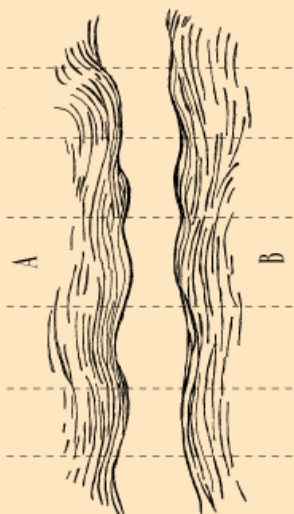


# Le Cours de Linguistique Générale 1916-2016

Genève - Paris • 2016 - 2017



## TRAVAUX DES COLLOQUES LE COURS DE LINGUISTIQUE GÉNÉRALE, 1916-2016. L'ÉMERGENCE, LE DEVENIR

Éditeurs scientifiques : Daniele  
GAMBARARA, Fabienne REBOUL.

Miro BRADA, « Psychological and  
other aspects of the sign  
arbitrariness »

Communication donnée dans l'atelier de Jean-Yves Beziau, *The  
Arbitrariness of the Sign*, au colloque **Le Cours de  
Linguistique Générale, 1916-2016.  
L'émergence**, Genève, 9-13 janvier 2017.

Psychological and Other Aspects of the Sign's Arbitrariness

N° D'ISBN : 978-2-8399-2282-1

Pour consulter le programme complet de l'atelier de Jean-Yves Beziau,

***The Arbitrariness of the Sign :***

<https://www.clg2016.org/geneve/programme/ateliers-libres/the-arbitrariness-of-the-sign/>



## Psychological and Other Aspects of the Sign's Arbitrariness

MIRO BRADA

ABSTRACT. I confront arbitrariness of the sign to a criterion assessing the quality of language, logical system, psychometrics and art.

### 1. Why is arbitrariness impossible

The random process is independent of any forces, without any cause. In this sense the sign isn't 100% random, as it has various references to reality.

#### 1.1 External reference

Americas speak *English, Spanish, Portuguese, French* since colonization. *Mao* simplified Mandarin. *Atatürk* released Turkish from Arabic... While *Esperanto*, artificial international language (Latin + German vocabulary, Slavic grammar), hasn't spread much. The usage of languages (their signifiers) depends on the political or economic power, while the quality of language seems secondary (e.g. some extinct indigenous languages could be more efficient), although speculatively the efficiency of European languages (which I'll explain later) could have helped them to spread (along with colonization).

#### 1.2 Inner dependence

Psychology explains why *dog* is a response to something (=signified), not why *dog* is *dog* (=signifier). Signifier in its origin was a response to signified, and so isn't entirely random. *Mama* is a mother in very different languages (Russian, English, Italian, Mandarin...), probably due to baby's limited ability to speak - when wanting to suck, *mama* is one of the few words he can pronounce (so associated with mother), increasing the probability that *mama* is *mama*. Then *mama* is *mama* in geographically distant languages, as *incest* or *cannibalism* is taboo in geographically distant societies.

### 2. Utility of arbitrariness

The efficiency of the higher abstraction, resulting from arbitrariness of the sign, can be a criterion to assess the utility of the language, or other fields.

#### 2.1 The higher the arbitrariness, the higher the efficiency

The sign (signifier) cannot be entirely arbitrary, but the more arbitrary (abstract) it is, the higher its efficiency. Chinese signs directly or indirectly refer to reality, e.g. home is 家 (jiā) - pig under roof. The *sign language* of the deaf also refers to reality (shown signs "describe" their meaning), being so less abstract: the signifier and the signified overlap. Unlike spoken languages, such sign is hard to re-use. Abstract signs - letters a, b, c, ... (referring to nothing), and their combinations express all cases of reality more economically. Just 26 letters of English alphabet give, for 5 letters' words:  $26 \cdot 26 \cdot 26 \cdot 26 \cdot 26$  (=11 881 376) potential signs, far more than circa 50,000 Chinese characters (dictionaries rarely list over 20,000. An educated Chinese know about 8,000,

while 2-3,000 signs are enough to read a newspaper).

### 2.2 The more unique the signs, the higher the divergence

Few letters (a, b, c...) in European alphabets, in contrast to thousands of Chinese signs, create a bigger set of potential signs (with repeated letters). The Chinese characters are less efficient, as they are hard to re-use. They must be unique to express (without a combination of letters) different meanings. That's why the Chinese need more unique characters than Europeans to reflect reality. More unique characters increase deviation. So, the differences between Japanese, Koreans, Chinese, Cantonese, Vietnamese (all rooted in Chinese) are bigger than between European languages e.g. Latin (Spanish, Italians, French, Portuguese, Romanian) or Slavic (Russian, Polish, Serbian, Slovak, Czech, Croatian, Slovenian, Bulgarian, Ukrainian). Likewise, the deaf language (in spite of its limited vocabulary) has high divergence, Wikipedia says: "*It is not clear how many sign languages there are. A common misconception is that all sign languages are the same worldwide or that sign language is international. Aside from the pidgin International Sign, each country generally has its own, native sign language, and some have more than one (although there are also substantial similarities among all sign languages).*"



I built a program to analyse the re-usage of the signs in text. I took a random text from a British newspaper and then translated by google translator. As is visible below: English reuses signs more than Arabic and Arabic more than Mandarin. If diacritics are counted, the Slavic and Latin languages have more letters in their alphabets than English, so they reuse the signs a bit less than English but more than Arabic, Hindi. The languages using

abstract paired characters (Arabic, Hindu..) are more efficient than Chinese / Japanese, but less efficient than European 1-letter languages. It is because the paired letters are less repeatable than the 1 letter. More advanced analysis would be possible.

+ TEXT	English	+ TEXT	Arabic	+ TEXT	Chinese
+ RESULT 1		+ RESULT 1		+ RESULT 1	
- RESULT 2		- RESULT 2		- RESULT 2	
	1317 26.34%		787 10.22%	,	79 0.18%
e	805 16.1%	ا	525 6.82%	的	48 0.11%
t	602 12.04%	ل	411 5.34%	line	39 0.09%
i	508 10.16%	ن	250 3.25%	。	32 0.07%
n	457 9.14%	ي	242 3.14%	在	29 0.07%
a	452 9.04%	م	229 2.97%	我	25 0.06%
o	444 8.88%	و	188 2.44%	国	21 0.05%
r	385 7.7%	ت	175 2.27%	“	20 0.05%
s	362 7.24%	ة	127 1.65%	她	20 0.05%
h	332 6.64%	ر	115 1.49%	是	20 0.05%
d	224 4.48%	د	111 1.44%	有	20 0.05%
l	224 4.48%	أ	103 1.34%	为	17 0.04%
u	210 4.2%	ع	100 1.3%	这	17 0.04%
c	191 3.82%	ب	94 1.22%	们	17 0.04%
m	129 2.58%	ك	87 1.13%	公	15 0.04%
f	128 2.56%	ق	86 1.12%	英	15 0.04%
g	116 2.32%	ح	85 1.1%	民	14 0.03%
p	108 2.16%	ف	82 1.06%	个	14 0.03%
w	105 2.1%	د	74 0.96%	0	13 0.03%
y	102 2.04%	س	51 0.66%	e	13 0.03%
b	100 2%	ظ	48 0.62%	保	13 0.03%
,	70 1.4%	،	43 0.56%	—	13 0.03%
v	67 1.34%	ج	42 0.55%	s	12 0.03%
line	58 1.16%	line	39 0.51%	年	12 0.03%
.	50 1%	ص	34 0.44%	盟	12 0.03%
k	49 0.98%	.	33 0.43%	欧	12 0.03%
“	23 0.46%	ش	32 0.42%	”	11 0.03%
”	22 0.44%	”	31 0.4%	没	11 0.03%
j	19 0.38%	ى	29 0.38%	r	10 0.02%
,	17 0.34%	ظ	22 0.29%	但	10 0.02%

### 2.3 The higher the divergence, the simpler the grammar

With zero re-usage, language would be too inefficient to exist. The "radicals" are the special Chinese signs variously re-used to express something more or less similar. E.g. person 人 (rén), when repeated 人人, means everyone, or preceding mouth 口 (kǒu), e.g. 人口, means population (rén kǒu). The higher divergence of Chinese / Japanese is related to simpler grammar (no plurals / tenses or just few simply created...). A more advanced grammar would be too difficult to express by unique signs (multiple of other unique signs would be needed). To compensate the simple grammar and answer the necessity to specify cases, Chinese / Japanese use 'measure words', specific for persons, animals, flat objects etc, which MUST be used in counting (1 bǎ chair, 2 bǎ chairs, 1 gè person, 2 gè persons...). It doesn't exist in European languages, nor Arabic, whose grammar is sufficiently complex to specify.

### 2.4 Grammatical structures produce similarities

Set of possible signs (signifiers) for European (or non-Chinese) languages is:  $N*N*N*...$  (N being the number of letters in a specific alphabet). It is huge, but final, further reduced by clearing non-senses like 'aaaa', 'bcld'..., etc. Grammar excludes 'crazy' signs, with

rules to reuse letters in a certain way. In Arabic the words (of similar things, activities) arise by entering vowels among 'root letters'. E.g. words related to writing contain ktb:

كتاب (kitab) book  
 كتب (kutib) he wrote  
 يكتب (yaktub) he writes  
 كاتب (kaatib) writer  
 مكتب (maktab) office  
 مكتبة (maktaba) library ...

Even if ktb is arbitrary, derived words are a lot less random. Behind signs may be other "super" or "parent" signs determining likelihood of (derived) signs to occur. Grammar's function to reuse signs leads to a hypothesis: the verbs (or words with more similar cases) are more similar than words with simpler structure. E.g. 'to be' (or other verbs) in Spanish, Italian, French... should be more similar than words like 'very', 'too', 'low' - as it costs more to replace words with more grammatical cases. It can be tested by algorithms.

SPANISH	FRENCH	ITALIAN	SPANISH	FRENCH	ITALIAN
yo soy	je suis	io sono	yo nado	je nage	io nuoto
tú eres	tu es	tu sei	tú nadas	tu nages	tu nuoti
él es	il est	ella/egli è	él nada	il/elle nage	ella/egli
nosotros	nous	noi siamo	nosotros	nous	nuota
somos	sommes	voi siete	nadamos	nageons	noi nuotiamo
vosotros	vous etês	esse/essi	vosotros	vous nagez	voi nuotate
sois	ils sont	sono	nadáis	ils/elles	esse/essi
ellos son			ellos nadan	nagent	nuotano

SPANISH	FRENCH	ITALIAN	PORTUGUESE	ROMANIAN
demasiado	trop	troppo	demais	prea
muy	très	molto	muito	foarte
poco	peu	po '	bocado	pic
gracias	merci	grazie	obrigado	mîltumesc
mucho	beaucoup	molto	muito	mult
bajo	bas	basso	baixo	scăzut
derecha	droit	destra	direito	dreapta
izquierda	gauche	sinistra	esquerda	stânga
lejo	lieu	lieu	lieu	loc
arriba	dessus	su	para cima	în sus
todavía	encore	ancora	ainda	încă

### 3. Sign in psychology / psychiatry

Psychology is a set of notions (signifiers) reflecting cognition or personality. Neurosis, psychopathy, psychosis, IQ, originality etc... manifest themselves via certain signs, which are named associations of psyche and reality, explored by psychometric methods that should be valid and reliable. Antipsychiatry challenged the validity of psychiatric diagnosis. Foucault claimed that seemingly independent psychiatry (and other sciences)

serves upper class to exclude lower one. Like colonizers of Latin America coerced to use Spanish, the diagnosis (signifiers) is enforced from above.

### **3. 1 Reliable psychometry needs abstract / arbitrary sign**

The sign, in order to distinguish quality in psychometrics, must be abstract enough to be reliable. Torrance Creativity Test (1974) assesses distinct answers (=flexibility), their frequencies (=originality), details (=elaboration), total answers (=fluency). Figure 1 shows the first pattern, which people complete and name, "as nobody would do"<sup>1</sup>.

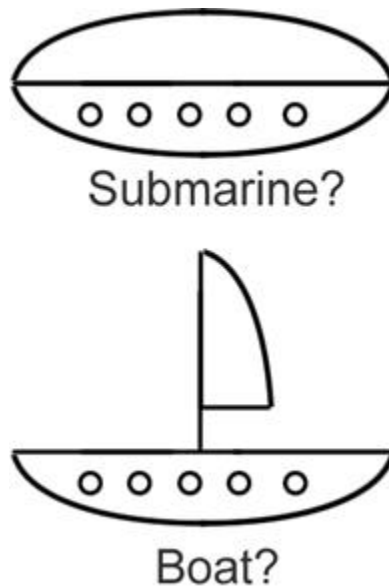


**Boat** is frequent, while **submarine** is an original answer. The pictured submarine and boat have the same 5 circles' hull. Are they identical, slightly or entirely distinct? According to pictographs, they can be classified as the same class (object of 5 circles' hull). But the abstract signifiers 'submarine' and 'knife' make a difference, because they can be represented by various pictographs: similar or very different (e.g. submarines without circles). As languages need abstract (arbitrary) signs to be efficient, so do psychometrics.

---

<sup>1</sup> 'As nobody would do' is an instruction in the creativity tests to encourage persons to invent the most original answer. Normally the first association is usually banal / ordinary (the same or similar as other people have). So, the instruction 'complete the shape as you think nobody else would do it (the same way)' emphasizes to avoid most likely answers. Then the originality is calculated by the frequencies of the answers - the less frequent, the more original / unique. However there are classification problems, when signifier seems to be more reliable to assess originality, than drawn figures, because there are many ways how to draw e.g. knife, boat, and some drawn parts may overlap (although the objects may be very different). It is a general problem also with projective tests (like Rorschach) how to reliably classify / evaluate the answers...

## Psychological and Other Aspects of the Sign's Arbitrariness



Rorschach (1921) reveals unconscious emotions projected (=associated) to the inkblots. 'Oligophrenic detail' shows it may reflect IQ: children or mentally handicapped more often interpret inkblot as a part of something (human, animal). The abstract sign is more efficient, and needs higher IQ to be invented. The sign isn't arbitrary because the sample of reality (depending on IQ) determines what is signified (set of all signified objects), affecting the signifier itself. E.g. Piaget showed in his experiments that the same ball at distinct places isn't the same ball for the child of certain age. For this child, the same ball under bed is 'ball A', while the same ball on the table is 'ball B'. It multiplies the signifiers, while there should be just one: ball.



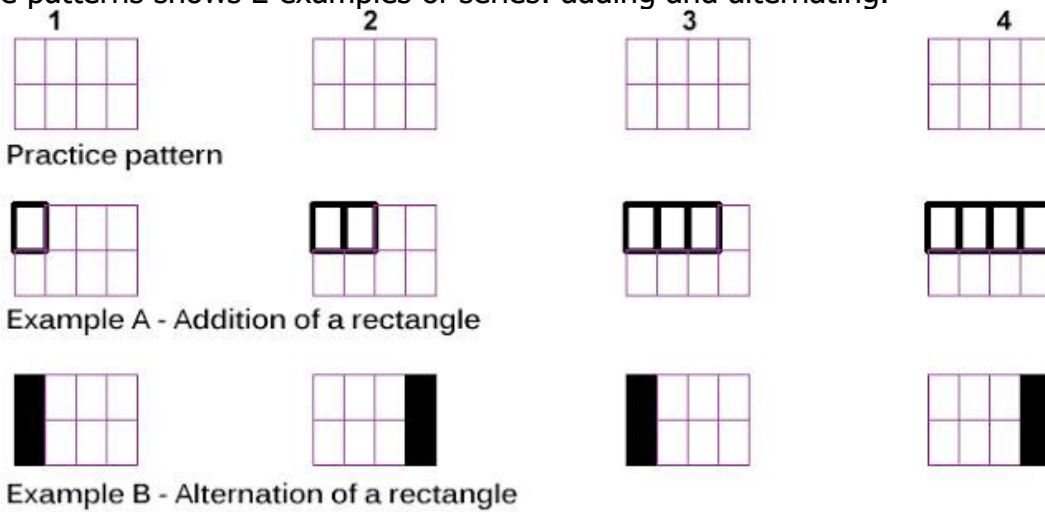
Rorschach's inkblot. Sexual Imagery: Breasts, primarily the rounded areas at the top of the image. Good/Common Answers: "Bat, butterfly, female figure (in the centre), moth"



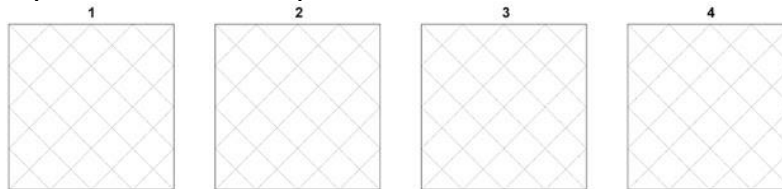
Psychological and Other Aspects of the Sign's Arbitrariness

You may be a little paranoid if you see: "Mask, animal face, jack o lantern"  
 Bad Answer: "Anything insulting about the female figure (it is an indicator of your own body image)"....

The right answer in IQ tests is a correct sign (out of all signs). In my Master thesis in psychology (1998), I made a test to assess logical series drawn on 4 patterns. Instead of selecting the right sign (classic IQ test), people were creating series. So, the IQ and creativity (originality, flexibility...) or personality traits could be observed altogether. To be valid, series must contain repeated signs e.g. rotation, diminishing, adding... which may be combined. The repetition of the sign is like a grammatical rule defining series. Practice patterns shows 2 examples of series: adding and alternating.

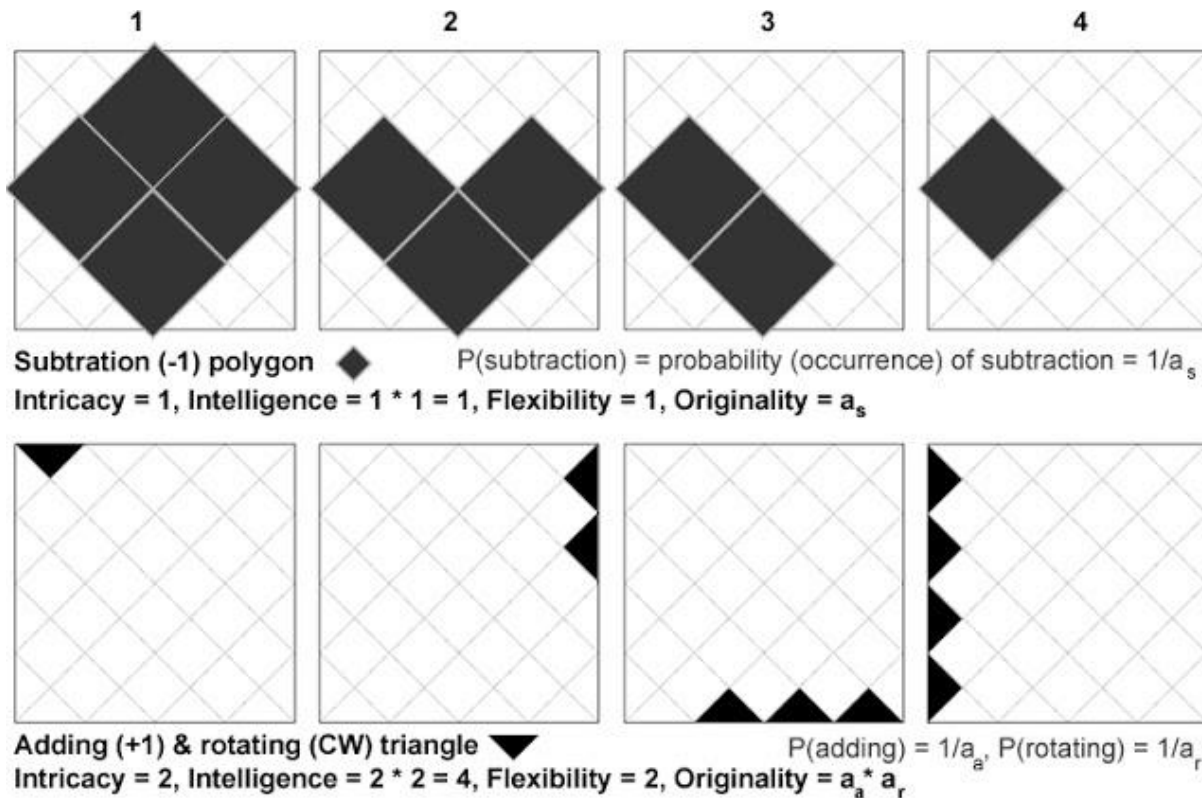


I used 4 different patterns. The first pattern to draw series:



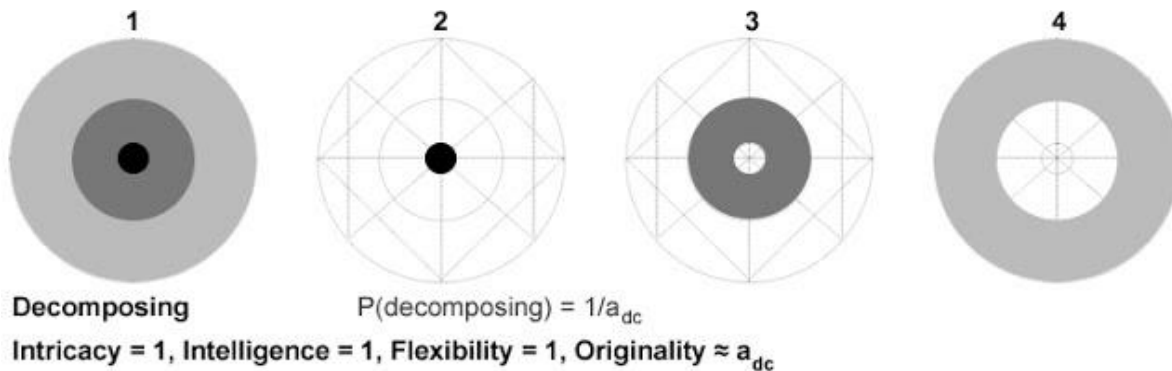
Testing 600 people, I identified 24 distinct series. Below are 2 examples.

Psychological and Other Aspects of the Sign's Arbitrariness



This test is much harder than classic IQ tests. Some people weren't even able to create series, or used the same logic (adding) for all patterns. Series needs signifier (rotation, increasing & sum, etc) and signified (drawing) together. If both are present at the same time, how can new sign e.g. invention arise? From where originated the name (signifier) for e.g. PC, bulb, train, phone, alternator...? Tsiolkovsky, the father of astronautics, was inspired by Verne's fictions. The rocket hadn't existed, when Verne signified it. So, the signifier (name of rocket) preceded the signified (object launched to space)? Or the signifier could somehow be "calculated" post facto? Or is it individual for every case (once signifier first, at another time signified)? Anyhow, the birth to previous inventions which influence its name and construction.

My research showed some other findings, e.g. type of series can depend on profession, when technicians overused 'decomposing', because in technical fields the problems are broken down, in order to be resolved like integration by parts: [Riemann–Stieltjes integral](#). So, the frequency of the sign doesn't always indicate originality (decomposing is a rare logic in general, but in technical fields it is common).



#### 4. Art and sign

The artistic value increases by the uniqueness against the criterion via which the art is evaluated. This criterion is a sign - abstract enough to be repeated. E.g. cubism shows the same object from different angles causing a 'plastic' effect, impressionism blurs points / lines of the objects, so the colors become more appealing. The 'different angle', 'blurring' are signs re-used to compose the art.

There are qualitative differences in the uniqueness. E.g. to make a striptease ('a performance') is more unique than not to make striptease. But anybody is able to do striptease, while only few can jump a pirouette like a figure skater. This way, it's harder to do cubistic art (according to its definition) than 'abstract' 'art' (e.g. Pollock) without clear sign. That abstract 'art' "reflects" the mood / psyche is too vague a sign to allow distinction. After all, cubism reflects mood / psyche too, but in addition it satisfies its more abstract criterion (sign). The figure skater can be naked, but a stripper can hardly jump a pirouette.

New technology leads to a new sign: new art. More options to generate sound, picture, video, application need a new sign to define the art (image is too easy to create now). But the new sign can arise without new technology, like Mannerism, Cubism... So, the new art primarily depends on a society that can ignore, deny, punish or promote it, while the technology is secondary.

Today, the only sign has become the market controlled by ad. Anything advertised can be 'art'. Duchamp's Fountain 1917 (urinal), wasn't just a satire, but an omen of coming times... Maybe the decadency must precede the period of the new art defined by more abstract sign promoted by society altering economic system to prevent (incompetent) monopolization of art. Critic Dave Hickey lamented (2012) the incompetent rich art buyers greatly overrating contemporary artists, adding: "At the moment it feels like the Paris salon of the 19th century, where bureaucrats and conservatives combined to stifle the field of work. It was the Impressionists who forced a new system, led by the artists themselves. It created modern art and a whole new way of looking at things. ...Lord

knows we need that now more than anything. We need artists to work outside the establishment and start looking at the world in a different way - to start challenging preconceptions instead of reinforcing them." Or, as art historian Harvard Benjamin complained (2016), the market is an exclusive criterion, distorting a real contribution.



## RÉFÉRENCES

Benjamin, H. (2016). *La crítica de arte ha perdido totalmente su función*, [El País](#)

Hickey, D. (2012). *Nasty, stupid' world of modern art*, [The Guardian](#)

Foucault M. (1971). *Justice vs. Power*, Debate on human nature (with Chomsky)

Rorschach, H. (1927). *Rorschach Test – Psychodiagnostic Plates*. Cambridge, MA: Hogrefe Publishing Corp. ISBN 3-456-82605-2.

Torrance, E.P., (1974). *Torrance tests of creative thinking*, Scholastic Testing Service, ISBN 0663310393, 9780663310395

**Miro Brada**  
**Computer Programmer**  
**EACH (Estate Agents Clearing House), UK**  
**E-mail: [miro.brada@yahoo.co.uk](mailto:miro.brada@yahoo.co.uk)**