The Metal-Planet Relationship

A Study of Celestial Influence

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Chapter 4

A type of symbolism which can be traced to sources much more ancient than any we have for alchemy is the association of metals with the planets.

F. Sherwood Taylor, Origins of Greek Alchemy Ambix. I, p.46

From antiquity up until the end of the 17th century the number of metals known and recognised as such was seven. They were: lead, tin, iron, gold, copper, mercury and silver. Brass, made from copper, was used, but it was not realised that it was an alloy made from another metal, zinc, until the eighteenth century.

The linking of these seven metals with the 'seven planets' is a belief which cannot be dated, but goes back into the mists of time: there was no age in which silver was not associated with the Moon, gold with the Sun. These correspondences defined the identities of the metals. Iron, used always for instruments of war, was associated with Mars; the soft, pliable metal copper was linked with Venus; and so forth. A vestige of this belief-system is found in one metal having the same name as its planet, Mercury. Then, around the beginning of the 18th century these old, cosmic imaginations were swept away by the emerging science of chemistry. The characters of the metals were no longer explained in terms of their cosmic origins but instead in terms of an underlying atomic structure. In addition, the many new metals then discovered made the old view appear limited.

In the 20th century new lines of approach to this old subject have been opened up through work done within the Anthroposophical movement founded by Rudolf Steiner. What follows draws primarily frorn the works of Rudolf Steiner[1] and Wilhelm Pelikan.[2] The attitude ere adopted is that the traditional seven metals do in fact express most fully and typically the seven planetary characters, in a way that the many other metals known today do not.

Concerning the large number of metals known today a recent work has expressed the view that:

the seven fundamental metals represent something like the seven notes of a scale. As there exists a great variety of intermediate tones within the scale so one can recognise intermediate tones between the metals.[3]

Physical Properties

The traditional seven metals can be arranged so that their defining physical properties form, more or less, a scale which corresponds to an ordering of their associated planets.

The class of metals is defined and distinguished from that of nonmetals by the following physical properties: lustre, resonance, malleability and conductivity. The first three of these cannot readily be expressed in quantitative terms, but values for their conductivities, thermal and electrical, are shown in the table below. (Values are scaled for convenience) silver= 100. Source: Kaye and Laby, Physical and Chemical Constants, 4th ed.) The planets are ordered by their simplest observable property, their mean angular speed relative to the earth, which gives them the same ordering as they received in the old Ptolemaic system.

Table 1
Parallel ordering of metal/planet physical properties

Planet	Mean Orbital Motion deg/day	Metal Associated with Planet	Thermal Conductivity	Electrical Conductivity
Moon	13.2	silver	100	100
Mercury	1.4	mercury		
Venus	1.2	copper	94	95
Sun	1.0	gold	74	72
Mars	0.5	iron	20	17
Jupiter	0.08	tin	16	13
Saturn	0.03	lead	8	8

Lustre (or reflectance): silver is the most perfectly reflecting metal of the seven and is therefore used for making mirrors. Mercury also has a very high lustre and is often used for making mirrors. The other metals show an approximate gradation in lustre down to lead which has a very dull surface.

Resonance: copper is much used in musical instruments because of its high resonance although silver instruments have the clearest, purest tones 'silver bells', and this property again decreases down the scale to the dull sound lead makes on being struck.

Malleability: Hauschka described how metals at the top of the list are highly malleable, but cannot be well cast, whereas those at thebottom can be cast but not forged. Gold he regarded as holding a balance position in that it could equally well be cast or forged.

Conductivity copper is used for electrical wiring being a good conductor.

Mercury is not included on this table being a liquid; the conductivities of metals when liquid are much lower than when they are solid.

These scales show, if such a notion is acceptable, a kind of increase in inner mobility from lead, the most inert, up to silver, which parallels the increasing angular speeds of the planets. Hauschka, who first described this, concluded: 'We see then that planetary movement is metamorphosed into the properties of earthly metals'.

Chemical Properties

Valency: In chemistry, valency means the ratio in which atoms combine together - for example, the valency of hydrogen is one, of oxygen two, of nitrogen three and of carbon, four. Most metals have more than one possible valency state. Wilhelm Pelikan described how these valencies displayed the traditional Ptolemaic ordering we have just considered. Pelikan's list was:

silver 1 Moon
mercury 1+2 Mercury
copper 1+2 Venus
gold 1+3 Sun
iron 2+3 Mars
tin 2+4 Jupiter
lead 2+4 Saturn

These are all the valencies one finds in the normal range of mistry. If there are any others formed by the seven metals, they are and comparatively unimportant. So, those metals which scored lowest on the physical properties, tin and lead, being least lustrous and forth, exhibit the most active tendency in their ratios of combination. inversely, the metal which showed the highest conductivity and gave purest sound, has only a valency of one for the links it forms with r elements.

Electrode Potential: The chemical activity of a metal is measured what chemists call its electrode potential, which indicates how reactive its ions are in solution. Metals which are not very active will not rate hydrogen from an acid, and these are called electronegative. The re active metals which will liberate hydrogen are electropositive. This gives us a chemical scale, which chemists measure by the 'standard electrode potential' of a solution of the ions, at a given concentration, and it indicates the readiness with which a metallic atom will gain or lose an electron. In the above list, the three metals at the bottom, iron, tin and lead corresponding to outer planets are all electropositive, while the 'inferior planet' metals are all electronegative. We could rephrase that by saying electropositive metals are associated with planets appearing to move faster in the sky than the Sun, while for electronegative metals the reverse lies. This was noted by Dr Hausclika in his opus, The

Nature of Substance.

A more modem way of expressing this phenomenon was given by biochemist Dr Frank McGillian, in his 1982 opus The Opening Eye as follows.[4] Taking the modern ordering of the planets around the Sun, McGillian related the orbital motion of the planet to the corresponding metal's electrode potential:

Sun Mercury Venus Earth Mars Jupiter Saturn
gold mercury copper iron tin lead
-1.50 -0.79 -0.33 +0.04 +0.14 +0.13

A contrast can be seen between electronegative metal ions, linked planets inside Earth's orbit including the Sun, and electropositive ions which correspond to those outside the Earth's orbit. Electrode potential measured with respect to the earth, i.e. one terminal has to be earthed, which may help to indicate the relevance of the geocentric viewpoint here involved. (The figures are standard electrode potentials, given to the most common valence condition). Silver's standard electrode potential is -0. 8. In the more traditional order as given in the valence table, silver would be at the top instead of gold. Either way, the correlations are impressive.

Transition Metals: The so-called 'transition metals' cobalt, nickel and manganese show a strong affinity with iron, and Hauschka argued that they had a Mars-like nature. For example, 95% of manganese production is used in steel. They have some comparable physical properties, especially cobalt and nickel:

Atomic Weight Specific Gravity Melting Point

Manganese 54.9 7.4 12440C
Iron 55.8 7.9 15280C
Cobalt 58.9 8.5 15240C
Nickel 58.7 7.7 14900C

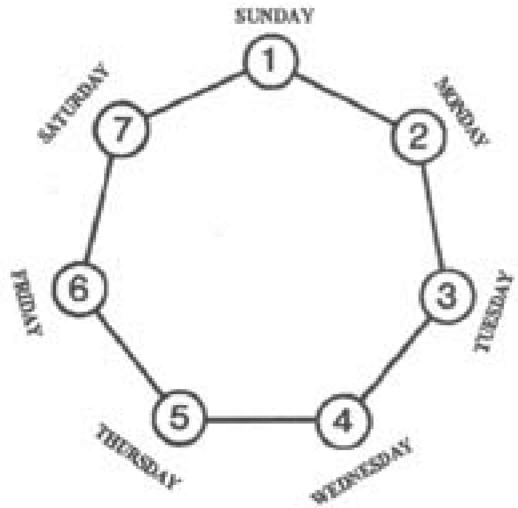
They are more chemically active than iron as shown by their electrode potentials: manganese (Mn>Mn++) +1.2, cobalt (Co>Co++)+0.28, and nickel (Ni>Ni++) +0.25, which accounts for why they were only isolated long after iron.

Atomic Weights: atomic weight gives the ordering of the elements as they appear in the

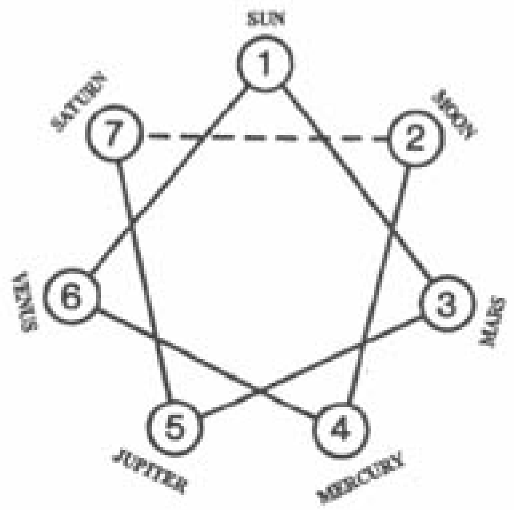
Periodic Table, and so relates to their chemical properties. For comparison, oxygen has an atomic weight of 16 and carbon of 12. An ordering of the seven metals by their atomic weights can readily be derived from our previous ordering: placing the seven metals in a circle in the sequence of their physical properties, as given above, start from iron, as having the lowest atomic weight, and score alternately, and that will produce the ordering by atomic weights.' The significance of this can be seen within a larger, threestage process.

The diagram starts off with the days of the week arranged in a circle. As is well known, the days of the week are named after planetary deities, and the European languages are concordant in this respect. For example, our Thursday derives from 'Thor's day', while the French Jeudi is 'Jupiter's day', the thunder-wielding Thor being a Norse equivalent to Jupiter. Likewise there is an analogy between our Friday, as 'Freya's day', and Vendredi, 'Venus' day', with Freya as a Venus-deity, and so forth.

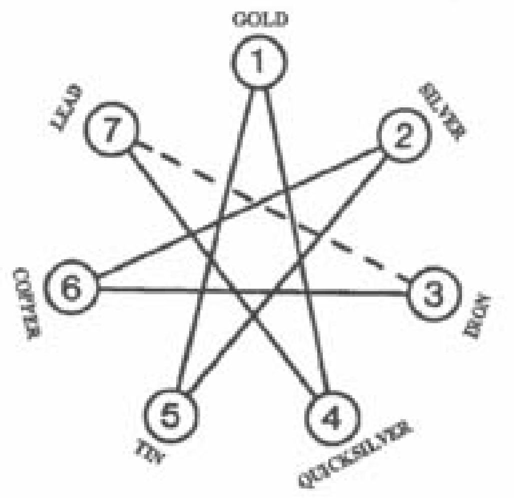
Days, Planets and Metals



The Seven Days of the Week



Traditional ordering of the Planets



Metal atomic weights

Starting from this circle of the seven days of the week and selecting alternately gives the ancient, Ptolemaic ordering of the planets. This sequence starts from the Moon, as the sphere closest to the Earth, and ends with Saturn as the furthest of the seven. We saw how this refers to their speeds of motion across the sky, but also to the order of valencies of their corresponding metals, as well as their physical properties.

Selecting every third step creates a heptagon, that is a sevenfold star-pattem. This final step produces an ordering according to atomic weight or atomic number of the metals (N. B., this is not the same as density). It starts from iron, as having the lowest atomic weight of the seven:

	Atomic Weight	Atomic Number
iron	56	26
copper	64	29
silver	108	47
tin	119	50
gold	197	79
mercury	201	80
lead	207	82

Thus, a moving sevenfold pattern starts from sky-gods linked to the days of the week, and then contracts into sequences of physical and chemical properties of the metals. Pelikan may have been the first to describe these heptagon-patterns, though not in quite the sequence here presented. They link together the concepts of modem chemistry and ancient traditions of the cosmos rather effectively, as well as reminding us that the number seven is in some ways rather mysterious.

Reference

1 . R. Hauschka, 1966.
2. W. Pelikan, 1973.
3. W. Cloos, 1977, p. 123.
4. F. McGillian, 1982, p.93.
5. Sephariel, Cosmic Symbolism, 1912.

Top