

REPRESSIVE BORDER CONTROL BY SENSORIMOTOR INHIBITION AND RETURN OF THE REPRESSED AS PHONEME PHANTOMS

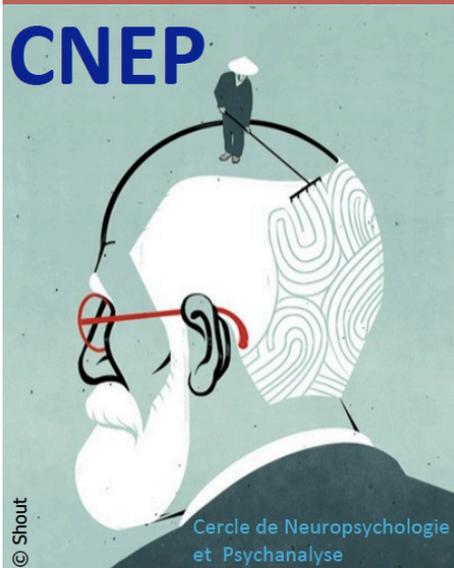
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OBJECTIVE DETECTION THRESHOLD (ODT)

- separate detection task: *did you see something or nothing?*
stimulus = unconscious WHEN COMPLETE ABSENCE OF CORRELATION between
 - forced-choice responses of participant
 - actual blank-or-stimulus presentations
- *‘is it there (or not)?’* requires
 - no content information
 - distinction between perception and imagination
 - definition of consciousness
 - indications of reality (Freud, 1895) – tags (Shevrin, 1998)
- Freudian indication of reality \approx modern efference copies

- I. INDICATIONS OF REALITY \approx EFFERENCE COPIES
- II. SENSORIMOTOR INHIBITION \approx REPRESSION
- III. PHANTOMS
- IV. DEFENSE DYNAMICS CONSTITUTIVE OF THE MIND

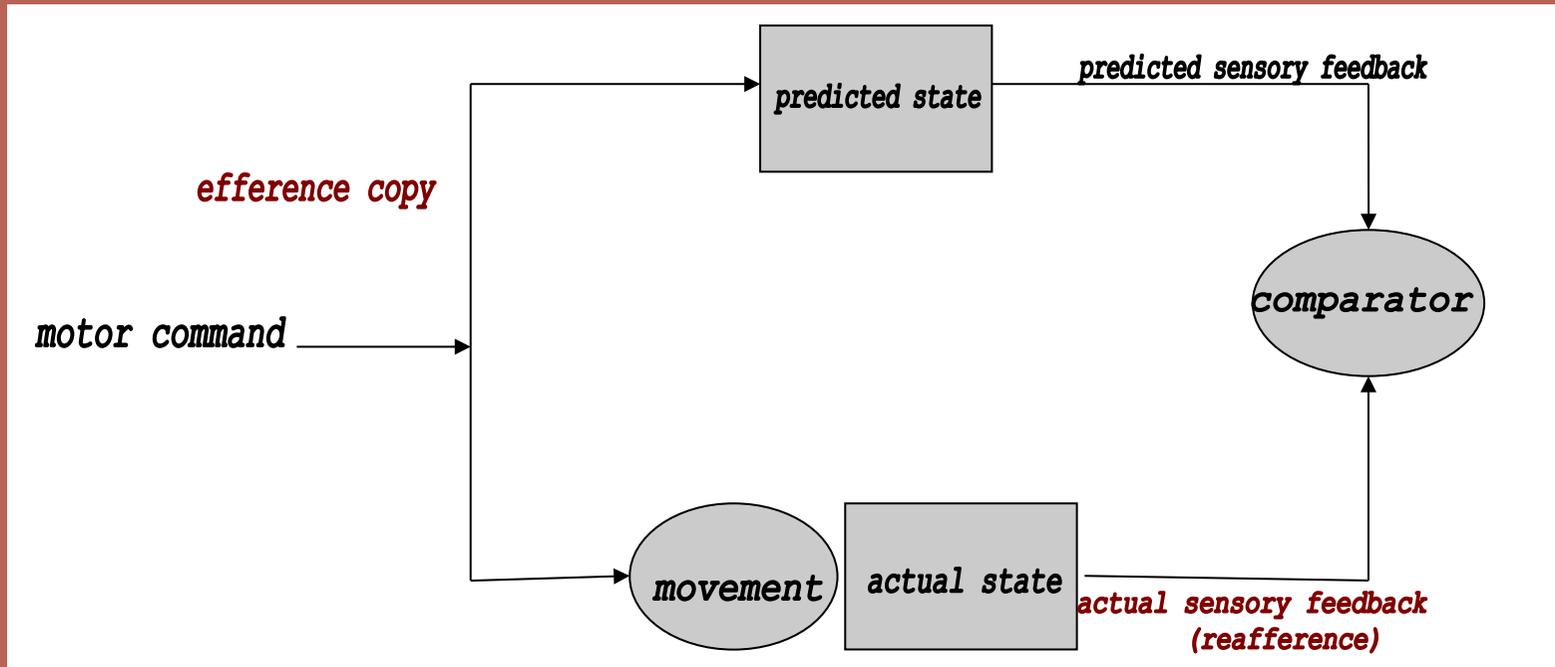
**I. INDICATIONS OF REALITY \approx
EFFERENCE COPIES**

both the Freudian and the neuroscience tradition draw from the 19th century physiologist Hermann von Helmholtz

I. VON HELMHOLTZ, 1878

“The impulse to move, which we initiate through the innervation of our motor nerves, is immediately perceptible.”

The Efference Copy Model



Blakemore, Wolpert & Frith, 2000; Georgieff & Jeannerod, 1998; Sperry, 1950; van Holst, 1954

II. FREUD, 1891-1895

'direct perception of the impulse to move'.

- i. ON APHASIA: feeling of innervation
- ii. THE PROJECT: *Abfur Nachrichte* = indications of reality

FREUD, THE PROJECT, 1895

« it is probably the ω neurons which furnish these indications of reality »

- ***ω neurons are engaged in the constitution of perception***

- *« excited along with perception »*
- *« behave like organs of perception »*

even if they are motor neurons

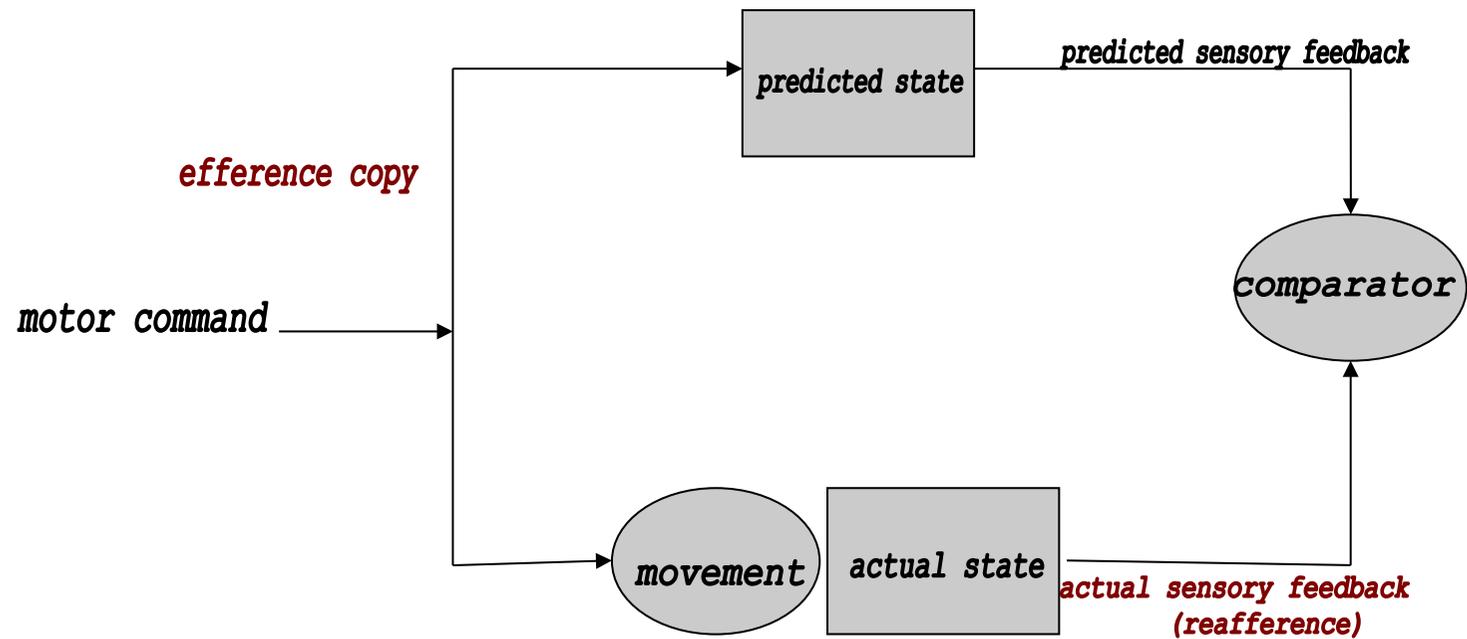
- *« it must be assumed that the ω neurons are originally linked anatomically with the paths of conduction from the various sense organs and that they direct their discharges back to the motor apparatuses belonging to those same sense organs. »*
- *« their discharge direction is efferent, i.e. in the direction of motility»*

ex. oculomotor neurons: linked with the sense organ of vision and direct their discharges to the muscles of the eye

« In the case of every external perception a qualitative excitation occurs in ω [this] ω excitation leads to ω discharge, and information of this, as of every discharge, reaches III. The information of this discharge from reality

Abfuhr

⇒ indic
copies



active apperception gives
efference copy/indication of reality information
to situate the origin of the content
either outside (perception) or inside (imagination)

active apperception \approx consciousness

both the psychodynamic and the neuroscience framework
(e.g. Obhi et al., 2009) propose that
indications of reality/efference copies
are characteristic for conscious processing

- a wide variety of operations, including complex processing, can occur unconsciously because they only require content information
- 1 ms: long enough to deliver content information but not long enough for active apperception
≈ an experimental approximation of an internal activation
 - e.g. mind is wandering: bump upon unconscious conflict material

- **crucial difference: only actively grasped stimuli are submitted to an inhibition process**

efference copy-based sensorimotor attenuation

- Blakemore et al., 2004: cancel the feeling of predictable effects of movements
- Heinks-Maldonado et al., 2005; Christoffels et al., 2007: cancel the feeling of predictable articulation

- Freud, 1895:

a maturing ego increasingly acquires the means to inhibit mental processes by use of the indications of reality

II. SENSORIMOTOR INHIBITION \approx REPRESSION

efference copy-mediated attenuation mechanism \approx
neurophysiological functional principle for repression
(Bazan, 2012; Bazan and Snodgrass, 2012)

CHAPTER

On unconscious inhibition: Instantiating repression in the brain

Ariane Bazan and Michael Snodgrass

in *From the Couch to the Lab*

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frontiers in
PSYCHOLOGY

HYPOTHESIS AND THEORY ARTICLE

published: 05 November 2012
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From sensorimotor inhibition to Freudian repression:
insights from psychosis applied to neurosis

Ariane Bazan *

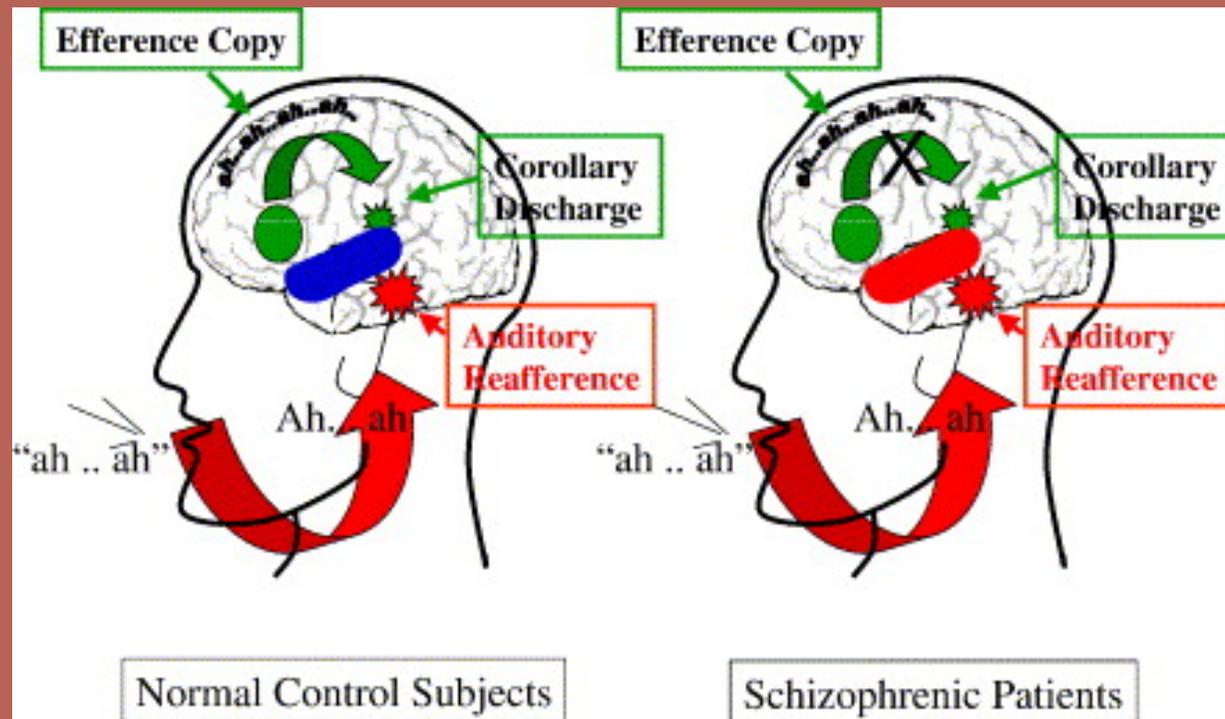
psychoanalysis on psychosis

fundamental metapsychological difference between a neurotic and a psychotic structure is supposed to be the presence, resp. the (occasional) absence of repression

- De Waelhens (1978, p. 149) and Laplanche and Pontalis (1973) summarize Freud
- Lacan (1955–1956) in psychosis the unconscious is exposed for all the world to see (“a ciel ouvert”)

neuroscience on psychosis

cf. defective corollary discharge model for verbal auditory hallucinations for the voices in psychosis (Frith, 1992; Frith et al., 2000)



Ford & Mathalon (2005). Corollary discharge dysfunction in schizophrenia: Can it explain auditory hallucinations? International Journal of Psychophysiology 58, 2-3, 179-189.

neuroscience on psychosis

compromised efference copy-mediated attenuation mechanism thought to explain

- hearing of voices (unattenuated feedback of proper subvocal articulation)
- intrusive feelings
- delusions of passivity
- loose thought associations in psychosis

REVIEW

NEUROREPORT

Why can't you tickle yourself?

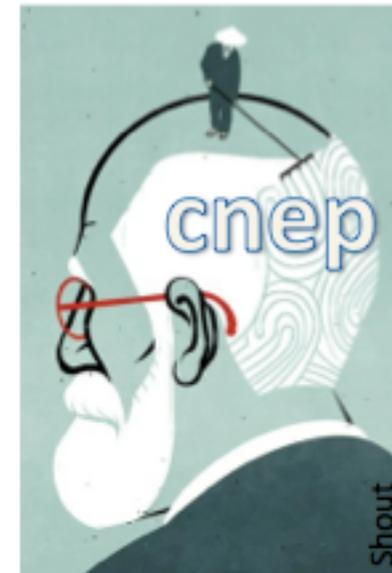
Sarah-Jayne Blakemore,^{CA} Daniel Wolpert and Chris Frith

psychoanalysis on psychosis

Failing inhibition in psychosis
shows what repression
might be at a brain level
- what I learned from Hervé

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London, UCL, 8th October 2015



the chain of events which is painful to Hervé

moving people or things in the world



a 'fizz' or a 'popping' or a 'pinching feeling' on his retina ('short-circuits')



(the only and direct cause of) an 'undesirable image'

a needle in the eye

my eye swallowed

a penis through my knife

my viscera extirpated

my balls unhooked or melted

...



to undo the image: the moving target that first caused the pinch on his retina is asked to un-do the guilty movement



if this doesn't happen: persecution and accumulation

Hervé's symptoms	Freudian interpretation	sensorimotor interpretation
pinching feeling in the eye	/	dysfunction of the efference copies of the eye movements
penetrating perceptions induced by exterior moving stimuli	invalidation of the signs of reality associated to vision resulting in a hallucinatory type perception	dysfunction of the ocular efference copies induces a difficulty to grant a status of exteriority to a perception (Lenay)
proliferation of 'undesirable' thoughts in an associative way	disinhibition and predominance of primary processes	positive somatosensory activation (lack of attenuation): <i>a disinhibition of the identification processes in the ventral pathway?</i>
back-and-forth movement to restore a bearable relationship	/	a reversible unconscious ocular movement constitutive of perception is replaced by a conscious physical movement

psychosis

putting the psychodynamic failure of repression
together with the sensorimotor failure of
attenuation:

**sensorimotor attenuation
constitutive of repression**

III. PHANTOMS

REPRESSION IS A SPECIAL INSTANCE OF INHIBITION FOR EMOTIONALLY THREATENING STIMULI

- action or speech fragments invested with more drive arousal pop up more frequently
- in case their execution might be emotionally threatening these require a ***MORE STRUCTURAL LEVEL OF INHIBITION***

sustained inhibition induces mental imagery

- *Jeannerod (1994: 201):*

« If the goal [of an action plan] were not reached, the sustained discharge would be interpreted centrally as a pure representational activity and give rise to mental imagery.»

~ limb action phantoms

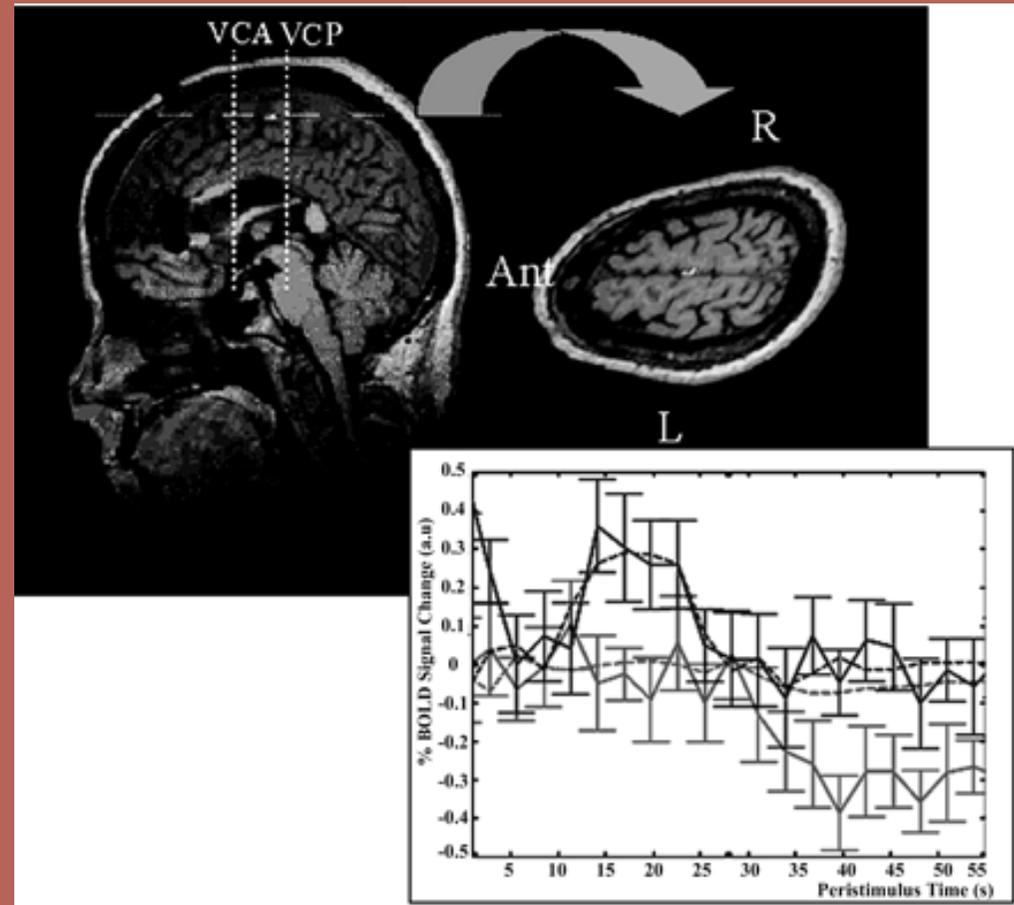


Ramachandran: phantom limbs

McGonigle et al., 2002
case of a patient with a local mesofrontal lesion
transitory experience of a supplementary « phantom arm »

*Haemodynamic activation (measured using fMRI) in the brain of E.P., a right-handed stroke patient, while she perceives a supernumerary 'ghost' left arm, contrasted with periods when the ghost arm was not present. A single cluster in the right **supplementary motor area (SMA)** displayed a significant pattern of signal change during the presence of the ghost arm.*

Activation in motor regions of the brain may be sufficient to cause somatic phantom perceptions like E.P.'s. D. J. McGonigle et al., pp. 1265–1274.



~ phonemic phantoms

« A presentation **which is not put into words, or a psychological act which is not hypercathected**, remains thereafter in the Ucs.»

(Freud, 1915, The Unconscious, p. 186)

The *structural inhibition* on these emotional fragments will induce:

1. mental imagery with formal characteristics, i.e. ***phantoms***

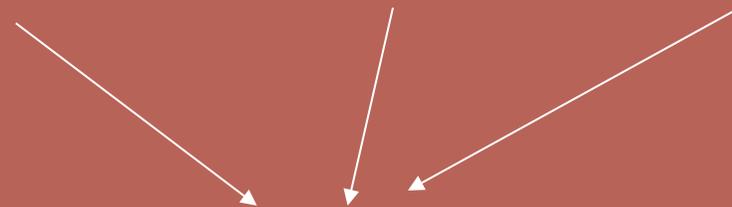
2. spill-over effects

F.

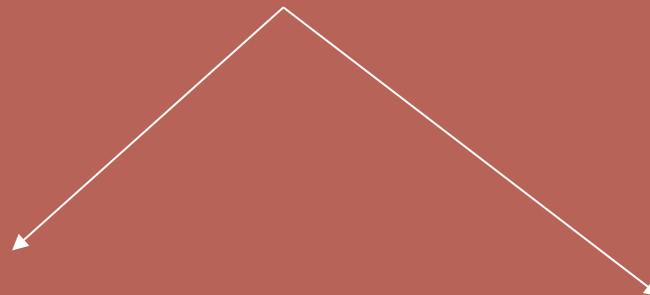
« Nature determines everything. Everything comes from nature. Everything has an *effect*. (...) Colors have an *effect*. (...) Metals don't bend, inox bends. It has *effects* due to circumstances. A guy and a girl have an *effect* on each other. This is the meaning of life, the *affection*, this is perfect. When something is done with *effect*, it is very well done. The teacher says it is perfect. (...) Everything has an *effect*. Proteins, all of them, from one to twelve, they have an *effect*. To eat [in Dutch: *Fretten*]. Djezus To eat [*Fretten*]. »

the phantom of Ef

Sisters: Sofie Stefanie Steffie



Patient F.

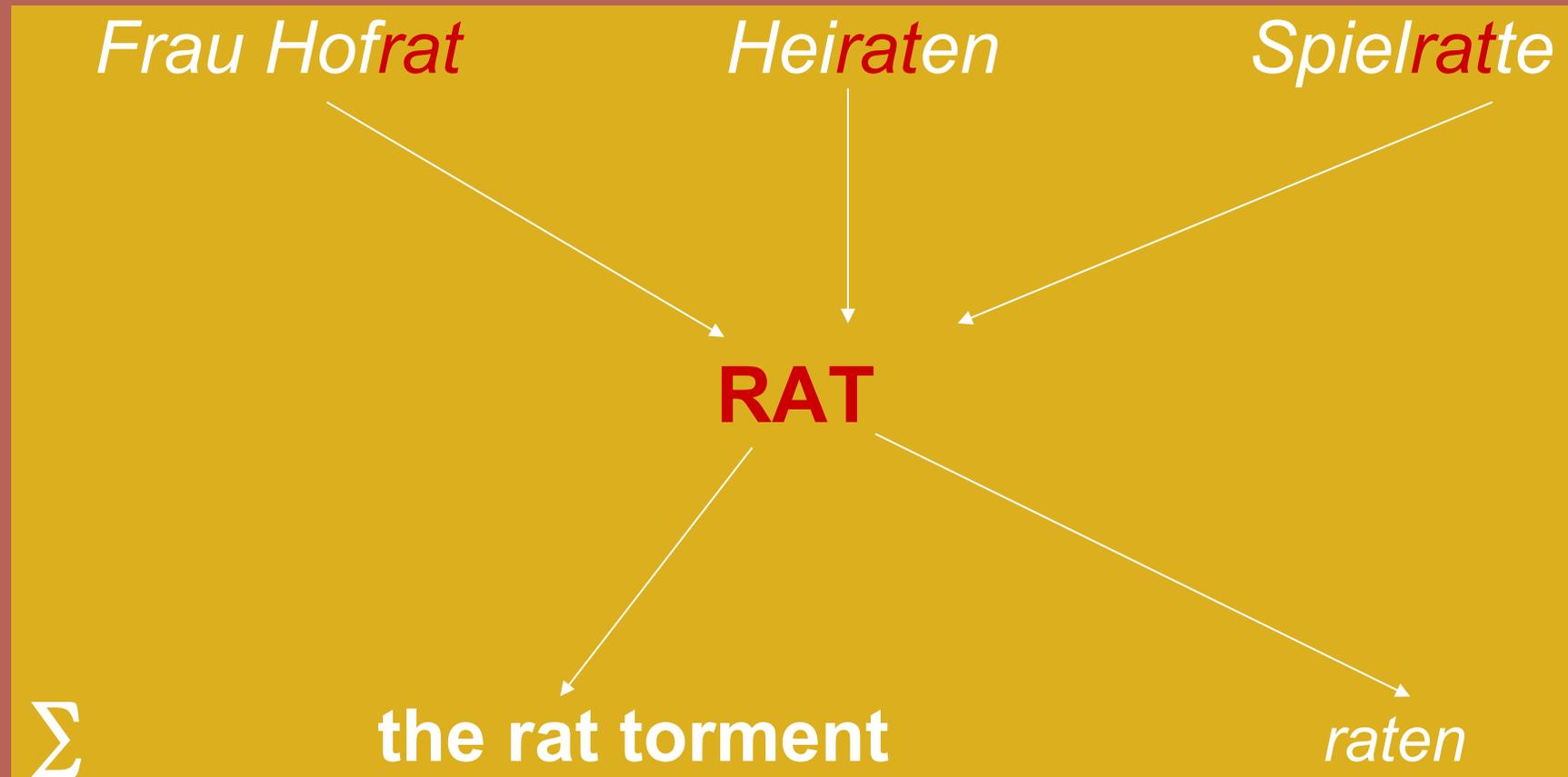


Σ

'effect'

'fretten'

the Rat phantom in the Ratman (Freud, 1919)





Voix psychanalytiques
Collection dirigée par Michel Peterson

«Nous portons dans nos voix des fantômes que nous transportons, le plus souvent à notre insu, de génération en génération et qui nous parlent de notre histoire, de notre descendance et de notre identité. La plupart du temps ces fantômes agissent sous couvert. Ils refont surface dans nos rêves, nos lapsus, nos anxiétés et dans nos symptômes. La psychopathologie, c'est la pathologie du fantôme, du signifiant indicible mais néanmoins transmis. Tel un bras fantôme ou une jambe fantôme, ce signifiant bien qu'absent est investi. Il est investi d'une pulsion ou d'une intention mais, pareil au membre fantôme, son action véritable, c'est-à-dire son articulation, est bloquée. Or, ce qui n'est pas possible pour un bras ou une jambe, le devient pour une séquence phonologique: on peut refaire le même mouvement exactement — c'est-à-dire refaire point par point une même articulation — tout en changeant radicalement la signification de cette articulation. C'est la structure intrinsèquement ambiguë du langage qui permet la survie et donc la transmission du fantôme phonémique, alors que les fantômes des membres finissent par s'éteindre. C'est elle qui donne lieu à l'inconscient et à son action par-delà l'entendement conscient qu'on peut en avoir.

Ce sont ces propositions-là sur la structure linguistique de l'inconscient qui font l'objet de ce livre.» A. B.

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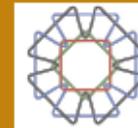
Ariane Bazan

Des fantômes dans la voix

ARIANE BAZAN

Des fantômes dans la voix

*Une hypothèse neuropsychanalytique
sur la structure de l'inconscient*



Voix psychanalytiques

Liber

**IV. DEFENSE DYNAMICS
CONSTITUTIVE OF THE MIND**

Repression shares functional principles of efference-copy-mediated attenuation with non-defensive cognitive mechanisms, such as the suppression of activation in order

- to stop unwanted movements (e.g. Mattia et al., 2012)
- to constrain visual, movement or speech perception (resp. Hafed & Krauzlis, 2006; Haggard & Whitford, 2004; Niziolek et al., 2013)
- to consciously suppress unwanted memories (Anderson & Levy, 2009)

➔ Neither alpha synchronization nor efference copy-induced attenuation is constituted of unique functional principles as compared to conscious or cognitive processes.

Instead, DEFENSIVE FUNCTION IS BASED ON DYNAMIC PRINCIPLES:

- the α -hose is used flexibly when needed to consciously inhibit irrelevant and interfering processes, but when it is supposed to subserve unconscious defense, *a permanent state of alertness must be assumed.*
- efference-copy mediated inhibition is used flexibly for the selection of action alternatives, but when it subserves repression *more permanent attenuation of certain representations must be assumed.*

→ *the same functional principles, when used ad hoc subserve cognitive mechanisms, and when used with a more permanent character subserve psychodynamic mechanisms.*

two brain mechanisms for unconscious defense

	(PRIMAL?) REPRESSION	REPRESSION (PROPER?)
brain mechanism	steerable targeted α synchronization pulses	efference-copy mediated attenuation
initiated proximally to	the drive derivatives by any percolating activation of the unconscious conflict	the entrance locus of the perceived stimulus
locus of agency	Id	Ego
target of defensive act	internal contents (mental wanderings)	external stimuli Freud (1926, p. 93): « it exists only in regard to external stimuli, not in regard to internal instinctual demands »
motive of defensive act	prevent activation of internal conflicts and access of these conflicts to associative and executive pathways Freud (1926, p. 141): “A repressed instinctual impulse can be activated from two directions: from within, through reinforcement from its internal sources of excitation, and from without, through the perception of an object that it desires.”	

(PRIMAL?) REPRESSION

REPRESSION (PROPER?)

identification

not required since only disruption of integration into associative networks

required because inhibition is precise negative of activation induced by the stimulus

knowability

not knowable because defended against

known because repressed

return of the

?

countercathexis =



psychosis

only alpha synchronization at hand?

hampers

metaphor of mechanism

bazooka

a steerable hose 'weapon'

border control

'protective shield'

Freud (1926, p. 96): "In repression the decisive fact is that the ego is an organization and the id is not."

~ thank you

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