The entity of consciousness and its measurement (Case study)

According the patent of The MRI Hologram (US patent NO : 15052970) I developed, basic on one of MRI research article, I did the investigation for the so-called yin and yang, the physics ,the Qi, and the Shen of life systems 。

On this case study, the entity of consciousness was revealed, the measurement of the entity of consciousness was confirmed to be available.

Part one

Back ground:

In the books of “The essays on the issue of high negative entropy and consciousness” and “Traditional Chinese medicine and Metaphysics”, the so-called “Advance Quantum Biology “ （AQB） was proposed: 1)The definition of AQB;2） The content of AQB, which is the theory of yin and yang, the so-called the physics, the Qi and the “Shen”----Consciousness.3) Special MRI technology---PQS hologram was developed as one of the technological platform to make the quantum prediction for the life system.

Part Two

The citation of one research article.

How to verify the theory of yin and yang, the so-called the physics, the Qi and the “Shen”---- Consciousness ? How does MRI Hologram work?

Basic on one of MRI research article, I do the case study to demonstrate these as following.

The Article I cited here is: A. Pfefferbaum et al. / NeuroImage 21 (2004) 1585–1595：Postmortem MR imaging of formalin-fixed human brain.

It was the MRI research article.

Here were the citations from this article:

The brain of In vivo and Ex vivo were scanned by MRI, MRI parameter were:

T==1,5 T, Fov==24cm,matrix: 256X256. Voxel: 0.9375mmx0.9375mmx1mm.

1） The citations from the article.

A) The MRI parameter. T1, T2, PD; 1.5T.

T1, T2:

TR/Te	20 ms	40	60	80 ms
2400 ms				
1200 ms				
600 Ms				
300 Ms				

Table 1

Indeed, these were the so-called MSME and MSStir MRI.

With these data of MRI, according MSME, MSStir approaches, it calculated out the following numbers:

A-a) PD

	GM	WM
In Vivo	1028 ms	802 ms
Ex Vivo	1143 ms	896 ms

Table 2

A-b) T1, T2

	T1- In vivo	T2-In vivo	T1-ex vivo	T2 –Ex vivo
GM	1581 ms	64 ms	375 ms	43 ms
WM	1130 ms	57 ms	426 ms	37 ms

Table 3

Part three

Calculation

Due to: rB(p)==M(0): 1） if Mz(0)==0; then, Mxy(0)==PD.2) If Mxy(MAX)==0,

then, Mz(Max)==PD。

According

Mxy(t) = Mxy(0)^-t/T2

Mz(t)==Mz(Max) (1-e^-t/T1)

Mxy(0)==Mz(Max)===PD

Adopting the process of my Patent of US patent NO : 15052970 ,basic on the concept of Block Signals and the Shimming Technique (Quantum entanglement),I did the following calculations.

Here were the calculations :

3-A) The Grey matter of Brain, T2;

GM T2: PD: 1028 ms; T2:64 ms (In Vivo)/43 ms (Ex vivo); t (3xT2)==192 ms-→ 210 ms.

$Mxy(t) = Mxy(0)e^{-t/T2}$

3-A-1) Block signal calculation.

3- A-1-a) In vivo brain T2

Te (ms)	PD	20 ms	40 ms	60 ms	80 ms	100 ms	120 ms	140 ms	160 ms	180 ms	200 ms	220 ms	240 ms	260 ms	280 ms
Te/T2		0.313	0.625	0,938	1.25	1.563	1.876	2.188	2.501	2.813	3.125	3.44	3.75	4.07	4.38
$e^{-t/T2}$		0.731	0.535	0.391	0.287	0.210	0.153	0.112	0.082	0.060	0.044	0.032	0.024	0.017	0.013
(S) In Vivo	802	751	550	402	295	215	157	115	84.3	61,7	45.2	32.9	24.2	17.8	12.9
BS		51	201	148	107*	80	58	42	30.8	22.6	16.5	12.3	8.7	6.4	4.9

3-A-1-b) Ex vivo brain T2

Te (ms)		20	40	60	80	100	120	140	160	180	200	220	240	260	280
Te/T2		-0,465	-0.930	-1.395	-1.860	-2.325	-2.790	-3.255	-3.720	-4.185	-4,650				
$e^{-t/T2}$		0.628	0.395	0.248	0.156	0.098	0.061	0.039	0.024	0.015	0.000				
(S)Ex Vivo	892	718	452	283	178	112	70	44.6	27.4	17.2	0.00	0.00	0.00	0.00	0.00
BS		174	266	169	105	66	42	25.4	17.2	10.5	17.2	0.00	0.00	0.00	0.00

Table 4 (3-A-1-a，3- A-1-b) MSME (Multiple slices multiple echo) for T2.

According to Mxy(t) = Mxy(0)^-t/T2, we had the calculation step by step:

1)Te, Echo time;

2) Te/T2, the value of Te/T2;

3) The value of $e^{-t/T2}$;

4) S, the intensity of T2 MRI signals;

5) BS, the value of block signal.

3-A-2) Block Signal and Shimming technique-----Hologram of T2 of GM of in vivo

14	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	68.6
13	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4		83
12	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7			104
11	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3				135.3
10	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5					165

9	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6	22.6						203.4
8*	30.8	30.8	30.8	30.8	30.8	30.8	30.8	30.8							246.4
7	42	42	42	42	42	42	42								294
6	58	58	58	58	58	58									348
5	80	80	80	80	80										400
4*	107	107	107	107											428
3	148	148	148												444
2	201	201													402
1	51														51
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5. T2 of GM of in vivo.

According Block signals and shimming technique, we have table 5

3-A-3) Block Signal and Shimming technique-----Hologram of T2 of GM of Ex vivo

14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00
10	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2					172
9	10.	10.	10.	10.	10.	10.	10.	10.	10.						94

	5	5	5	5	5	5	5	5	5						.5
8*	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2							137.6
7	25.4	25.4	25.4	25.4	25.4	25.4	25.4								177.8
6	42	42	42	42	42	42									252
5	66	66	66	66	66										330
4*	105	105	105	105											420
3	169	169	169												507
2	266	266													532
1	174														174
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	

Table 6. T2 of GM of Ex vivo.

According Block signals and shimming technique, we have table 6

3-A-4) The difference among the physics,the Qi and the Shen between In vivo and Ex vivo of GM of Brain。

Definition

Between Te (0 ms) to Te (280 ms),we divided them into three parts

Part1: From 0ms to 80ms,corresponded to the physics;

Part 2: From 80ms to 160ms,corresponded to the Qi;

Part 3: From 160ms to 280ms,corresponded to the Shen.

3-A-4-a)The difference according quantum prediction (Put the quantum entanglement into account.)

	S (I)	SD (1)	P(I)	S(E)	SD(E)	P(E)	t (I-E)	P (I-E)	
Part	150.1	45.39		165	63.08		1.36	P>0.05	No

1									difference
Part 2	49.55	18.19		34.52	18.19		-3.00	P<0.01	difference
Part 3	11.01	5.93		3.86	6.56		11.46	P<0.01	difference

Table 7

A-4-b) The difference according to non-quantum prediction (not put the quantum entanglement into account.)

	S (I)	SD (I)	P(I)	S(E)	SD(E)	P(E)	t (I-E)	P (I-E)	Diff.
Part 1	170.75	53.73		184	66.67		-0.3095	>0.05	No
Part 2	52.7	21.35		37.6	21.60		0.9945	>0.05	No
Part 3	11.9	6.71		4.62	7.46		1.778	>0.05	No

Table 8

In 3- A), we presented out the complete T2 MRI signals of grey matter: Total T2, sectional T2s among one of ROI of living brain and dead brain. If putting the quantum entanglement into account, between In vivo brain (I) and Ex vivo brain， we have:

Total T2: (I)> (E) ;

Part 1 (Physics)： (I)==(E)

Part 2 (Qi)： (I)>(E)

Part 3) (Shen)：(I)>>(E)。

3-B) WM T2： In vivo: PD：802 ms；T2，57 ms. Ex vivo: PD, 896 ms; T2,37 ms.

3-B-1) Block Signal calculation

		1	2	3	4*	5	6	7	8*	9	10	11	12
Te	(PD)	20 ms	40 ms	60 Ms	80 ms	100 ms	120 ms	140 ms	160 ms	180 ms	200 ms	220 ms	240 ms
		///				///				///			
S (In Vivo)	802	564 .60	397 .47	279 .81	196 .98	138 .81	97. 72	68. 74	48. 43	34. 09	24. 00	16. 90	11. 91
BS (I)		237 .4	167 .13	117 .49	82 .83	58 .17	41 .09	28 .98	20 .31	14 .34	10 .09	7 .1	4 .99
		///				///				///			
S(Ex Vivo)	892	522 .06	304 .31	177 .16	103 .24	60. 10	34. 98	20. 39	11. 88	7. 06	4. 03	2. 35	1. 37
BS(E)		369 .94	217 .75	127 .15	73 .92	43 .14	25 .12	14 .59	8 .51	4 .82	3 .03	1 .68	0 .98

Table 9

B-2) The difference according to quantum prediction (Put the quantum entanglement into account.):

	S (I)	SD(I)	S(E)	SD(E)	t value	P	difference
Part1	125.55	51.06	148.26	95.59	-0.6627	>0.05	No
Part 2	36.80	18,06	20.64	12.78	3.8169	<0.05	Yes
Part 3	8.85	3.48	2.47	1.45	10.8526	<0.01	Yes

Table 10

3-B-3) The difference according to non-quantum prediction (Not put the quantum entanglement into account.)

	S(I)	SD(I)	S(E)	SD(E)	T value	P	Difference
Part 1	151.21	67.07	197.19	129.57	-0.6307	>0.05	No
Part 2	36.88	15.98	26.94	20.12	0.8678	>0.05	No
Part 3	9.13	4.06	2.63	1.69	2.9601	<0.05	Yes/No

Table 11

In 3-B), we presented out the complete T2 MRI signals of white matter (WM): Total T2, sectional T2 among one of ROI of living brain and dead brain. If putting the quantum entanglement into account, between In vivo brain (I) and Ex vivo brain， we have:

Total T2: (I)> (E) ;

Part 1 (Physics)： (I)==(E)

Part 2 (Qi)： (I)>(E)

Part 3) (Shen)： (I)>>(E)。

3-C) GM T1 . T1,in vivo 1581 ms ,PD,1028;;T1, Ex vivo,375 ms, PD,1143ms

3-C-1) Block Signals calculation.

		1	2	3	4	5	6	7	8	9	10	11	12	13
	0	200	400	600	800*	1000	1200	1400	1600*	1800	2000	2200	2400	PD
In Vivo (S)	0	112.30	230.27	324.85	408.12	482.13	546.90	604.46	654.83	699.04	738.10	772.03	802.87	1581
BS		112	117	94	77	74.	64.	57.	50.	44.	39.	33.	30.	

		.30	.97	.58	.27	01	77	56	37	21	06	93	84	
					///				///					
Ex Vivo (S)	0	472 .06	749 .81	912 .11	1008 .13	1064 .13	1096 .14	1115 .57	1127 .00	1133 .86	1137 .29	1139 .57	1140 .71	375
BS		472 .06	277 .75	162 .30	96 .02	56. 00	32. 01	19. 43	11. 43	06. 86	03. 43	02. 28	01. 14	

Table 12

3- C-2) The difference according to quantum prediction (Put the quantum entanglement into account.)

	S(I)	SD(I)	S(E)	SD(E)	T value	P	Difference
Part 1	91.45	15.52	189.85	121.38	-2,5402	>0.05	No
Part 2	60.68	8.72	26.90	16.37	9.1486	<0.01	Yes
Part 3	36.47	5.078	3.210	2.103	39.2144	<<0.01	Yes

Table 13

3-C-3) The difference according non-quantum prediction (not put the quantum entanglement into account.)

	S(I)	SD(I)	S(E)	SD(E)	T value	P	Difference
Part 1	94.72	17.52	251,03	17.52	-1.8951	>0.05	No
Part 2	61.68	10.11	29.72	19.46	2.915	<0.05	Yes
Part 3	36.33	6.999	3.428	2.472	7.7847	<0.01	Yes

Table 14

In C), we presented out the complete T1 MRI signals of grey matter (GM): Total T2, sectional T2s among one of ROI of living brain and dead brain. If putting the quantum entanglement into account, between In vivo brain (I) and Ex vivo brain, we have:

Total T2: (I)> (E) ;

Part 1 (Physics)： (I)==(E)

Part 2 (Qi)： (I)>(E)

Part 3) (Shen)： (I)>>(E)。

3-D) WMT1.

T1,in vivo 1130 ms, PD, 802 ms; T1,Ex vivo,426 ms, PD,896 ms

3-D-1) Block Signal calculation

		1	2	3	4	5	6	7	8	9	10	11	12	
	0	2 00	4 00	6 00	8 00*	10 00	12 00	14 00	16 00*	18 00	20 00	22 00	24 00	PD
(S)In Vivo	0	12 9. 92	23 9. 00	33 0. 42	40 6. 61	47 0. 77	52 4. 51	56 9. 42	60 7. 11	63 9. 19	66 5. 66	68 7. 31	70 5. 76	80 2
BS		12 9. 92	10 9. 08	9 1. 42	7 6. 19	6 4. 16	5 3. 74	4 4. 91	3 7. 69	3 2. 08	2 6. 47	2 1. 65	1 8. 45	
					///				///					
(S)Ex Vivo	0	33 6	54 5. 66	67 6. 48	75 8. 91	80 9. 98	84 2. 24	86 2. 85	87 5. 50	88 2. 56	88 7. 94	89 0. 62	89 2. 42	89 6
BS		33 6. 00	20 9. 66	13 0. 82	8 2. 43	5 1. 07	3 2. 26	2 0. 61	1 2. 65	0 7. 06	0 5. 38	0 2. 68	0 1. 80	

Table 15

3-D-2)The difference according quantum prediction (Put the quantum entanglement into account.)

	S(I)	SD(I)	S(E)	SD(E)	T value	P	Difference
Part 1	92.71	18.31	138.39	84,29	-1.7447	>0.05	No
Part 2	48.43	9.830	26.7069	14.1334	6.4334	<0.05	Yes
Part 3	24.83	5.129	4.01	2.099	23.52	<<0.01	Yes

Table 16

3-D-3) The difference according physics prediction (not put the quantum entanglement into account.)

	S(I)	SD(I)	S(E)	SD(E)	T value	P	Difference
Part 1	101.65	24.15	189.73	110.72	-1.5673	>0.05	No
Part 2	50.13	11.43	29.15	16.69	2.0744	>0.05	No
Part 3	24.66	5.943	4.23	2,425	6.3666	<0.05	Yes

Table 17

In3- D), we presented out the complete T1 MRI signals of white matter (WM): Total T2, sectional T2 among one of ROI of living brain and dead brain. If putting the quantum entanglement into account, between In vivo brain (I) and Ex vivo brain,we have:

Total T2: (I)> (E) ;

Part 1 (Physics)： (I)==(E)

Part 2 (Qi)： (I)>(E)

Part 3) (Shen)： (I)>>(E)。

Part Four

Interpretation and conclusion.

With the tables from table 1 to table 17, we could have the following interpretations and final conclusion：

For any ROI, we could measure out

4-1） Yin and Yang

4-1-A) Yin and yang of GM of In vivo of Brain

4-1-B) Yin and yang of GM of Ex vivo of Brain

4-1-C) Yin and yang of WM of In vivo of Brain

4-1-D) Yin and yang of WM of Ex vivo of Brain

They could be predicted in quantity

In Vivo >>Ex vivo.

4-2) The Physics

The Physics. 4-2-A) GM of In vivo of Brain== GM of Ex vivo of Brain,

4-2-B) WM of In vivo of Brain==WM of Ex vivo of Brain

They could be predicted in quantity

4-3) The Qi

The Qi. 4-3-A) GM of In vivo of Brain> GM of Ex vivo of Brain,

4-3-B) WM of In vivo of Brain>WM of Ex vivo of Brain

The Qi==In vivo---Ex vivo

They could be predicted in quantity

4-4) The Shen

The Shen (Consciousness).

4-4-A) GM of In vivo of Brain> > GM of Ex vivo of Brain,

4-4-B) WM of In vivo of Brain>>WM of Ex vivo of Brain

The Shen== In vivo---Ex vivo

They could be predicted in quantity.

The conclusion is: In the life system, there is the quantum prediction, the yin and yang, the physics, the Qi, the Shen could be predicted by this quantum prediction.

Thus, the yin and yang,(the physics), the Qi, the Shen are the real things of life, they could be measured by MRI Hologram.

This study also confirms the definition of AQB, the contents of AQM, the operation platform of AQM .

Finally, we further summary as the following according to AQB:

Basic on the data process we described above, among grey matter (GM) and White matter（WM）of living brain and dead brain, we could measure the total T2, T1; the physics, the Qi, the Shen ; further, with calculation, we could have MTR, we could have the statue of free energy, negative entropy, temperature, the space statue (coupling VS non coupling).

The conclusion is : we could have MRI Hologram;more detail as:

According the decay curve of T2, T1 , basic on the concept of QMRI, AUC, inputting the idea of quantum entanglement, adopting the techniques of block signals and shimming, we develop out the MRI Hologram:

1) According to MSME, MSstir , in Magnetics space, we have multiple “slices” of T2, T1 signals;

2) Basic on the concept of QMRI, AUC, inputting the idea of quantum entanglement, adopting the techniques of block signals and shimming, we develop out the MRI Hologram;
3) Applying the cloud computing, among any ROIs,we could calculate (measure) out the complete MRI signals of T2, T1 and MTR, the signals of different Tes；
4) According to the theory of quantum thermodynamics, we could calculate （measure）out the parameters of free energy (E) , negative entropy (S-), temperature (T) and space (V), E==(S-)TV.
5) According to the theory of yin and yang of TCM, the results of 3) and 4) could be completely interpreted as the complete contents of yin and yang (Yin and yang; emptiness and fullness; cold and hot; outside and inside; the physics, the Qi, the Shen and others.)
6) Particularly, according 4-4) , the entity of Shen (consciousness) could be revealed, it could be measurable.

   In reference 3), basic on the calculation of the entity of consciousness, with the idea of negative entropy, Gödel's incompleteness could be overcome, crystallized conscious phenomena could be appeared, the Libet experience could be explained without difficulty.

References

Ming Wong, The Collection of Essays on the Issues of Negative Entropy and Consciousness. Published by Scientific Research Publishing, Inc. ISBN: 978-1-61896-129-7 (2016)