

THE BRAIN OF A CREATIVE ARTIST

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Art of Creativity, Training Course

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Point of departure

- Postmodernistic view of written history:
- Historical texts are texts like other literature (novels, science fiction, myths, scientific papers)
- Science, art, religion are windows, which make it possible to learn about the outside – and inner – world
- What we have learned (knowledge) is described by words which make it accessible to other people

A Czech village teacher born in 1928

- Likes to teach pupils to sing folk songs
- Becomes chorus master (charisma esp. for female members of the chorus)
- When 40 years old, he works at a radio station,
- Political engagement in 1968 (Socialisme with a Human Face, Prague Spring, Dubček) followed by Soviet occupation
- 1969: thrown out of the radio, separation from his sweetheart

Major Depressive Episode

- Depressed mood most of the day
- Markedly diminished interest in all activities
- Significant weight loss
- Insomnia nearly every day
- Psychomotor retardation
- Fatigue, loss of energy
- Feelings of worthlessness, guilt feelings
- Diminished ability to think and concentrate
- Thoughts of death, plans for committing suicide

Brain of a depressed patient

- Decreased volume of the hippocampus, prefrontal cortex and amygdala
- Decreased concentration of BDNF
- Increased release of stress hormones – no response to dexamethasone
- Decreased availability of serotonin on 5HT_{1A} receptors

Treatment

- 1. Psychotherapy

Attribution Theory

The brain is a causality producing machine

ANXIETY IS WORSE THAN FEAR

Finding the cause of my suffering is relieving

It is a reward

Treatment

- 1. psychotherapy
- 2. antidepressants (SSRIs)

Miriam - Student of Art Academy

- When 20 years old, she was so keen and passionate and full of fervour to get down to the nitty-gritty of the art of painting that she lost contact with reality and had visions of figures and gradually heard their voices.
- Was diagnosed as suffering from schizophrenia

Miriam's brain

- Hyperactivity of the dopaminergic limbic system
- Decreased dopaminergic and glutamatergic activity in the prefrontal cortex
- Lower volume of the cingulate and hippocampus

Treatment

- 1. Psychotherapy
- 2. Antipsychotic drugs

- (hospitalized in a closed ward of a psychiatric hospital)
- She meets there another patient, a student of psychology and they fell in love

Jacob writer, poet, painter

- When 35 years old, becomes dependent on alcohol, marijuana, experiments with hallucinogens
- Treatment: psychotherapy, SSRIs

Mind = nervous activity

Warning

- Mental activity is not a product of the matter (brain)
(a product is a separate entity of its maker)
- Culture is a product of the mental activity

WHAT IS MENTAL ACTIVITY?

- **Mental activity (mind, consciousness) is a property of matter (brain)**
- **Consciousness (mind) is defined by its accessibility by introspection and is knowable thanks to the language**

Traditional opinion

- The **brain** is subject to natural laws including **causality**
- **Mental activity** as a **subjective experience** need not follow the laws of nature – causality and determinism need not be valid
- Thus, the subjective experience of **free will** – and indeterminism – is made possible

Faith vs. scientific research

Faith and science are separate domains

from the gnoseological point of view

- Speaking about **mind**, mental processes, mental activity, selfreflection, subjective experience, consciousness
- It will not mean **soul or spirit** or anything else which is considered immortal

Methods of cognition

- **Brain:** observation of behaviour (behaviorism), EEG, brain imaging (PET, functional magnetic resonance) biochemistry
- **Mind:** verbal communication, language

Karel Jaspers - psychiatrist

- **Brain**: causality, experiment
- **Mind**: the evidence is validated by a consensus (agreement) about the **comprehensibility** of the relations among various subjective experiences
- **Incomprehensibility**: criterion of **pathology**

Language

Incomprehensible is where we miss words:

Non-Euclidean geometry, general theory of relativity, quantum mechanics

The language is an „architect“ of nervous structures which organize the cognition of the external world and of the subjective experience

Outside reality and the inner truth...

- Do the paths of outside and inside knowledge stray apart?

L.C.Roth, JPL, NASA sec. M.Mináriková

- Language (and art) is the interface...

What is common to:

- Drug dependence
- Hallucinatory-delusional experience
- Workoholism
- Love
- Deep involvement in a creative work of a talented artist

Dopaminergic reward circuits

FUNCTIONAL MAGNETIC RESONANCE:

Watching an erotic film – or heroin administration - increases metabolic activity in the limbic structures

When the person becomes **addicted** also **stimuli associated with heroin** administration increase this activity

REWIRING OF THE BRAIN

- In an heroin addict the erotic film **does not** increase the metabolic activity in the reward circuits

Reality can be approached from various angles

- Religion
- Science
- Art
- Philosophy
- (myth)

Attribution Theory

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ANXIETY IS WORSE THAN FEAR

Alleviation of suffering

If I know the cause of my suffering, I feel better – at least a bit

It is a reward