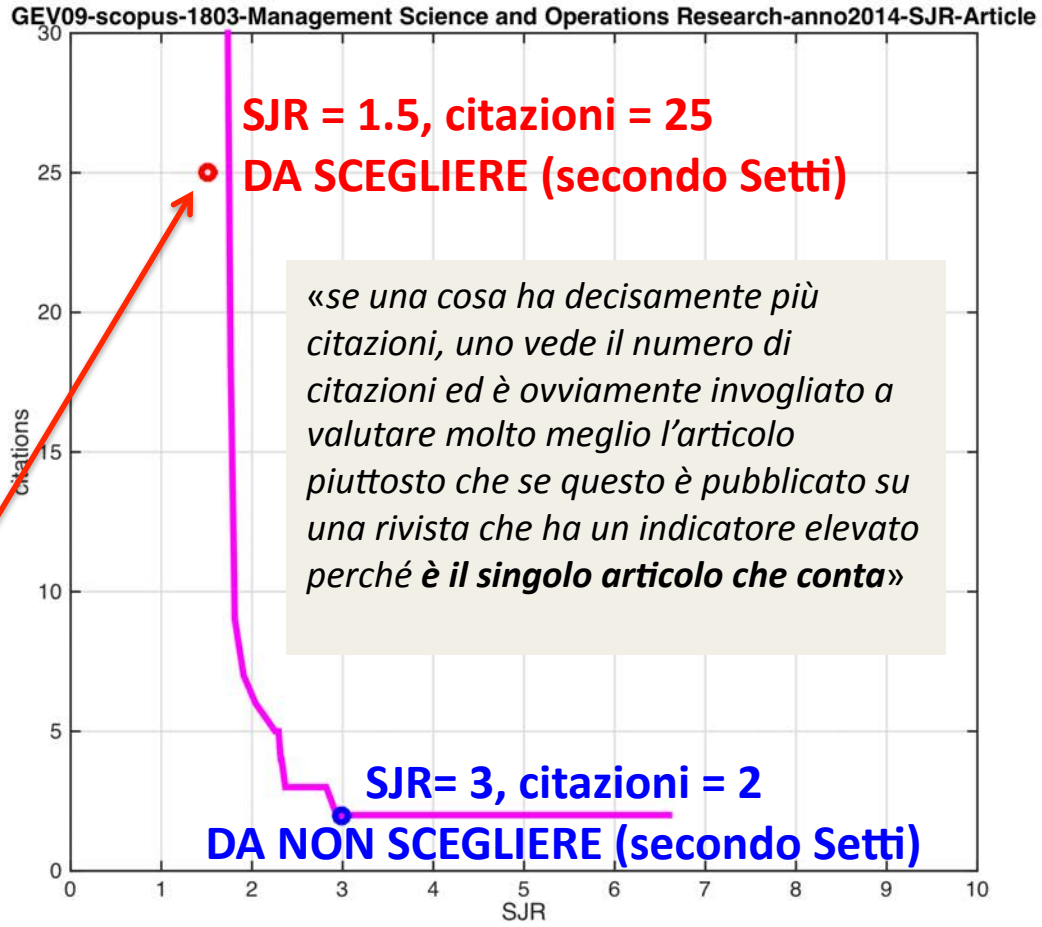
- It seems counterintuitive to many persons, even to some educated people with terminal degrees serving on faculty at world-class universities, that some numbers simply cannot be added …
- **The only reason for using percentile ranks is ignorance**, and it is questionable whether a defense of ignorance will be viable.

Il coordinatore del GEV 09 spiega come funzionano i criteri della VQR (che ha progettato)

Gianluca Setti
Coordinatore GEV 09
(e progettista dei criteri)

«... diciamo, una rivista che ha **SJR = 3** e l'articolo pubblicato ha **2 citazioni** e una rivista che ha **SJR = 1.5** e l'articolo pubblicato ne ha **25**: **allora io sono portato a scegliere il secondo**»

Criteri GEV 09 pubblicati da Anvur



Persino al coordinatore del GEV 09 non è chiaro come funzionano i criteri della VQR (che ha progettato)

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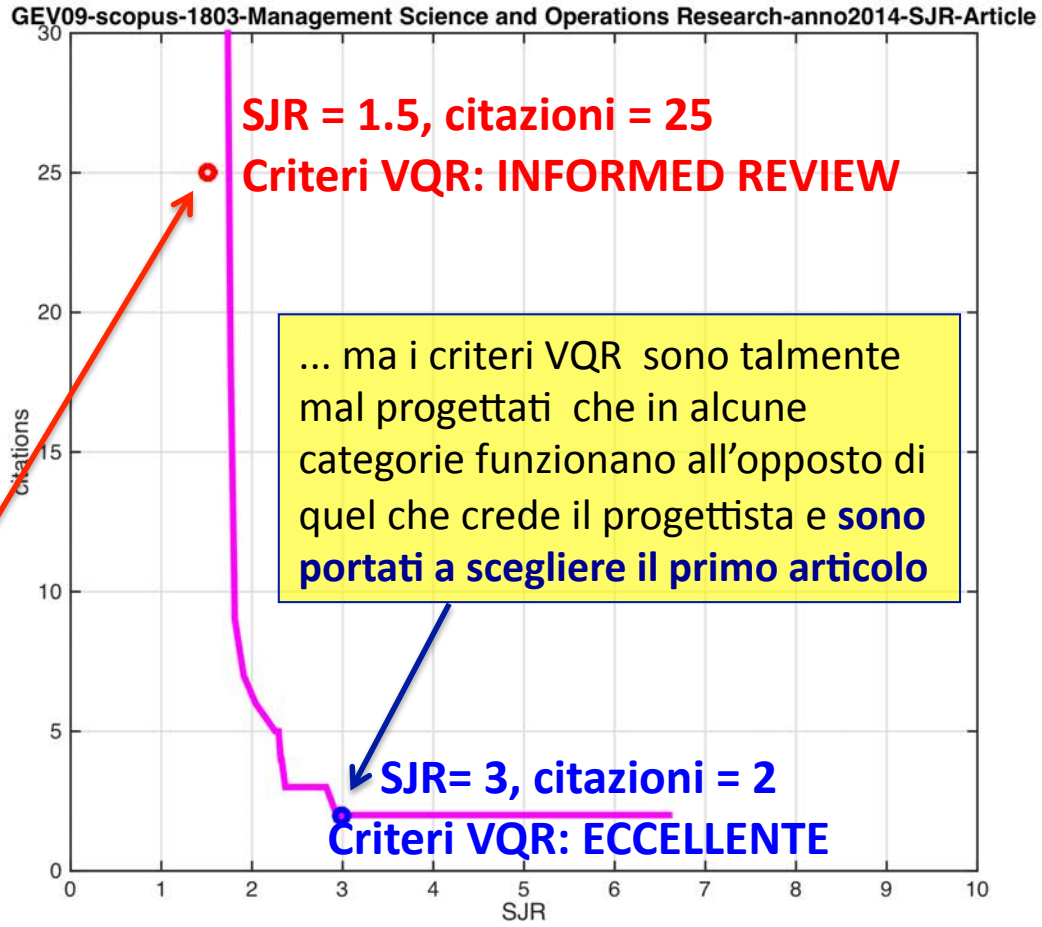
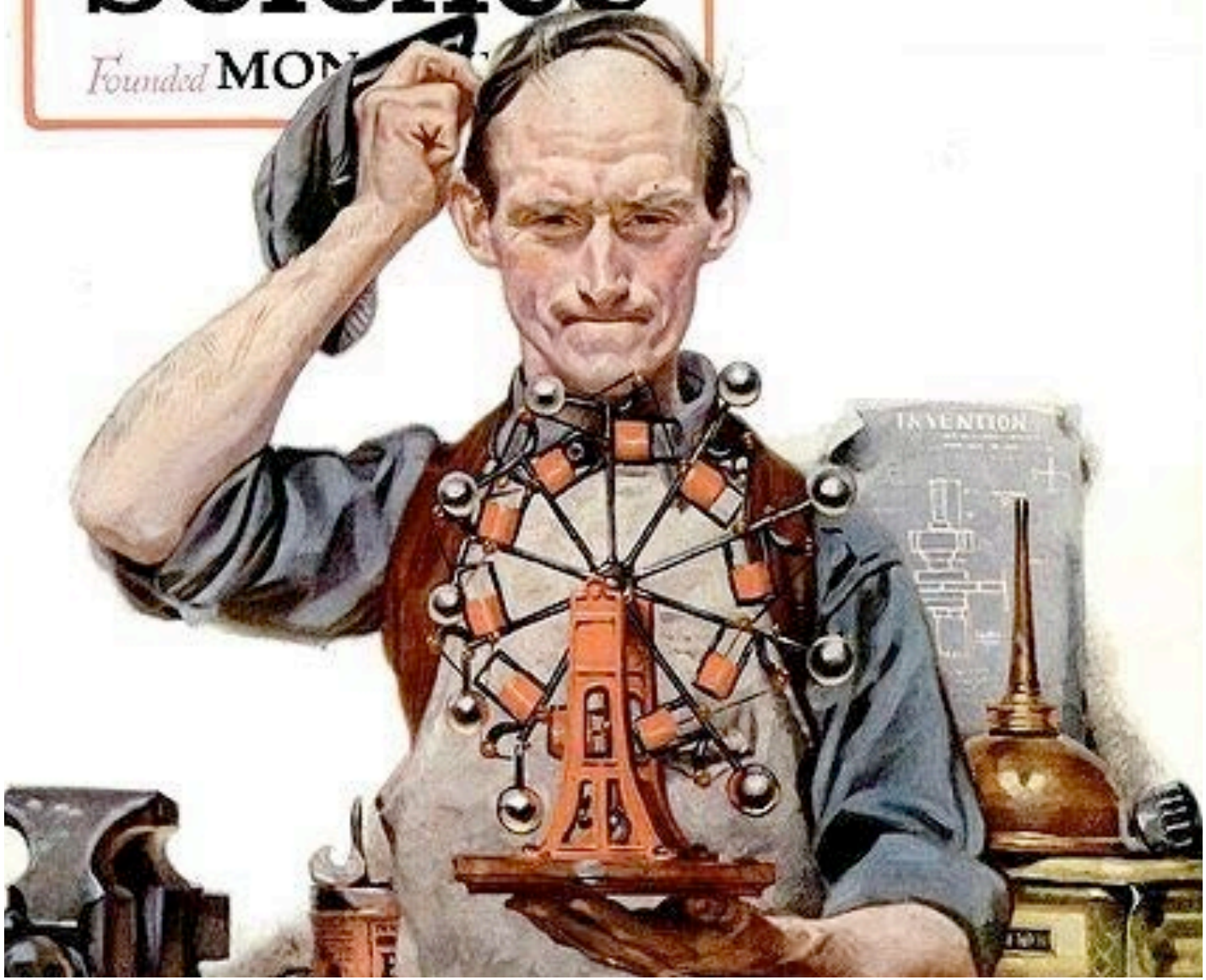


Popular Science

Founded MON

Perpetual Motion?
See page 26



Do we believe in magic?

CICAP
COMITATO ITALIANO PER IL CONTROLLO
DELLE AFFERMAZIONI SUL PARANORMALE

DAVVERO
IL CICAP HA BISOGNO DEL TUO AIUTO
SOSTIENI LA NOSTRA OPERA DI INFORMAZIONE E A FAVORE DELLA RAZIONALITA`

Mathematical Intimidation:
Driven by the Data

John Ewing

Models are tools, not magic

- Whether naïfs or experts, mathematicians need to confront people who misuse their subject to intimidate others into accepting conclusions simply because they are based on some mathematics.
- Mathematical models have limitations. They do not by themselves convey authority for their conclusions. **They are tools, not magic**. And using the mathematics to intimidate— to preempt debate about the goals of education and measures of success—is harmful not only to education but to mathematics itself.

CICAV

COMITATO ITALIANO PER IL CONTROLLO DELLE AFFERMAZIONI SULLA VALUTAZIONE

BIBLIOMETRIA / VALUTAZIONE

Le classifiche CENSIS-Repubblica sono credibili?

PACCO DOPPIO PACCO E CONTROPACCOTTO

Classifica Sole 24 Ore: un "aiutino" e … voilà, la LUISS scavalca il San Raffaele

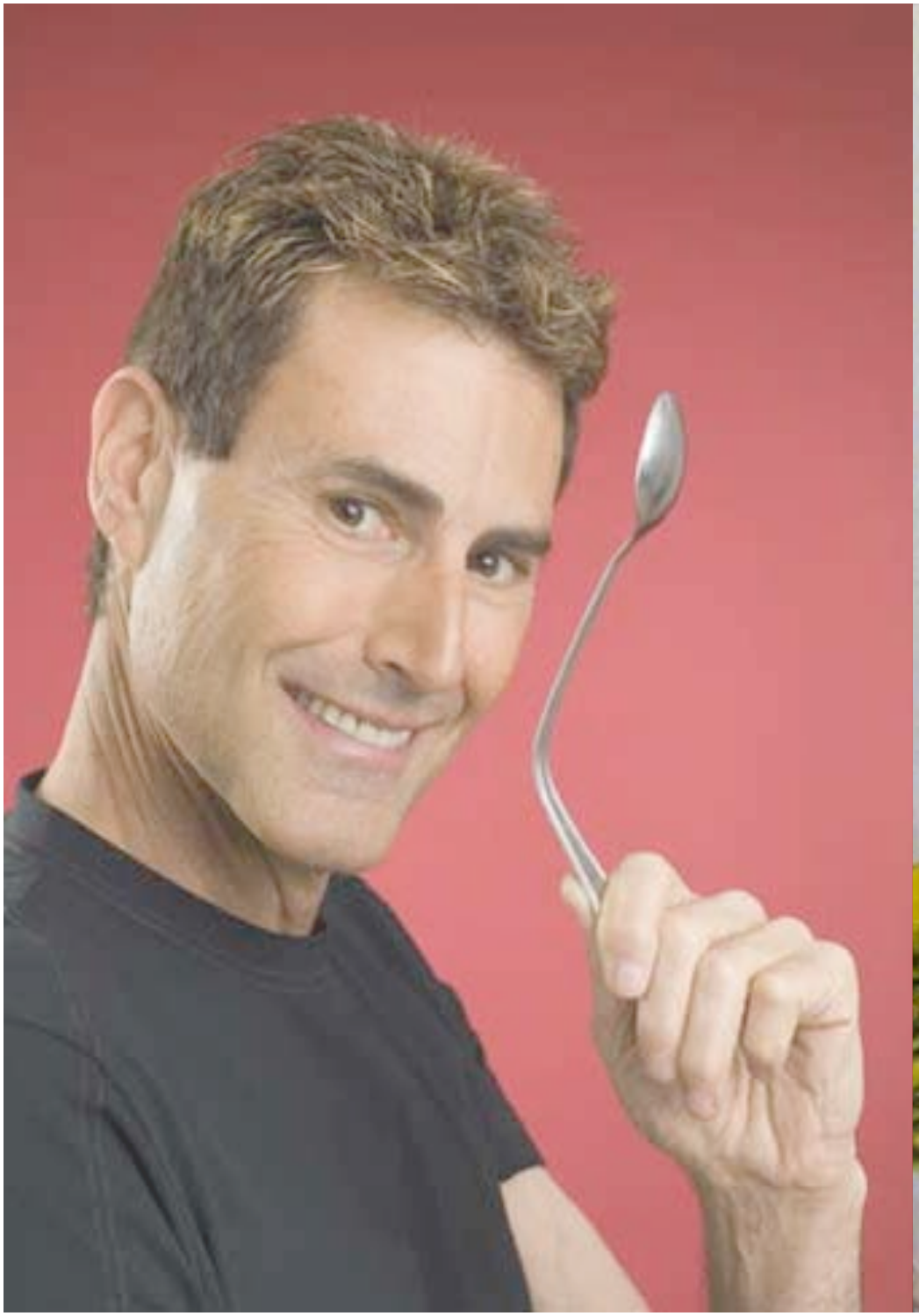
CLASSIFICHE INTERNAZIONALI

Ranking QS: la Top 10 degli svarioni più spettacolari

e se l’intimidazione matematica non basta o non funziona più ...

… si possono evocare altre paure:

«il collegamento tra le questioni sollevate nella protesta e l'adesione all'esercizio VQR presenta un'insidia assai grave. Esso minaccia di confermare cliché e strumenti retorici anti-universitari di cui stiamo faticosamente riuscendo a sbarazzarci. Il cliché è quello di una casta di "baroni", malati di "autoreferenzialità", che sfuggono a qualsiasi rendiconto sulla loro professionalità e laboriosità»



Piero Angela

VIAGGIO NEL MONDO DEL PARANORMALE