

Prihodnost v možganih: sanje, ki gradijo svet

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VZAJEMNA
zdravstvena zavarovalnica

FENS

Federation of
European
Neuroscience
Societies



**TEDEN
MOŽGANOV**



SiNAPSA
SLOVENSKO DRUŠTVO ZA NEVROZNANOST
SLOVENIAN NEUROSCIENCE ASSOCIATION



za **možgane**

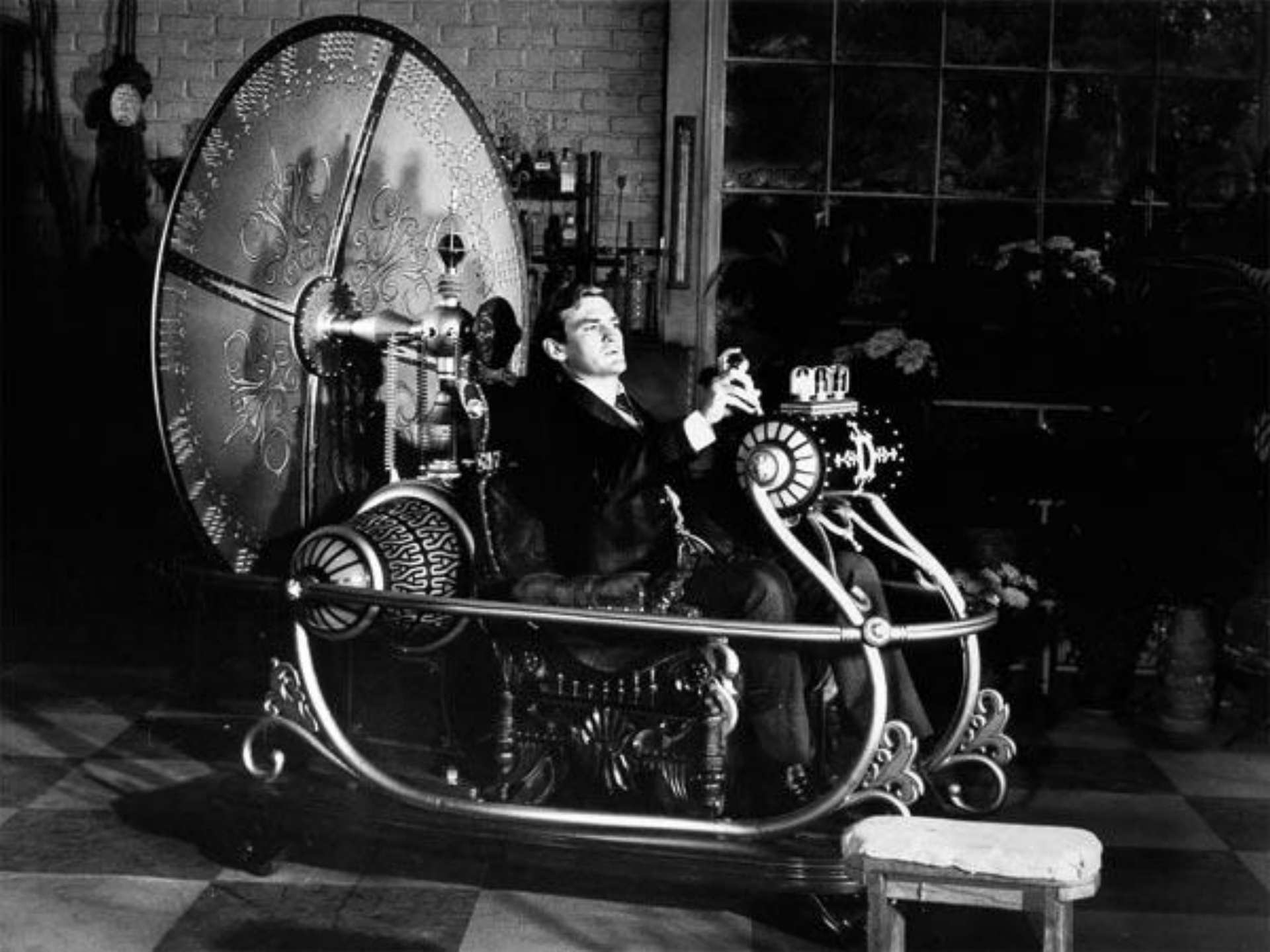
THE
DANA
FOUNDATION

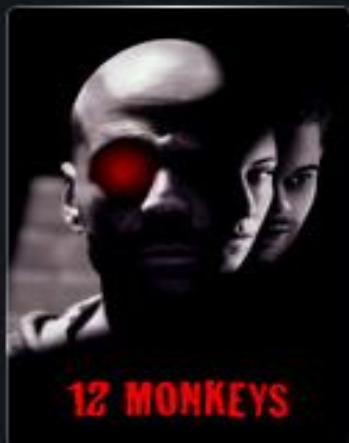
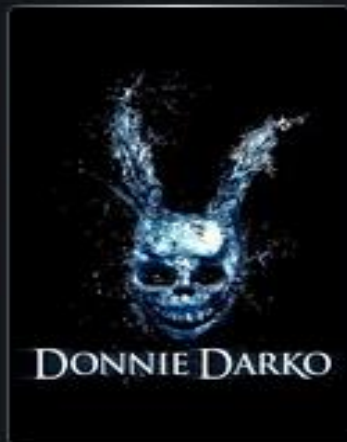
Teden
možganov 2018

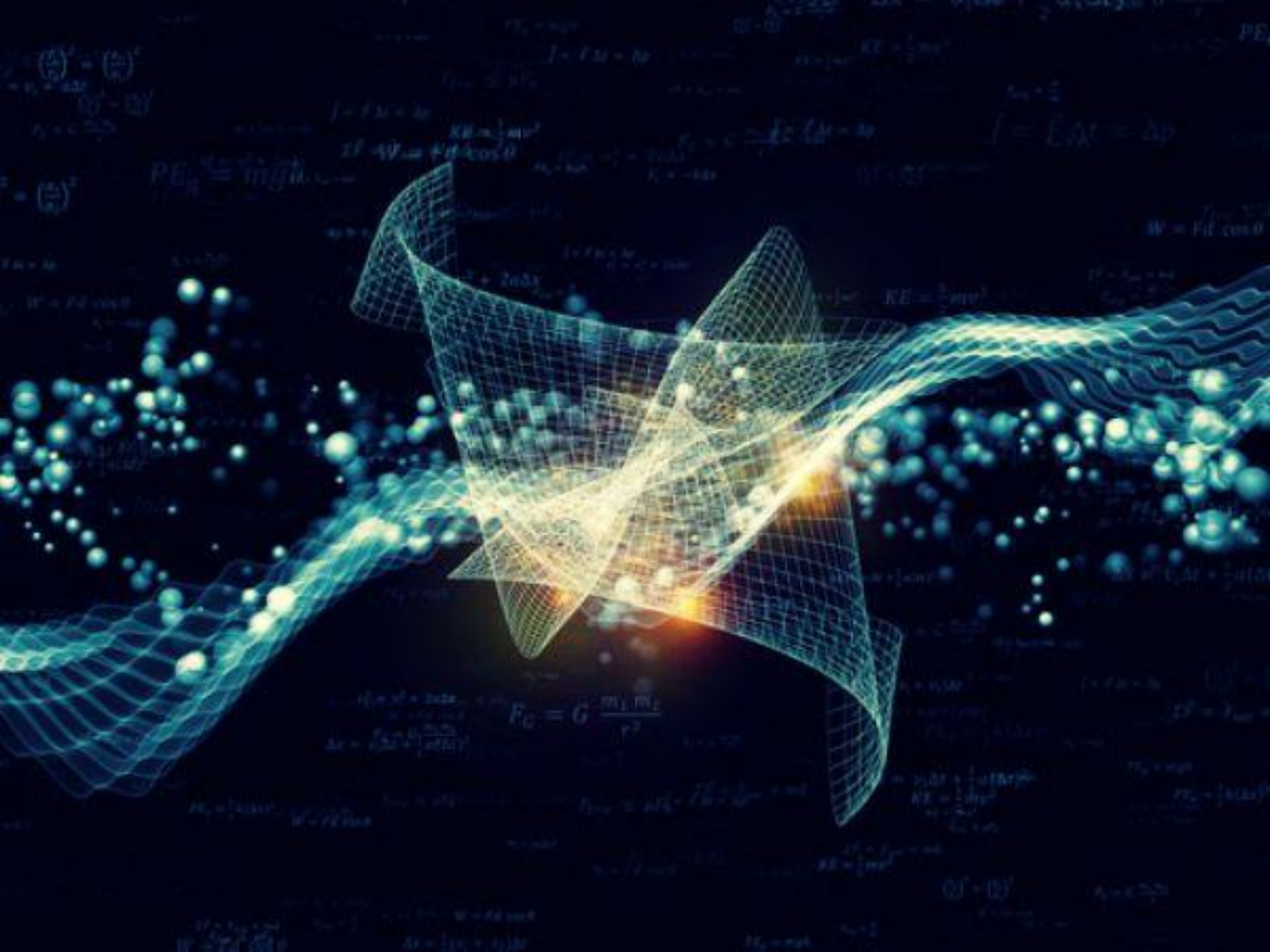
**Na sanjah
svet stoji**



12.–18. marec







$$\left(\frac{\partial}{\partial t}\right)^2 = \left(\frac{\partial}{\partial t}\right)^2$$
$$\left(\frac{\partial}{\partial x}\right)^2 = \left(\frac{\partial}{\partial x}\right)^2$$
$$\left(\frac{\partial}{\partial y}\right)^2 = \left(\frac{\partial}{\partial y}\right)^2$$

$$PE_{\text{eff}} = mgh$$

$$I = Fd = W$$
$$I = Fd = W$$
$$I = Fd = W$$

$$I = Fd = W$$

$$F = c \frac{d}{dt} (W = W)$$
$$F = c \frac{d}{dt} (W = W)$$

$$I = Fd = W$$

$$W = Fd \cos \theta$$

$$F_G = G \frac{m_1 m_2}{r^2}$$

$$KE = \frac{1}{2}mv^2$$

$$\vec{O}' = \vec{O}'$$

$[X^2]_{\text{red}}$ $\langle B, 1 \rangle = \sqrt{2} \dots$ $\int \frac{1}{x^2} dx = -\frac{1}{x} + C$ $\frac{dr}{dt} = \frac{dr}{d\theta} \frac{d\theta}{dt} = \frac{1}{r^2} \cdot \frac{dr}{d\theta} \cdot \frac{3}{r^2}$ $\text{area} = \frac{1}{2} \int r^2 d\theta$
 $H_0 \frac{d^2}{dt^2} + \dots$ $\langle B, 1 \rangle = \sqrt{2} \dots$ $\frac{d}{dt} \left(\frac{1}{r^2} \right) = -2 \left(\frac{\dot{r}}{r^3} \right)$
 $11 \dots \dots$ $\langle 9, 1 \rangle = \dots$ $E = \frac{1}{2} m v^2, \quad v = \frac{dr}{dt}$ $\frac{dr}{dt} = \frac{dr}{d\theta} \left(\frac{3}{r^2} \right) = \frac{1}{r^2} \frac{dr}{d\theta} \cdot \frac{3}{r^2}$



$\sqrt{2} \dots$ $\langle B, 1 \rangle = \sqrt{2} \dots$ $\frac{dr}{dt} = \left(\frac{dr}{d\theta} \right)^2 \frac{d\theta}{dt} = \frac{1}{r^2} \left(\frac{dr}{d\theta} \right)^2 \frac{3}{r^2}$ $\frac{1}{2} \cdot \frac{dr}{dt} \dots$
 \dots \dots \dots \dots

WELCOME TIME
TRAVELLERS



Časovni stroj že obstaja ...

- Najnovejši model je star dobrih sto tisoč let
- Ni najbolj zanesljiv
- Potrebuje vsaj tri leta, da začne delovati ... in se v manj kot sto letih nepopravljivo pokvari
- Za delovanje potrebuje veliko goriva
- Na potovanja v času lahko vzamemo bližnje, ne pa domačih živali
- Zaenkrat najboljše, kar imamo

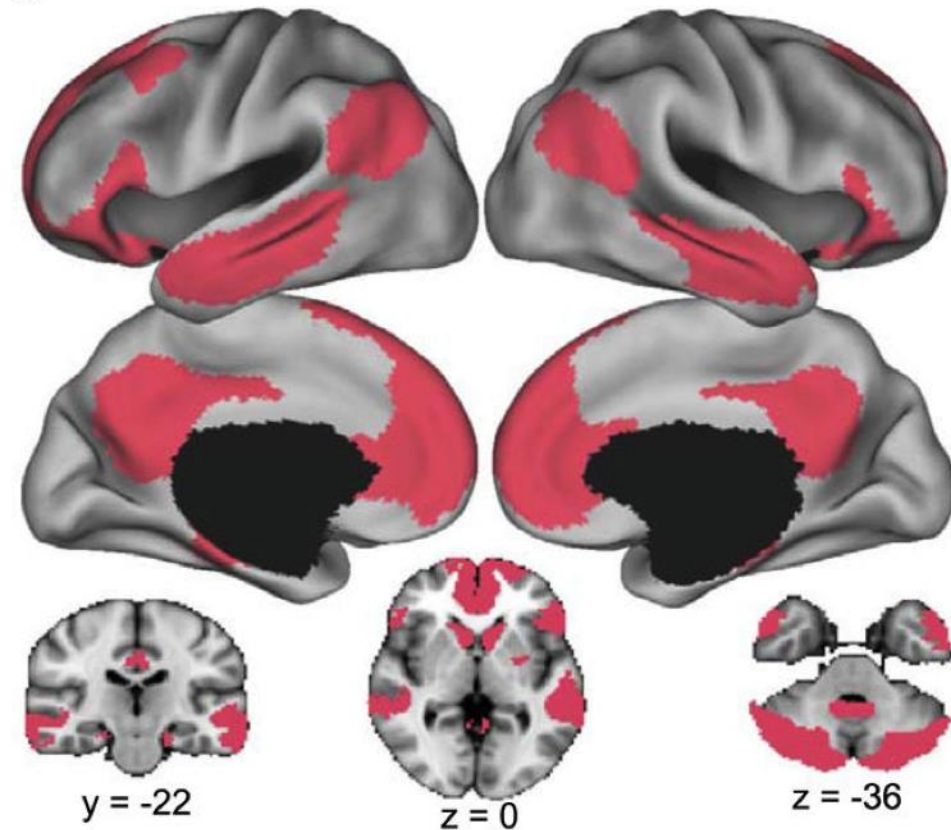


EVOLUTION™

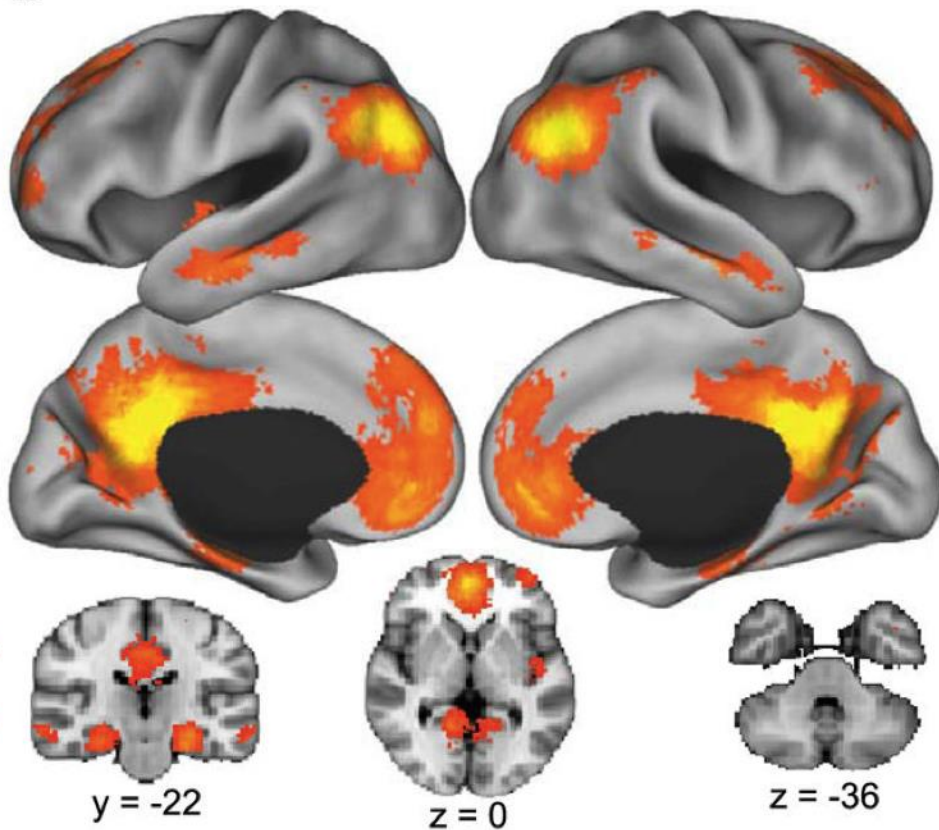
DMN

- mPFC
- lateral frontal cortex
- medial temporal lobe (hippocampus and parahippocampal cortices)
- medial parietal cortex
- lateral parietal cortex (angular gyrus, posterior supramarginal gyrus/TPJ)
- lateral temporal cortex

a RESTING STATE CONNECTIVITY



b fMRI META-ANALYSES

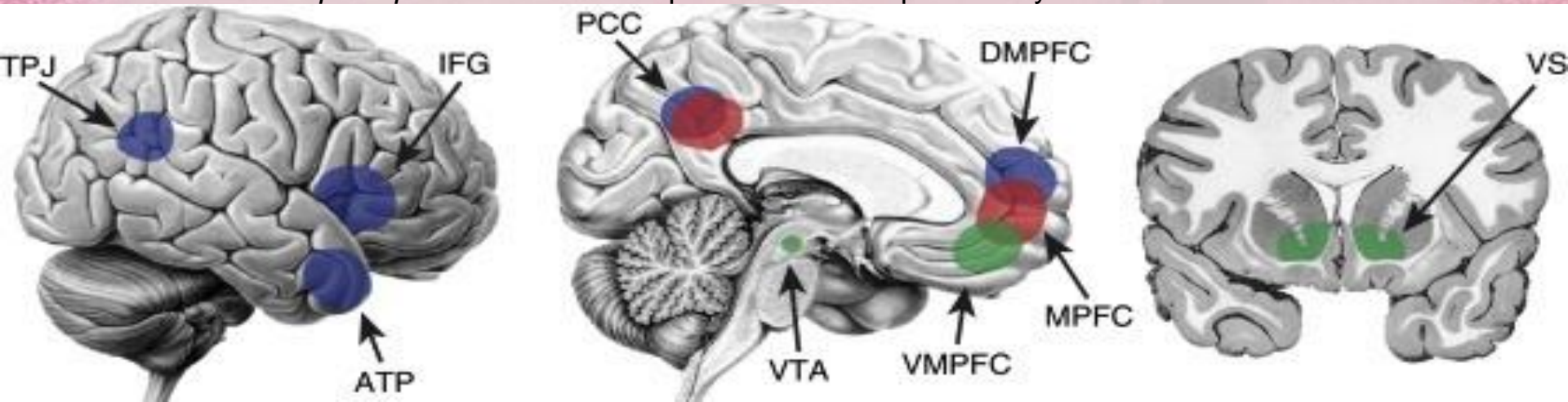


Medial temporal subsystem: Autobiographical memory and future simulations

- *Hippocampus* (HF+): Formation of new memories, remembering the past and imagining the future
- *Parahippocampus* (PHC): Spatial and scene recognition and simulation
- *Retrosplenial cortex* (RSC): Spatial navigation
- *Posterior inferior parietal lobe* (pIPL): Junction of auditory, visual, and somatosensory information and attention
- *Posterior cingulate cortex* (PCC) & *precuneus*: Combines bottom-up (not controlled) attention with information from memory and perception. Related to remembering the past, thinking about futurespatial navigation.
- *Medial prefrontal cortex* (mPFC): Self processing, personal information, autobiographical memories, future goals and events.
- *Angular gyrus*: Connects perception, attention, spatial cognition, and action; helps with parts of recall of episodic memories

Additional:

- *Dorsal medial prefrontal cortex* (dmPFC): Social understanding
- *Temporoparietal junction* (TPJ): Theory of mind
- *Lateral temporal cortex*: Social semantic and conceptual knowledge
- *Anterior temporal pole*: Abstract conceptual information particularly social in nature



Osrednje funkcije

SEBSTVO

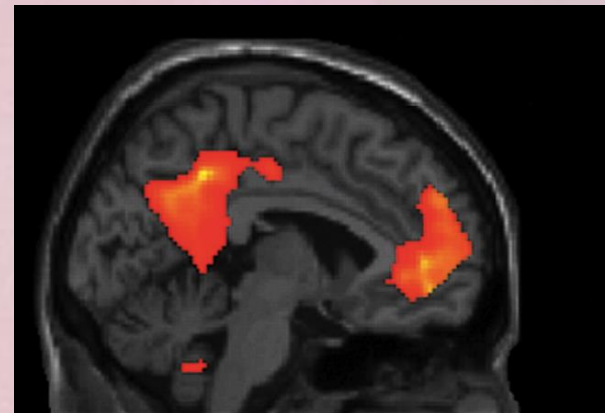
- *Autobiografski spomin*
- *Samo-nanašalnost*
- *Samorefleksija, emocije o sebi*

SOCIALNOST

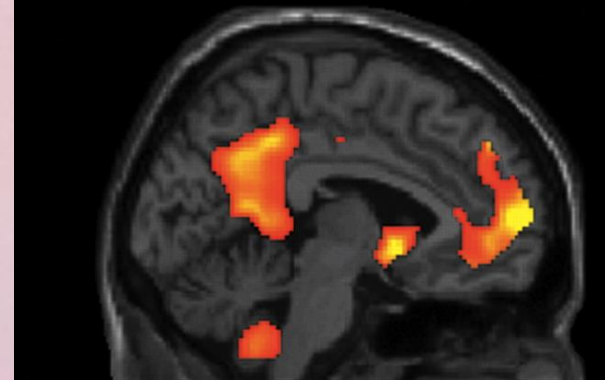
- *Teorija uma*
- *Empatija*
- *Moralno presojanje*
- *Socialne primerjave, evalvacija in kategorizacija*

PRETEKLOST IN PRIHODNOST

- *Spominjanje*
- *Predstavljanje prihodnosti*
- *Razumevanje zgodb, narativi*



past events



future events

Spomin na prihodnost?

- Constructive episodic simulation hypothesis (Schacter in Addis)
- Prospektivni možgani
- Okrog četrtno budnega življenja
- Starost, demence, duševne motnje
- Pacient K.C.
- Spomin za prihodnost?

[...] Imagination depends directly on the richness and variety of a person's previous experience because this experience provides the material from which the products of fantasy are constructed. The richer a person's experience, the richer is the material his imagination has access to.

(Vygotsky, 1967/2004, p. 14–15)

STEVEN SPIELBERG PRESENTS



BRAVE NEW WORLD

TO THE BURNING WIRE

PG

A ROBERT ZEMECKIS FILM



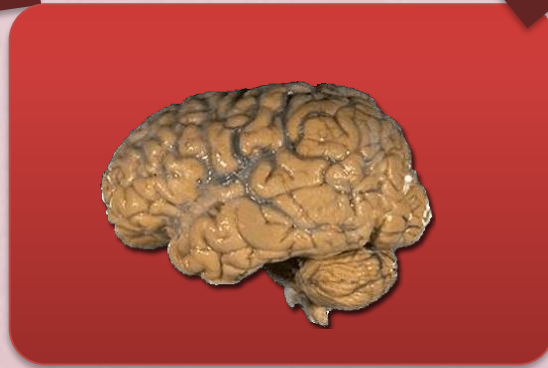
Ali CESH popolnoma pojasni predstavlanje prihodnosti?

- Zgolj epizodični ali tudi semantični spomin?
- Je predstavlanje prihodnosti res zgolj spominjanje? So udeleženi tudi drugi procesi?
- Ali obstajajo razlike med predstavljanjem prihodnosti in ne-časovnimi predstavami?
- Ali je sposobnost miselnega potovanja v času značilna zgolj za človeško vrsto?
- Kako se je ta sposobnost razvila?





S



R

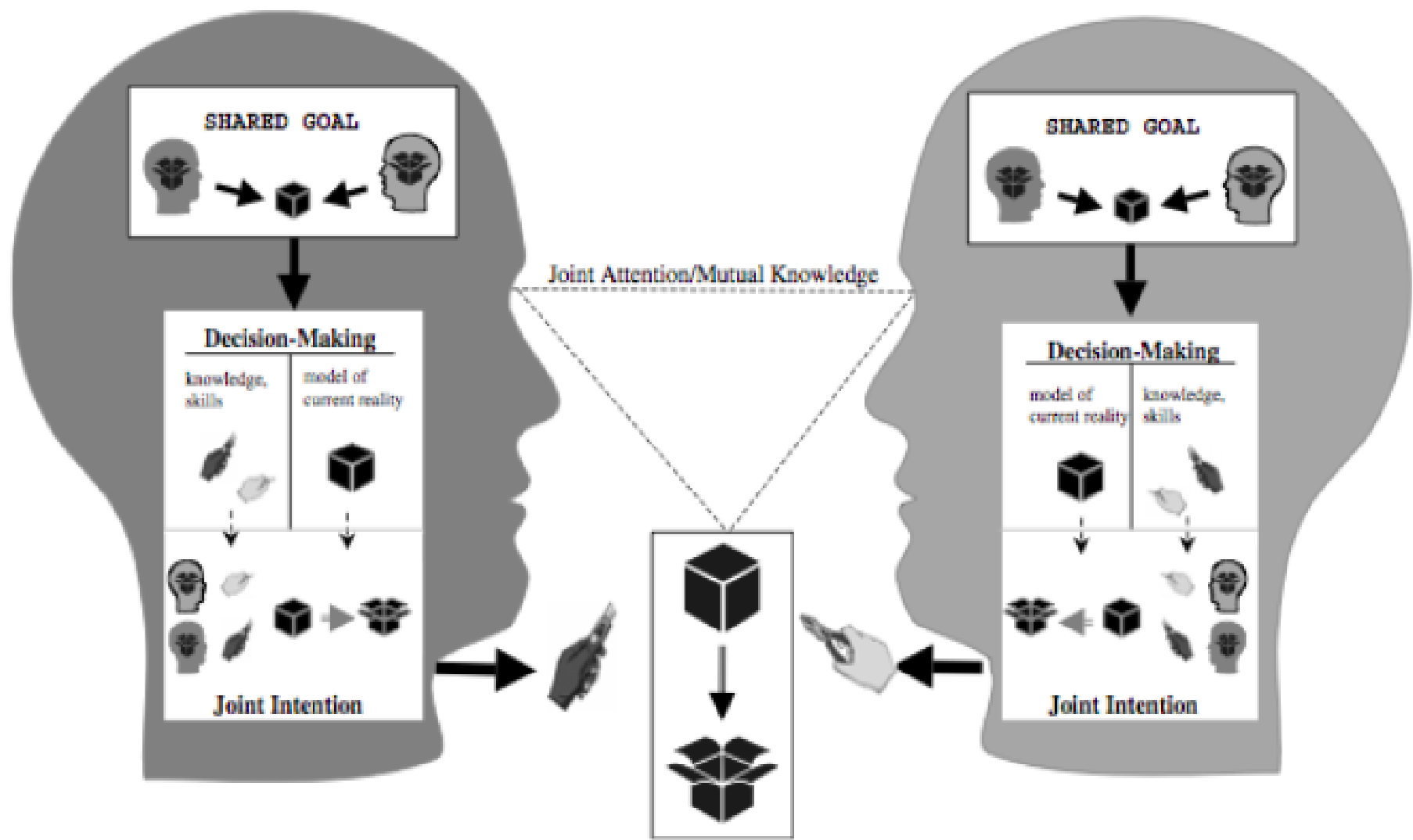


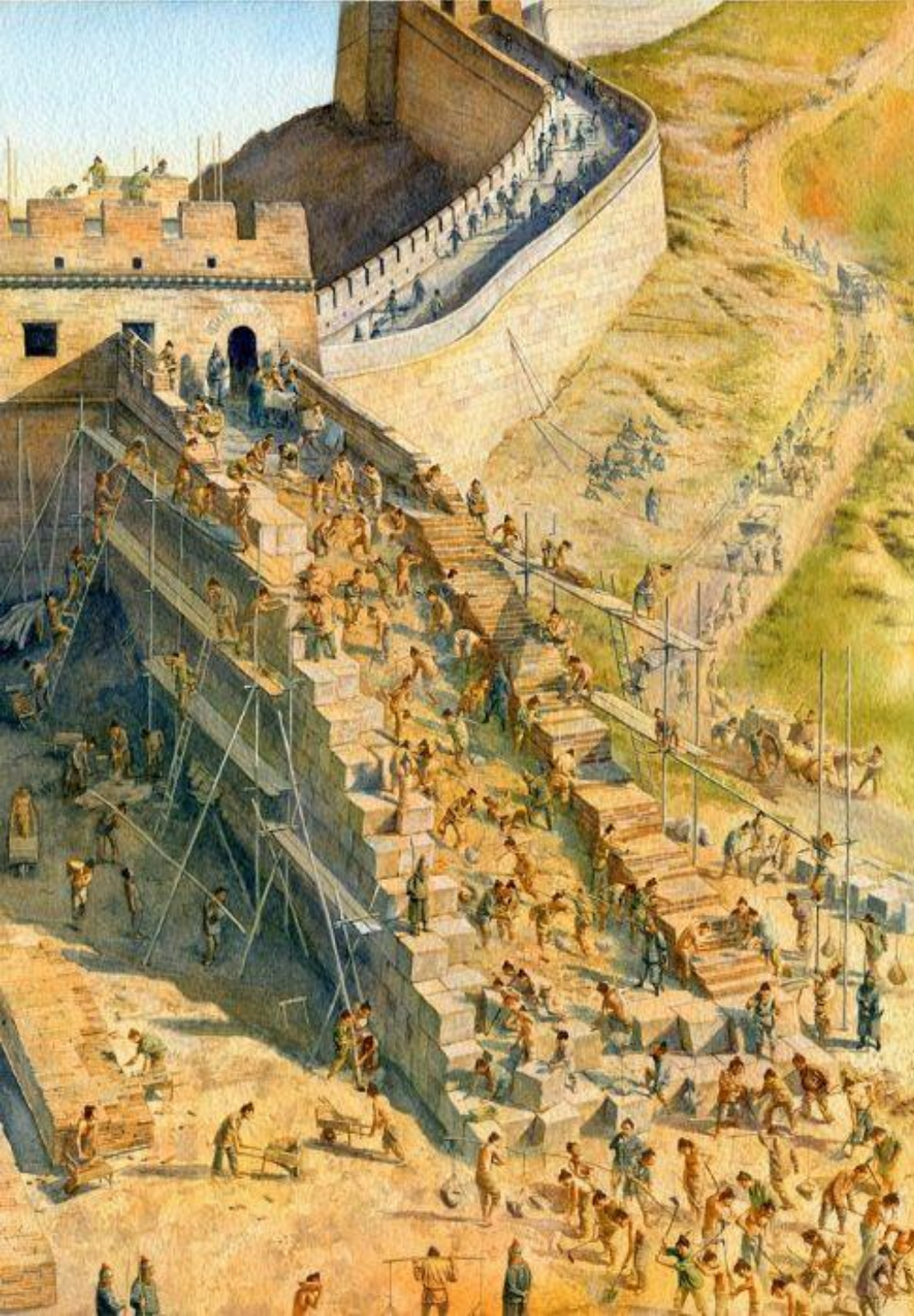
There is nothing very remarkable about being immortal; with the exception of mankind, all creatures are immortal, for they know nothing of death. What is divine, terrible, and incomprehensible is to know oneself immortal.

Jorge Luis Borges











100MENS

Coca-Cola
ココアを飲んで
ハッピークリスマス

100MENS

H&D
KUIN 演劇!

キヤラクワ
アイフル
駅前店 8F

スバル

スバル

スバル

スバル

スバル

スバル

スバル

TSUTAYA

TSUTAYA

Welcome to the Anthropocene



Največja pridobitev
človeške vrste?

Rojstvo zavesti?





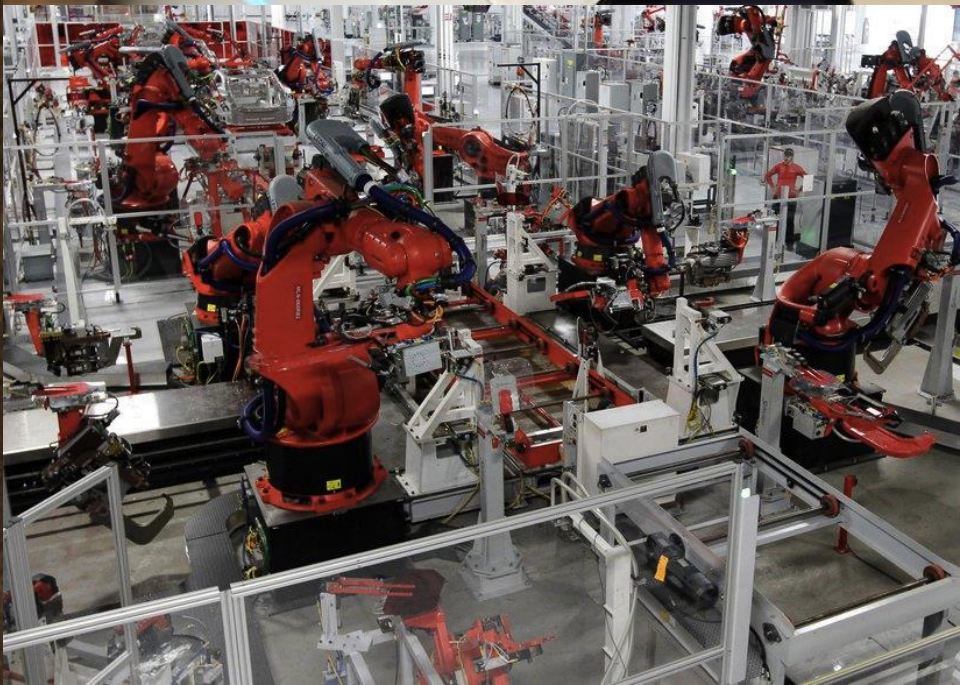
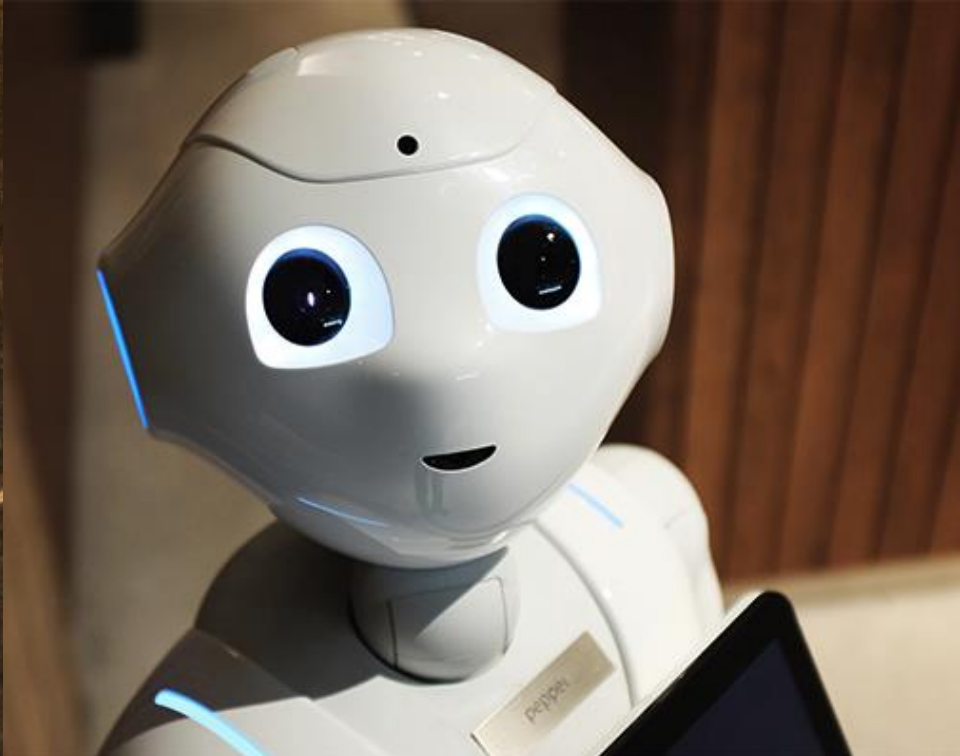
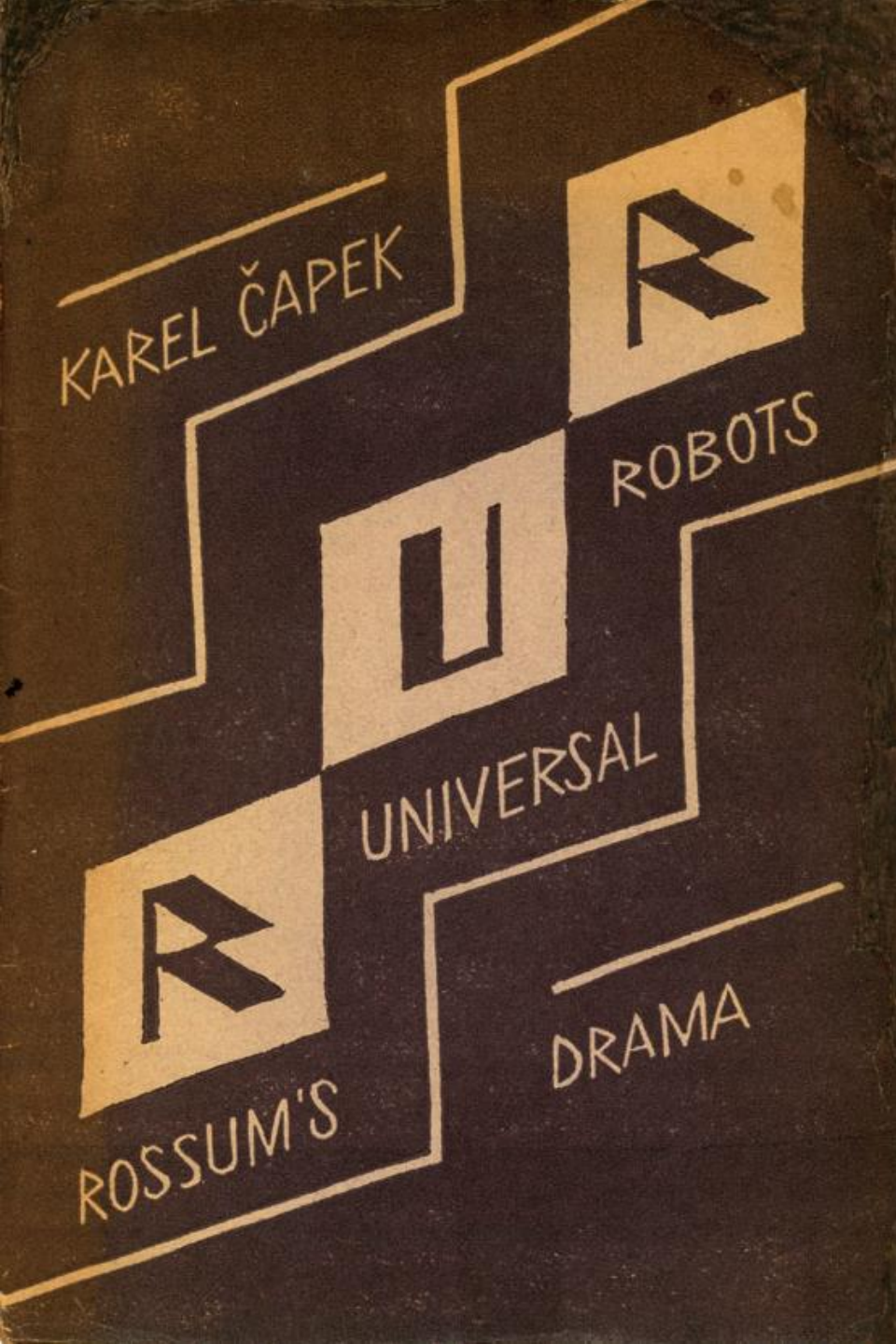
Poleg tega nam predstavljajanje prihodnosti ne gre tako dobro od rok/možganov...

- Temporal discounting
- Podcenjevanje sprememb
- Precenjevanje sprememb
- Netočnost
- Zdravje
- Delo
- Prihranki
- Globalno segrevanje

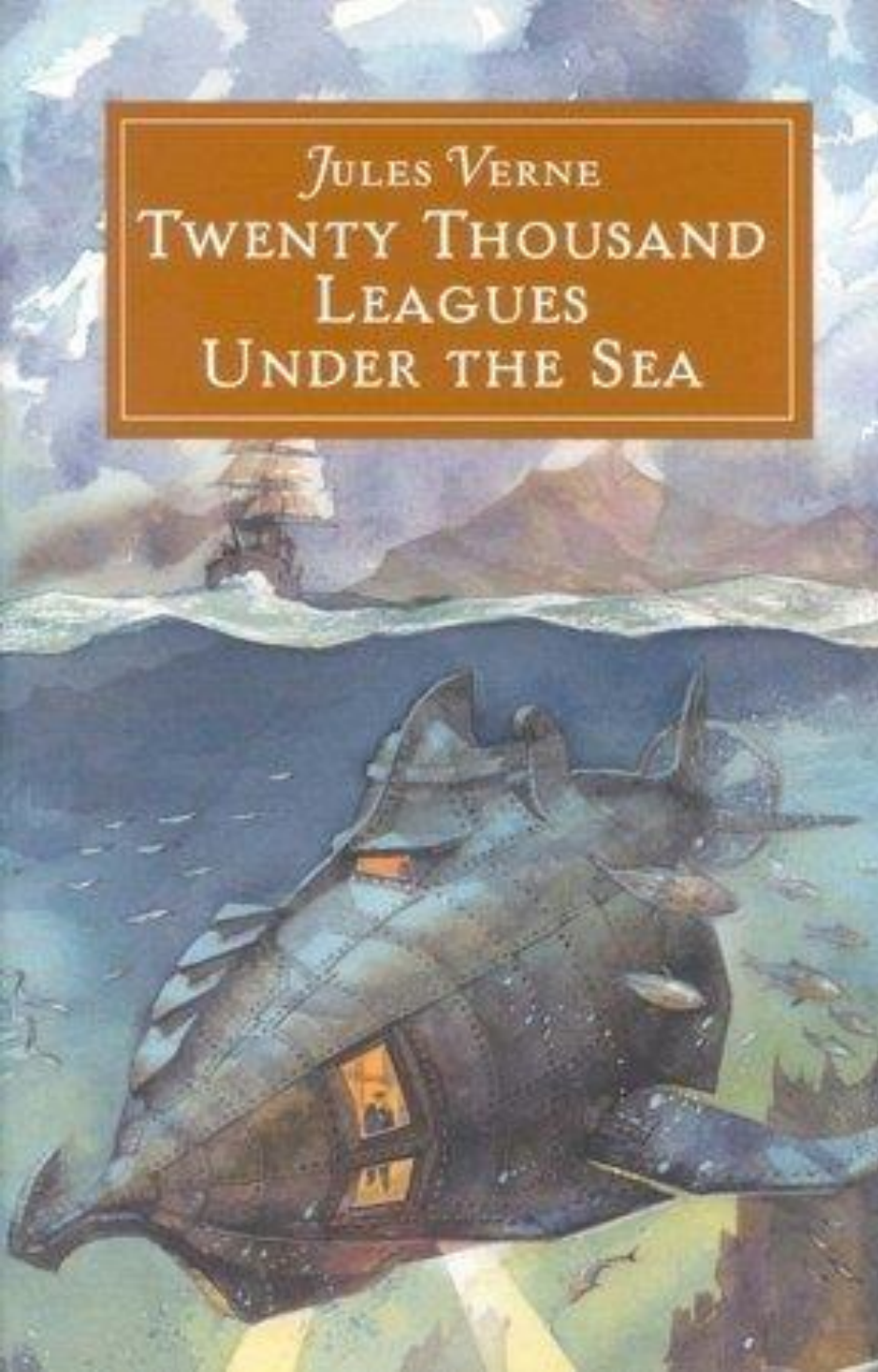
...

NAPOVEDOVANJE ...

... USTVARJANJE



JULES VERNE
TWENTY THOUSAND
LEAGUES
UNDER THE SEA



ARTHUR C. CLARKE
**DIAL F FOR
FRANKENSTEIN**



LOOKING BACKWARD

2000-1887

By
Edward
Bellamy

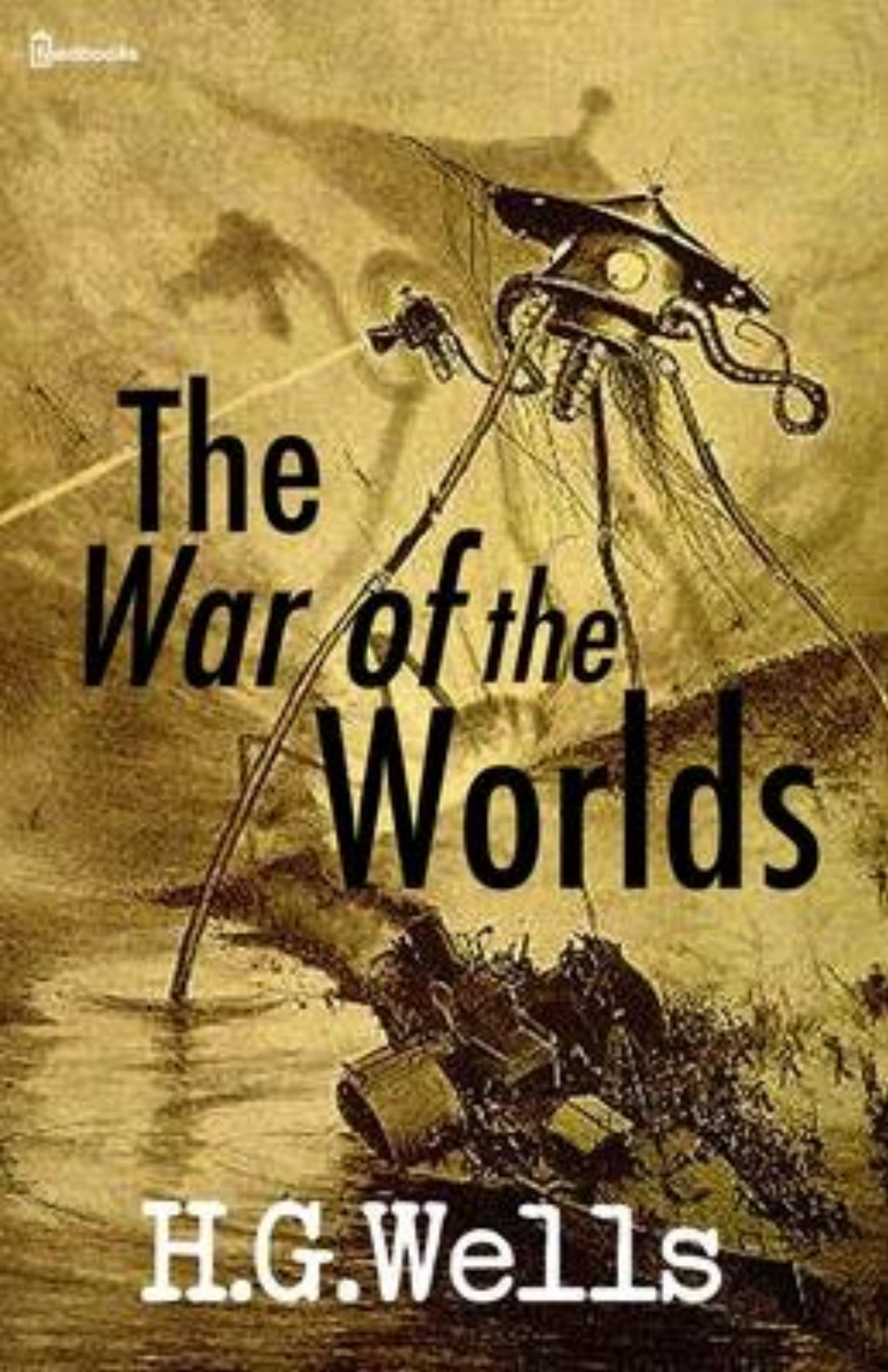
To which is added
THE AUTHOR'S REPLY
to his Critics.

WARD, LOCK & CO.
- London -
New York and Melbourne.



The *War of the* Worlds

H.G.Wells





- Mobilni telefoni
- Osebni računalniki
- Tablični računalniki
- Siri
- Računalniško prevajanje
- Skype/FaceTime
- Bionične oči
- Google glass
- 3D printerji
- Televizije z velikim zaslonom
- Floppy diski in USB



Taser

“Thomas A. Swift’s Electric Rifle”

Anti-mimesis



... rabimo več dobre znanstvene fantastike 😊



[...] Imagination depends directly on the richness and variety of a person's previous experience because this experience provides the material from which the products of fantasy are constructed. The richer a person's experience, the richer is the material his imagination has access to.

(Vygotsky, 1967/2004, p. 14–15)

“Imagination depends on the richness and variety of culturally available artefacts because these provide the material from which the products of fantasy are constructed. The richer a culture’s artefacts, the richer is the material that imagination [of individuals within that culture] has access to.”

(Jovchelovitch & Hawlina, 2018)



PredPol

Predict Crime in Real Time

PredPol provides targeted, real-time crime prediction designed for and successfully tested by officers in the field.

CRIME COEFFICIENT
49.7 -50
TARGET
Not Target

LOCK
NONLETHAL PARALYZER

QT-03
QT-02
QT-01
ANALYZE SEARCH

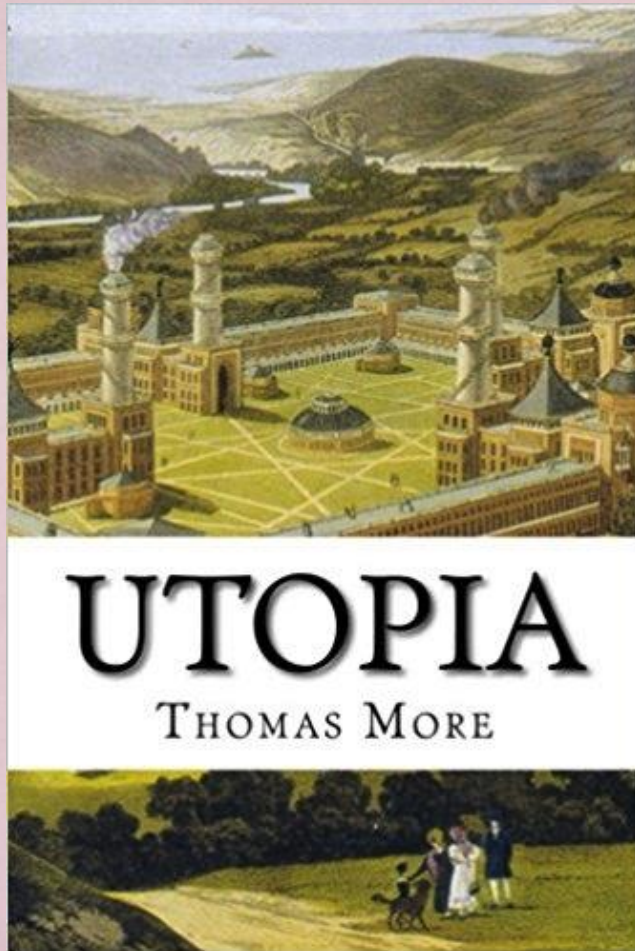
AREA level **02**
mode: 00145A

SET

Crime Coefficient is under 50. Not a target for enforcement action.



Fikcija, ki gradi prihodnosti ...



Utopije in distopije

- Odsevajo in razrahljajo sedanjost
- Zgrajene iz preteklosti
- Oblikujejo prihodnost

- Kulturni artefakti – kolektivna vizija
- Ustvarjanje skupnosti
- Navdih novih del
- Utopije, distopije v dialogu med sabo



A map of the world that does not include Utopia is not worth even glancing at, for it leaves out the one country at which Humanity is always landing. And when Humanity lands there, it looks out, and, seeing a better country, sets sail. Progress is the realisation of Utopias.

(Wilde, 1891, p. 247)

Utopias are breeders of illusions and therefore, inevitably, of disillusion. And utopias can be used, have been used, as justifications for terrible wrongs. The last thing we really need is still more utopian visions.

(Wallerstein, 1998, p. 1)

Utopije → Distopije

Stalinistična sovjetska
zveza

Nacistična Nemlija

Maoistična Kitajska

Khmer Rouge v
Kambodži

...

- Atemporalne
- Konec utopij, zgodovine
- Post-človeške
- Zgolj končna točka, brez poti
- Slabo se poznamo in pomanjkljivo si predstavljamo
- Hegemonične utopije iz ene perspektive so hitro totalitarne
- Utopije → Distopije

Utopije





