

# Microvita and the Dualism of Body and Mind

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Humans obviously have both physical and mental properties, and the issue at hand is how these properties are related to each other. There is an ontological problem: what are mental states and what are physical states? Is one class a subclass of the other, so that all mental states are physical, or vice versa? Or are mental states and physical states entirely distinct? And there is a causal problem: do physical states influence mental states? Do mental states influence physical states? And if so, how? Different aspects of the mind-body problem arise for different aspects of the mental, such as consciousness, intentionality and the self. The problem of consciousness: what is consciousness? How is it related to the brain and the body? The problem of intentionality: what is intentionality? How is it related to the brain and the body? The problem of the self: what is the self? How is it related to the brain and the body? (1)

The answers can be categorized under three items: Dualism, materialist monism and idealist monism.

Modern versions of dualism originate from Descartes' Meditations. (2) Accordingly, bodies are machines that work on their own laws. Except where there are minds interfering with it, matter proceeds deterministically. Where there are minds requiring to influence bodies, they must work by 'pulling levers' in a piece of machinery that already has its own laws of operation. This raises the question of where those 'levers' are. Descartes opted for the pineal gland, mainly because it is not duplicated on both sides of the brain, so it is a candidate for having a unique, unifying function. The main uncertainty that faced Descartes and his contemporaries, however, was not where interaction took place, but **how** two things so different as thought and extension could interact at all. This would be particularly mysterious if one had an impact view of causal interaction. (1)

On these issues, the following model (3) provides astonishing answers, which might be illuminating, considering that dualism almost vanished with the growing popularity of mechanism in the nineteenth and twentieth century. Accordingly, there was no concept left for any interference by the mind. Mechanists saw the conscious mind merely as an epiphenomenon: that is, it was seen as a by-product of the physical system, which had no influence back on it.

Now, the proposed model starts with a universal grid, made of the cognitive and operative aspects of the supreme causal factor; its lattice width would be in the range of the Planck length. (3) Primarily constituting imaginary space-time, it can also produce real space-time by simply squaring its negativized unit vectors  $[(i^2, 0, 0, 0), (0, -i^2, 0, 0), (0, 0, -i^2, 0), (0, 0, 0, -i^2)]$ .

This grid is considered to be the primary matter, which is able to form simple elements, simulated as numbers, situated in complex 2 x 2 matrices. Tab. 1, for example, shows an operation, which multiplies an imaginary space-time element with coordinates -t, x, y, z. For transformations into real space, however, natural numbers won't do; for this purpose we do need the imaginary number i. And with the elements 0, 1, 2, -i, +i, -2i and +i/2 we can now start to build the proposed microvita model:

Firstly, we need 2 x 2 space-time ( $p_i \in M_i$ ) and creation/annihilation (3) ( $p_i' \in E_i$ ) operators. Then we have to combine two of them into one complex 4 x 4 matrix ( $q_i \in M_i \oplus E_i$ ). And in a third step we have to combine 4 of these operators into one block: a complex 4 x 4 x 4 tensor (Fig. 1).

The resultant model is good for some surprise: The operators can process pieces of the universal grid at the front, on the back side and also one piece in the middle, where it undergoes cyclical transmutation. In this article, however, I will focus on matrices processed by the outer creation operator only.

Let's start with a simple case: Here, the complex 4 x 4 creation operator is able to process a piece of the universal grid containing its position in space-time as well as two pairs of opposite qualities (Tab. 2). The result is a state of superposition,

$$\Psi(t, \vec{x}) = \sum_{i=1}^2 \Psi_i(t, \vec{x})$$

which decays into particles of opposite nature. In this way, we can get, for example, an electron and a positron.

A slight modification allows for the production of a single electron or positron respectively. The same holds for the production of a pair of photons, propagating in opposite direction. In a next step, we have to introduce the modified creation operator, depicted in Tab. 3. It allows the production of two real opposites (photons for example), where each one contains an imaginary mirror image of the other one. This peculiarity allows to model a phenomenon called quantum entanglement, which means that the particles are correlated to each other - a correlation which is now performed via matrix representation within the collective body of the related imaginary matrices, unlimited by the speed of light (see Tab. 3).

With this in mind, we are now only one step from solving the mind-body problem in principle: We simply have to use a modified positive or negative creation operator. Thereby a particle is created, which contains imaginary representations of the opposite qualities. So, if the real spin, for example, changes its algebraic sign, the imaginary representation reverses accordingly. And vice versa: If the imaginary representation is reversed, the real spin has to change accordingly (Tab. 4).

Which means that a change in the configuration of a piece of primary matter, carried by the cognitive and operative aspects of the supreme causal factor, is able to induce a change in reality (in simple cases, such changes of a particular imaginary term could be modeled as cis-trans- or fac-mer-isomerism).

So, these are the 'pulling levers' mentioned above!

For the described functions we had to apply seven different operators (Tab. 5). Six of them can be embedded in the presented tensor model of microvita. They are processing pieces of primary matter, containing imaginary or complex coordinates and forms. Tab. 6 gives an overview of the aforesaid.

Last but not least, it should be mentioned that the proposed model also works perfectly fine with Devayoniis (Dy) and Pretayoniis (Py = anti-Devayoniis). Details can be found in my book (3), which is now available at the big online book shops.

(1) Robinson, Howard, "Dualism", The Stanford Encyclopedia of Philosophy (Winter 2011 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/win2011/entries/dualism/>>

(2) Descartes, René, Meditations on First Philosophy (1641), in The Philosophical Writings of René Descartes, trans. by J. Cottingham, R. Stoothoff and D. Murdoch, Cambridge: Cambridge University Press, 1984, vol. 2, pp. 1-62.

(3) Rudolph, Hans-Joachim, From Imaginary Oxymora to Real Polarities and Return (2012), Authorhouse, URL = <<http://www.microvita.eu/book/>>

p					Multiplier																		
<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">-t</td><td style="padding: 5px;">x</td></tr> <tr><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">y</td><td style="padding: 5px;">z</td></tr> </table>	0	0	-t	x	0	0	y	z	x	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> <tr><td style="padding: 5px;">0</td><td style="padding: 5px;">2</td><td style="padding: 5px;">0</td><td style="padding: 5px;">0</td></tr> </table>	2	0	0	0	0	2	0	0	=				
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0	0	-t	x																				
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real		imaginary		real		imaginary																	

Tab. 1: Five complex 2 x 2 matrices, containing (except for the multiplier at the upper right) only imaginary space-time coordinates: Multiplied by this operator,  $p = (-it, ix, iy, iz) \in M_I$  (= imaginary Minkowski space) gives a state of superposition, which subsequently decays into two imaginary space-time elements. The process can be repeated, producing more and more units of imaginary space-time.

### Complex 4 x 4 x 4 Tensor Model of Microvita

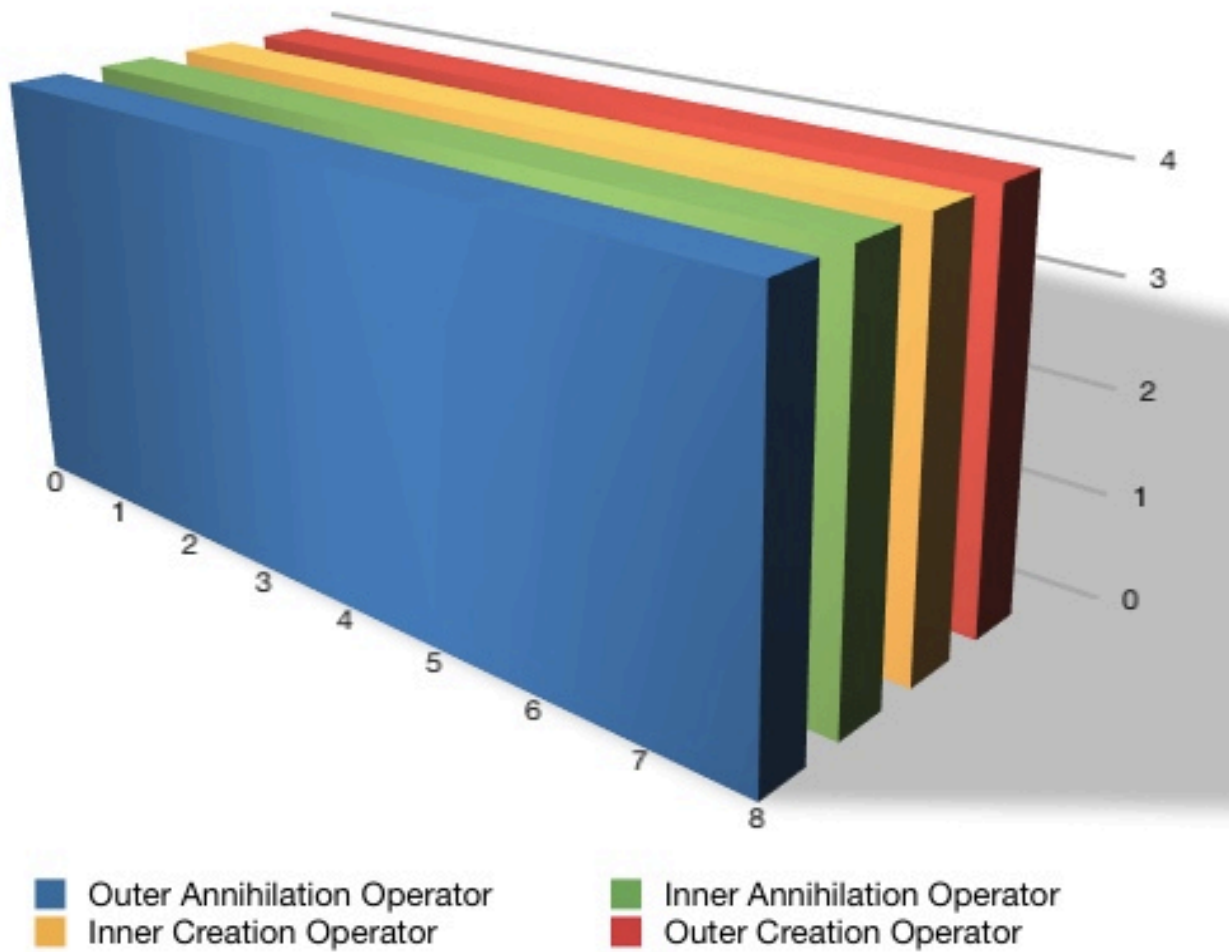


Fig. 1

$$\begin{array}{c}
 \begin{array}{cc}
 \mathbf{q} & \text{Creation Operator} \\
 \left| \begin{array}{cccc|cccc}
 0 & 0 & 0 & 0 & -t & x & 0 & 0 \\
 0 & 0 & 0 & 0 & y & z & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & a & b \\
 0 & 0 & 0 & 0 & 0 & 0 & c & d
 \end{array} \right. & \times & \left| \begin{array}{cccc|cccc}
 0 & 0 & 0 & 0 & -2 & 0 & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & -1 & 0
 \end{array} \right. & =
 \end{array} \\
 \begin{array}{c}
 \begin{array}{cc}
 \text{real} & \text{imaginary} \\
 \left| \begin{array}{cccc|cccc}
 -2t & 2x & 0 & 0 & 0 & 0 & 0 & 0 \\
 2y & 2z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & a+b & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & c+d & 0 & 0 & 0 & 0 & 0
 \end{array} \right. & = & \begin{array}{cc}
 \text{real} & \text{imaginary} \\
 \left| \begin{array}{cccc|cccc}
 -t & x & 0 & 0 & 0 & 0 & 0 & 0 \\
 y & z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & a & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & c & 0 & 0 & 0 & 0 & 0
 \end{array} \right. & + & \left| \begin{array}{cccc|cccc}
 -t & x & 0 & 0 & 0 & 0 & 0 & 0 \\
 y & z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & b & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & d & 0 & 0 & 0 & 0 & 0
 \end{array} \right.
 \end{array} \\
 \begin{array}{cc}
 \text{real} & \text{imaginary} \\
 \text{real} & \text{imaginary}
 \end{array}
 \end{array}
 \end{array}
 \end{array}$$

Tab. 2: Five complex 4 x 4 matrices, containing (except for the creation operator at the upper right) imaginary or real space-time coordinates as well as pairs of qualities (a, b, c, d): Multiplied by this operator,  $\mathbf{q} = (-it, ix, iy, iz, ia, ib, ic, id) \in M_I \oplus E_I$  (= imaginary Minkowski  $\oplus$  Euclidean space) gives a state of superposition, which subsequently decays into two real polarities with the qualities a, c and b, d. The process can be repeated, producing more and more of these elements.

**Entanglement of Photons**

$$\begin{array}{c}
 \begin{array}{cc}
 \text{q} & \text{Modified Creation Operator} \\
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 0 & 0 & 0 & 0 & -t & x & 0 & 0 \\
 0 & 0 & 0 & 0 & y & z & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & \lambda & -\lambda \\
 0 & 0 & 0 & 0 & 0 & 0 & 1 & -1 \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 0 & 0 & 0 & 0 & -2 & 0 & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & -2 & 0 & 0 \\
 2 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\
 2 & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \end{array}
 \\
 \times & = \\
 \end{array}
 \\
 \\
 \begin{array}{c}
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 -2t & 2x & 0 & 0 & 0 & 0 & 0 & 0 \\
 2y & 2z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & \lambda-\lambda & 0 & 2(\lambda-\lambda) & 0 & 0 & 0 \\
 0 & 0 & 1-1 & 0 & 2-2 & 0 & 0 & 0 \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \end{array}
 \\
 = \\
 \begin{array}{c}
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 -t & x & 0 & 0 & 0 & 0 & 0 & 0 \\
 y & z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & \lambda & 0 & \lambda-\lambda & 0 & 0 & 0 \\
 0 & 0 & 1 & 0 & 1-1 & 0 & 0 & 0 \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 -t & x & 0 & 0 & 0 & 0 & 0 & 0 \\
 y & z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & -\lambda & 0 & \lambda-\lambda & 0 & 0 & 0 \\
 0 & 0 & -1 & 0 & 1-1 & 0 & 0 & 0 \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \end{array}
 \\
 + & \\
 \end{array}
 \\
 \\
 \begin{array}{c}
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 -1 & & & & & & & \\
 & & & & & & & \\
 & & & & & & & \\
 & & & & & & & \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \end{array}
 \\
 \Rightarrow & \\
 \begin{array}{|c|c|}
 \hline
 \begin{array}{cccc|cccc}
 1 & & & & & & & \\
 & & & & & & & \\
 & & & & & & & \\
 & & & & & & & \\
 \hline
 \text{real} & & & & \text{imaginary} & & & \\
 \end{array}
 &
 \end{array}
 \\
 \Leftarrow & \\
 \end{array}
 \\
 \\
 \begin{array}{c}
 \text{c} \quad \text{c+d} \\
 \text{d} \quad \text{c+d}
 \end{array}
 \end{array}$$

Tab. 3: Five complex 4 x 4 matrices, containing (except for the modified creation operator at the upper right) the imaginary or real space-time coordinates of two photons. Multiplied by the modified creation operator,  $q = (-it, ix, iy, iz, +i\lambda, -i\lambda, +1i, -1i) \in M_1 \oplus E_1$  gives a state of superposition, which subsequently decays into two photons of wavelength  $\lambda$  and clockwise or counterclockwise spin, moving in opposite direction. The speciality of this operator is that it also produces imaginary pairs of opposites ( $+ \lambda i - \lambda i$  or  $- \lambda i + \lambda i$  and  $+ 1i - 1i$  or  $- 1i + 1i$ ) being set to zero, which allow for the described quantum entanglement.

**Mind-Body Interaction**

$$\begin{array}{c}
 \text{q} \\
 \left[ \begin{array}{cccc|cccc}
 0 & 0 & 0 & 0 & -t & x & 0 & 0 \\
 0 & 0 & 0 & 0 & y & z & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & a & b \\
 0 & 0 & 0 & 0 & 0 & 0 & c & d
 \end{array} \right]
 \end{array}
 \times
 \begin{array}{c}
 \text{Modified Positive Creation Operator} \\
 \left[ \begin{array}{cccc|cccc}
 0 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & -1 & 0 & 0 \\
 \mathbf{1} & 0 & 0 & 0 & 0 & 0 & -1 & 0 \\
 \mathbf{1} & 0 & 0 & 0 & 0 & 0 & 0 & 0
 \end{array} \right]
 \end{array}
 =$$

real
imaginary
real
imaginary

$$\begin{array}{c}
 \left[ \begin{array}{cccc|cccc}
 -t & x & 0 & 0 & 0 & 0 & 0 & 0 \\
 y & z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & a & 0 & \mathbf{a+b} & 0 & 0 & 0 \\
 0 & 0 & c & 0 & \mathbf{c+d} & 0 & 0 & 0
 \end{array} \right]
 \end{array}$$

real
imaginary

$$\begin{array}{c}
 \left[ \begin{array}{cccc|cccc}
 -t & x & 0 & 0 & 0 & 0 & 0 & 0 \\
 y & z & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & a & 0 & a+b & 0 & 0 & 0 \\
 0 & 0 & \mathbf{1} & 0 & \mathbf{1-1} & 0 & 0 & 0
 \end{array} \right]
 \end{array}$$

real
imaginary

-1
←
-1+1

Tab. 4: Mind-body interaction as derived from the described mechanism of quantum entanglement. Instead of two particles, however, the modified positive (or negative) creation operator produces only one particle. Besides its space-time coordinates and pairs of real qualities, the particle also contains imaginary pairs of opposites (+ai+bi and +ci+di) being set to zero. Accordingly, a change of an imaginary term is reflected into the real quality (imaginary spins of -1+1, for example, will induce a real spin of -1 or vice versa) - a change which can be brought about by the cognitive aspects of the supreme causal factor via cis-trans- or fac-mer-isomerism of the universal grid.



Multiplier

2	0	0	0
0	2	0	0

Creation Operator

0	0	0	0	-2	0	0	0
0	0	0	0	0	-2	0	0
0	0	0	0	0	0	-1	0
0	0	0	0	0	0	-1	0

Modified Creation Operator

0	0	0	0	-2	0	0	0
0	0	0	0	0	-2	0	0
2	0	0	0	0	0	-1	0
2	0	0	0	0	0	-1	0

Positive Creation Operator

0	0	0	0	-1	0	0	0
0	0	0	0	0	-1	0	0
0	0	0	0	0	0	-1	0
0	0	0	0	0	0	0	0

Modified Positive Creation Operator

0	0	0	0	-1	0	0	0
0	0	0	0	0	-1	0	0
1	0	0	0	0	0	-1	0
1	0	0	0	0	0	0	0

Negative Creation Operator

0	0	0	0	-1	0	0	0
0	0	0	0	0	-1	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	-1	0

Modified Negative Creation Operator

0	0	0	0	-1	0	0	0
0	0	0	0	0	-1	0	0
1	0	0	0	0	0	0	0
1	0	0	0	0	0	-1	0

Tab. 5: Schedule of operators used in this paper.

Abbrev	Mathematical	Descriptive
0	Zero point	Cosmic nucleus (Purushottama)
$M_I$	imaginary Minkowski space	plenum of all imaginations
$i$	unit vectors of $M_I$	$(-i, 0, 0, 0), (0, i, 0, 0), (0, 0, i, 0), (0, 0, 0, i)$
$E_I$	imaginary Euclidean space	register of all qualia
$i'$	unit vectors of $E_I$	$(i, 0, 0, 0), (0, i, 0, 0), (0, 0, i, 0), (0, 0, 0, i)$
$Q_I$	$M_I \oplus E_I$	set of all ideas
$q_I$	elements of $Q_I$	individual ideas
$M_R$	real Minkowski space	plenum of all real forms of existence
$e$	unit vectors of $M_R$	$(i^2, 0, 0, 0), (0, -i^2, 0, 0), (0, 0, -i^2, 0), (0, 0, 0, -i^2)$
$E_R$	real Euclidean space	register of all characteristics
$e'$	unit vectors of $E_R$	$(-i^2, 0, 0, 0), (0, -i^2, 0, 0), (0, 0, -i^2, 0), (0, 0, 0, -i^2)$
$Q_R$	$M_R \oplus E_R$	set of all matter & energy
$q_R$	elements of $Q_R$	individual particles & quanta of energy
$S_C$	$E_C \oplus E_C$	set of all operators
$s_C$	elements of $S_C$	individual operators
SL	$S_C \otimes S_C \otimes Q_C \otimes S_C \otimes S_C$	Set of all microvita tensors with their respective core matrices
अ	elements of SL	individual microvita tensors with their respective core matrices

Tab. 6: Summarizing the five classes: The cosmic nucleus (point zero), the set of all concepts and ideas ( $Q_I = M_I \oplus E_I$ ), the set of all matter and energy ( $Q_R = M_R \oplus E_R$ ), the set of all operators ( $S_C = E_C \oplus E_C$ ), and the set of all microvita tensors with their respective core matrices ( $SL = S_C \otimes S_C \otimes Q_C \otimes S_C \otimes S_C$ ), situated at the boundary between the abstract ( $S_C$ ), the imaginary ( $Q_I$ ) and the real world ( $Q_R$ ).

(<sub>C</sub> complex                      <sub>I</sub> imaginary                      <sub>R</sub> real)  
(SL silver line                      अ Anujivat)