

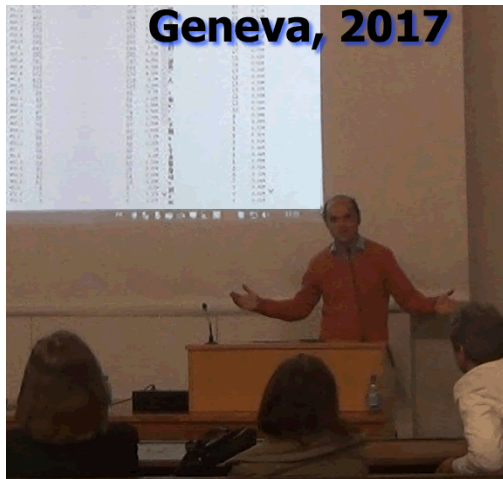
# Model of Intelligence

1995

## New methods to assess IQ

### Miro Brada

MA thesis in 1998 (Comenius University)  
Art exhibitions "From Animation" London 2013,  
"Fading Memory" Weißenhohe 2015, TAIF Tokyo 2017  
Conferences in Santorini, Daejeon 2016, Geneva 2017



## BIAS of the classic IQ method



eLephant

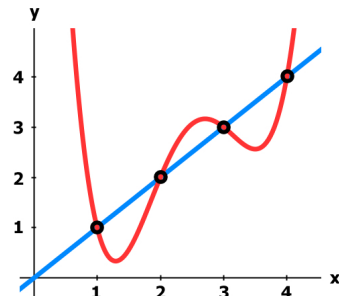
Classic IQ tests admit one solution.  
A task in Amthauer test (1953), asks:  
What has common violet and elephant?  
The right answer is: **LIFE**  
Both have letter "l", so the right can be: **L**



vioLet

Series: 1 2 3 ? can be solved by: 1.  $y = x$   
2.  $y = x^4 - 10x^3 + 35x^2 - 49x + 24$

Both lead to the SAME solution 4, but logics differ. The classic IQ test admits 1 simpler solution that is BIASED against the intricate logic. Nevertheless it reflects IQ, because people discovering the intricate logic probably discover simpler one too. So the classic IQ method is valid on average, only its reliability decreases as the IQ rises.



Graduate Record Examinations test (1994) has this task:

Choose one of 5 options:

- a) geyser : water
- b) fault : tremor
- c) glacier : fissure
- d) avalanche : snow
- e) cavern: limestone

to express the same relation as the pair:

**volcano : lava**

The ONLY right answer is: **a) geyser : water**

But the right answer is e.g: **e) cavern: limestone**

with formal analogy **V** : **L**

**V**olcano : **L**ava e) ca**V**ern: **L**imestone

## New method to assess IQ

In my research (1999), I asked 600 people to invent analogies as: "life : death" = "laugh : cry"

for: **fire** : ..... = **darkness** : .....

There were 2 kinds of inventions:

### a) content

fire : red = darkness : black  
 fire : water = darkness : light  
 fire : leasure = darkness : melancholy



All invented ⇒ average IQ

### b) formal

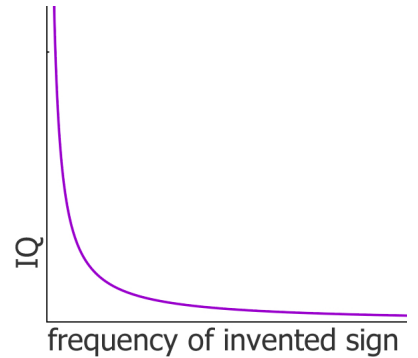
fire : fire = darkness : darkness  
 fire : darkness = darkness : fire  
 fire : fired = darkness : dark  
 fire : erif = darkness : ssenkard



Only 5% invented ⇒ higher IQ

## Creativity is a higher form of IQ

The higher IQ, the less frequency of the invented sign. Newton's and Leibniz's invention of calculus was very demanding for IQ, that's why it was unique (=original) as only very few could think so exactly. Creativity is so a higher form of the IQ. Newton and Leibniz knew Euclid's and Descartes's mathematics to which they added the new logic. The high IQ is aware of simpler as well as advanced logic, so it is more flexible too.



## IQ and Test of Creativity

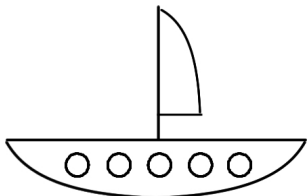
Torrance figural test (1957) asseses:

- |                |                            |
|----------------|----------------------------|
| 1. originality | frequency of answers       |
| 2. flexibility | different types of answers |
| 3. fluency     | number of answers          |
| 4. elaboration | how many details           |

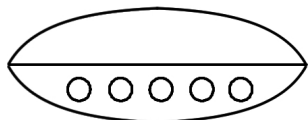
Figure 1



Complete a figure as nobody would do.



boat



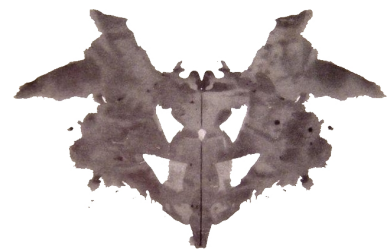
submarine

Knife or boat is a frequent response (=not original) for the figure 1 of the Torrance test, a submarine is relatively rare (=original). The submarine and the boat on the pic, have the same 5 hulls. Are they same, slightly or entirely different? It shows a problem to classify creativity, without other criteria.

"Complete a figure as nobody would do" instructs to invent unusual answers. It needs certain IQ to realize the first idea (boat, knife..) is often banal, to continue searching uncommon and different responses. So the IQ rises creativity - non-linearly: the new ideas don't need to appear in spite of search.

## IQ and Projective Tests

Rorschach test (1921) reveals unconscious emotions projected to the inkblots. Kids or mentally handicapped more often interpret inkblots as part of something that is: 'oligophrenic detail'. High IQ synthesizes rather than fragments the fragments. J. Piaget showed the same ball at different places isn't the same for children of certain age: the ball under bed is 'ball A', and the SAME ball on the table is 'ball B'. Certain IQ is needed to synthesize "ball A" and "ball B" to ONE "ball".



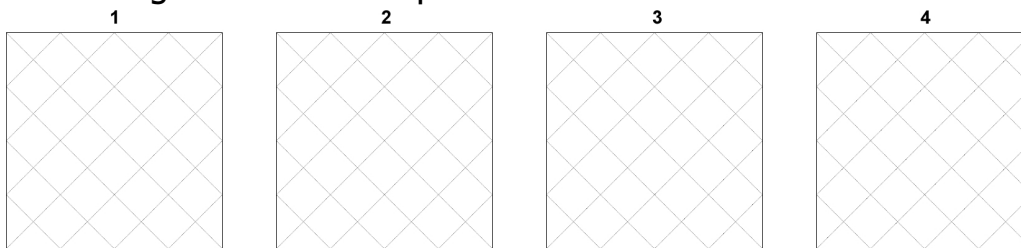
Rorschach inkblot

# Test of Intelligence and Creativity (TIC)

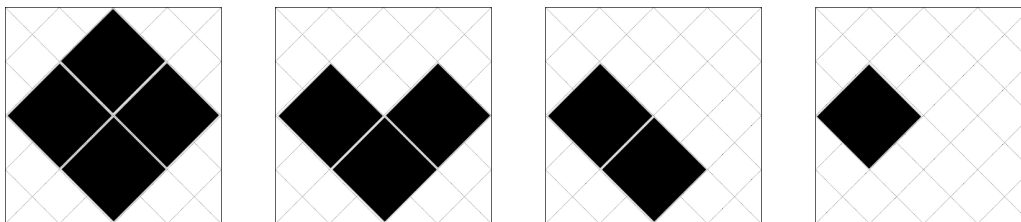
I developed TIC as part of my MA thesis to assess intelligence, flexibility, originality of logical series drawn on series of 4 patterns (overall I used 4x 4 different patterns = 16 series). It merges Torrance test (1984) and IQ tests - Raven (1936), Amthauer (1953) or Wechsler (1955). Practice patterns shows 2 logical series adding and alternating. The series must repeat (and eventually combine) logic like e.g. rotation, diminishing, adding, adding & rotation...

|                          |           |           |           |           |
|--------------------------|-----------|-----------|-----------|-----------|
|                          | <b>1.</b> | <b>2.</b> | <b>3.</b> | <b>4.</b> |
| Practice Pattern:        |           |           |           |           |
| Example A: (adding)      |           |           |           |           |
| Example B: (alternating) |           |           |           |           |

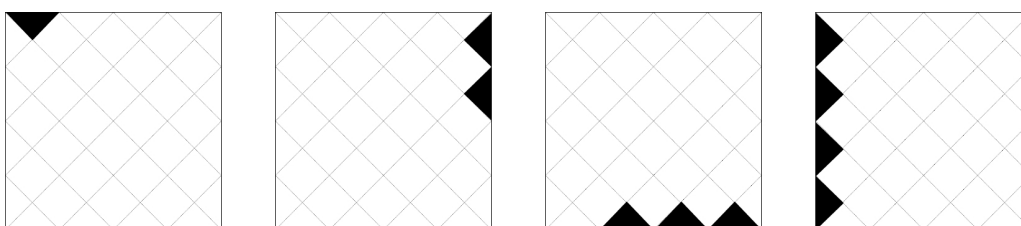
Instruction - draw a logical series on 4 patterns below



I tested over 600 people to identify 24 different logic: "adding" and "alternating" were most frequent also because they were a practice example, the least frequent (most original) was "weakening" - decreasing the opacity. The test is a lot harder than classic IQ tests. Some weren't able to create series, or always used the same logic. A new category is intricacy: combination of logics, solo logic has intricacy = 1, two combined = 2 etc. Logic must repeat itself to create series, and repetition is multiplication in math, that's why: The IQ of the series is intricacy<sup>2</sup>. Solo adding and solo alternating have intricacy = 1 + 1 = 2, and IQ = 1<sup>2</sup> + 1<sup>2</sup> = 2, while series combining adding & rotating has intricacy = 2 and IQ = 2<sup>2</sup> = 4. Flexibility and IQ are related. It's possible but unlikely to achieve high IQ with one logic. E.g. adding & adding & adding (adding inside other adding inside..) is much less likely than combination of different logics. Intricacy increases scarcity (originality), so originality and IQ are related too, but less than flexibility.



Assessment: subtraction (-1), P(subtraction) = probability of subtraction = 1/a<sub>s</sub>  
 Intricacy = 1, IQ = Intricacy<sup>2</sup> = 1\*1 = 1, Flexibility = 1, Originality=a<sub>s</sub>



Assessment: adding (+1) & rotating (cw), P(adding) = 1/a<sub>a</sub>, P(rotating) = 1/a<sub>r</sub>  
 Intricacy = 2, IQ = Intricacy<sup>2</sup> = 2\*2 = 4, Flexibility = 2, Originality=a<sub>a</sub>\*a<sub>r</sub>

## **Emotional Quotient (EQ) is an illusion**

Persons of high rank can be very selfish, that is often misinterpreted as a high IQ is at the expense of EQ. The rank isn't reliable indicator of IQ. So the persons of high rank can be very selfish because they have low (or not high enough) IQ, not low EQ. Empathy (EQ) needs IQ to understand the others, so IQ isn't at the expense of EQ. Murderers have on average low IQ = low EQ. Prejudices decline with high IQ, which is another indicator of empathy. In my research, the IQ reduced the prejudices, while the strongest bias was against the high IQ.

## **Social IQ is an illusion**

Was G. Bruno burnt alive socially unintelligent? And were his executioners socially intelligent? Social status is often linked with social IQ. But unintelligent people can't be socially intelligent, and the status is often inherited or earned by anti-social egoism. People good in math have lower social IQ, is a typical prejudice. It is only occasionally true in special cases, and can be a result of social exclusion. Popularity uses to be misinterpreted as the social IQ. E.g. physically attractive persons can be popular not because of their social IQ but because of their attractiveness (or other quality unrelated to IQ).

## **Artificial IQ requires consciousness**

PC is much faster and capable to process incomparable more info than humans. Neural networks can learn, but when will PC write witty aphorisms or catchy music? Humans instruct computers and check the generated output. PC can't replace humans without self-consciousness and motivation to create. Uncontrolled artificial IQ can harm like a drone killing civilians, but without consciousness it has no incentive to e.g. systematically kill humans or compose popular songs.

## **IQ types**

Performance and verbal IQs correlate - but not always. Performance (non-verbal) IQ decreases more with age or e.g. alcoholism, and it is sometimes considered genuine intelligence. Any talent requires motivation and certain level of IQ - but there is no special IQ like music or linguistic IQ. The higher IQ, the (usually) higher flexibility. That's why persons good in one field are more likely to be good in any other field if they have motivation and opportunity.

## **IQ and mental health**

IQ decreases the likelihood of mental illness and disorders. The high IQ needs higher flexibility preventing iteration of one logic (=psychosis). Neurosis: denial, rationalization, regression, projection etc.. is a self-defense mechanism protecting ego from unsuccess or unacceptable impulses. The high IQ is more likely to understand the motivation of neurosis and so prevent it. Psychopathy e.g. lies or manipulation, decreases with IQ that sees more options, and a lie is only one of them. In special cases the high IQ can increase chances of suicide or mental disorder. E.g. the high IQ is more aware of inevitable loss to make suicide (in this case) more likely.

## **IQ and art**

Art is logical series of various forms and contents. Baudelaire's *Les Fleurs du mal* or Leibniz's calculus is logical series comparable by originality, flexibility or intricacy. It can be assessed like figure skating with far more options as art has fewer physical limits. The calculus defines more intricate (unique) principle than poems with more variants. Thus it's likely that Leibniz was a bit more brilliant than Baudelaire, but vice verse is possible too. Psychometrics sets objective criteria to assess and compare intricacies or other qualities. It has a practical or political meaning: certain positions require certain mental qualities independent of social status to support meritocracy: the best should manage the society to function better for all.

Baudelaire's *Les Fleurs du mal* (1857), Whitman's *Leaves of Grass* (1855) or Ginsberg's *Howl* (1955) opened a new space of romanticism. Whitman was re-writing his poems till his death - so the poetry is too vague to be unique (as calculus). That's why many poets were famous not because their poetry was the best (sometimes maybe yes), but because they evoked outrage (Baudelaire, Ginsberg, Shelley..) or for political or other reasons. Whitman embodied the need of the great American poet like Warhol embodied the great American painter (as Picasso).



Parallax Art Fair / 2015年1月15日  
 PAF 12 exhibitor: Miro Brada, "Naomi Campbell". Chelsea Town Hall, London,  
 February 28th - March 1st



Between 1994 and 2000 I composed about 200 chess problems winning a few international prizes, and defined a new class of conditions redefining mate e.g. MAFF mate with a free field. It was like writing algorithms (mental gymnastics far harder than playing chess) helping me to succeed in computer programming. Chess composition is exactly defined with its own evolution and genres: mate in 2 / 3.. self-mates, studies... Alberto Mari published in *l'Echiquier Belge* (1928) reciprocal change of mates (AB-BA) to set neo-strategic movement, a multi tier logic (game in game) reminding Mannerism. It has genetics of modern art: surrealism, impressionism, cubism, pop-art.. Or Hitchcock's *Vertigo* (1958) altering a plot (AB-BA) in the middle. I tried to apply new-strategy into logical series of animations, to exhibit in London, Germany, Tokyo. Chess composition is a limited set with options to add new conditions (e.g. redefine mate) to always enhance itself. Nevertheless the ideas are occasionally anticipated - unintentionally or in fewer cases as plagiarism. I re-invented the same idea of renowned composers 3 times: mate in 2 with cyclic change (1958) of V. Rudenko, self-mate in 2 with reciprocal change (1972) of M. Mladenović, and mate in 2 with Shedy cycle (1992) of J. Valuška.

>>26416  
**Valuška, Ján**

Slovenský denník  
 Special HM  
 Slovenský denník, 1992



#2 9+8

>>43218  
**Brada, Miroslav**

Práca  
 1<sup>st</sup> Prize  
 Práca, 22 Apr 1995 (1408)



#2 11+i

**Keywords:**

- ♣ Shedy cycle
- ♣ Stocchi

**Solution:**



- 1. ♖g3? ~ 2. ♜e4# (A)
- 1... ♗xe5 (a) 2. ♘b5# (B)
- 1... ♙c3 (b) 2. ♜d3# (C)
- 1... ♙c5!
- ♙c6! ~ 2. ♘b5# (B)
- 1... ♗xe5 (a) 2. ♜d3# (C)
- 1... ♙c3 (b) 2. ♜e4# (A)
- 1... ♜xe3 2. ♖xe3#
- 1... ♗xc6 2. ♙e6#
- 1... ♗b8 2. ♙e6#
- 1... ♜f4+ 2. ♖xf4#

**Auto: Foreign IDs:**

Show ♣ WinChloe: 26797

So even the unique ideas like calculus can be re-invented: nothing is 100% unique. Valuška is like me from Slovak town Zvolen (we met firstly in 1998). Rudenko was working in cosmonautics in Dnepropetrovsk, where my grandma born and lived till her 20s, and Mladenović is Serbian. Maybe it wasn't 100% accident I re-invented the ideas of Slavic composers, and not French, English, Indian. Structure of Slavic languages (less sure about DNA) can make some ideas more likely. It is a speculation that could be investigated.

Israeli composer Paz Einat in 2015 improved my idea in 1995, and won the contest in American StrateGems with a comment: "the uncontested highlight of the year". I created it in my 19s with little experience to perfect the idea. And I had a fantasy that other composers had to notice its potential. "Telepathy" started working 20 years on. Paz Einat is originally from Lviv - Ukraine, that can support a speculation that languages (Slavic) can make some ideas more likely.

**Paz Einat**  
 après Miroslav BRADA  
 dédié à B. Barnes  
 StrateGems 2015  
 1° Prix



Judge : H. Gockel  
 Judgement : StrateGems 78 (avr. 17)  
 Comments :  
 Judge Hubert Gockel wrote on A: The uncontested highlight of the year! None of the flaws in Brada's forerunner ... had to be preserved to extend the unchanged mechanism of reciprocal change and supplementary try to a full-blown 3x3 Zagoruiko! ... The white Queen is extremely active: From a distance she delivers both thematic mates A and B and is still responsible for the complementary Zagoruiko phase, almost single-handedly and with sweeping moves. ... Perfect enhancement, enviable!

#2 (13+9) C+

- 1.Da2? [2.Jf7‡]  
 1...D×e6 2.D×e6‡  
 1...D×e7 2.Dd5‡  
 1...Jg5 2.Dh2‡  
 mais 1...S×e3!
- 1.Sf5? [2.Jf7‡]  
 1...De6 a 2.Dd4‡ A  
 1...D×e7 b 2.Dc5‡ B  
 1...Jg5 2.f4‡  
 mais 1...Dd5!
- 1.Jg8! [2.Jf7‡]  
 1...D×e6 a 2.Dc5‡ B  
 1...De7 b,Df8 2.Dd4‡ A  
 1...Jg5 2.S×f6‡  
 1...S×e3 2.D×e3‡  
 1...D×d7 2.S×d7‡

- Miro Brada** I met Paz in Tel Aviv, where he showed me interesting places there. Sometimes I use to meet chess composers, as I travel to discuss. among others, to transfer the idea of new-strategy to other arts. For sure, there is a potential for it, especially in the age of computer enabling to apply logic to arts. The "new strategy" is kind of new form like e.g. Cubism... It is true, that multi-layers logic is nothing new (plan A, plan B... or different plots in the stories), but only in chess composition this form achieves the superior aesthetics.  
 Me gusta · Responder · 36 sem
- Seetharaman Kalyan** Beautiful  
 Me gusta · Responder · 36 sem



**IQ and prejudices**

TO BE ADDED LATER

**IQ and expectation**

TO BE ADDED LATER