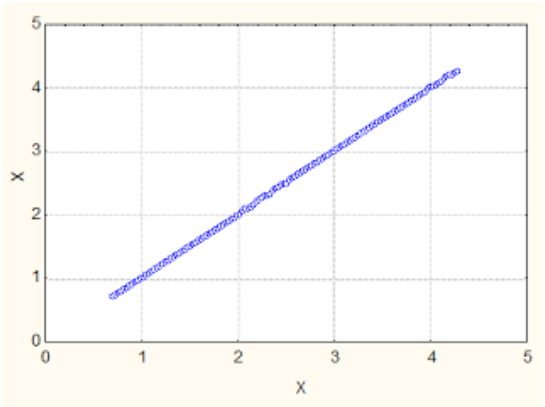
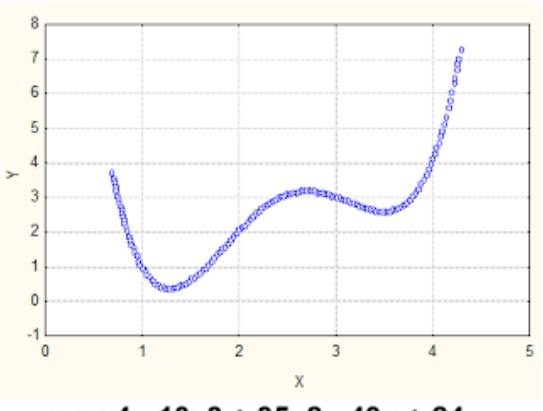
Theory of Intelligence and BIAS of the classic IQ method, **Miro Brada**

In 1999 I was doing psychological-economic research (supported by Open Society). I was testing various group of respondents with series of my own methodology (Test of Intelligence and Creativity, Questionnaire of Unbiased Judgement, Test of Expectations, Test of Abstract pictures, Creating verbal analogies)...
Some results / conclusions were published in Kultura, OS, inzine.sk, Nove Slovo or Japanese journal Problem Paradise...
Here I present part about intelligence and BIAS of classic IQ method.

Theory of Intelligence and BIAS of the classic IQ method

A classic concept of the IQ tests admits just one solution. In Amthauer test (1953), the common sign of violet and elephant is life (or similar). But, the right answer could be also letter 'l' or singular, which are common for both violet and elephant. In the mathematical series: 1 2 3 ? There can be e.g. 3 justifications:
1) addition of one (= +1),
2) function, y = x (see graphs), where x is the order of the values 1 2 3 ?
3) function, $y = x^4 - 10x^3 + 35x^2 - 49x + 24$.
Although the all logics result in the same solution: 4, their intricacies are very different.
Those who discover more logics (in give time) hesitate - which logic is the optimal. Or they may consider the 'right' logic too simple, so they rather select unusual logic that can be 'wrong'. That's why classic IQ tests with just 1 right solution are BIASED excluding too intricate justifications.





The classic IQ test BIAS can be clarified by the proof disproving the identity.
Languages reflect the identity between the words and their meanings, or all (mathematical, chemical) equations have 'left hand side' identical with 'right hand side'.
But probability of simultaneously occurring independent entities equals the multiply of their probabilities:

Event A: p(A)=1/a
Event B: p(B)=1/b
if p(A) p(B) = 0 (= independence), then p(A) p(B) = 1/ab

This leads to the paradox: if the probability of an entity is 1/a, where a is the sum of all possible entities, then the probability of another identical independent entity is $1/a^2$. So if two (or more) entities are identical, then their probabilities are not identical. Thus things cannot be identical, i.e. logic is based only on a convention.

More generally, impossibility of identity coincides with the Chinese ceaseless transition (change), challenging the 'identity' relation on which the European science clings. The identity in equations of mathematics / chemistry / physics, is illusory as the left hand side differs (by position, time) from the right hand side (Heraclitus panta rhei): P is not P.

BIAS of the classic IQ method

Graduate Record Examinations test (1994) contains this task:
Choose one of the five options:

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

that expresses the same relation as the pair:
volcano : lava

The right answer is:
a) geyser : water

The problem is that there are more correct answers...
E.g. e) cavern : limestone, could be also solution, based on the formal analogy,
when cavern has one v (as volcano), and limestone has one l (like lava)
volcano : lava e) cavern : limestone

The more intelligent people usually discover more options, and then they can have problem to decide which one is right. Although GRE tests (or other intelligence tests based on one right) are valid to some extent, their construction is BIASED…

In my research (1999), I proved the BIAS of the classic IQ test via 2 tasks (about 600 respondents):
Task 1) People invent a few analogies, e.g. 'life : death = laugh : cry'
Based on the words: 'fire : ..... = darkness : .....'.
There were 2 kinds of the solution:

a) analogy of the meaning:
'fire : red = darkness : black',
'fire : water = darkens : light'
'fire : pleasure = darkness : melancholy'

b) formal analogy
'fire : fire = darkness : darkness'
'fire : darkness = darkness : fire'
'fire : fired = darkness : dark',
'fire : erif = darkness : ssenkrad'

All invented the analogy based on the meaning (a). Only 5% invented a formal analogy (b). This 5% minority achieved above average intelligence and originality, which means people inventing infrequent solution are on average more intelligent.

Task 2) Example showed 3 words:
1. swam 2. chop 3. cut, and categories grouping 2
E.g. category 'past tense' groups 'swam', and 'cut',
and excludes 'chop' that is in the present tense,
'work with wood' groups 'chop' and 'cut',
and excludes 'swam', etc…
Then I asked people to invent such categories (grouping just 2 words) for the words
1. rifles 2. revolver 3. pebble chopper
Some answers are on the right:

a) gun (1+2, 3)
b) singular (2+3, -1)
c) letter r at the beginning (1+2, -3)
d) letter o (2+3, -1)
e) more than six letters (2+3, -1)
f) one word (1+2, -3)
g) metal, iron, steel (1+2, 3)
h) modern era, prehistoric tools (1+2, 3)

The less frequent sign discovered the higher intelligence, which means the IQ tests excluding rare signs, can't detect too high intellect. The relation between intelligence (and originality) and the sign infrequency is visualised in graph: