

Information in Bible and in Science

Metatron and Memra in rabbinical writings

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Summary

Information plays a major role today. Some scientists state that information is one of the basic principles in nature. However, the importance of information was well known to Bible scholars many centuries ago. The act of God's creation is explained in the Bible as the act of the Creator's spoken word. We will distinguish three forms of information: 1) Pure information (the word/plan of God dimensionless and independent of information carriers), 2) Dynamic information or information flow, (the spoken Word of God, information transmitted as course of time), 3) Static information (the written word of God, information stored on a material carrier). Arguments in this article are based on the hypothesis, that information flow multiplied by Planck's constant h is equal to energy. According to this hypothesis the genesis of the universe can be seen as follows: In the beginning of time the Creator transformed his word – his eternal plan for the universe and the earth – into dynamic information, the spoken word of the Creator. With the expression of the Creator's command the universe started to expand. Dark energy, the force behind the accelerating expansion of the universe, may be identical with the Creator's word.

Metatron - what is this?

RaSHI (Rabbi Schlomo ben Jizchak, 11th century) suggests that the words at the end of Exodus 23:20-21, *'my name is in him'*, mean *'He and I have the same name.'* *"And our Rabbis have said that this is Metatron, whose name is the same as the name of the LORD. The numeric value of 'Metatron' corresponds to that of 'Shaddai', the name of the Almighty."*

In a modern internet version [1] this passage is given as follows:

For My Name is within him: [This clause] is connected to the beginning of the verse: Beware of him because My Name is associated with him. Our Sages, however, said: This is [the angel] Metatron, whose name is like the name of his Master (Sanh. 38b). The numerical value of (314) מִטְרָטוֹן equals that of (314) שְׁדַי. - [From Tikunei Zohar 66b].

In the Talmud we find the simple statement that Metatron is also the Prince of the Countenance [2]. Additionally, the Talmud says that the name *Metatron* is equivalent to 'LORD', *and he sits in the Holiest of Holies and acts as God's emissary* [3]. He is called the "Angel of the LORD", "The Prince of the Universe", "The Prince of the Countenance" and by the name "Shechina" – the Presence of God [4].

The concept of Memra

Memra or *mimra* is the Aramaic for "word", which, in Greek, is *logos*. The concept of the Memra is derived from Psalm 33:6 (*all Scripture quotations from King James Version*): "By the word of the LORD were

the heavens made; and all the host of them by the breath of his mouth." The Hebrew root for 'word' here is *dabar*. In the text, the inflected word is *bidabar* - "by the word".

In the Targums, the Aramaic versions of the TANACH, the word *memra* is used in every instance where God appears or speaks to human beings. For example, in Genesis 3:8, "*And they heard the voice of the LORD God walking in the garden*", the Targums replace the phrase "*the LORD God*" (יהוה אלהים - *yehovah elohim*) with מימרא (*memra*, spelled *mymra* or *mimra*).

A striking feature of these passages from the Targums is that the *Mimra* often seems to be identified with the name of God: "*The LORD's Mimra will be my God*"; "*I will save them through their God, the LORD's Mimra*" [5];

There are some indications that the *Memra* concept was current among the Essenes of Qumran. They stress in their scrolls that everything received its beginning through God's deliberate purposing, and "*without him nothing was made*" - "*Through your word everything received its beginning, and without you nothing was made*" [6].

Rabbi Gottlieb Klein [7] provides a review of the Jewish literature concerning Metatron and *Mimra*: "*Metatron is the nearest person to God, serving him; on the one hand his confident and delegate, on the other hand the representative of Israel before God... Metatron is also known as Sar ha-Panîm, the 'Prince of the Countenance' or just as 'the Prince', and he sits in God's innermost chamber (penim). The numeric value of 'Metatron' is the same as that of Shaddai, 'the Almighty'. He is therefore the delegate of the Almighty. Shaddai (10+4+300) = 314 and Metatron (50+6+200+9+9+40) = 314.*"

Metatron is often identified with the Word or Logos, and Klein shows that there are five such intermediaries in the Talmud: "1. *Metatron*, 2. *The Word of YHVH*, *Mimra*, 3. *God's hovering glory, the Shechina*, 4. *God's Holy Spirit, Rûah ha-Qôdesh*, and 5. *the Voice from Heaven, Bath Qôl (lit. 'daughter of a voice')*" [7].

The personified Word, the speaking of God and information

As mentioned above, the *Memra* concept of the personified Word of God was derived from Psalm 33:6:

By the word of the LORD were the heavens made; and all the host of them by the breath of his mouth.

Now we will consider the possibility that the actual speaking of God has to be distinguished from the personified Word, for in v. 9 we read:

For he spoke, and it was [done]; he commanded, and it stood fast.

There are hints in Jewish literature that the very act of speaking is seen to be equivalent to creating. According to the Bible, God created the world by His word. God simply spoke and the world became

reality. Not only are words the instrument of creation, in Judaism they are primary reality itself.

Philo of Alexandria also contends that God speaks simultaneously with his acting or creating. *"For God while he spoke the word, did at the same moment create [8]."*

Interpreting the garment of the high priest (Exod. 28:34;) Philo states: *"But the seal is an Idea of Ideas, according to which God fashioned the world, being an incorporeal Idea, comprehensible only by the intellect"... "The incorporeal world then was already completed, having its seat in the Divine Logos and the world, perceptible by the external senses, was made on the model of it"[9]."*

As an analogy, Philo uses the plan of a city in the mind of its builder:

„Now we must form a somewhat similar opinion of God, who, having determined to found a mighty state, first of all conceived its form in his mind, according to which form he made a world perceptible only by the intellect, and then completed one visible to the external senses, using the first one as a model“ [10]."

God enacted this completion by speaking the word.

Information in science

While Philo did not accept the existence of eternal matter as Plato did he was influenced by Greek philosophy and admired Plato. A connection between Plato and Aristotle on one side and our modern thinking was drawn by Weizsaecker: *"Today mankind starts to become accustomed to the fact that information has to be taken as a third thing beside matter and consciousness. This is a rediscovery of an old truth. It is the Platonic Eidos and the Aristotelic Form in new clothes so that even a man in the 20th century may learn to have some idea of it" [11]."*

Wheeler emphasises the importance of information when coining the expression *„It from bit“*, which he explains as follows: *"It from bit symbolizes the idea that every item of the physical world has at bottom - at a very deep bottom, in most instances - an immaterial source and explanation; that what we call reality arises in the last analysis from the posing of yes-no questions and the registered of equipment-evoked responses; in short, that things physical are information-theoretic in origin" [12]."*

Zeilinger proposed, as the foundational principle of quantum physics, that each elementary system (e.g. a single photon) is carrying one bit of information. The quantum nature of information is immediately plausible, since a yes-no question can have only the answer yes or no [13]. A fraction of this answer is illogical. In contrast to this, the quantum nature of radiation energy - introduced by Max Planck - is quite difficult for our imagination. For this reason, Zeilinger established a novel mathematical formulation of quantum mechanics on the basis of his foundational principle and quoted the Gospel

according to John 1:1 – *In the beginning was the word* [14] – to underline his conviction that the most important basis of physics is information.

Forms of information

Different forms of information are well known to us from daily life. Thoughts and plans are the beginning of any creative work, which is subsequently expressed in written or spoken words or in music. Let us take music as an example. A composer is meditating on a new composition and seeks a short melody as a theme. First trials are discarded till finally he has found his theme and is thrilled by it. All this work was confined to his thoughts. Nobody knows the short melody, nobody has ever heard it, but the composer knows, “this is my theme”. Then he plays the beginning of his new composition on the piano. He thus transforms his ideas into the dynamic form of information carried on sound waves as a function of time. However, before this first sounding of the new melody it existed as pure information – independent of an information carrier – in his thoughts. And finally, he records the melody on a CD, transforming it into a static form of information – in this form the information is independent of time. In mathematical language, the information is transferred to a function of one space dimension, the location on the CD groove.

Before the creation there was the Memra, the eternal word or plan of the Creator. This concept can be found in the TANACH and in the New Testament as well: *In the beginning was the Word (logos) and the Word was with God, and the Word was God* (John 1:1). The distinction mentioned above between the eternal and the spoken word is also found in the New Testament: *Through faith we understand that the worlds were framed by the word (rhema: the spoken word) of God, so that things which are seen were not made of things which do appear* (Hebrews 11:3).

On the basis of the passages from the Bible and from rabbinical literature quoted above, we can, therefore, distinguish the following forms of information:

- 1) The personified Word (*Memra = dabar/logos*), representing pure information independent of information carriers (i.e. thoughts, plans),
- 2) the spoken word (*amar = dabar/rhema*), representing dynamic information i.e. information transmitted as a function of time, often on a dynamic information carrier (e.g. sound or electromagnetic waves) or in a system, whereby the information undergoes change over time,

- 3) the written word representing static information as a function of space
always on information carriers (e.g. paper, CD, DNA, memory chip).

Hypothetic equivalence of information and energy

In this paper God's plan is used as an example of pure information. The act of creation is the speaking of God. God's speaking is a flux of information in time.

According to the new hypothesis the information flux I multiplied with Planck's constant h is equal to energy E . $E = I h$ [15]. The information flux I is the total information change per time. The equivalence between energy and mass is given by Einstein's equation: $E = mc^2$. According to the new hypothesis the conservation law of mass and energy is to be extended by the energy equivalence of the information flux I : $E = I h$.

Since according to this hypothesis, the universe was created by the divine information flux I , the complete conservation law is written, (after division by h) beginning with I :

$$I + E/h + mc^2/h = \text{constant}.$$

The creation of the universe by the speaking of God

In the beginning God created the heavens and the earth. This is the well-known first sentence of the Bible. Yeshayahu Leibowitz explains that the first Hebrew word "bereshit", translated literally, has the meaning: "in the beginning of" and he asks: The beginning of what? The beginning of time? [16].

According to Philo, God did not begin to create the world at a certain moment: *But God is the creator of time* [17]. First of all, time was created by the spoken word of God. This is in accordance with Psalm 33:9: *For he spoke and it was.*

Therefore, the act of creation is the speaking of God. The origin of the physical world can be understood thus, that in the beginning of time, God introduced his plan for the cosmos and for the earth into space. Therefore, the origin of the world was the mighty spoken word of the Creator in the beginning of time and space (see Appendix). According to his plan the universe developed and expanded – in accordance with Isaiah's words (40:22): *He stretcheth out the heavens as a curtain, and spreadeth them out as a tent to dwell in.*

The expanding of the universe was observed first by Hubble in the beginning of the 20th century, however, Isaiah had described it already 2500 years ago. The expanding of the universe has continued from the beginning to the present day and is been observed by modern astronomers.

The powerful word of God is sustaining the universe

The Bible describes the beginning and the end of the temporal universe. The unidirectional time flow in our world is one of the great

problems of physics today. Penrose [18] explained that a fine tuning of $1/e^{10^{123}}$ is necessary to explain this time flow. We will estimate the resulting energy according to the above described hypothesis, when the corresponding information is flowing through the universe. For this purpose, we will insert in the formula $E = I h$ the huge information estimated by Penrose, $I = 10^{123}$ bit. If we choose for the duration of the information flow the age of the universe, nearly 14 billion years, we get for the resulting dark energy density approximately 10^{-15} Joule/cm³, which match the astronomical observations.

It seems to be possible by the current state of information technology to demonstrate experimentally the repulsive force caused by a high information flux through a fibre. This experiment could answer the open question about the nature of dark energy. Experimental details are described in the appendix and in [15].

The mystery of the eternal Son of God

The Midrash explains Psalm 2:7 as follows: "*The LORD said 'You are my son'. The decrees are those of the king, the king of kings that this would be done to the Messiah-King...*"

The Talmud too has something to say about the messianic character of the second psalm. Regarding the word "anointed" in verse 2 it explains: "*When the war of Gog and Magog is in sight they will be asked, 'Why have you come?' The answer will be: 'We have come against the LORD and his anointed', for it is written: 'Why do the nations rage and the peoples plot in vain?' (Ps. 2:2)*" [19].

When the Zohar describes this "son", *bar*, it appends this statement: "*You are the good shepherd; of you it is said, 'Kiss the Son'. You are great here below, the teacher of Israel, the Lord of the serving angels, the son of the Most High, the son of the Holy One, may his name be praised and his Holy Spirit.*" [20]. The Midrash sees the Messiah-King in Psalm 72: *who will deliver the needy and the afflicted, "for it is written: 'A shoot will come up from the stump of Jesse, and he will judge the needy with righteousness' " (Isa. 11:4).* The whole psalm, the Midrash says, is "*praise to the Messiah-King*". Verse 17 reads literally: "*before the sun was, his name was Yinnôn*", which means 'may it sprout' (one of the names of Messiah). The Midrash also understands this name as being assigned to the Messiah "*before the creation of the world*".

RaSHI refers to Psalm 72 in his commentary on Micah 5:1, which says of the Ruler of Israel to be born in Bethlehem that his "*origins are from old, from ancient times*". According to RaSHI "*he is the Messiah, the Son of David, as Ps. 118 says he is the 'stone which the builders rejected', and his origins are from ancient times, for 'before the sun was, his name was Yinnôn'*" [21].

R. David Qimhi goes even further saying: "*It will be said in the Messianic age that his 'origins are from old, from ancient times'; 'from Bethlehem' means that he will be of the house of David, because*

there is a long period of time between David and the Messiah-King; and he is El (God), which is how he is 'from old, from ancient times' [22].

In Isaiah 9:5 we find a list of names, from which we learn that he will be called: *"Wonderful, Counsellor, Mighty God, Everlasting Father, Prince of Peace."* The Targum elucidates this verse, saying: *"His name has been from ancient times... and regarding the 'Everlasting Father' part, 'the Messiah has been for ever'".*

The first three verses of John's Gospel read as follows:

"In the beginning was the Word, and the Word was with God, and the Word was God. He was with God in the beginning. Through him all things were made; without him nothing was made that has been made."

The Qumran scrolls reveal a thought world astonishingly similar to that which we find in John: *"All that is and ever was comes from the God of knowledge. Before things came into existence He determined the plan of them; and when they fill their appointed roles, it is in accordance with his glorious design that they discharge their functions. Nothing can be changed" [23].*

The "Book of Hymns" says in its opening chapter: *"Thou hast created this, and in the wisdom of thy design thou preparedst its laws before they were. By thy mouth and by thy word it has all come into being; without thee there is nothing, which has been made" [24].*

However, the deepest mystery is expressed in verse 14 of the first chapter of John's Gospel: *And the Word was made flesh and dwelt among us.*

The mystery of the eternal Memra becoming a human being and thus *the image of the invisible God* (Colossians 1:15) is too deep for our intellect, which is bound to our limited dimensions in time and space. According to the Zohar, this mystery will one day be revealed to the faithful by the Messiah: *"And this is the spirit which will rise from the hidden wisdom, and which is called the spirit of life; and that spirit is ready to give this wisdom in its due time through the Messiah-King, as it is written (Isa. 11:2): 'And the spirit of the LORD will rest upon him, the spirit of wisdom and of understanding'" [25].*

Messianic believers pray that the day of His revelation will come soon: *Amen. Even so, come Lord Jesus* (Revelation 22:20b).

Orthodox Jewish believers pray at Yom Kippur: *„Messiah our Righteousness is departed from us: horror hath seized us, and we have none to justify us. He hath borne the yoke of our iniquities, and our transgression, and was wounded because of our transgression. He beareth our sins on his shoulder, that he may find pardon for our iniquities. We shall be healed by his wound, at the time that the Eternal will create him (the Messiah) as a new creature. O bring him up from the circle of the earth. Raise him up from the land of Seir, to*

assemble us on Mount Lebanon, a second time by the power of Yinon." [26].

Appendix

The command of the Creator is the beginning of the universe. In my opinion, God transformed his eternal plan (pure information) into a spoken word (dynamic information). The creator's spoken word is an extremely high flow of information which is – according to the hypothesis^{*)} mentioned above – equivalent to a vast amount of negative energy. This negative energy, acting as a repulsive force, caused the original inflationary expansion of the primordial universe. The duration of this information flow and of the resulting inflationary expansion was an unimaginably small part of a second.

Brian Greene [27] described the cause of the "Big Bang" as an extremely compressed negative energy, which he called "inflaton field". He estimated that its energy corresponded to the mass of about 10 kg which is more than 10,000 times higher than the energy of the Hiroshima bomb. He wrote about *"our continuing ignorance of fundamental origin: specifically, if inflationary cosmology is right, our ignorance of why there is an inflaton field, why its potential energy bowl has the right shape for inflation to have occurred, why there are space and time within which the whole discussion takes place, and, in Leibniz's more grandiose phrasing, why there is something rather than nothing."*

In contrast to this, Hebrews 11:3 states: *Through faith we understand that the worlds were framed by the word (rhema: the spoken word) of God, so that things which are seen were not made of things which do appear.*

*) Feasibility of an experimental test of the hypothesis: An information flow of more than 20 Tbit/s through a fiber of less than 1µm diameter was demonstrated [28]. Between two fibers of a length of 0.1m this information flow will – according to the hypothesis – cause a repulsive force of more than 0.1 nN. A nanoforce device was described which is able to measure this force with an uncertainty of 1% [29].

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