Physics

Universe in 5 dimensions - as a model of Zero

— a conceptual structure suggested for interpretations in different sciences —

Part I

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An alternative 5-dimensional model in theoretical physics

It's a model or conceptual structure suggested for interpretations in theoretical physics in the first place, but with a pattern returning in sciences of superposed levels too.

In all its simplicity, without intricate mathematics and despite debatable features, the schematic model may be useful in getting a grasp of scientific data and it feels at the same time congruent with common human experience.

In following files application of the model is tested to main concepts of physics, such as

Forces, Matter and Vacant Space, Antimatter, Charge, Electromagnetic waves, Spin etc.

Some of the main treats in the conceptual model:

- Dimensions as building stones with a special definition

- The "Entirety" as the beginning

- 4th dimension degree (d-degree) identified as Direction

- Motions put into the scheme in their own, new place

- Infinities (written 00) redefined and incorporated

- A suggested interpretation of Charge as property.

- Dimension degree of analysis optional

- All advanced mathematics excluded. Some new, perhaps "odd" and very simple arithmetic introduced for derivation of numbers such as quotients in physics, with the hypothesis that they ultimately originate from number of dimension degrees (see one *__example below__*).

Here the model:

A dimension degree (d-degree) is in this model characterized as the relation between **2 complementary "poles"**.
   This **principle of complementarity is central** (in agreement with treats in quantum mechanics too).

The definition of dimensions as the number of "independent" variables is not accepted; everything is assumed interrelated.

Polarizations are assumed as the elementary principle of development'. It's assumed as responsible for steps towards lower d-degrees.

Science seeks tracing manifoldness back to unity. The creation of universe would presumably have the opposite direction.
   Hence, this model **starts with the "whole"**, with the "Entirety". and this "Entirety" is assumed as 5-dimensional, of one higher degree than the commonly accepted 4 in established physics.
   This doesn't exclude developments of more polarities and dimensions - or fractals within each step in accordance with theories of later decades.

The steps of polarizations in elementary <u>geometrical</u> definitions:

5→4:
Starting point - at the border to metaphysics, at the triple point between metaphysics, concepts and geometry, at Big Bang - is regarded as a real point, a Zero, a "0-pole", a centre, in accordance with accepted physical views but perhaps more extreme.

Complementary pole becomes the undefined opposite, the "infinity" as a "00-pole" (∞, written 00).
   This implies **a redefining of the problematic "infinity" to the concept of "anticenter"**.
   These first definitions make up the first polarization of the 5-dimensional "Entirety" to 0 and 00, **centre and anticenter**, from which all following complementarities are inherited.

4→3:
The 4-dimensional degree is defined as Direction.
   Conceptually, that which is created through a point (and its undefined surrounding) is d**irections outwards-inwards**.
   Geometrically this is vectors, in common definition objects which in addition to positions in 3 dimensions also demand the 4th specification of Direction.

Through polarization between outwards and inwards, here the complementary "poles" (or partial structures") of d-degree 4, principally anti-parallel, and with a loss of direction, a 3-dimensional world of volumes for masses and space is created, and roughly speaking with a **radial - circular** geometry (or with negative - positive curvature) as geometrical poles. In other words: partial structures with enclosed in opposition to excluded centres.

3→2:
The 3rd d-degree when polarized defines in its turn surfaces, 2-dimensional structures with geometries of the type "**inside - outside**" or "**convex - concave**",. The polarity can also be thought of as geometrically appearing in sine curves.

2→1:
In this last structural step a polarization of surfaces are assumed to lead to 1-dimensional structures as lines.

1→"0/00":
1-dimensional structures are assumed to polarize into Motions: with "**motions towards each other**" (converging) and "**motions from each other**", (diverging) as the complementary "poles" in this step.
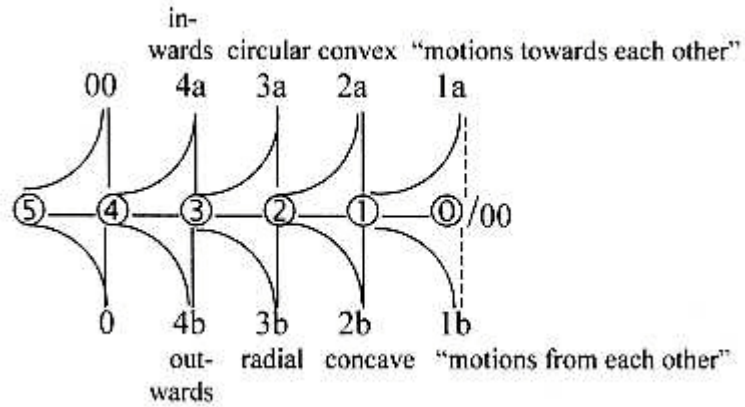
The types of geometrical complementarities in these first "postulates" may be acceptable. In which way simple polarizations create the geometries of the lower degrees out of higher ones is a more serious question. The simple statements above may rise immediate doubts.

Yet, the question is left here for later discussions.

The series of steps is called **a "dimension chain"** and may be written:

$$5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 0/00$$

In this chain of polarizations towards lower degrees **each step implies 1 d-degree debranched**. Lost degrees in a unit are interpreted as transformed into external motions.

There is also the alternative that lost degrees as 1-dimensional structures meet "the other way around" - in synthesizing direction, being built-in into structural element in units of higher degrees.
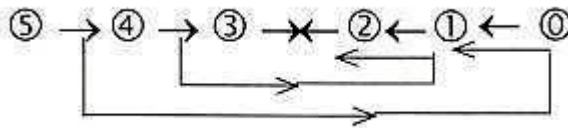
D-degree "0/00" of Motions:

Motions towards each other defines a centre, a zero or 0-pole; motions from each other an anti-center, a 00-pole Still not the same as the poles of the "Entirety" of d-degree 5.

This "dimension degree 0/00" of Motions - corresponding to the concept of pure kinetic energy - can be designated 5'.

Motions as concept becomes in this model the ultimate translation of the 5th dimension degree, expressions for the underlying unity, the "Entirety" stepwise transformed.

In this model Motions are regarded not only as relative but also as absolute realities.

<u>Time</u> is regarded as defined in the d-degree of motions, which also means that it is evolved in first and each following steps towards lower d-degrees.

The d-degree of motions will increase when d-degree of structure decreases. Hence, motions form a "counterdirected" chain to the chain of structure.

Chain of motions   0/00 - 1 --- 2 --- 3 --- 4 --- 5 d-degrees
Chain of structures: 5 -- 4 --- 3 --- 2 --- 1 ---0/00 "

Structure of motions:
· Vibration in 1 dimension - in 4-dimensional vector fields?
· Rotation in 2 dimensions - by 3-dimensional bodies
· Motions in 3 dimensions - by "shells" or 2-dimensional phenomena…(as in cell membranes)…

Compare, as an association, with the temperature (here) motions in one- and two-atomic gases Ew = 3/2, 5/2 or 7/2 (times a constant, times Temperature).
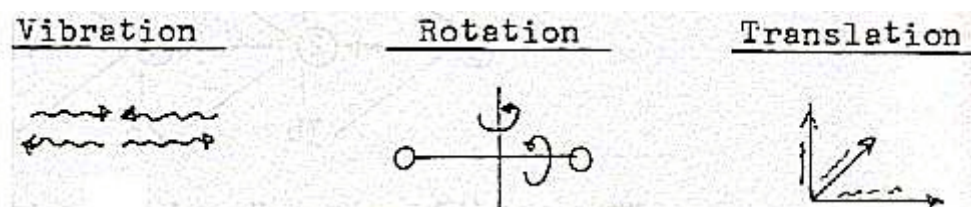
Analysis:
Dimensional degree of analysis will be optional, when d-degree of motions are included.
   Different models of the atom for example would have the same validity, if external relations or motions are included: analyses in vector fields, or particle models or the shell models. We could add here: analysis in structures of 1-dimensional lines or "strings".
   The model implies that everything is interrelated - at bottom. And if so, the 5 primary dimensions should manifest themselves in all phenomenon we choose to study.

This is the basis of the model as a skeleton in terms of concepts and geometries.

The model applied to main concepts of <u>physics</u>:

4th degree:
Here defined as Direction, could be identified with "fields" in physics, with 4-dimensional **Vector Fields** (inwards Û outwards) or pair of forces. (About Forces as concept below.)
   In the first step 5→4, to centre and anticenter, there is only the concept of pure Density, directions from a centre illustrating a gradient of "near / far" from the centre. Implicitly it contains such relations as Mass per Volume, or in the other end of the dimension chain Frequency or Distance per Time (velocity).

3rd degree:
Here as Volumes, geometrically defined as characterized by enclosed / excluded centre, are here identified with **Mass and Vacant Space**, the opposition in the formula $E = +/- mc^2$(*Dirac*); that is in the aspect on Mass or Matter as e.g. celestial bodies occupying space in a 3-dimensional room, that is when analysed as 3-dimensional.

Steps (3) → 2 → 1 →0/00 will represent **waves**: with degree of motions increasing, the structure gets increasing motional character.

2nd degree:
Here is introduced the hypothesis that **Charge** as a 2-dimensional property in relation to Mass when interpreted as 3-dimensional.
   (In the 1960th a physicist as David Park pointed to the fact that physicists didn't know what charge is. The hypothesis here became the starting point to this model.)
   The suggestion should imply that it would be possible to find some difference of 1

dimension degree in the mathematical equations that are connected with electric charge, compared with equations related to masses - or matter. (About the difference mass - matter, see that file).

Charges with opposite signs (+/-) may eventually be regarded as represented by the opposite halves of coordinate axes.

1st d-degree:
The degree of lines may represent the elementary concept of **Distance**, but could also be identified with elementary potentials. Compare too the concept of "field lines". In addition we have path ways for particles or bodies like planets.

One suggestion here is to identify the d-degree steps themselves with the concept Velocity and this polarized into **Distance and Time** in the sense of "scales", that is 1-dimensional physical entities.

Distances transform into Time in one direction, Time into distances, change in relative positions, in the other direction.

D-degree "0/00":
Motions as pure kinetic energy. **Temperature** will of course be one concept in this d-degree of Motions.

The elementary concepts of physics in a dimension chain - a first rough identification.
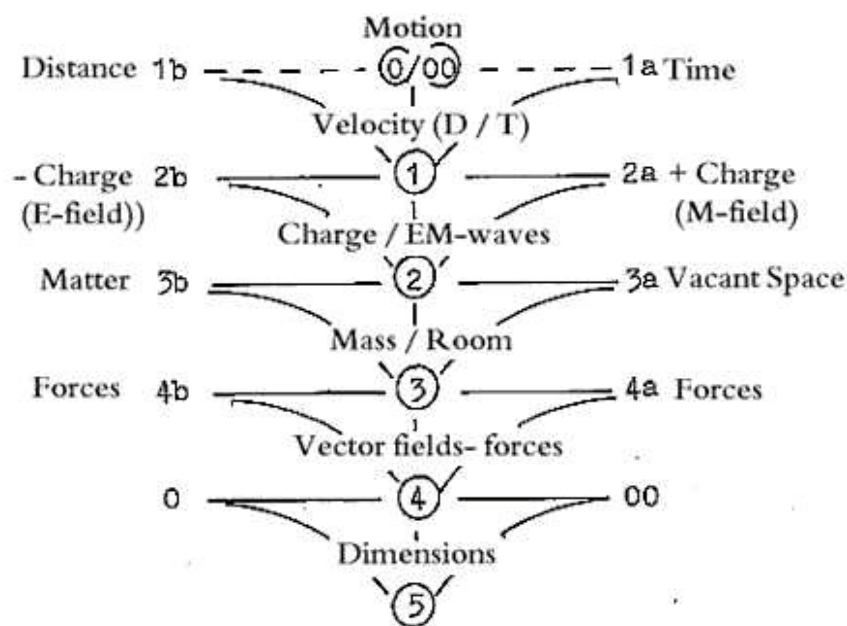
Some annotations:

The complementarity principle are the easily recognizable in pairs as Mass - Vacant Space, charge (+) and (-), p---e, nucleus and shell of the atoms, or quarks up and down, and will be a consequence of a starting point, a centre. (They are In agreement with mythologies too.)

(It should be noted that Bohr's "complementarity" between momentum and position in Quantum mechanics not is of this kind.)

The polarizations imply that 1 d-degree of the inner structure of a unit gets transformed to outer motion. That's at least one thing to say about them here. Compare how Einstein by using the complex number $\sqrt{-1}$ (for Time) moved Time to the same

side of an equation as the 3 room coordinates and got a 4-dimensional Space.

One example of a polarization in elementary physics is the disintegration of neutrons outside the atoms: n → p + e, by "weak interaction". Most things however which we recognize is already polarized realities and in that sense - it's relations we perceive.

Unpolarized higher d-degrees seem as "superpositions " in the sense of Quantum mechanics.

Entropy:
The development from higher to lower degrees in such a dimension chain is in this respect in agreement with the energy law of entropy - which still has its well-known opposite, as in the structuring of life.

5 dimensions?
It differs probably in several aspects from the scientists' research in 5-dimensional mathematics, those inspired for example by *Theodor Kaluza*, but could eventually have connections with it as in the file about forces which is called "MEGA-fields", (magnetic, electric, gravitational and acceleration forces or vector fields).

About counting with 5 dimensions, one should observe that the common elementary coordinate system for 3 dimensions presupposes, without mentioning it, a centre, an origin - and signs (+) and ((-) on the opposite directed halves of the coordinate axes: this means a couple of extra specifications in addition to the 3 about x-y-z coordinates.

Abstractions:
It's a common view that "abstractions" represent "high levels" of the human mind. Here concepts such as geometries are understood as the opposite, very deep realities - in the bottom of human mind and of the world.

There is a process of gradual substantiation to the material world.

Matter;
Matter, versus "non-material" things should be a question of (relative) structure.

Gradual substantiation:
The development toward our "material" and "anti-material" world from both higher and lower d-degrees is regarded as a question of increasing complexity and gradual substantiation.

Incorporation of the 00-pole:
A general aspect on development in the model is the gradually building-in of the 00-pole, the anticenter as "surrounding" into units representing centres. So in development towards life .

This implies growing complexity in the centre-units in relation to the surrounding as "anticenters".

Forces as a concept:

- The concept of "forces" has been discussed and sometimes dissolved into mathematical relations. Still the concept of "forces" seems to be indispensable, so in the concept of "carriers" of forces, distinguished from other elementary particles, and in the so-called 4 known forces in physics. It is of course central in the standard model of quantum mechanics.

- When talking about "forces", emphasis is given to something opposite to "structure", Relations however has also the character of structure. This ambiguity fits very well in this dimension model.

- Forces in the old definition is something that generates changes in direction or velocity of motions. In the model here such changes are primarily related to d-degree steps.

- Here the opposition is introduced between binding and polarizing forces, and the simple starting point that the bond between two parts of a unit is the unit of which they are, or "were", parts.

- According to that statement, the binding force in each dimension degree is assumed to be the next higher dimension degree. Then the 4th dimension degree constitutes the binding force in the 3rd dimension degree, the 3rd in the 2nd and so on. And a line, or distance, is the binding force in motions.   (Apparently so in human beings' building of roads and railways as materialization of distances and then using different vehicles to "bind the endpoints together"!).

- In the opposite direction we ought to have the polarizing forces, from lower to next higher dimension degree.

- Then a "force" can be defined as one dimension degree operating upon next lower or higher degree, the latter seen or analysed as structure.

- A dimension could superficially be resembled with a rubber band that is stretched. The binding force is the contracting, inner, chemical force in the rubber material itself. The polarizing, stretching force comes from the outside.

- With these assumptions Structure and Force (or pair of forces) show up as two aspects on a dimension, depending on the starting point of the analysis. The concept of force is in a simple way traced the back to the concept of dimension.
   (Einstein mentioned in a book from 1960th the difficulty for physicists to derive a particle or atomistic world from field theories of that time. In some sense it could be just a question of different aspects on the same thing and the d-degree of analysis. See later files about mass and step $4 \rightarrow 3$.)

- It's worth remembering that the proton p (H^+) and the electron (e^-) are real "carrier of forces" in biochemical processes on a superposed level, in spite of being fermions and not having integer spin. The same view may be applied to all organisms on the biological level, acting as forces.   And, on the ground level, pure motions are forces, as a fist hitting something. Such aspects support the interpretation of forces as a question about relations between dimensions.

- At the same time it's possible to identify vector fields of 4th d-degree as representing primary forces in usual physical sense with forces often illustrated by vectors. Here the difference between bosons and fermions miss mass would be applicable including the difference in complexity of spin.

Following view is adopted in the model:
Main, first "binding force" will be the 5th d-degree, the "Entirety",
transformed and expressed in all motions and dynamic processes in Universe.
   Polarized into d-degree 4 between 0 and 00, center and anticenter, these poles are assumed as next primary forces:
- the 0-pole (the center) as the secondary binding, integrating force, "from inside",
- the 00-pole (the anticenter) secondarily as a polarizing force,
still, as part of d-degree 5 primarily also with the character of an "aggregating" force. "From outside".

The relation may be elucidated by viewing the dimension chain as "haploid", (0 → 4 →3 →2 → 1 →00) where only the 0-pole develops towards closed units and

materialization, while the 00-pole meats the other way around in each step: there is always an undefined surrounding for a unit as a center-pole

Relations between lower and higher d-degrees are also of the kind 00 to 0: manifolds versus unity, for instance an infinity of surfaces in a volume, of lines in a surface.

Polarizing and binding forces in other words: Surroundings separate the force or Directions from the center, gets integrated by the center. (As in Biology).

A similar relation could be found between concepts as continuum versus quantified realities or fields: the 00-pole as the quantifying one, continuum from the 0-pole the one that gets quantified.

Active forces should presumably be identified with just one of the poles of a dimension degree. A usual statement is that a force always awake its opposite force. (But note: not necessary anti-parallel, in most cases not, according to this model.)

Since all "b-/and a-poles" of lower degrees inherit features from the 0-and 00-poles respectively, this would be a logical consequence.

The concept of connection is ambiguous: The structural or outer connection between for instance poles 4b and 4a is in this model d-degree 3. While the deeper, perhaps expressible as "operational" relation goes through d-degree 4 as an inner, underlying connection, the common origin.
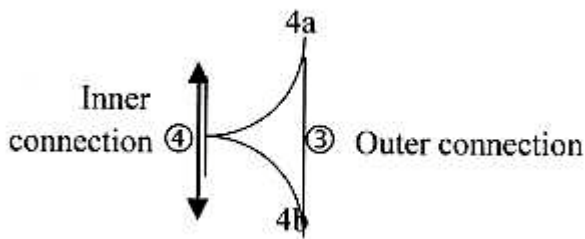
Structure - process - motions:
A dimension chain 5 →4 →3 →2 →1 →0/00 can be understood as a dynamic process of polarizations, of dimension steps.

We can also focus on the dimension degrees themselves as potentials instead of the steps and see the chain as a structure - like a standing wave can be seen as a structure. We choose then a static view.

Static/dynamic or structure/process becomes two aspects on dimension chains.
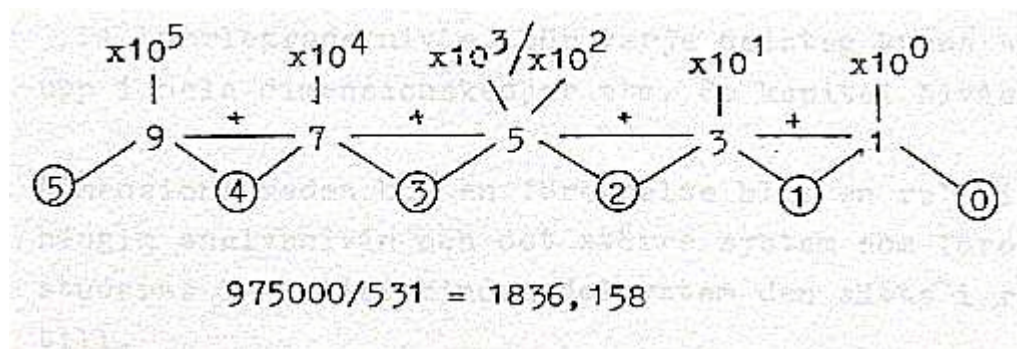
An assumption about angle steps:

There is also in this model a tentative assumption that the d-degree steps geometrically can be characterized by angle steps: in simplest illustration as halvings:

D-degree	5	360°	poles c - ac
	4	180°	antiparallel
	3	90°	orthogonal
	2	45°	sin = cos
	1	22,5°	
	0/00	11,25°	

Such steps may imply enclosing of a center, defining a "separate" unit, leaving an open rest angle for the communication with the outer world, the "00-pole".

Level development:
Shortly: Two thoughts:

a) A development toward higher levels - as a "level chain" through step 3-2; the primary dimension chain is viewed perpendicular, d-degree steps meeting in the middle, in step 3 → ↑8594;2. See illustration below (from file *Forces*).

b) A development of new dimension chains as secondary"loops" in each step of the primary chain, possible to interpret as "fractals".
Example: vector fields as such developing through a whole dimension chain, properties as Mass and Charge likewise developing in such secondary chains...
  It seems as if the two assumptions turn out to be different aspects on the same dimensional development of new "levels".

Mathematics:

One example of the kind of simple arithmetic here and there in these texts:

$$975000/531 = 1836,158$$

Look at the superposed number chain 9-7-5-3-1.

The quotient between the rest masses of proton and electron is given at **1836.12** (data from 1973).. The proton has most of the mass, d-degree 3, the electron form the atomic shell, d-degree 2.

According to Gamow the proton and the electron have about the same energy if the kinetic energy of the electron is taken into account.

(One assumption about numbers is that a d-degree step in some contexts could represent a 10-power step.).

*

An alternative presentation of the mode follows, may be superfluousl.

An alternative presentation of the model

1. "Simpleminded" postulates:

- Science seeks tracing manifolds back to unity.
- The creation of universe would presumably have the opposite direction.
- The most uniform (or integrated) concept we have got is the Whole (the Entirety).
- The starting point, therefore, will here be "the Entirety" as first postulate.
- The simplest way to get manifolds from unity should be through dividing.
- Assume therefore that the world was created through the division of the Entirety.
- Science seeks relations.
- In physics some word for relations is often used as equivalent to the concept of "forces".
- The simplest relation or bond between two parts of a unit is that they are parts of this unit - or has been. It´s the relation that reigned "before" the division.
- Assume then that the Entirety is this first bond or relation, the first force operating between its parts - when it was divided or split. It may be called the "entirety force".

2. Dimensions as building material:

- Postulated: the entirety and its partition.
- We assume now that the partition has the character of polarization.

- The concept "dimension" is chosen as building stone for this model. Geometrically it´s generally designated by coordinate axis. Dimensions are usually taken as geometrical concepts.

- It will be stated here that a dimension is characterize by 2 complementary poles. This means that a dimension is the result of a partition or split, a polarization.

- Physicists generally have been content with 4 dimensions (in standard models, 3 for space, 1 for time.).
  Suppose therefore that the Entirety is one dimension higher, that it is 5-dimensional.

- The **5th dimension degree** as the Entirety as first unit, we now assume, gets polarized in 2 poles, mathematically designated 0 and 00 (here ∞), a point and the infinity. Geometrically the poles can be defined as center and "periphery". Conceptually as center and anticenter = everything else. Note this new definition of "infinity".

- Suppose further more that every polarization gives birth to the next lower dimension degree. The polarization then of the Entirety in center and anticenter gives rise to the 4th dimension degree.

- What you get defined by a polarization center / anticenter is Direction, outwards/inwards. Compare the vector concept. The 4th dimension degree ought to be identified and notified as Direction. (Graphically the 4th dimension degree can be represented by double arrows, two-ways in direction, → ← between center and anticenter.*

- The **4th dimension degree** will in next step be polarized in outward direction and inward direction. These are the 2 poles of the 4th dimension degree. This polarization is assumed to give birth to the 3rd dimension degree, the definition of volumes geometrically.

- The **3rd dimension degree** will be polarized in the following step in 2 poles. In this first schematic outline, with a primitive geometry, these 2 poles could be identified as

enclosed and excluded center respectively, or radial / circular structure.
- Between the poles of the 3rd dimension degree are surfaces defined, the 2nd
dimension degree geometrically.

- The **2nd dimension degree**, that of surfaces, is in its turn polarized, divided, in 2
poles which possibly could have the character of inside / outside, convex/concave
surface, or similar identifications geometrically. The polarization gives the 1st
dimension degree, the line.

- The **1st dimension degree**, the line, polarized, gives 2 poles, which we here presume
can be identified as motions: "movements toward each other" and "movements from
each other". (In simple geometry a divided line leads to the point.)

- Movements towards each other, converging, defines in their turn a center, a zero- or 0-
pole. And movements from each other, diverging, define an anticenter, a 00-pole.

- With that the 1st dimension degree can be seen to define the dimension degree of
"0/00". These are also by definition the both poles of the first 5-dimensional Entirety.
Still not the same unpolarized Entirety as at the beginning.

- The **"dimension degree 0/00"** - corresponding to the concept of pure kinetic energy -
can be designated 5´ and be supposed to make the starting point for a new dimensional
evolution. (About level development here.) Motions as concept gets its own place in the
scheme and can be seen as the ultimate translation of the 5th dimension degree,
expressions for the underlying unity.

One can call a development like the here described from a 5-dimensional unity via
dimension degrees 4-3-2-1 to 0/00 for a **"dimension chain"**

Each dimension degree that is "lost" in the steps towards lower degrees in the chain is
assumed translated in an external 1-dimensional relation, which can be polarized in
movements.

Essential to note:
All poles, each pair in the chain of dimension degrees, will be of a complementary type
according to the assumptions, as a result of the first complementarity between center
and anticenter..

*About counting with 5 dimensions, one should observe that the ordinary mathematical
concept of dimensions presupposes, without mentioning it, a center, an origin - and plus
and minus signs on the opposite directed coordinate axes: this means a couple of extra
specifications in addition to the 3 about x-y-z coordinates.
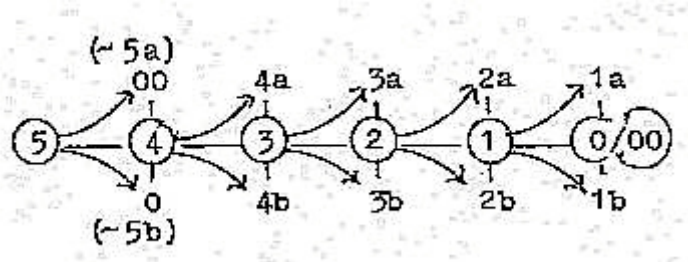
First critical comments:

Main opposition, at first, concerns probably the **geometrical statements** about transformations in d-degree steps 4→3→2→1, not easy to visualize if at all possible:

1. How does antiparallel vectors (outwards - inwards) in step 4→3, change to perpendicular ones? What makes expansion-contraction transform to rotational phenomena? It's an obvious reality for celestial bodies in macrocosm and in microcosm, but why and how? Step 4→3.(Later discussion **here**.)

2. How justify a statement - in pure geometrical terms, that in d-degree step 3→2 a polarization between radial and circular geometries in volumes are defining surfaces or 2-dimensional structures? Step 3 → 2.

3. And in step 2→1: How do surfaces - geometrically seen, get polarized into 2 "poles" which define between them a path line connection or one-dimensional potentials ? Step 2 → 1.

4. Finally, in the last step from d-degree 1 to motions: can all motions be interpreted - at bottom - as a pole exchange between "to and fro", as in waves, as in living beings? What about rotation - of stars and planets for example?

Other questions:
-What kind of dimension concept do these statements imply?
- What drives the polarizations?
- Where do we find expressions for the unpolarized 4th or 3rd or 2nd dimension degree? Compare about superpositions in **Quantum Physics**.

Leaving these and more critical comments for a moment and further discussions to other pages, we will first suggest how the model could be applied to **more physical concepts**, surely easier to accept:

<u>Elementary quantities or concepts of physics:</u>

A first connection of this dimension model to the elementary concepts of physics could be done like this:

5th degree:
As the primary Entirety it doesn't get any attributes apart from mathematical. It is the world, everything and nothing, the whole cosmos, the universe, everything inside and outside of something or equivalent with universe. (See note below.)

4th degree:
Here defined as Direction, could be identified with "fields" in physics, with 4-dimensional vector fields (inwards - outwards) or pair of forces, in relation to mass ("substance") when this is studied as such.

3rd degree:
This could be identified with the concepts of Matter and Space, where matter is analyzed and regarded as simple structure. Its poles, geometrically defined as characterized by enclosed / excluded center, or radial/circular (closed) structure, could at least out of one aspect be identified with matter/vacant space.

2nd degree:
Geometrically the dimension of surfaces, the 2nd degree is already so specified that it

should have several expressions. Here is supposed that this degree could be in some meaning identified with the physical concept Charge (which the physicists when this was written didn't know what it was, according to David Park). This means that it should be possible to find some difference of 1 dimension degree in the mathematical equations that are connected with electric charge, relative to equations related to masses - or matter (about the difference mass - matter, see **here**….).

1st degree:
This degree, the degree of lines, could be identified with simple potentials. Compare too the concept of "field lines". In addition we have path lines for particles or bodies like planets.

Poles of 1st degree:
These should be identified also with the concepts of Distance and Time (or frequency as the inversion of Time).

0/00 - the "dimension of Motion" - is identified as such. What one - relatively - describes as such, - with pure kinetic energy.

Figure 2:
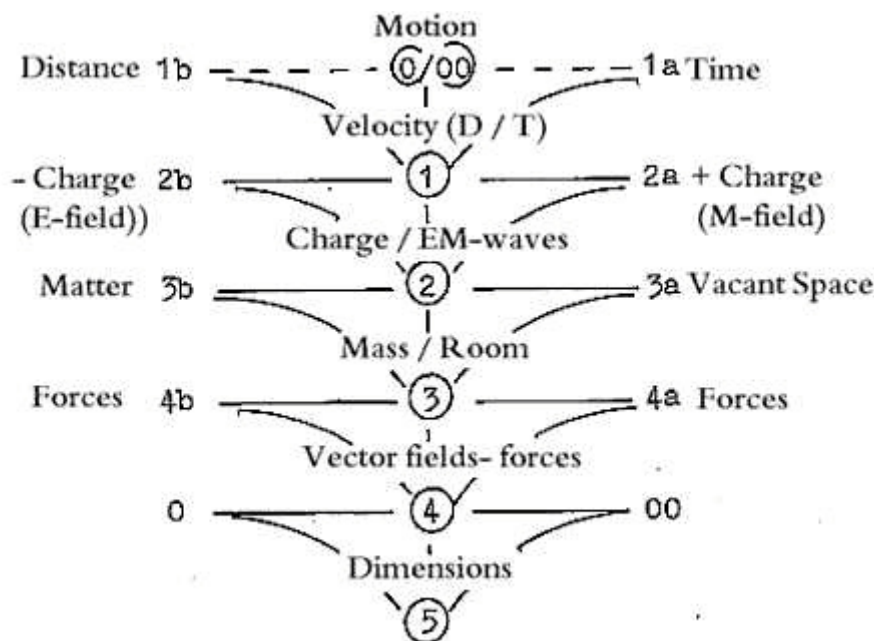
The elementary concepts of physics in a dimension chain - a first sketch.

* First physical concept in step 5 →4 could be identified as Density, directions from a center illustrating a gradient of "near / far" from the center. That is an amount of something per a measure of something else, as Mass per Volume, or as Distance / Time in the concept of velocity.

Some central views on the "dimension chain"

Forces:

- The concept of "forces" has been discussed and sometimes dissolved into mathematical relations. Still the concept of "forces" seems to be indispensable, so in the concept of "carriers" of forces, distinguished from other elementary particles, and in the so-called 4 known forces in physics. It is of course central in the standard model of quantum mechanics.

- When talking about "forces", you will give emphasize to something opposite to "structure", something that generates motions. Relations however, formulated in mathematical equations, has also the character of structure. This ambiguity fits very well in this dimension model.

As said above: the simplest bond between two parts of a unit is the unit of which they are, or "were", parts.

According to that statement, the binding force in each dimension degree is here assumed to be the next higher dimension degree. The 4th dimension degree constitutes the binding force in the 3rd dimension degree, the 3rd in the 2nd and so on. And a line, or distance, is the binding force in motions. (Apparently so in human beings' building of roads and railways as materialization of distances and then using different vehicles to "bind the endpoints together!).

- In the opposite direction we ought to have the polarizing forces, from lower to next higher dimension degree.

- Then a "force" can be defined as one dimension degree operating upon next lower or higher degree, the latter seen or analyzed as structure.

Presumably is that which is identified as working forces just one of the poles of a dimension degree. A usual statement is that a force always has its opposite force. But note: not necessary antiparallel, in most cases not, according to this model.

- With these assumptions one has in a simple way traced the concept of force back to the concept of dimension.

A dimension could superficially be resembled with a rubber band that is stretched. The binding force is the contracting, inner, chemical force in the rubber material itself. The polarizing force comes from the outside.

It's worth remembering that the proton **p** or element **H$^+$** and the electron are real "carrier of forces" in biochemical processes, in spite of being fermions and not having integer spin. That said as an argument for seeing forces as a concept for relations.

- Structure and force (or pair of forces) show up as two aspects on a dimension, depending on the starting point of the analysis.

The concept of connection is ambiguous:
The structural or outer connection between the poles 0 and 00 e.g. is the 4th dimension degree. While the more functional connection between the poles goes via the common origin , the 5th dimension degree, as an inner, underlying connection.
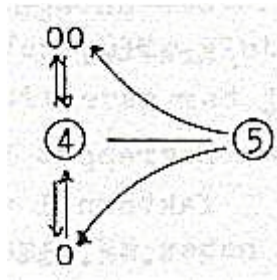
The 5th degree is seen as the first binding force in all lower degrees, transformed and expressed in all motions and dynamic processes in Universe.

At the same time we can identify its poles 0 and 00 as the next primary forces: 0-pole (the center) as the binding force and 00-pole (the anticenter) as the polarizing force. Between these poles are the following lower dimension degrees developed.

We get two aspects on the 5th degree as primary "entirety force" or pair of forces:
- As pair of forces it is binding force relative to lower degrees, as the junction of ramifications.
- As polarized, the 0-pole becomes the secondary binding force in relation to the 00-pole as secondary polarizing force "the other way around".
- Binding character for the 0-pole: integrating from inside.
- First binding character for the 00-pole in 5th degree: aggregating from outside.


Motions:

According to the thesis here, one d-degree is "branched off" or "lost" in each step and will be translated into external motions, an external 1-dimensional structural element, polarized into motions. The d-degree of motion will grow in the direction outwards in the chain, at the same time as the d-degree of structure falls off.

A chain can then be described totally in terms of movements This chain has then the opposite direction to the chain of structures:

Chain of motions   5 -- 4 --- 3 --- 2 --- 1 ---0/00
Chain of structures: 0/00- 1 --- 2 --- 3 --- 4 --- 5

One example is the relation between the proton and the electron. According to Gamow has p and e about the same energy if the kinetic energy of the electron is taken into account. Look to the superposed chain 9-7-5-3-1 below: an example of odd mathematics in these texts:
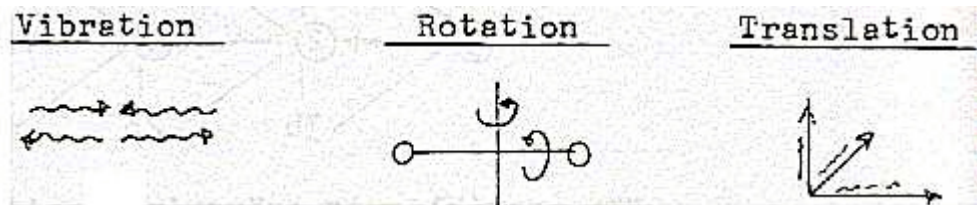

$$975000/531 = 1836,158$$
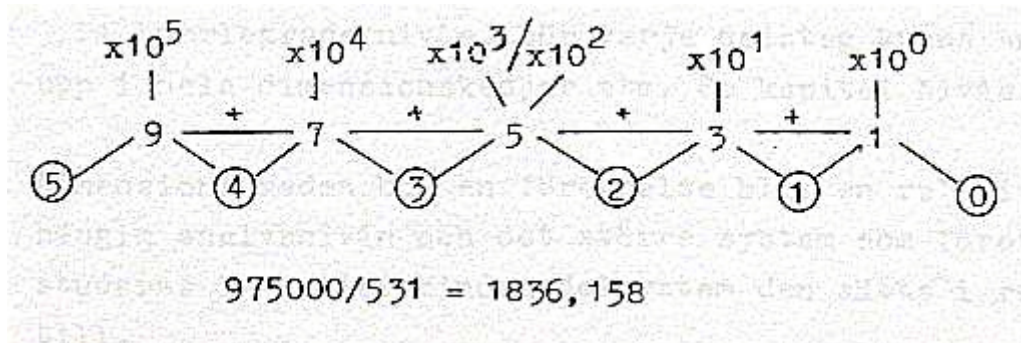
The quotient between the rest masses of p and e is given to **1836,15**. The proton: most of the mass, d-degree 3, the electron as atomic shell, d-degree 2.

(One assumption about numbers is that a d-degree step in some contexts could represent a 10-power step.).

Structure of motions:

- Vibration in 1 dimension - in 4-dimensional vector fields?

- Rotation in 2 dimensions - by 3-dimensional bodies

- Motions in 3 dimensions - by "shells" or 2-dimensional phenomena…(as in cell membranes)…

Compare, as an association, with the temperature (here) motions in one- and two-atomic gases Ew = 3/2, 5/2 or 7/2 (times a constant, times Temperature).

Structure - process - motions:

A dimension chain 5 → 4 → 3 → 2 → 1 → 0/00 can be understood as a dynamic process of polarizations, of dimension steps.
   We can also focus on the dimension degrees themselves as potentials instead of the steps and see the chain as a structure - like a standing wave can be seen as a structure. We choose then a static view.

Static/dynamic or structure/process becomes two aspects on dimension chains.

Level of analysis optional:

The assumptions above implies that the level or d-degree of analysis should be optional:
   So would different models of the atom for example have the same validity, if external relations or motions are included: analyses in vector fields, or particle models or the shell models.
   We could add here: analysis in structures of 1-dimensional lines or "strings".
   If everything is related to everything else, the 5 primary dimensions should manifest themselves in all phenomenon we choose to study.

All dimensions, d-degrees or levels of dimension chains (chapter "Level developments) should be coupled to one another via the d-degree steps.

An assumption about angle steps:

There is also in this model a tentative assumption that the d-degree steps geometrically can be characterized by angle steps: in simplest illustration as halvings:

| D-degree	5	360°	poles c-ac
	4	180°	anti-parallel
	3	90°	orthogonal
	2	45°	sin = cos
	1	22,5°	
	0/00	11,25°	

Such steps could mean an enclosing of the center, defining a "separate" unit, leaving an open rest angle for the communication with the outer world.

Some of the geometrical aspects on dimension chains:

- Dimension chains as geometrically 5-dimensional, designing forces or processes - working on a material of dimension chains polarized to 1-dimensional potentials:
  that could be one aspect on the relation form/number.

- Dimension chains as a way through angle steps.

- Increasing or decreasing length of the potentials towards lower d-degrees.

- Gradually substantiation of lower d-degrees towards the development of higher levels.

- Quantum jumps, d-degree steps, towards the development of higher levels increasingly translated into processes through secondary development of chains within primary dimensional degree steps.

- Gradually building-in of the 00-pole, the anticenter

*.

Forces - MEGA-fields
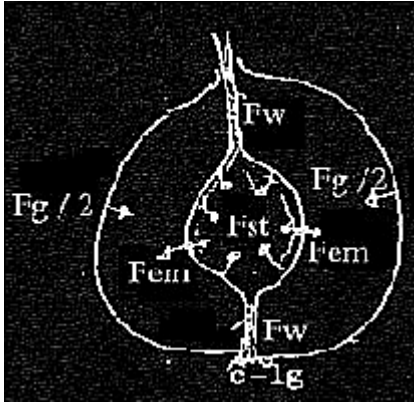

Starting points:

All forces should be connected and possible to deduce from one another, according to the dimension model but also assumed by many physicists.
   Still, there doesn't seem to be much of that connections in the latest standard model.

Outsiders are perhaps too inclined to believe the physicists' interpretations of the day, much of which is speculations within a given framework A certain skepticism could sometimes be relevant as for instance towards economists of the day.

MEGA-fields - as a suggestion:

Adopting fully the Big Bang theory, in a more fundamental way than many physicists, starting with a point in this model, we could presume a 4-dimensional vector field as a preliminary stage out of which force components of gravitation and electromagnetism, those which the physicists have defined, are developed. As a suggestion here called MEGA-fields:
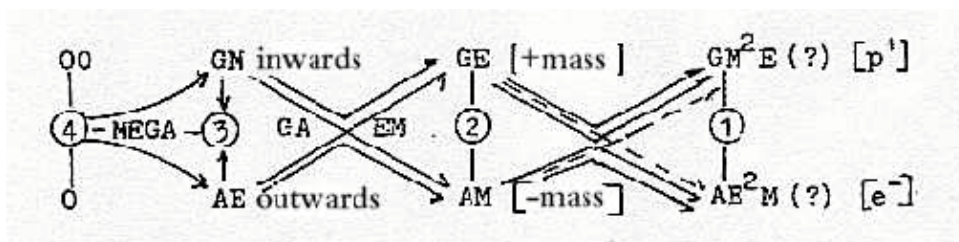
A for Acceleration (outwards), **FA**
G for Gravitation (inwards), **FG**
E for Electric field component, **FE**
M for Magnetic field component, **FM**

Out of this MEGA-field the forces should crystallize through polarizations, partial crossing over (pole exchanges) and combining in later steps, emerging into complex polarities towards lower d-degrees - and composed of each other.

The polarity 0 — 00, center — anticenter, outward direction — inward direction, could first apply to the components
A, E <====> G, M:
G - M as 00-forces, A - E as 0-forces.
(Note that we here will regard **FE** and **FM** as separate forces.)

Note:
It´s said also (by Hoyle) that gravitation and the electromagnetic force seems to have been equally strong in a universe with 1 particle (interpreted as one mass unit or as the entire Mass?).

Adding here:
When Kulaza after Einstein tried equations for a 4-dimensional space and got one extra equation very similar to Maxwell's for the electromagnetic force, it seems to agree with the suggestion here. One could perhaps talk about "meta-volumes". Illustrations of 4-dimensional cubes for example (in a book from the 1960th) give the form of a hollow cube inwards, as built-in into a 3- dimensional one. Compare the string theory (commented here)..

(One aspect could eventually be a gradual branching off through angle steps - but hardly as in this figure from the original with G first:
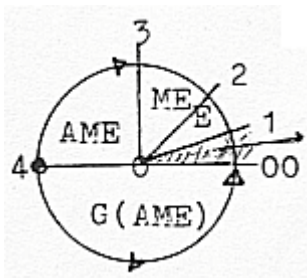
With the other two forces that physicists recognize as such, the nuclear force or "strong interaction", **Fst**, and the the "weak interaction", **Fw**, the original suggestion here looks like this:
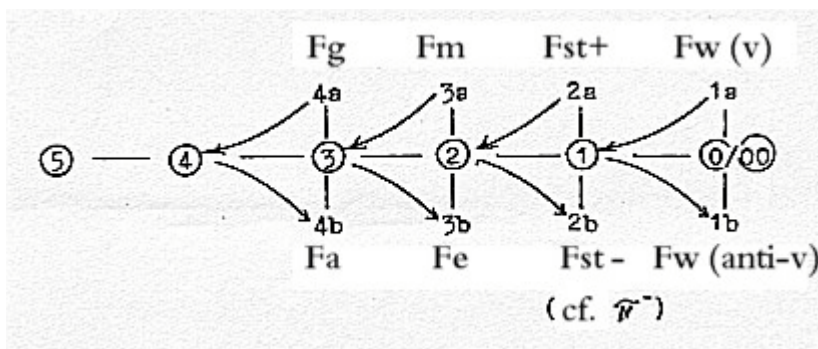
(W- and Z-bosons not identified in the 70th. Fw, Fst have now new interpretations in the standard model.)

FA, the outward acceleration force:

According to the model here all forces should show up in complementary forms.

FA, an acceleration force, is not identified as a special force by physicians, but which force should else be responsible for the Big Band?! *(Now, in later days, the view is accepted that Universe expands, and one talks about "vacuum energy".)*
   Radial acceleration and gravitation is counterdirected vectors as complementary

forces out of outward / inward direction.

In this meaning Acceleration can be seen as "anti-gravitation" and the force responsible for the expansion of Universe (and its negative radii of curvature? About negative curvature, se the booklet "Astronomy" of this series. Einstein noticed gravitation as an answer to acceleration, but did only see the latter as a mechanical force created by human beings?)

   Gravitation could be seen as the answer to this expansion of Universe. Acceleration and Gravitation out of 0- and 00-poles as "meta-forces".

   That gravitation must have a counterforce is reasonably obvious - what should else maintain the separation of celestial masses?

   We can compare with longitudinal waves of concentrations and thinnings which mutually presuppose one another, of motion directions towards and from one another:

—> | <—, <—| —> .

Gravitation collapses seem to be followed by an increase in the centrifugal force with energy transportation outwards, - as an interaction between complementary vectors.

   (According to the fundamental hypotheses in the dimension model we also have that converging movements define a new 0-pole - for a secondary 4-dimensional vector field with primarily outward direction, and that diverging movements define a new 00-pole, giving inward direction.)

G - EM - connected with physical qualities - and Fst ?:

That gravitation is coupled with **Mass** and the electromagnetic force to the relation between opposite **Charges** is out of question.

We can assume:

- Mass and Vacant Space as transformations of G-A-fields in

d-degree step 4→3, or 4←3,

- Charges as p+ and e- as transformations of E-M-fields in d-degree step 3 → 2, or 3 ← 2.

   Compare that EM-waves (photons) can transform to electron-positron pairs in the neighborhood of heavier masses, interpreted here as in inward direction.

But how on earth could strong interaction, **Fst,** be connected with the entity Distance, or in the step 2 - 1 related Charges and Distances (1-dimensional potentials) as suggested here?

   Two things are evident:

   Gravitational gathering of big masses, leading to high pressure and high temperature in stars is also needed for fusion and the development of a nuclear farce - conquering Distance!.

   And the nuclear force cannot develop before the polarization of the property Charge into (+) and (-). In this aspect a later step in relation to the electromagnetic force **Fem**.

Fst seems to be more of a superposition of elements in the earlier to forces, G and EM, a result of the differentiation of potentials in these earlier forces into perhaps 2-1-dimensional ones. This view is also in agreement with how physicists tentatively described the force some decades ago.

   According to the dimension model here we have that number of motions increases towards lower d-degrees of structure. And physicists have stated that the nuclear force can be analyzed in spin-spin- and and spin-path-couplings, that is to say motions.

The particle for communication between protons is the π^+-meson:

compare perhaps the relation between poles

3a <-----2------>3b:
Protons composed of 3 quarks, mesons of 2 quarks!?
More about the strong force <u>here</u>.

Adding one more thing about this strong p-p-binding force: The real complementary
force ought to be - not bonds between anti-p-particles - but the molecular, covalent
bonds between electrons in a much colder universe, leading to the eminent development
of all life processes.
   Or should we, more likely, first see the pairing of electrons with opposite spin in the
atomic orbitals (connected with the Pauli principle) as the complementary force on an
earlier stage. (Nor is this principle identified as a force, but why not.)

Fw, the force of weak interaction, is connected with the neutrino, mostly recognized as
(loss of) kinetic energy in disintegration of particles with mass. So in the disintegration
of charged μ-leptons. That is two reasons to see this force connected with the last step in
the dimension chain of forces. More about the force of weak interaction <u>here.</u>

The reach of the forces:

The expressions can be read as a series of derivations à la d-degree
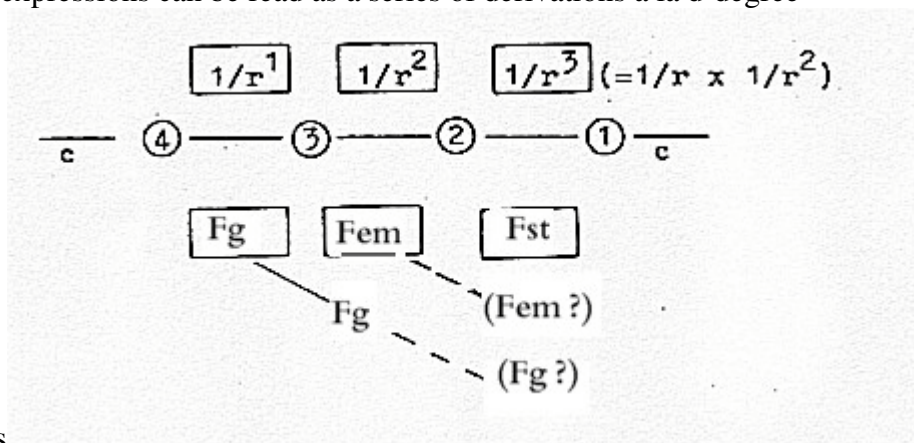
steps
$1/r^1$ **FG**- reach for gravitation ***within*** a mass.
Mass as d-degree 3. 1/r1 also valid when masses are accelerated.

$1/r^2$: **FG, Fem** - reach ***between*** masses and between
charges. Charge, d-degree 2.
   When charges are accelerated, there comes to this a term $1/r^1$, an addition in
opposition to the same factor for accelerated masses, which can be interpreted like
mathematical integration.

$1/r^3$: **Fst** reach for the strong interaction. The expression could be interpreted as a
product $1/r^1$ x $1/r^2$: strong interaction as a result of factors in previous forces?

G-M-p and A-E-e relationship:

There ought to be a relationship between inward directed components of the forces:
   We have **FG**, gravitation, as an inward directed field vector, and **FM**, the magnetic
factor in the electromagnetic force, which in many respects has a circular character,
representing the anticenter pole (the 00-pole) in lower d-degree, in relation to the radial
electric one.
   Physicists have looked for a magnetic "monopole" (not yet found?) and estimated that

it should have a mass circa 137 times the electron's. This indicates that magnetic fields can be associated with the property Mass, as Gravitation - in spite of being seen as rather unreal, that is belonging to "vacant space".

G-waves and M-radiation, a note:

Gravitation waves have been difficult to detect. They are said or presumed to be virtual and only realized when masses are accelerated. In this aspect too they seem to resemble magnetic radiation witch only is realized by charges in motion. Hence, it seems that the gravitation field shows up to be the complementary pole to an (outward) acceleration force, according to the MEGA-hypothesis here.

We have the similarity between G- and M-fields too that neither the graviton or the "monopole" has been found. (?)

In general terms we could presume the view that anticenter poles (00-type) as G and M are continuously redefined by the motion of the unities of the center-poles, the inward direction as answers (to A and E): Lost d-degrees in a d-degree step are translated into motions according to the fundamental hypotheses. Hence, a charge which is set in motion or an accelerated mass will represent (or "reach") the higher d-degree from where they originate. They become then momentarily coupled - through the higher d-degree as underlying level - to their complementary poles, to the "anti-matter" as a "negative" energy of different degrees, that is activating the virtual M-field or G-field.

Assuming the relation G - M, we have in next step the **particles p+ and e-**, protons representing most of the mass (and "inward directed" in the sense of taking the nucleus position)..

In plasma physics there are mathematical relations which show that

p ~ M^2, the magnetic factor squared, (~ sign for proportional to)

e ~ E^2, the electric factor squared.

This seems to show a dominant heredity from the magnetic force **FM** and indirectly coupled with gravitation, **FG**.

We could add that the π^+-meson, involved in the binding force **Fst** between protons, has got an essential mass, in opposition to the weightless photon, carrier of the electromagnetic force. And its mass is 273 x e, that is ca. 2 x 137, the presumed mass of the magnetic monopole.

FA- which we connect with expanding Vacant Space -
(and with "-E=mc^2 ", according to Dirac), should in the same way be most closely related to **FE**, the electric factor in he electromagnetic field (radial in relations to the magnetic one), and with the electron with mostly kinetic energy in next step, (as e- is proportional to E^2 in the plasma formulas above).

This in spite of the connection of Dirac's "E= - mc^2 " with positrons and anti-matter.

We should assume that both E- and M-fields, the electric and the magnetic fields, are complex combinations of factors in both the primary G- and A-fields in a new polarized relation: M-fields also related to Vacant Space in their immaterial property, and E-fields with the Mass and G-fields as electrons have positive energy and makes up an essential part of our matter.

Compare one interpretation of the **strong force.**

Mass, matter and Charges as "inversion" of vector fields:

In other chapters the hypotheses are brought up that **Mass, Matter** and **Charge** should be possible to interpret as "inverted" fields, the result of inversion and/or a change of external fields to inward direction, or with factors of negative acceleration and negative velocity respectively. In this dimension model that corresponds to d-degree steps.

   Both the complementary "poles" or forces in the d-degree must then take part in this change. In p-anti-p-annihilations for example, via π-mesons and leptons much of the energy is transformed to electromagnetic radiation and neutrinos.

Macrocosm - microcosm:

One of the important aspects on dimension chains in this model, is a stepwise building-in of the 00-pole into centers with growing complexity during the development, centers defined as such, as 0-poles. The building in of the surrounding opposite pole as inward directed.

   So we - obviously - have celestial bodies of Masses built-in into Vacant Space in Macrocosm,

   and shall find Vacant Space built into mass and matter in Microcosm.

G - EM: dimension degree relations:

G-and E-waves 180°-90°:
Interpreting gravitation according to the dimension model, we should be able to assume that G-waves are longitudinal, in relation to EM-waves as transversal? G-waves à la sound waves:
- Longitudinal waves: 4 -- 1-waves: Out of radial, antiparallel fields (4), propagation in one (1) dimension, counterdirection 180°.
- Transversal waves: 3 -- 2-waves: Counterdirection E - M 90°.

Some numbers:
About Gravitation and electromagnetic force as connected with Mass and Charge in d-degree 3 and 2 respectively:

   Assuming that the cube of the radius of Universe is about 10^{80}, radius then $10^{26,66.}$ m (said to be circa 10^{26} and calculate the atom radius as the "Bohr radius" for hydrogen, the quotient will be:

Volume of Universe
――――――――――――――――――   **= √ 3 in log-numbers**
Sum of volumes of atoms

Volume of atoms (e-shells, negative charge)
―――――――――――――――――――----------------------   **= √ 2   "**

Sum of volumes of atomic nuclei (positive charge)
   Presupposed circa 10^{77} nucleons in Universe (Estimation 1973). The
   radius of the atom nucleus, given as circa 10^{-15} m, would be $10^{-14,8}$ m.

(Would it be possible, eventually, to conclude the existence of gravitation waves - indirectly - from changes in the magnetic field of the earth for example? G- and M-vectors, according to assumptions here, related to one another.)

About d-degrees of forces:

a. According to classical physics gravitation (**FG**) and the electromagnetic force (**Fem**) becomes 2-dimensional if Mass is interpreted as 3-dimensional, Charge as a 2-dimensional quality and **Time and Distance as 1-dimensional**. These forces could in that case be interpreted as "roots" out of 4-dimensional vector fields or as components in them.

b. However, **if Time is interpreted as a 0-dimensional** entity, **FG**, gravitation becomes 4-dimensional and **Fem** 3-dimensional if we as before regard Charge as a kind of derivative of Mass.

(Velocity could be seen as a 1-dimensional quantity. Primarily interpreted as an expression for a d-degree step, velocity corresponds to the loss of 1 d-degree)

Appearance of the same force in different d-degrees:

If we assume that the force components from a MEGA-field show up restructured in following d-degree steps, it ought to imply that the phenomena which are identified as gravitation or electromagnetism must be interpreted in different dimension degrees (or steps).

So for instance, it seems that we have to distinguish between revelation forms of gravitation in different d-degrees. They could perhaps be described as follows:
- negative acceleration or antiparallel acceleration in
d-degree 4,
- as equivalent with Mass or "inverted" into Mass in
d-degree 3,
- as an explanation of the motion structure between 2 celestial bodies in d-degree 2, with one radial and one tangential acceleration vector perpendicular to one another,

Compare also the hypothesis about **Matter and Vacant space** on a potentially graded minus-energy: empty space of different quality and degrees of "sweating".

"Carriers" of forces, forces acting over distances

It has been an old problem - for Einstein and others - how forces can act over distances (as e.g. gravitation). The first natural answer should be that it is "forces" that creates distances. There is nothing like "distance" at first, no such concept.

The Big Bang of Universe is one example. And ordinary mechanical pushes. Distances too become forces, which for example give birth to road buildings (path ways), which in their turn bring about traffic motions, with cars as "force mediating quanta" or "carriers of forces".

(The human need that transforms a distance into a road construction is of course an expression for a fundamental binding force.)

Now when we have distances, that is a space and different positions of matter: are there empty distances or the virtual existing of something, of a memory of a bond?

"Carriers" of forces:
What do the physicists mean with "carriers" of forces, with "force mediating particles? Some type of quanta in motion, one-way or return in interaction..

One speaks about gravitons and photons as wave quanta, or other elementary particles with more or less particle like structure.
The relation ordinary particles and these quanta of forces can perhaps be imagined as in

this figure, as a relation between levels of dimension chains, related to the difference between borders and intervals |---|---|.
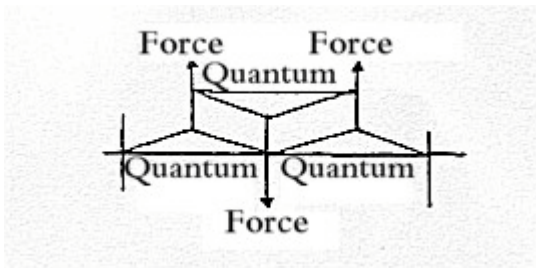
If we assume that levels are "1/2"-step displaced in relation to one another, or displaced a partial step, as border/interval, that which is seen as forces on one level could show up as quanta (with more or less of particle like structure) on another level, and vice versa.

   Cf.. the relation coenzyme - substratum in biochemistry? Coenzymes as forces on a biochemical level.

Language can be defined as a force on superposed levels, that is an interaction between human beings. If the content is the force, the words are the quanta of that force, or its "carriers".

   At the same time the air as medium for the sound waves can be called the carrier of the force. The concept becomes ambiguous. The air would represent the "field" concept,. quantified in quanta.

What is a "force"?
In ordinary physics we meet a mess of expressions for "forces", forces as only "connections" or mathematical relations, forces as fields, "electromagnetic field", "gravitational field", the force of gravitation as inertia, equivalent with mass, "carriers" of forces as quanta, the same as forces or what?, forces as "waves", gravitation waves, electromagnetic (EM-)waves, forces as "interactions"...

   With the basic definitions in the dimension model here, where "forces" are seen as "relative", as a relation between different dimension degrees, the different expressions for forces become rather easy to understand.

   A structure concept for one d-degree becomes a force concept in relation to another d-degree as structure. We can say that fields become binding forces in the mass, in he same manner that translation ways or path lines are binding forces in motion.

Some comments on comparisons with the "standard model":

Physicists' views focus on external relations between particle like quanta, but we shall of course see these motions of communication built in into the structure of more complex unities as atoms and nuclei and galaxies.

   We could also adopt the thesis that all the interactions between units use the "negative energy" of Vacant Space for their "implementation". See **Electromagnetic waves.**

What about the physicists' statement that all carrriers of forces have integer spin, are so called bosons, in opposition to other, more material quanta with spin 1/2, the so called fermions? Is it possible to get this to agree with the dimension model here?   Not in any easy way. Note that there seems to be to ways to get integer spin, one through being very simple in the structure and one being composed of ½-spin particles which naturalize each others' spin, as the alfa-particle.

   And as said before: p and e with spin ½ are"carrier of forces" on the level of biochemistry. See further about **the strong and weak force** and **Spin**.

There is also " carriers" both without mass and with heavy mass in the standard model and this without explanation? And two of the four carriers of identified "forces" are not seen, only theoretically assumed.

Example of another problem concerns the graviton; If the photon is the quantum of the electromagnetic force, that is the combination of **FE** and **FM**, we likewise ought to have a quantum representing the combination of **FA** and **FG**, a "**ga**"-quantum, not only an expression for gravitation.

 Physicists have (earlier) distinguished between polar forces like Fem, (and Fw) and non polar, aggregating ones, as gravitation and the strong nuclear force. According to the"dimension model" here there should exist complementary forces in each d-degree (or on each level) and as many polarizing forces as binding ones.

 Now, in later years, when Vacant Space has been recognized and awarded its own type of energy, we could probably look at the four old "forces" as a kind of conservatism depending on historical heritage. Physicists have also, in more detailed studies, found both attracting and repulsing moments in the electromagnetic "binding force". More about Attraction - Repulsion **here**.

 More discussions about forces in the standard model - and critical aspects on this model here.

The 5th force ?

Many, so it seems, have looked for a 5th force. In this model here we cannot aspect that the 5th d-degree, the primary Entirety or unity, should be directly found as a force, as it is unpolarized and all "forces", as one-way directed on some level, will have canceled out each other.

 With the hypotheses in this dimension model, we should see **Motion** (d-degree 0/00), - all the motions of Universe - as the translation and expression for the 5th d-degree, the 5th "force". (Call it Fk, k for kinetic, or Ft, t for temperature.)

 Of course Motion too must be seen as a force, not only as the result of forces as in old mechanical physics. Big Bang is one example, ordinary pushes or hits are others.

At the same time we can identify its poles 0 and 00 as the next primary forces: 0-pole (the center) as the binding force and 00-pole (the anticenter) as the polarizing force. Between these poles are the following lower dimension degrees developed.

We get two aspects on the 5th degree as primary "entirety force" or pair of forces:
- As pair of forces it is binding force relative to lower degrees, as joint "fork of a branch".
- As polarized, the 0-pole becomes the secondary binding force in relation to the 00-pole as secondary polarizing force "the other way around".
- Binding character for the 0-pole: integrating from inside.
- First binding character for the 00-pole in 5th degree: aggregating from outside.
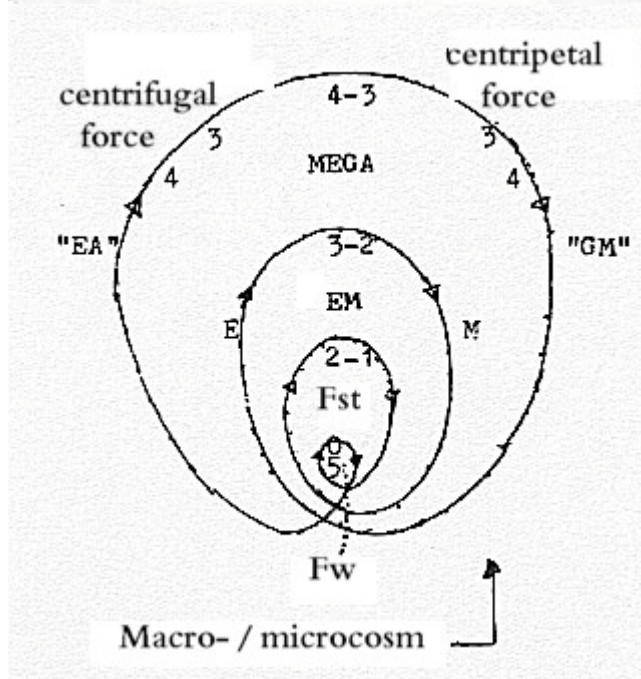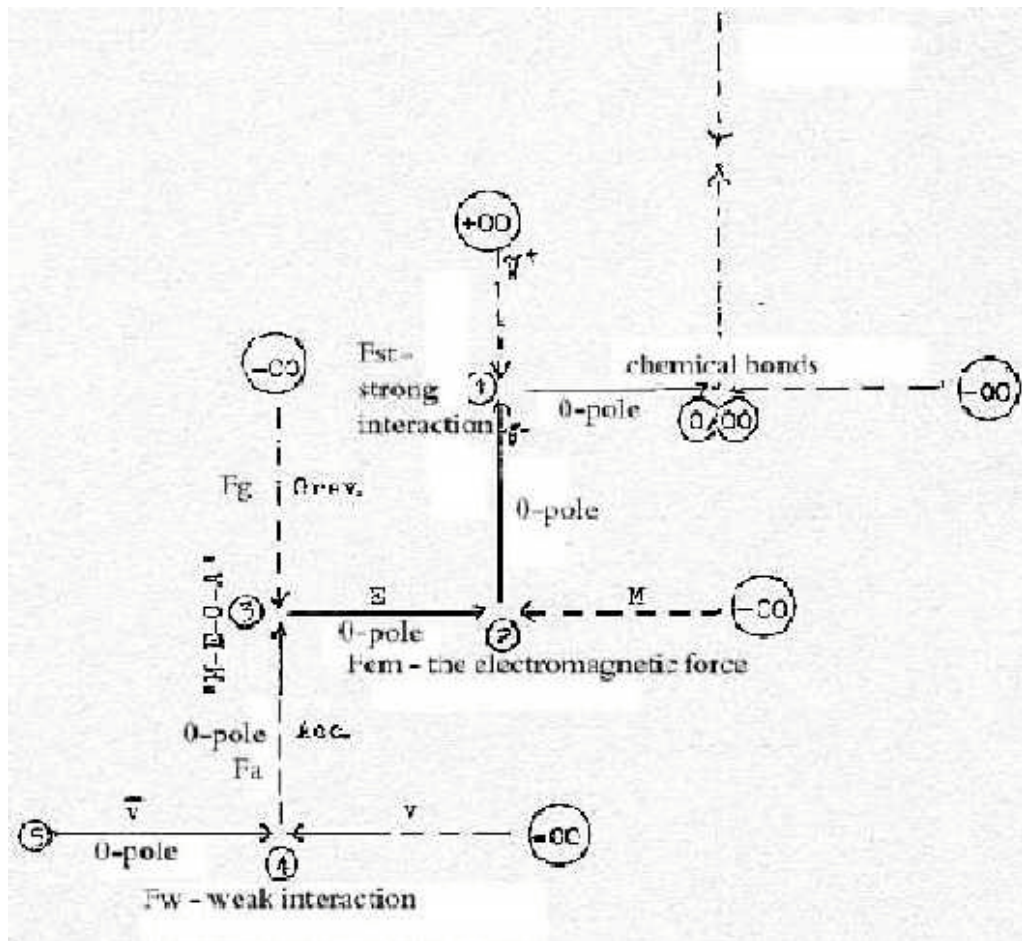
Even if the physicists should find a 5th force, that doesn´t mean that it is *the 5th* one.
 It seems very dubious too if the definitions of the 4 "primary" forces which the physicists have recognized up till now - and their concept apparatus can be seen as final or conclusive and satisfy the need for a world of inner connections. There is really not much beauty in the "standard model".

Strength and weakness of forces:
*Some more general comments **here**:*

Number of particles in Universe:
The number of particles (nucleons) in Universe was estimated to about 10^{77} according

to the physicist in the year 1973. That is to say, about the inversion of the relative strength of the gravitation squared and with negative sign.

$$\frac{Fg}{Fem} \approx 10^{-38.5} \qquad \left[\frac{1}{10^{-38.5}}\right]^2 = \frac{10^{77}}{1}$$

| |
~ relative strength   number of nucleons
Fg / Fem in Universe

(Mass of the entire Universe at that time estimated to circa 10^{50} kg. Year 1973.)

Some problems:

It is a bit difficult to see Gravitation as a more high-dimensional force than for instance the strong nuclear force. Both in its weakness and its property of aggregating masses of nuclei.

One aspect is to see the "00-components" of forces as **FG** and **FM** meeting from the end of a dimension chain, - or to view the lost d-degree in d-degree steps outwards meeting the 0-components of forces (**FA**, **FE**) "the other way around" from outside inwards:

Another question is how for instance the electromagnetic force Fem could be interpreted as keeping up the polarity between the **FG** and the **FA** forces - in agreement with the first postulates that lower d-degrees act polarizing on higher ones ?

**Other sketched illustrations of forces
in a dimension chain:**

"Polar - non polar forces as from development inwards"

Note:

An apple:
Fw as the ramified or forked stalk, FG as the peel - flesh. FEM as core and Fst as the pips.

Apples and oranges:
For the rest, to pair together the gravitation force with the electromagnetic force seems similar to pairing apples (Newton´s apple) with oranges. Apples with a homogeneous pulp and thin shell, with the segmented oranges in a more liquid and filamentous state - and thicker shell: a polarization that has gone further, chemically towards lower degrees of "substantiality".

The sun with its convection cells and magnetic sections should perhaps be seen as a hybrid.

Nuclear force - Weak interaction

A general doubt:
These forces, the strong, nuclear one and the so called weak interaction, acting in microcosm, have naturally been more difficult to investigate - and several news have been introduced into the "standard model" the last decades, since the original writings here were born.

   Yet, the views of today are partly only theories - about unseen "gluons" among other things - and implies a certain choice of concepts and what to focus on. It must be allowed to doubt that this apparatus of thoughts is the best or final one. More about the "standard model" later perhaps. First some aspects building on informations from the 1960th and 70th.

Nuclear force a combination of other forces ?

According to physics about 30 years ago the nuclear force or strong interaction seems to be a combination of "earlier" forces or of components from them - . In the same way as later steps in a dimension chain follows from the earlier ones.

At that time physicists told that the strong force was made up by a lot of potentials, some resembling gravitation, some electromagnetic ones.

In a more detailed description there is talk about 8 times a gravitation like force, 8 complex potentials resembling electromagnetism and 8 simple attractive potentials. (If correctly understood, they should correspond to 8 mesons with spin 2, 8 mesons with spin 1 and 8 mesons with spin 0?)

If 3 x 8 potentials, they could perhaps be illustrated as in the figure below, with the strong force as a complicated result from earlier d-degree steps.
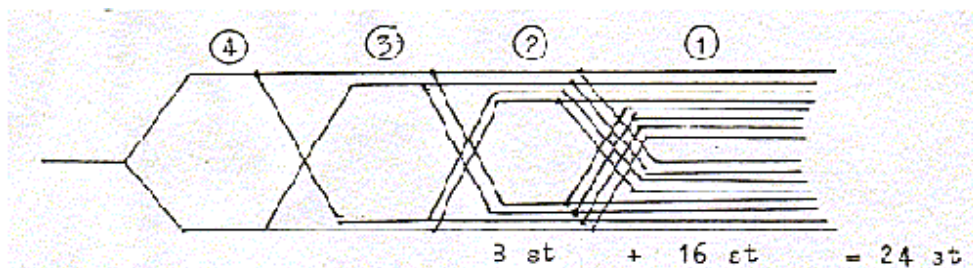
The 2^x-series gives number 8 after 3 polarizations, which could correspond to step 5-4-3-2, and number 16 then at d-degree 1: one reason for the absurd simplification (see **Forces - MEGA-fields**) to assume that the strong force is connected with d-degree step 2-1?

Number 8:
24 units is also the result of 4 x 3 x 2 (x 1). And if we take the assumed "potential values" (sum of poles) in d-degrees 4-3-2, that is 10 E, 8 E, 6 E, and count with a displacement of 2 E in each step, we get 8 E, 8 E, 8 E.

The number 8 shows itself again in the information that the strong force is not fully developed in nuclei until it has 8 or more nucleons.

To all this comes the "octette rule" for **covalent bonds,** which could be identified as the complementary force. 8 e- give a full shell in the atom (in fact 6 + 2).
  (Cf. the later presumed "gluons", 6 + 2?)

Further, if we accept the hypothesis in this model about angle steps in the dimension chain, from 180° polarity (FGs) and 90° (FEM) to 45°, there is 8 x 45° in a circle. Which 45° ? See below.

In terms of Motions
:
According to the physicists the strong force can also be analysed in terms of spin-/spin-dependence and spin-path-dependences between the nucleons: that is to say in couplings between motions.
  This could perhaps also support the suggestion that the strong force is coupled with a d-degree step 2→1. According to the chapter about motions we have assumed that the lost d-degree in step 5→4 is translated into 1-dimensional motion, path movements, corresponding to step 1-0/00, and rotation (cf. spin) out of the second polarization step 4→3, corresponding to step 2←1.
  According to this model, it should be possible to analyse all forces in terms of motion structures, but this could be easier to detect in lower d-degrees where more potentials have been polarized into motion. In d-degree 2 there should be movements in 3 dimensions, in 1-dimensional structures d-degree movements in 4 dimensions. Which would be the 4th? Inside the proton?

Remember here the coupling between the proton and M^2 and what has been said about the **magnetic force** or vector, that it totally depends on the spin of the photon.

D-degree step 2 — 1 and "negative distances"?

Two things are obvious, as said in the text about "Forces and MEGA-fields":
Gravitational gathering of big masses, leading to high pressure and high temperature in stars is also needed for fusion and the development of a nuclear force.
  And the nuclear force cannot develop before the polarization of the property Charge into (+) and (-) is a fact, in this respect a later step in relation to the electromagnetic force **FEM**.

The primary physical quality of d-degree 1 is Distance. In one of two central aspects, distances are created by the polarization between opposite charges of the proton and the electron. That too is rather obvious:

2a-------1---------2b
 p-------------------e

If **Mass** as property (~ inertia) is a kind of "inversion" of G-fields (cf. "negative acceleration") and **Charge** as property a result of "inverted" EM-fields - as presumed, and Charge - as inversely proportional to permeability - could be interpreted as a surface structure, and with the physical quality Distance in d-degree 1, how imagine **"negative" distances** as a central property of heavier nuclei? It could mean that the nucleons partly were overlapping, existing inside one another ?
  With "inversion" interpreted as "going underground", a change to inward direction and energy in a complementary, negative form?   Inward directed surfaces as 2-dimensional magnetic fields as parabolas or hyperbolas squared ?

Proton-/antiproton relations in nuclei?

Some decades ago there were thoughts among physicists that it could exist some p /anti-p-relation inside the nuclei. This information gave rise to the idea that inward directed magnetic fields around the protons could overlap each other and therewith define an area with opposite, outward directed M-field as **antimatter**:
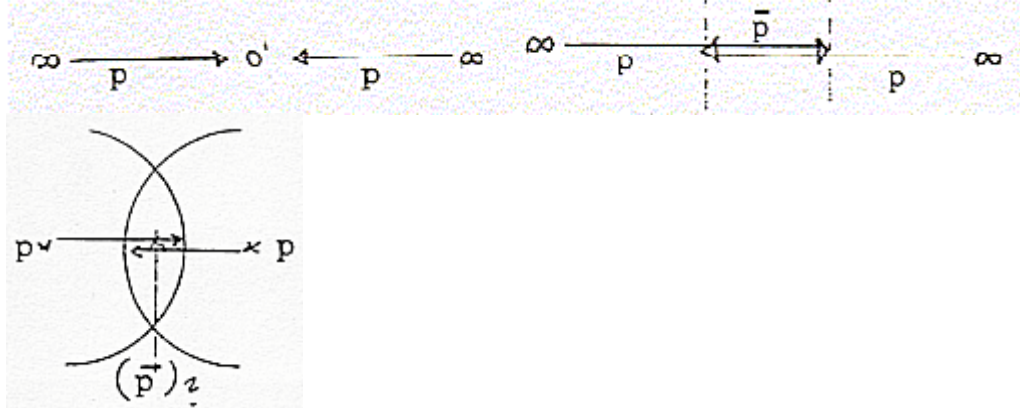
The figure above could illustrate a kind of role exchange between convex and concave forms and inside/outside, presumed in this model as the first simple geometrical definitions of 2a and 2b, the poles of a polarized d-degree 2.

In terms of "inverted fields" we could guess that it chiefly concerns the M-component of the EM-field, the magnetic field with assumed roots in Gravitation. (Electrons mostly an expression for the FA-field and the Electric component.)

Angle steps?

One presumption in this model is that the d-degree steps in a dimension chain are associated with angle steps, simplest assumed as halvings:

FG/A   FE/M   Fst   Fw
180°   90°   45°   22,5°
                  ???   ????

In d-degree 2 we should have a relation 45°.

This could perhaps be illustrated with the value of tangens in a unity circle:

Tangens =   0   +1   00   −1
First angle relation E/M (e/p) = 90o,
E (e) from 0, M (p) from 00
Changing 45o to −/+ 1, charge value
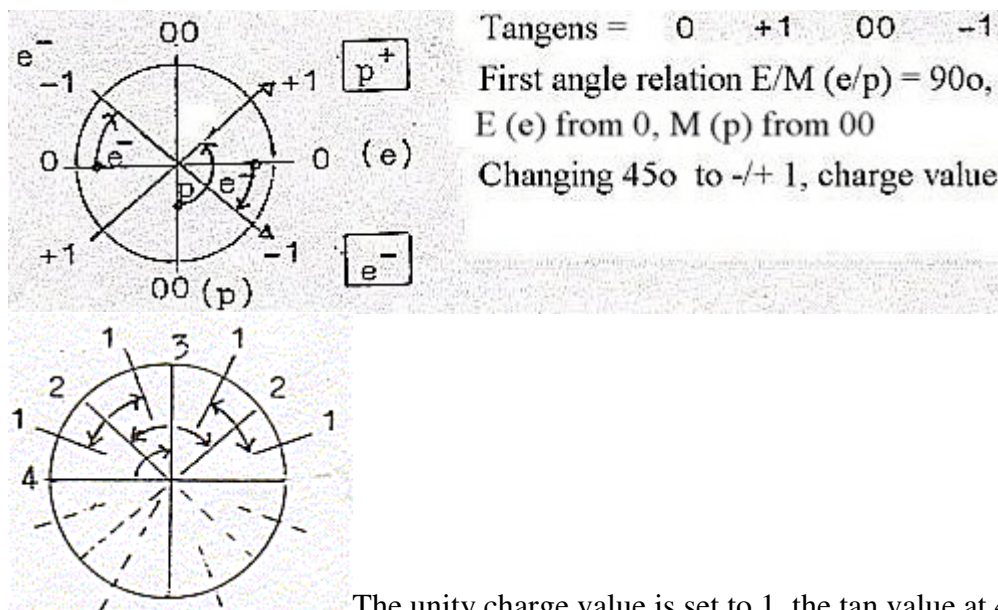
The unity charge value is set to 1, the tan value at 45°, a

background for calculations of quarks' charge values.

   Here we can remember some old and as it seems conflicting informations: one that Charge seemed to go towards infinity inwards the electron (?), and one that said that charge is built up from outside inwards towards heavier nuclei, (protons), interpretable as if directed towards zero inwards.

Tangent too is the derivative of a circle, the geometrical form of d-degree pole 3a according to first simple postulates.

We could also imagine perhaps that the E- and M-vectors of the electromagnetic field undergo a change in their angle relation towards lower degrees 2-1-0/00, possibly, if at last nearly parallel, responsible for some anti-gravitational behaviour and happenings in plasma physics**? ?**

Complementary force to the nuclear one?

With the assumption in this model that the "real" antimatter is of complementary type and not a mirrored world , the real complementary force to the nuclear one ought to be - not bonds between anti-p-particles - but the molecular, covalent bonds between electrons in a much colder universe, leading to the eminent development of all life processes.
   Or should we first see the pairing of electrons with opposite spin in the atomic orbitals (connected with the Pauli principle) as the complementary force on an earlier stage? (Why isn't the Pauli principle identified as a "force"?) More generally: the e-shell building "forces" of the atom?
- More wave-like and in that respect outward directed towards complementary atom neighbours.
- 2-dimensional as squared amplitudes in Schrödinger's equations for their probability existence "somewhere".

Reach of the nuclear force - the Uranium atom:

The heaviest element in nature is Uranium 238 A, one measure of the reach of the strong force. Two rather beautiful or funny derivations of the number, remembering that the strong force, as atoms, should be combinations of other forces:

Inverting the triplet-number **2-1-0** out of the dimension chain (times 10E5) we get the number of 2 x 238.
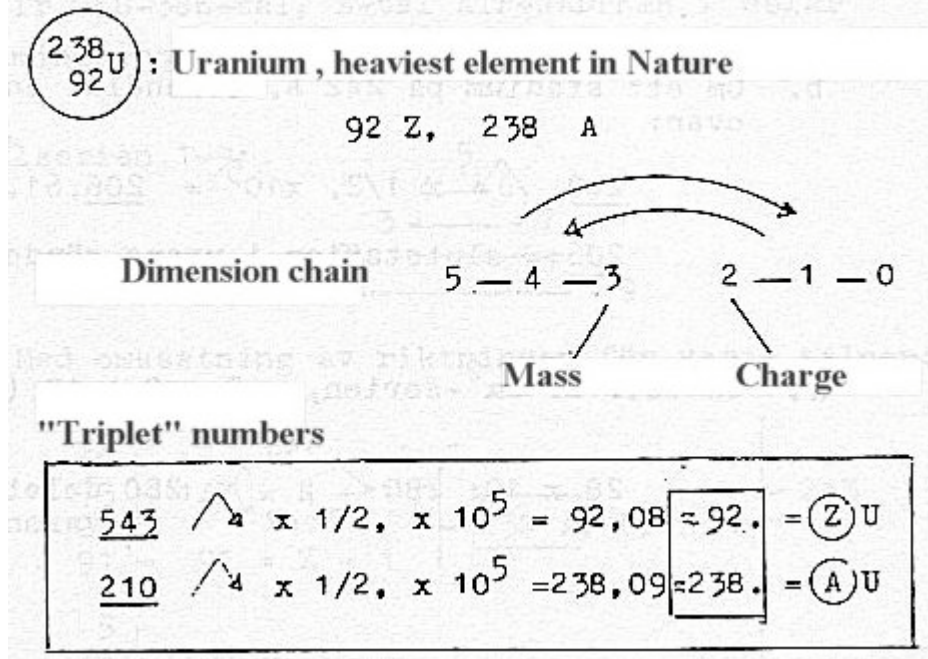
From Chemical elements.

Another derivation, from the "natural logarithm" e:

```
5 ----- 4 ----- 3 --|--- 2 ----- 1 ----- 0/00
<----------------> | <---------------->
    5 - e                 e = 2,71828...
  2,2817...
```

543 / (5-e) = 237,97 ~ **238**. = A mass number of U
210 / (5-e) = 92,036 ~   **92**. = Z charge number of U
(543-210) / (5-e) = 145,94. ~ **146**. = N neutron number of U

It's probably left to the future to find out if these "derivations" reveal a deeper meaning.

($238^{2/3}$ = ~38,4 = 10-power of the Gravitation weakness compared to the nuclear force.)
($10^{2,3765}$ = ~ 238. (237,95.) Somewhere around this figure there is a log-number which in the 10-base system gives 100 times itself.

Reach ~1/r³, - a tentative suggestion:
According to earlier informations the strong force falls of proportional to **$1/r^3$**, which can be read (?) as a derivative from the same term for the electromagnetic force, $1/r^2$, or as a product $1/r^1$ x $1/r^2$ from earlier or more fundamental forces.

   Suppose we could read these $1/r^x$ -relations as inversions of the forms of motions in the different d-degrees:

$1/r^1$: 180°: 1-dimensional motion "space" or degree of motion inside a Mass or when a mass is accelerated: a "bond line" of 180°.

$1/r^2$: 90°: 2-dimensional "space" or degree of motion between Masses or opposite Charges: Cf. orbital planes for planets or electrons.

$1/r^3$: 45°: 3-dimensional "space" in "the angle" of the strong force? Cf.. perhaps that 8 x 45° = 360° and that the strong interaction is fully developed first with 8 nucleons. The degree of motion (3) should close its form - perhaps one cause to the stability of protons.

Note too that the "carrier" of the strong force - or the exchanged quantum between protons, **the π-meson, has got Mass**, a considerable one, - in opposition to the carriers of the previous forces, the assumed graviton and the photon of the EM-field, both without mass.

"Carrier" - the π-meson:

Before the "discovery" of *gluons*, the π-meson was identified as carrier of the strong force. It is still seen as the communication particle between protons as whole entities, gluons as "carriers" between quarks inside the protons. But is there any reason not seeing the interaction by π-mesons between protons as expression for the strong force? Quarks not being free particles? (The assumed gluons as another "force" if we will?)

The annihilation between protons and antiprotons produces during the disintegration - not quarks but π-mesons which disintegrate in μ-leptons, μ-neutrinos, electrons, e-neutrinos and electromagnetic radiation. (*Gamow*).

Compare the relation between poles in d-degree step 3-2 in the dimension chain of this model: 3a <— 2 —>3b:
   Protons composed of 3 quarks, π-mesons of 2 quarks. Yet, the pole 3b ought to represent the antimatter on this level, according to the model here..
   Now the physicists describe the π-mesons as consisting of one matter quark and one antimatter quark, so it partly seems to agree in number with the 3a — 2 — 3b illustration of d-degree 2.

Could we imagine the p-mesons as virtual parts of the communicating protons with quarks "uud" ?
p = uu| d — u ud = p
            π= ud, u or d changing charge to the antimatter quark? Compare the thought of overlapping magnetic fields above with the change convex-concave or inward-outward direction.

A note for a lover of numbers:
If we assume that the mass quotient (1836,…) between proton and electron, (p/e) in the bottom is an integer, and mirror the number, we get:
   1 8 3 6 | 6 3 8 1
      3 6 , 6 3
         Λ , the inversion 1/36,36 = **273**,000273000273…, x 10^{-4}.
(Cf. "**quark numbers**" 36 and 63 as "loop numbers for 54 and 45, and number 273 **among amino acids**.).
   Apart from the ten-power, that number 273, repeated, is the number of the charged π-meson, the quotient π/e.

A couple of associations:
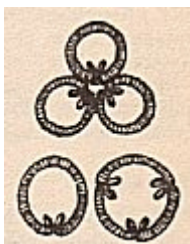
3b------2-------3a ~ antipodes

3 types of ovary   **Embryo sac of a flower**
B.Ursing: Svenska växter1944   Biologi I, A Müntzing 1970 (Figure sources)

Number 137:
According to information sources (Gamow) the number 137 as a quotient appears in three contexts, presumably connected:
- The quotient between the strength of the strong interaction force and that of the electromagnetic force = 137.
  That is about half the π-meson.
- The mass of the (assumed) magnetic monopole. = 137 times that of the electron.
- The quotient between the velocity of light and that of the electron around the atom nucleus (in an orbit model of the atom) is said to be about 137.

Quarks:

These are indications of **3** parts or areas inside the proton, where charge seems concentrated. Some negative charge too. The names up-quarks and down-quarks with positive and negative charge respectively in our ordinary matter, seems to agree with the fundamental view in this model here that Direction (d-degree 4) underlies and characterises all poles of lower degrees in different angles and geometries.
   If the quarks cannot be free particles or quanta, as physicists assume, it could depend on the "quarks" simply being the essential inner structure of the proton itself, as walls in a three-room flat. (The possible break down of an inner wall making it a two-room flat. - As mesons?)
   The believe is that the 3 quarks uud together have a mass of about 25 MeV/c2. (New data: Up-quark u 1.7 to 3.3 MeV/c2, Down-quark d 4.1 to 5.8 MeV/c2.)
   Mass of the proton is 938,3 MeV. Accordingly there must be a lot of other energy. In "bonds" between quarks? * Compare the view here that **Matter** is a measure of the degree of inner structure or included volumes. (see further about **Charge**.)
   Then not necessary in terms of "bonds".

Yet, physicists have introduced the **gluons** in the standard model: Gluons as communication quanta between the quarks is seen as the real strong force carriers, π-mesons as only secondary exchange quanta between gluon-processes in each proton.

*(Compare that the average binding energy per nucleon in heavier elements is estimated to circa 7-8 MeV. In Uranium 238 A it should give a total bond energy of about two protons.)

About the nuclear force in d-degree step 2 - 1 again:

1) The charges attributed to quarks, u = +2/3, d = -1/3:
A very simple illustration or interpretation here, partition as expressions for the polarizations in 3 - 2 - 1-step in the dimension chain:
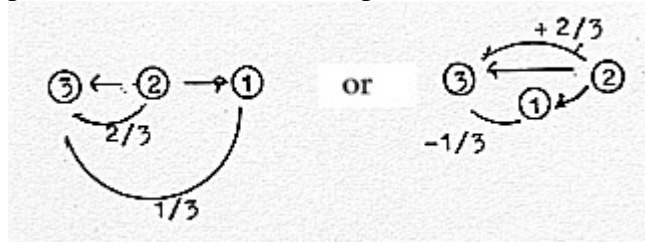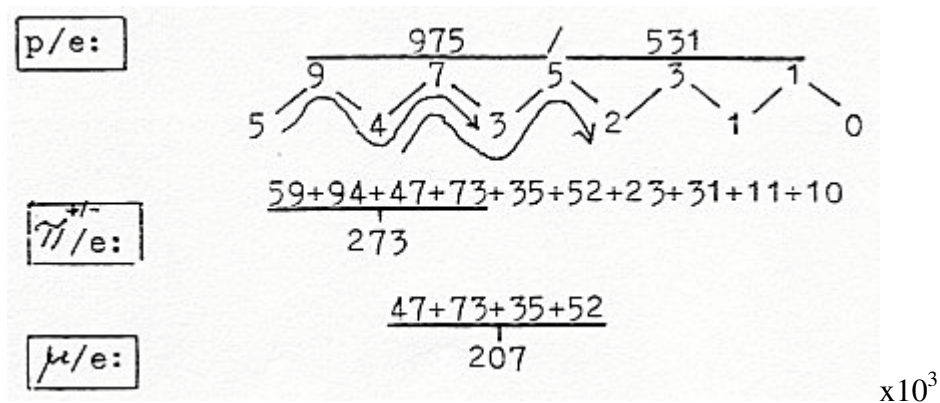

                                                                    More, see **Charge**

2) We have the number 8 for the strong force again in the number of gluons. 6+2?

Compare as above: 3b —— 2 —— 3a

About 6-dimensional (3a + 3b?) Calabi Yau-rooms
in the **String Theory.**

p/e - π – μ - numbers - and a K -meson:

$$\frac{975}{} / \frac{531}{}$$

$$\underline{59+94+47+73+35+52+23+31+11} \div 10$$
$$273$$

$$\frac{47+73+35+52}{207}$$

x10³

K° = 975/e, disintegrates into π-mesons.

π-mesons disintegrate in μ, e and ν (neutrinos).

Spin: the different way for π to get spin Zero: not commented: Gluons attributed spin 1, a spin of the same kind as the photon.

Fw - Weak Interaction

Some essential changes has occurred in the physicists' aspects of this weak force since the 1970th and the original texts here. Yet the neutrino is still closely involved, earlier seen as carrier of the force. First, from informations at that time:

Weak interaction was chiefly seen as the "force" responsible for disintegrations, such as the disintegrations of π-mesons and the so called μ-"mesons" (not being mesons now but leptons).
   This seems to be *one* good reason for relating this force to d-degree step 1 - 0/00 in our dimension chain. (Seeing π-mesons of the strong force in previous step for example as a binding force in relation to this weak one, according to first postulated definitions. Or inversely: the weak force as the polarizing force of lower degree in relation to next higher degree of structure.

The neutrino is also regarded as nearly pure kinetic energy, another reason to relate this force to the step from 1-dimensional potentials to Motions (d-degree 0/00).
   Neutrinos of the weak force was mostly registered as a a loss of energy: a loss of about half the energy, for example, in p-anti-p-annihilations, and a loss of spin ½. Neutrinos are (therefor?) attributed spin ½.

Loss of "1/2"?
According to one hypothesis we should sometimes expect the loss of a 1/2 in the dimension chain , one half of a step or half the chain: Step 5→4 implies a polarization of d-degree 5 in the poles 0 and 00. We could then imagine that only the one branch, 5→0-pole, through further developments leads to a quantum, a unit with enclosed center, that is half the chain. The branch 5→00 will be open, undefined, equivalent to the "surroundings".
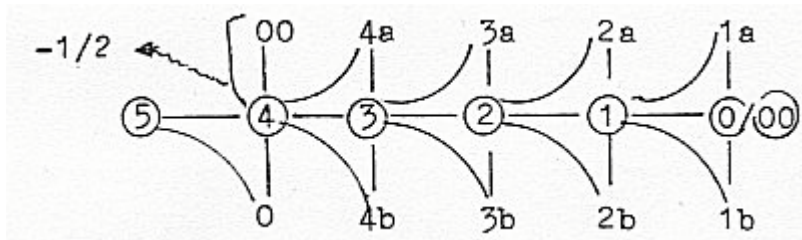
A dimension chain as a repeated cyclic process could perhaps be compared with a standing wave, where half a wavelength is lost at reflexion? (Note: step 1-0/00 branched off from step 5→4.)
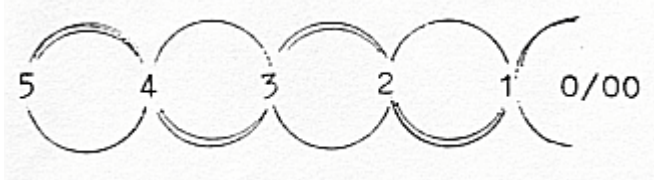

Yet, there is something wrong with this analogy, if spin ½ corresponds to two turns of a quantum, for looking the same again, see **Spin**.

                  Inside a sea urchin, ancestor to human beings:
They have a very complete and beautiful 5-numbered shell on the outside but inside a wave-form of only 4 + 1/2. (At least one specimen!)

Another illustration is the spiral: a typical example of the missing 1/2. Half a turn is always missing, farthest in or farthest out:
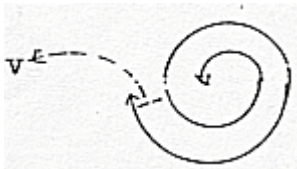
                  5-00 as spiral. vand anti-v-quanta
Here we have a matrix relation: the curled line as a potential (from a 0-pole) and the building-in of the surroundings as 00-pole. Compare that there are at least two types of neutrinos, those coupled to the heavier μ-leptons, and those coupled with electrons, like the matrix "substance" in different turns **of a spiral.** The weak force connected with a spring constant?

Participation in all d-degrees?
The weak force, if related to d-degree step 1-0/00, ought to show up in all the other steps too, since this step is branched off in all higher d-degree steps. So it does in the disintegration of π-mesons of the strong force and in connection with p-anti-p-annihilations and release of elections (at $n \rightarrow p + e + v$, charges out of EM-fields.
   What about gravitation-acceleration fields, the "GA"-force ? The character of a disintegration force could reveal its connection with the FA-force, the outward acceleration, coupled to Vacant Space, as anti-matter partly built into microcosm.
   Perhaps the weak force in one aspect is connected with the presumed 1-dimensional motion in these 4-dimensional vector fields. According to first postulates in the model here 1-dimensional potentials (d-degree 1) should have **motion** moments in 4 d-degrees, e.g. illustrated as growing-decreasing spirals, motion forms defining a 4-dimensional "space".

Connected with which physical quantity?

With Mass connected (and some kind of "inversions" of) G(A)-fields and Charge as property connected with EM-fields, aggregated positive charges in nucleons of higher elements connected with the strong force as a superposition of factors of the previous fields and perhaps"negative distances" - which elementary physical qualify or quantity should with the same views be coupled with the weak force?

   It should be **Motions** as such," to and from each other", in d-degree 0/00 according to the suggested interpretation here, (motion as the derivative of 1-dimensional distances, and motion as the transformation between Distance and Time. The d-degree step 1-0/00 means a loss of an element in structure.

   The other way around, in first step 5-4, the "physical quantity" suggested is the concept of Density, a measure of the distance to a center. A connection with Density could be one aspect on neutrinos or the anti-neutrinos. Cf. perhaps the extremely heavy W-Z-particles, see below.)

(In a chapter about physical quantities (Physics I b), some transformations of these to the quantities meter and seconds are tested, from the suggestion that Mass could be written as" negative" or inward acceleration and Charge as" negative" velocity.
   Density gets the form: $[-1/m^2s^2]$, that is the negative square of inverted Distance x Time, the only quantity that becomes a product of these units, not quotients.)

Parity:
Weak interaction was also said to differ from F_EM and Fst (and FG ?) in the fact that parity is not preserved, which implies that there isn't symmetry between "right" and "left". This could be understood as expression for a new polarization, added to the other, (like outward / inward, forward / backward / up / down). Another reason for identifying this force with the latest step. Or rather first step?

Angle steps?

Are there any expressions in the strong force and the weak interaction for the assumed angle steps in lower degrees, 22,5° in d-degree 2 and 11,25° in d-degree 1?
- Tan 22,5° (the strong force in step 2-1) = √2 -1.
(or 67,5°, √2 +1)*
- Tan 11,25° ~ 1/5, 0,2. (0,199.)
* (Cf. convergent series - ? - and the quotient denominator in the series expression for √2. Repeated processes in atomic nuclei ?)
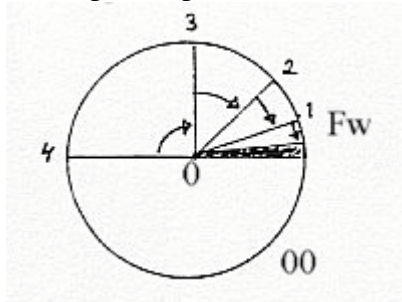
Hardly interacts with Matter?

It has been said too about neutrinos that they hardly at all interact with matter. In some way that sounds absurd.

Feynman is said to have viewed photons as sewing matter together, and shouldn´t that be valid for the neutrinos as well in at least the same degree!?

Hypothetically one aspect on neutrinos could be that they are responsible for the bond between the poles 0 and 00 in a very primary sense. Like electrons and protons, which can be seen as secondary 0- and 00-poles, where **F**ᴇᴍ is acting. Neutrinos could then be seen as an expression too for the connection between the poles positive and negative Mass (Mass - Vacant space). (Neutrinos - anti-neutrinos in different directions, outwards / inwards).

The "standard model", new interpretations:

There are at least three odd things in the new interpretation of the weak force:

1) The interaction occurs between quanta of family 1 and 2: μ-leptons and μ-neutrinos, belonging to family 2, are introduced on one side.

2) The interchanged particle are the new W-bosons (found or produced?), which fulfills the condition of spin 1 but
a) are charged (+/-), in opposition to the carriers of the other forces in the new scheme,
b) are three with the zero-charged Z-boson,
c) are immensely heavy, about 10^5 (***wrong old guess, now year 2014) calculated to about 80-90 times a proton)***x the mass of the proton, while the carriers of the other forces are assumed or known to be massless.

3) Perhaps the oddest thing is the new thought that exchange of these bosons occur while electrons are transformed to electron-neutrinos and on the other side μ-neutrinos instead transform to μ-leptons.
   This is very hard to swallow for us who have heard about these quanta and thought that at least electrons had a rather stable existence in our energy use and in the atomic world.

The belief in transformations to **/** from neutrinos, to/from electrons and my-leptons could be sign of a difficulty to distinguish between d-degrees and d-degree steps, as between borders and intervals, a structure and its matrix (cf. a spiral), or between a d-degree structure of potentials and the pattern of motions (kinetic energy)?

The pole exchange in d-degree 0/00 in the dimension model here, where "motions from each other" (outwards) define a 00-pole, "motions to each other" (inwards) define a 0-pole, could perhaps imply a new start and be coupled with the transition to quanta of family 2 in some way?
   0 and 00 as outer poles of d-degree 4, the vector fields, and the coupling between step 1-0/00 and step 5-4, could perhaps also lie behind the heaviness of the new bosons.

More perhaps later about the odd views on forces in the
Standard model.

Additions 2014-02: See file
x1: Englert - Higg's theory, Higgs boson and trhe Standard model

Three general aspects on the concept of forces:

1) Forces as outer correspondence:
:The view in the standard model makes forces look like correspondence between quanta, while these "transform" to them selves (!) or to other quanta. This correspondence is illustrated like some kind of wave bonds, but seems more like expressions for these bonds, as "the *outer* connection", not for the underlying real binding force.

2) Forces as translated to motions:
The new word for the concept of forces is "interaction", and it resembles to some extent what in this dimension model has been defined as the d-degree of Motion: motions "to and from each other". polarized and quantified potentials (of one or more d-degrees?).
   The old question from mechanical physics about what forces cause these motions is dismissed. A question which in this dimension model is equivalent to the question how the Forces can be derived from each other

3) **The complementarity principle dismissed:**
At least the well-known, "polar" electromagnetic force was earlier seen as a bond between complementary units, charges of plus and minus.
   This complementarity principle between corresponding quanta in these interactions seems now totally dismissed.
   The photon, quantum of the force **FEM**, is now described as an exchange quantum between solely electrons, quite difficult to understand. So is the assumed graviton of the gravitation field, **FG**: illustrated as an exchange particle between electrons only! Still more curious, if possible!

One could ask: Has Feynman's way of illustrating interactions seduced the physicists? And their frenetic fixation at the least possible "material" particle? Even if outsiders have to accept that physicists' view, with today's information, is *one* way to look at facts, we must be allowed to believe there are better ways.

About comparison with the dimension model here:

1) Use of anti-matter:
With he electromagnetic force or interaction as example, and the π-meson of the strong force (keeping to the view that this is the real "carrier" between *protons)*, we can predicate that "carriers" is using the anti-matter on their level for their existence and propagation. Photons using the magnetic field, the counterpole to the electric one, and p-mesons one quark from the anti-matter region. Similar as said above to human beings using surrounding air for the speech. (Cf. **"Electromagnetic Waves"**.) We should be able to assume that the same is valid for the other forces, as "ga"-carriers for "gravitation" and those of a weak force, for a homogeneous definition of forces.
   If so, there is in this respect a similarity with **first postulates** here about higher d-degrees (defined as potentials between complementary poles) as binding forces in relation to lower d-degrees.

2) **Motions as polarizing force:**
In the dimension model here lower d-degrees and ultimately d-degree 0/00 of Motion are postulated to be the polarizing forces in relation to higher d-degrees.

Perhaps we could read the illustration of forces in the standard model in another way:
   It's the **motion** of electrons (described as transformed to themselves!) that polarizes the EM-field, activating the M-field as complementarity pole.

   It's the **motions** too of electrons (!) that polarizes a G-A-field, / activating also Gravitation, coupled to F$_A$, the complementary pole, as electrons are according to interpretations of **"MEGA"-fields** in this model...

Then, what the physicists actually describe is (in one sense) not the binding forces but the polarizing ones, which makes their model a little easier to accept.

(But don't we have to believe that also free protons in motion polarizes the EM-field - and GA-field?)

3) Mutual relations between the forces:
As for the derivations of forces from each other, the mutual relations, they should in this model be the same as between different d-degrees. It surely remains quite a lot to verify this and it probably demands of physicists some redefinitions of "forces" - of what to designate so.

Are there for instance any possibility to show that a two-way directed vector field (!) of G-A is the inner bond between electric and magnetic vectors in an EM-field? (E- and M-fields perhaps anti-parallel on a meta-level, in d-degree 4?)
   Compare photons polarized into +/-e, that is positrons from antimatter and electrons from matter...

<center>*</center>

The curious thing from week zero:

<center>

Spectral lines of the hydrogen atom H:
The Balmer series: (R = Rydberg's constant):

</center>

$\lambda = R \ (\underline{1/2^2 - 1/ \ 5^2}), \quad R \ (\ \underline{1/2^2 - 1/4^2}), \quad R \ (\underline{1/2^2 - 1/3^2})$
$\qquad\qquad\quad$ a $\qquad\qquad\qquad\qquad$ b $\qquad\qquad\qquad$ c

a/b x 100 = **112** = mass number for **base U** in RNA

b/c x 100 = **135** =   -- " --   for **base A** in RNA

a/c x 100 = **151,2** 151 = mass   for **base G** in RNA

<center>

And what about the C-base? A later complement to the G-base ?
Starting codon in protein synthesis = AUG. UAG = Stop.
Formation of the bases in genes influenced by electron jumps in
the H atom ? See 5-4-3 numbers for amino acids **here.**

*

</center>

Strength - Weakness of Forces

"Strength" and "Weakness" as complementary properties
- only some general aspects:

We can presume that strength and weakness are complementary properties as dimension degree poles, not only a question about quantitative differences.

If a force is weak in one point of measurement, this doesn´t necessarily mean that the force in that point is indifferent in the context. The measurement perhaps takes place in an origin of coordinates where the force is counterbalanced by its counterforce.

Alternatively it could mean that the measurement takes place at "the terminal point" of the force, where the force shows up in its complementary form, perhaps under another name. Its "weakness" is then in that point a complementary strength.

- Photons with weak energy have longer effect with respect to time.
- Gravitation, which is said to be negligible in the atom, could be found as a factor in the strong force, perhaps in some complementary form.

Strength of forces should be related to different energy forms (complexly composed of (+/-)-energies in different steps). A comparison made from one energy form alone should in that case be misleading?

A continuous scale from strength to weakness can also be seen as analogous to a "density gradient": from that point of view represent a scale for distance to a center, a 0-pole. Strength and weakness will then depend on which center the measurement is related to.

When the forces also are related to different physical quantities (as mass, charge etc.), one can wonder if it really is possible to quantitatively compare their strengths? In which quantity shall the strength be measured? In time, in effect at a distance, in reach, in angle degrees or…?

Relative strength according to the sources (1973)
F_G $10^{-41}…10^{-37}$ (figures vary)
F_{EM} ~ 10^{-2}
F_{st} 10^0
F_w ~10^{-14} (1973) *New information says 10^{-5} ?*

According to Gamow the quotient between strengths of F_{st} and F_{EM} is ca. 137.

There is a coupling too between the numbers 41 (a 10-power) and 137, pole-exchanging the log-base. According to a hypothesis we could in some contexts have the sum of poles in d-degree 4, 10 "E", as log-base in outward direction in a dimension chain, and have 2 "E", the sum of poles in d-degree 0/00, as the log-base in inward direction.

4 ---- 3 ---- 2 ---- 1 ---- 0/00 (~5´) - - -> 4
| | |
10^{41} ------ ~ ------------- 2^{137} - - - - -> $10^{\lg 137}$

($10^{41} = 2^{136,2}$, $10^{41,24} = 2^{137}$)

Mass - Matter - Vacant Space

The absolutely first to state:

The material property of some things is only a question of relative complication and directions of structures - when all building stones of Universe are seen as dimensions.
   There is no such thing as the old fix border between a "material" nature and an "abstract" or "spiritual" world.

Fields - Mass/Matter-Charges - Waves:

Elementary, according to the dimension model here, the concepts "fields" - "matter" - "waves" should be possible to connect with dimension degree steps
   $4 \rightarrow 3 \rightarrow [2 \rightarrow 1 \rightarrow 0/00]$ respectively.

Matter is then seen as 3-dimensional in relation to 4-dimensional fields, as 3-dimensional superpositions to fields.
   Waves, in relation to matter (in a pre-de Broglie-sense!), can structurally be described in terms of dimension degree steps $2 \rightarrow 1 \rightarrow 0/00$, or $(3) \rightarrow 2 \rightarrow 1 \rightarrow 0/00$. In these viewpoints we among other things pay attention to the direction outwards towards the d-degree of motion, the increasing number of external motion moments.
   We take as starting point the external form of aggregated masses and material bodies as obeying the Euclidean geometry for volumes proportional to r^3.

Mass and Matter?

There are two concepts: Mass and Matter:
a) "Mass" is a property equivalent with or part in the expression for energy ($E=mc^2$) and is connected with the gravitational force.
   "Inertia" as a quality is associated or equivalent with "mass" in this sense.

b) "Matter" is associated with relative "impermeability", with surface structures, uphold through the property of Charges.
Collapses when gravitation is too strong.

Hence, we assume here that Mass is the property created in d-degree step **4 → 3**, (closer to the field level, and Matter the word for the property created in d-degree step **3→2**, close to the differentiation of Charge.

Mass as "inversion" of fields:

Gravitation is seen as an answer from anticenter, the 00-pole, to the FA-force, the outward acceleration force, on the field level, d-degree 4.
(About forces **here**:)

Here is assumed that Mass as property is the result of "inversion" of fields from 4th d-degree to the 3rd, dominated by gravitation. Some kind of "inversion". In three respects perhaps:

- "Inversion" as inward direction, interpreted as "negative" direction versus outward acceleration (FA-force), meaning a building in of fields*,
- "Inversion" as the mathematical operation y = x inverted to y = 1/x, a straight line translated to curves.
- Geometrically through angle steps forming one pole with enclosed center, ("the circular" pole) versus the excluded pole of the surroundings, (the" radial" pole)

> *** Compare, if superposition can be viewed as addition, the 4- dimensional fields plus 3-dimensional mass structure, forming the 7 dimensions that the <u>string theory</u> talks about as underlying, "not developed" ones.**

Compare the inversion of numbers too, all numbers › +1 or
‹ -1, giving fractional numbers near the origin, the Zero.

In old classical physics we have F = m x a, a Force is Mass times Acceleration. That gives:

  Mass = Force x 1/a, inversion of acceleration, (s^2/m).

If we regard Forces as 4-dimensional and Time as 0-dimensional, we get the Mass as 3-dimensional. (With Time seen as 1-dimensional, Mass will be 5-dimensional.).

According to first postulates in this model, the concept **Velocity** is identified with the quantum jumps, (along the main axis of a dimension chain).
   Hence, the Einstein formula $E = mc^2$, where E designates energy, **c** the light velocity, **m** the mass, the energy becomes 5-dimensional, which sounds reasonable, if Time is viewed as 0-dimensional.
   It could be interpreted as an expression for a 5-dimensional relation: Mass as a 3-dimensional structure, and c^2 interpreted as the expression for the 2 quantum steps from d-degree 5 to the Mass degree 3, representing the binding energy in underlying steps.

Mass as inertia:

Mass - Inertia - Heaviness - Gravitation: what difference?

1) It has been said - within the frames of mechanical physics - that Mass as a property is more or less equivalent with "inertia". Inertia as resistance to changes in velocity or motion, when an outer force is applied to it, is an aspect from outside.
   A hypothesis in this model is that Mass in this sense - but as an inner property - has its root in what the concept of **"center displacement"** stands for. (Compare in macrocosm the difference between gravitation centers and mass centers.) First origin of Mass should be found at the anticenter pole. With growing complexity anticenter of units become centers of superposed units:
   we get a stepwise center displacement as a eoretical foundation during development of dimension chains....

$$c_1 = ac_2$$
$$c_2 = ac_3$$
$$c_3 =$$

or:
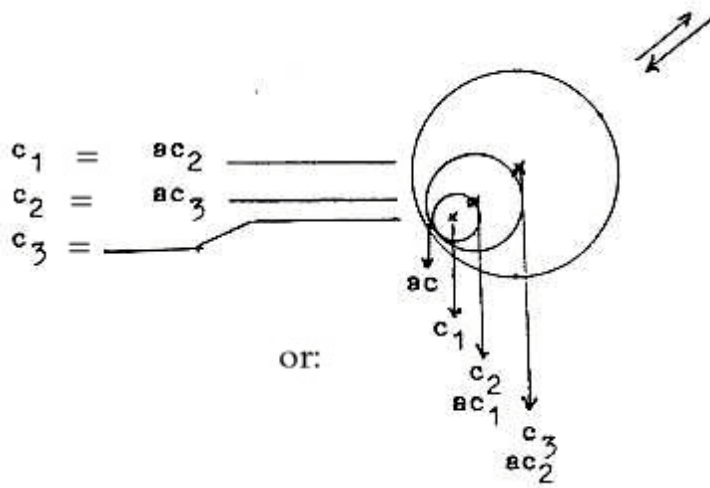
Mass then should be Mass in force of its "strangeness" to use a word from elementary particle physics. (And compare perhaps a flywheel, the inertia of which reasonably grows outwards with bigger radius.)

To compel a unit of an inward directed acceleration, even if inverted, to accelerate outwards, is naturally against its will!

Heaviness, in opposition to Inertia, could be described as a concept for relations between two bodies, as between the human body and the gravitation of earth.

There is a mess of loosely formulated statements about these things. Physicists don't seem to care about congruence between concepts in "classical" physics nowadays.

An example: Two statements seem difficult to unite:

It's said that gravitation is strongest at the surface of an aggregated mass. This is rather simple to understand: On a particle at the surface the gravitational forces are acting only from particles besides and inwards. For a particle deeper in the mass, gravitational forces from others cancel each others.

At the same time we have the statement that gravitation falls off proportional to $1/r$ inside an aggregated mass, strongest in the center then, This means we have a factor in gravitation as the inversion of the quality Distance, as in inverted acceleration, see above.

The two statements must be a mix of essentially opposite views, for instance from the single particle as 0-pole and the aggregated mass as 00-pole. Or a "reading" of the gravitational force along two perpendicular coordinate axes when the angle 180° of 4th d-degree is transformed to the 90° of 3rd d-degree,
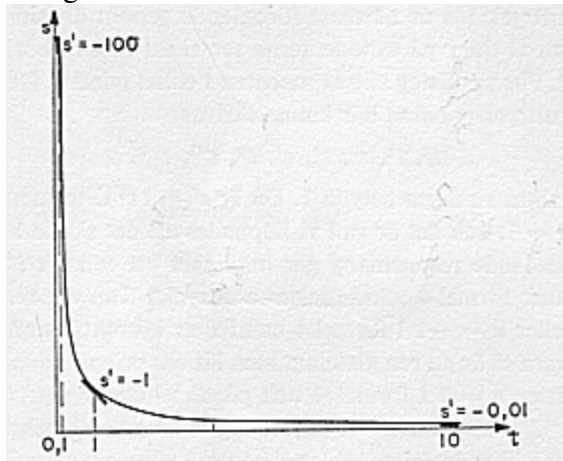
0- and 00-poles along straight angles. center and surface. What could that say about

the structure of Mass and aggregated masses - and the reason for rotation of celestial bodies !? (*Figure source: Sawyer 1961.* $v = -1/t^2$)

Another problem is how to interpret the Einstein's (Lorentz') formulas, which says that mass grows to infinity when the velocity of a particle or body goes to the light velocity c. And at the same time looses its length dimension, becomes 2-dimensional.

   The problem of the first formula arises when the 0- or Zero-pole shows itself as denominator, which it really is in this model, mathematically giving the numerator the role of 00-pole and "infinity", more properly the role of whatsoever. The relation becomes an undefined "infinity". If we allow ourselves to multiply both terms with with denominator zero, we get that Mass in light velocity x 0 = the rest mass. This rest mass becomes zero,

   Without penetrating the equations behind, we could assume here that the formula concerns mass as inertia, and that velocity, reaching c, implies a transformation to another coordinate axis - and d-degree 2 according to the second formula (compare the figure above). The Mass concept will then get another meaning.

   Lower d-degrees always represent an infinity - and "anticenter" - in relation to higher d-degrees. (There are an infinity of surfaces in a volume, e.g.)

   We have also in first formula a complex relation (as "division") between the "rest mass" as numerator and velocity in the denominator, both rest and motion. In the model here the quantum jumps between d-degrees are identified as the concept Velocity. They represent then happenings between structures and motions.

Figuratively Mass could be called a dimension fountain - of inversions, - or a "matter flower " out of underlying fields and dimensional networks of branches. A converted maelstrom.
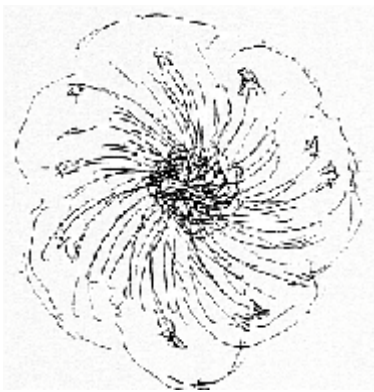
(The Mass more like a source of unrest. As built-in energy: As the spring in a winded up watch. As the aviation force in a bumblebee. As the spider when it spins the thread of its path. Mass in itself just that "being winded up" in a spring.)

Matter:

Matter as a concept is - in a certain contrast to "mass" - connected with a more "material", "particle" like structure, generally speaking: particles with enclosed centers, with surfaces.

It is an aspect on the relative **impermeability** of quanta, associated with this physical quality. .

It can be interpreted as a certain degree of complexity in the structure, of "**substantiation**".

   With the inwards / outwards development of dimension chains, the particle character in the structure increases. Hence, for matter as the property of being material there are differences in degrees.

Matter is also connected with the charge concept, with the charges of quarks, even if zero charged as some mesons and the neutrons.

   Charge is in this model assumed to be a property of d-degree 2 (in relation to Mass analysed as a property of d-degree 3). That's a reason to see "matter" here as a concept in d-degree 3-2:

Protons, e.g., as a pole 3a of 3 dimensions curled and rolled   up into them selves in inward direction (*compare the **String theory***).

We know that electromagnetic waves, outward directed as waves, in inward direction* can create / transform to pairs of charges as electrons/positrons (e+/e-) momentarily.

   * Interpretation in this model, **more here**.

Since the level of analysis is optional, the structure of matter as tied-up energy should alternatively be possible to describe
- as stratified shells,
- as stabilised , relatively closed processes (of polarizations/   depolarizations), à la "standing waves",
- as conglomerated, curly lines,
- as built-in movements, more or less stabilised.
This seen from lower dimension degrees 2←1←0/00.

Spin:
Matter particles are "fermions", are composed by quarks according to assumptions in the standard model. They have mass, and spin 1/2.

   Spin 1/2 means, according to Hawking, that the particle has to be turned twice (!) round for appearing the same again, (in opposition to quanta of forces, which only have to be turned one round).

   A suggestion here is to think about a band twisted once to an "8": The band has a 2-dimensional structure, an inside and an outside. Following the outside we come to the inside and after two round to the outside starting point again.

   Generally speaking this indicates a more complicated structure. More about spin on pages **Charge** and **Spin**.)

Vacant Space:

Time has been called "an aspect on the relative motions of bodies". Space could be seen as equal "relative", **an aspect on the relative positions of single units**, as quanta or material bodies.

   Space is defined through distances relations and direction relations of 1st degree and through motions. Through surfaces as enclosing and excluding centers, through material bodies and their movements.

   The answer to the question how forces can act over distances must be that it is the forces that create distances and Space.

Vacant Space is here defined as the complementary pole to Mass. It's seen as characterised by the outward acceleration, the FA-force in d-degree 4, more fundamentally

in the negative expression "-E=mc^2" in Dirac's hole theory, whose equations gave two results

+E = mc^2
- E = mc^2.

The first polarization of the Entirety in d-degree 5 into the poles 0 and 00 is here presumed as a polarization in +/- E for Energy.

According to first simple hypothesis in this model the opposite poles of 3rd d-degree get the forms of **"radial" versus "circular" geometries**. That is to say that the radial structure of vector fields in d-degree 4 are preserved in d-degree 3 for the pole 3 representing outward direction, while mass or matter as an "answer" from the 00-pole gets "circular" structure.(About d-degree step 4→3, see **here**.)

Through a pole exchange Vacant space as radial, open structure gets the role of anticenter to normal mass - and matter of positive energy.

(Another aspect is to see mass and matter as the result when a cosmos of "haploid" dimension chains are "saturated" through meeting and combining with another one - and see vacant space as the unsaturated rest.)

Density, here chosen as concept for a primary physical quantity (rather quality), between center and anticenter, in d-degree step 5 →4, is in outward direction imagined as polarized in e.g. Mass per Volume unit in 3rd dimension degree.

Density is expressed too in quantities (or qualities) as the strengths of vector fields and in density of charge - as in Schrödinger's wave functions - and is intrinsic in the concept of distance (-closeness): that is in lower d-degrees.

(In the same way as Forces are interpreted as transformed into qualities of lower d-degrees as Mass - Distance - Time.)

The "negative" energy of vacant space should not be interpreted as just lack of energy. It should be understood as a world "below the E0-line" (se further down).

Different signs (+) and (-) are viewed as representing complementary poles, at bottom opposite directions.

If we presume that there are plus- and minus-potentials developed in matter, and have the multiplication of minus-energy with minus-potentials (as in the expression for energy: Force x Distance), we can get positive results, (the radial ones, compare repulsion), and minus-energy on the plus-potentials, (circular), of the nucleus, compare attraction). (Se some notes about Energy.

Vacant space will be **a working force**, giving both plus- and minus-energy depending on the sign (or direction) of that phenomenon which it is acting on, etc.

The matter is not so simple:

According to the main **geometrical views** in this model the anticenter pole as surrounding is step by step built in into the counterpole units with enclosed centers towards superposed levels.

This implies that we should expect mass/matter and vacant space being **complementary combinations** of both 0- and 00-poles and FA and FG , a complementary construction of elements from the field level. Compare views on the nuclear force **here.** We could find "holes" or factors of "anti-matter" . (as earlier assumptions by physicists) in our ordinary matter.

On the level of atomic structures there are for instance the intervals between electron shells and distances between electron shells and nuclei.

Compare too about **Electromagnetic waves**.

If we accept the view about electromagnetic waves, that the waves uphold their existence thanks to the continuous access to vacant space as "nourishment", then we could imagine Matter being still more complicatedly dependant on vacant space for its existence. Presumably we could say that Matter as atoms"is breathing vacant space".

   Hence, we see the particle like structures as stabilised processes where matter, roughly interpreted as plus-energy, all the time must be uphold through communication with the original Entirety, via (+/-)-energies on underlying levels, i.e. with that original Entirety which also is environment.

When for example tremendously dense neutron stars implodes in so called **gravity collapses**, and explodes into supernovas, the interpretation could be that the access to "vacant space" in the inner of the stars has been strangled to a certain density limit. Matter - as just structure, is ruined (perishes) or revolts.

Different degrees of Vacant Space and Gravitation:

In more general terms we could imagine that there in the neighbourhood of big celestial bodies, where the field level so to say has been "used up" at the inversion to mass, are another degree of vacant space: gravitational fields as a sweating of vacant space: the negative energy of vacant space sucked out, making it extra or "collapsingly" empty, with losses in its"radial force", curved towards circular forms.

Masses are then depending on the outward acceleration force and Vacant space. According to new information too it isn't the galaxies that are flying outwards from us in cosmos but the space that is expanding, "carrying" them away.

Microcosm - macrocosm will then become 0-00-poles in a complex combination of matter and vacant space:
   Matter built-in into vacant space in macrocosm, and vacant space built-in into the matter in microcosm.

Motions:
Motions could be called the communication between $+E=mc^2$ and $-E=mc^2$
   (D-degree 0/00 of **Motion** as the ultimate expression or translation for the Entirety of 5th d-degree.)

Compare **forces** as interactions, with quanta of forces which include the complementary pole of vacant space.

The E0-line:

With accepting the theory of "two worlds" of $+/- E=mc^2$ we have to assume that the first Entirety of d-degree 5 represents E0, 0 for Zero, a border line between the regions, a kind of mirror.
   Osmosis, the penetration into surroundings, is a process generated by a Density difference. It doesn't claim any energy. Big Bang as osmosis?!

Said in another way: the concept of Energy isn't yet defined. According to the **abstracts** of this model: first when we have a relation between between derived d-degrees as force relative to structure (~Force x potentials as Distance), there is a measurable "energy".
   Still the border line or E0 will be the real energy well.

In d-degree 4 we could see the lost d-degree, transformed to motion, as this border line E0: expressed, say, in the increasing/decreasing Density of longitudinal waves.
   And then: Rotation as "E0" in d-degree 3.

Mass - Vacant space in relation to Distance and Time:

<u>Time</u>   (directions)   <u>Distance</u>
mass ——————————→ space: **frequency**-modulating

mass ←—————————— space: **amplitude**-modulating

Time: inverted to frequencies outwards the space: waves
Distance: as wavelengths inverted to amplitudes inwards: mass property.
   Compare the same in the atom and in the **<u>nervous system</u>**.

A curious question seems to follow from first postulates in this model. A 3-dimensional space "should have" movements in remaining 2 d-degrees, expressions for the "lost" dimensions in steps 5 → 4→ 3.
   Hence Space, analysed as 3-dimensional and an entity in its own right, should have some 2-dimensional motion. If we can see rotation as such a motion for its complementary "circular" pole, for Matter. the Vacant Space should have a motion of "radial" character, perhaps possible to identify as negative curving of surfaces in space? (Added here: As in some kind of hyperbolic geometry?)

Is Vacant Space quantified?

Shall we think that the vacant space in itself is quantified or only as a result of the quantified matter?
   When, for instance, the positive energy levels in the electron shells of atoms are quantified, the space or the negative energies between the levels are by that simultaneously quantified.
   In terms of quantum jumps versus continuum, the vacant space, in its role of a relative 00-pole, should still correspond to continuum, in that sense then be quantified by the counterpole, by matter.Yet, at bottom, the principle should be the same as in longitudinal waves: a simultaneous quantification through thinning - condensation (motions "to/from each other").

According to the model here we should be able to find **co-**resonances in both "structures" , between matter and vacant space, coupled through a joint, unpolarized underlying level.
   See **<u>further</u>** some notes on the experiments which became the foundation of quantum mechanics.

Some critical notes here:

1) According to this model there should be a 3-dimensional structure, geometrically called **Volume, still unpolarized** into Mass and Vacant Space. What should that be? It gets very abstract and hard to imagine otherwise than in mathematical terms, as 3-dimensional functions or vector fields.
   We could possibly imagine a 3-dimensional, Euclidean "room", polarized into an elliptical and a hyperbolical geometry for mass and vacant space respectively? (Or with

positive and negative curvature.)

The concept Volume is a scalar, but imagined as 3-dimensional vector fields we have a much more dynamic world.

2) How can such an abstract "volume" be interpreted as the **"binding force"** between Mass and Vacant Space? As their "inner connection"?

Simplest we could see the motions of material units as an expression for this binding force. (It's not least thanks to empty space that material bodies can move!)

In quantum mechanics we can think about **Feynman's "way integral"**, his interpretation of behaviour and "path way" of electrons in quantum experiments, the quanta taking "all ways" to a split in a screen. The "way integral" seems to just define the "Volume" concept.

Compare too forces as interactions and their "carriers" in the standard model - as expressions for this binding force.

3) Is it possible to state that the polarization between mass and vacant space defines d-degree 2 as Surfaces - in a more than a rather silly way? As a physical structure "in its own right"? Possible to identify with **Charge** as concept? We leave the question to that chapter.

4) In which sense is it allowed, if at all so, to look at Mass as a 3-dimensional property?

Well, celestial bodies and atoms, even nuclei?, occupy a 3-dimensional Euclidean space. And perhaps there is a connection with the physicists' statement that the strong, nuclear force falls of proportional to $1/r^3$, the cube of the radius.

Still, it should be possible in this model to include the aspect on a 4-dimensional "meta-room", already defined on the vector field level, where one d-degree is not yet transformed into external motion - not contradicting the 4th d-degree of the room in Kaluza's calculations.

(About 11 dimensions, see some notes to the **String Theory**.)

Special notes in additional file here, content:

- Waves before Mass?
- Matter as de Broglie waves
- Mass - transformed into other physical quantities
- Some numbers
- The lacking Mass or Matter in Universe
- Can new matter be created in our Universe?
- The splitting up or interference - diffraction of the Mass
- Vacant Space and the Future

Compare also file
The d-degree step 4 → 3 and the manyfold of masses

Special notes about Matter - Vacant Space

Some additional notes about Mass and Vacant Space:

1. Waves before mass and matter?

The model here, as a dimensional chain from d-degree 5 to degree 0/00 of motions could be interpreted as presuming a big mass in an empty space before it gets split up in charges and waves... But a d-degree chain can be read in double directions, the "branched off" d-degrees meeting"the other way around:
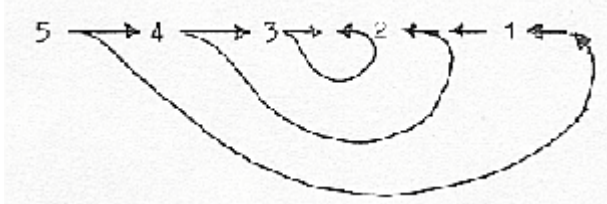
With step 4 → 3 there is 2 d-degrees "lost", enough to define motions, distances and 2-dimensional waves in inward direction - these acting as polarizing force on a 3-dimensional "volume" according to the model.

2. Matter waves:

With this dimensional model it is quite natural that matter also can be described as dissolved in waves. It becomes a question of level of analysis, which is optional: which d-degree is seen as structure, which as motions.

As said before, matter should be possible to describe as built-in movements, as conglomerated, curly lines or as stratified shells (seen from lower d-degrees 2←1← 0/00)..

According to some vague statement Matter waves follow other equations than electromagnetic waves (EM-waves), and so they reasonably should according to the model here:
- They "should be" of a higher d-degree (presuming the property Mass in relation to Charge as a d-degree relation 3 to 2).
- They "should" include components which in the next step (inverted?) could appear as electromagnetic waves.
- They ought to be double-directed in some respect in comparison with EM-waves.
- There should exist another phase displacement between the components than in EM-waves.
- The vibrations of Matter should perhaps be "at straight angle to" or just angled in relation to EM-waves.

However, the formulas which describe the relations between mass, wavelength and velocity for matter waves and EM-waves respectively is of the same kind with only one distinction, that between the velocity of light and relative velocity of masses, c versus v:

Photon, mass $m = h \times 1/(c_o \times \lambda)$

Matter wave: $m = h \times 1/(v \times \lambda)$

Is this the only truth about matter waves? No answer here.

If we isolate the time factor in the formula for the mass, $1/v = $ Time /Distance, we get that the mass for matter waves decreases when time approaches infinity. Simultaneously, according to the relativity theory, does the mass increase and approach 00 when v increases, asymptotically approaches c, In this contradiction then we could find the inverse relation in directions between matter waves as inward directed energy (equivalent to the mass property) on one hand, and the external motions of masses as outward directed kinetic energy, on the other.

The "mass" of the photon should increase with decreasing velocity, i.e. when passing through denser media than vacant space.
  An added note: Much of the "mass" in "black holes" could eventually be contributed by the imprisoned light with very low velocity?

3. Splitting up of a "whole Mass":

It is rather easy to imagine how wave motions in 3 dimensions can differentiate the masses, as through longitudinal vibration (motions to and from each other) in vector fields, shell creating as through surfaces in positive and negative curvature, a spherical stratifying through diffraction in different amplitudes and frequencies, through interference and counterdirections giving "standing waves" - an alternately concentration - rarefying, an alternately amplification and extinguishing (as in standing waves), defining centers and anticenters and energies of positive and negative signs.

We have interference even among electrons too **-** and among human beings, grouping together, creating intervals to other groups!

Velocity as splitting?
All points along the radius of a gramophone record have the same angle velocity. If angle velocity (as a function between radial coordinate axes) is "inverted" to the same orbit velocity along the circle, for all grooves of different "amplitude", we should get a breaking up of the record in separate grooves - and separate points if the grooves were spiral orbits. Indeed, a very effective disintegrating "inversion".

Footnote:
We could perhaps think of Distance and Time, (D/T) when interpreted as the 2 poles out of d-degree 1: 1a and 1b - as two rotating vectors in a unity circle, mutually polarized in 4 different respects:
- in the starting point: one starting from 0, the other from 00, a polarization in amplitude too,
- in direction inwards / outwards, translated into clockwise / counter clockwise rotation,
- in phase, with phase displacement (11,25° ?) at start,
- in angle velocity (implying varying phase displacement).
Moreover we could imagine a pole exchange where the vectors meet, giving alternately quotients of type + c and 1/c, or +c/-c, negative or positive energy… The position displacement of the starting points as a Heisenberg´s uncertainty, perhaps also with a correspondence in Macrocosm?
  An apparatus for polarizing masses - vacant spaces!
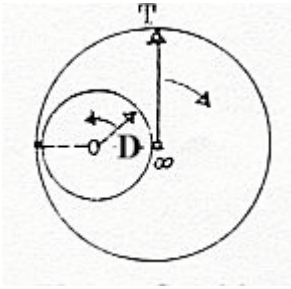
4. Some numbers:

Assuming angle steps through the dimension chain and halvings, we have 90° at d-degree 3. That is an ordinary 3-dimensional coordinate system, with 8 space quadrants.
   Compare the presumption of an "energy number" 8 E for the potentials in d-degree 3, equal to the sum of the outer poles 4a and 4b.

$2^8 = 256$. 2 as log base in polarizing inward direction?

$2^{256} = $ ca. 10^{77} = estimated number of atoms in Universe (1973 !)

3 — 2-step, read as numbers 32 — 23:

10-power figures:
32:    Mass of Universe ca 10^{50} kg = 10^{77} nucleons times volume for a nucleus, the cubic of ca. 10^{-15} m = 10^{32}.

23: x 2
= 46   Volume of the vacant space at a multiplying, "perpendicular" relation between the poles Mass — Vacant space.

32 + 46
= 78 10^{78}: Volume of Universe with radius estimated to ca. 10^{26} meters (1973).

23 x 2
= 46:   Also the volume of 10^{77} H-atoms with Bohr-radius 5,29 x 10^{-11} meters will be 10^{46}. (Atoms as "matter" = structure composed of masses and vacant space.)

Compare perhaps E-number products in the dimension chain:
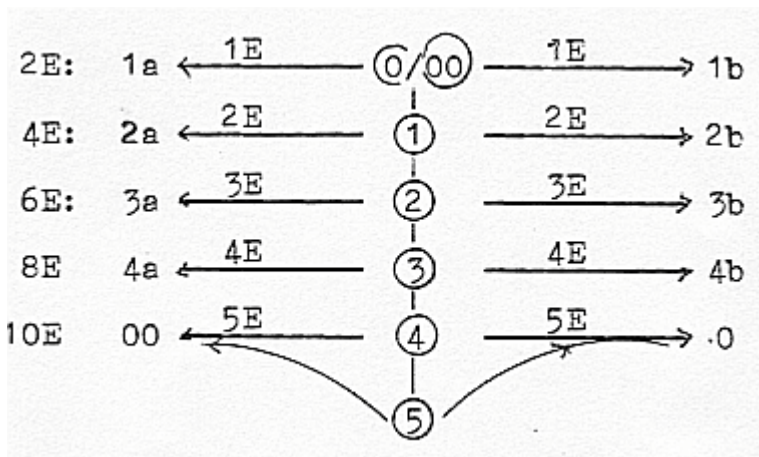
D-degrees:

```
4  x  3   :   10 x 8 E =  │80│
3  x  2   :    8 x 6 E =  │48│
2  x  1   :    6 x 4 E =  │24│
1  x 0/00:     4 x 2 E =  │ 8│
```

Sum 160

10 powers:
Volume of Universe, 78, cf. 80
Volume of empty space: 46, Cf. 48
Volumes of nucleons: 32. Cf. 24 + 8.

5. The lacking Mass or Matter of Universe:

Physicists have for a rather long time missed a great part of the Universe's mass, estimated necessary to explain things. Some decade ago it was said to be about 97 % of the mass.
   We could expect that matter is stepwise "designed" and "crystallizing" through the dimension chain, and presuming these steps as angle steps of halvings we get a very narrow sector at last which could represent visible matter, - or rather the light waves from it.
   In the last step we get the rest angle of 11,25°, that is about 3 % of the circle:
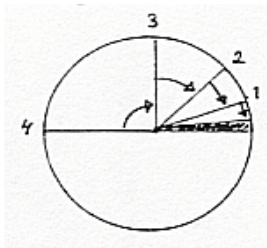
Cf. figures **here**..

The foregoing steps as the "empty space" whose "weight" not should be neglected?

Now, 2005, new rumors tell that
1) the energy of Vacant Space is recognized and
2) Vacant Space energy should make up 73%,
3) "dark matter" correspond to 23 %,
4) visible matter to 4 %.

```
4  x  3   :   10 x 8 E =  │80│
3  x  2   :    8 x 6 E =  │48│
2  x  1   :    6 x 4 E =  │24│
1  x 0/00:     4 x 2 E =  │ 8│
```

E-number products = sum 160. Assuming that step 3-2 is doubled (that of mass to matter), we get the sum **208**. (~$3^{2/3}$ x100).

80 + 48 + 24 = 152   = **73 %** of 208
            + 8   = ~ **4 %** (3,84) of 208
      48   = **23 %** of 208.

Motivations for this doubled step 3-2 - or 2 - 3 ? Double-direction in the dimension chain according to the loopversion og the model?

   Figures 73 - 23 - 4 procent corresponds roughly to estimated amount of H - He and heavier elements in macrocosm. Some connection in underlyingrules?

[Another way to find such percentage:

$(5 \times 3 \times 1) /(4 \times 2)$ = number "w", 1,875,
(odd through even d-degrees of a dimension chain).
15/8. $\wedge$ = inversion.

$\sqrt{w}, \wedge = 73 \%$

$\sqrt{10w}, \wedge = 23 \%$
                -----------difference ~ 4 %
$\sqrt[4]{100w}, \wedge = 27 \%$]

6. Can new matter be created in Universe?

One can assume that the 4-dimensional vector fields has been used up where big masses exist and gravitation as 2-dimensional roots out of the fields has been created between the masses. The requirements for new matter should then be exhausted in this neighborhood.. In solar systems, galaxies, galaxy crowds. - However, it is said that one has not been able to find gravitation between galaxy crowds. Why? Perhaps it could remain some suitable vector fields there for inversion?

7. Vacant Space and Future:

The vacant space can be compared with the inward direction of Time, with the Future as directed inwards towards the Present; vacant space as 00-pole be the analogue in Space to the inward direction of Time. Both can be seen as "causes from outside" - to an effect, to processes, to movements. It´s not least thanks to the empty space that bodies can move!

*

Antimatter — Anti- "Matter"

Antimatter:

Anti-matter - in a general sense - can with this dimension model be interpreted as one of the two complementary structures on each level where matter is gradually defined.

- From a general - E to E as = - mc^2 in relation to + E to E as + mc^2

- F$_A$-force and F$_M$-force in relation to F$_G$ and F$_E$-forces (or vice versa).

- Vacant Space in relation to Mass.

- Antimatter as positrons - in relation to electrons.

- Also then on a secondary level: Electrons in our matter in relation to protons..

Dirac's "hole theory" is since long ago a fundamental part of physics (in this model fully adopted of course), and in later days also the kind of energy and force of Vacant Space. Generally the anti-matter could appear as (-)-energies relative to matter as (+)-energy, as "quanta" or factors with opposite signs, of more or less particularized character.
This view on "antimatter" or anti-"matter" seems in most (?) cases carried through today by physicists. (Cf. quarks baptized"up-" and "down"-quarks.)

Arguments for not imagining separate worlds of anti-matter:

When many thinkers in physics have wanted to believe in **worlds of anti-matter** in cosmos, it could be a false conclusion from mathematics building on symmetry-concepts, which have a limited validity.

Primary we have that the starting point in this dimension model in a **5th d-degree, polarized in center and anticenter, already implies an asymmetry**. If two material worlds should arise in opposite space quadrants of a coordinate system so to say, which world should get the center (the rose on the tart)?

As written in the chapter about matter, one can take the concept of "strangeness" from elementary-particle physics and interpret it as center-displacement through a dimension or level chain.
   We can in that case guess that **matter is matter just in force of its "strangeness"**, in force of its center displacement and relative one-way direction.

(If we should imagine a white square divided by a straight line, we have two "mirror worlds". If we then make a little inward bend of the line into one of the two fields, we get an irregularity, a "matrix-relation", and no mirror worlds with the line as a mirror.
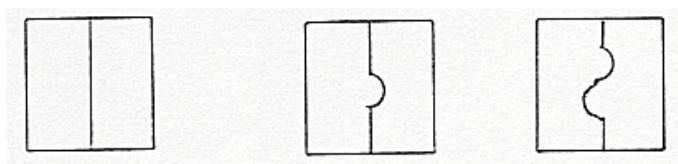
By making two inward bends on the line, in opposite directions, we get a "matrix-relation" in "real time", or two mirror worlds with a mutual *phase displacement*. (One

as a "jumping" center, as in waves with maxima and minima (tangent +/- infinity). But separated worlds in cosmos of "maxima and minima" become a nonsense.)

Anti-matter then should be seen as **built-in** everywhere in our world, - in the same way as "the infinity" or "the eternity" as 00-pole is built-in.

It should be possible to find it both inside and outside matter and it should constitute another relation between outwards and inwards directions.

- In level step 4 →3, the field level, fields with opposite sign to those underlying matter gets the role of anti-matter, as outward acceleration is a counterforce to gravitation.
- In level step 3 →2 then we can see the vacant space as the real so called anti-matter, negative protons for instance.
- Later, in level step 2 →1, we should identify proton and electron as each other's anti-matter (antiparticles) - among several anti-relations created with the growing complexity. So, according to Gamow, is the energy of the electron in an atom, if its kinetic energy is included, about the same as that of the proton.

Another argument against separate anti-matter worlds could possibly be formulated like this:

If we have as starting point an Entirety of all potential energy which could be designated E0 or $E = +/- mc^2$, and imagine this energy transformed into matter and anti-matter, this should need to occur in different parts of Universe from the start or in that way that the opposite masses flew apart of some reason, so that they couldn´t annihilate one another. - But this presupposes either that there already exists a "space" which could denote **"in different quarters", or a kinetic energy** to use for the flying apart.

In short, there wouldn´t remain enough of he potential energy to create space and vacant space between the parts of matter, to kinetic energy for motions of material particles and celestial bodies.

Furthermore, the thought of "flying apart" totally disagrees with the view on complementary energy forms - and with the postulates in this model that <u>inwards</u> and <u>outwards</u> are the fundamental opposites as far as directions concerns.

Doesn't´t "**anti-matter" exist just in all courses of events between masses of our matter - as processes,** as free energy, as surroundings? (Like cell plasma in relation to cell nuclei, as environment in relation to individuals.) Compare that the motion dimension chain is counterdirected that of the structures, according to the basic postulates here.

In the last d-degree 0/00 of **Motions**, creating relative **Distances and Time**, one could test the aspect of seeing these physical concepts as representing each other's "anti-matter".

(This suggested without more preciseness here.)

Then we can note the fact that there are found antiparticles in our world, as antiprotons and positrons. Produced and/or verified. They exist for example as occasionally created positron-electron pairs. That is not to be wondered at: now we have something to relate to: the matter. And something to extract from: the "vacant space" and the mathematics.

If we should imagine that conditions for greater quantities of material anti-matter existed in our universe, in an ordinary sense, it should perhaps be in passages or bands **between our galaxies,** along "force borders" between them; antiparticles there could

eventually form networks of motion directions, in principal parallel with the surface of each celestial body where somebody could be standing waiting for them?

   These bands or passages could then resemble the field-free regions between two magnetic north-poles, directed towards each other, and the anti-matter particles would get very curved and bewildered ramifications or tunnels to find their way through. (Not very likely.)

Celestial bodies as branch rudiments in tree trunks

More easy to accept - and more in accordance with views of today - and of the model here - would be the thought that Vacant Space and its energies is continuously created by a constantly progressive annihilation between complementary forces and quanta... (!), and therefore that the cosmic space is so big!

Compare - on one level - the propagation of **light waves**.

> (In that case it would have similarities with the "discrimination" in the nervous system, where inhibition signals from the brain (as minus 1/2), for example in the auditory sense, annihilates or puts out reactions on certain higher / lower tone frequencies from hearing cells surrounding a certain group of receptors, whose frequencies then is accentuated, as central, as centers.)

*

Charge

What is "charge"?

The question is put by D. Park in his book "The modern physics"*,* a pocket, from 1967 in Swedish, and he said there that physicists hadm't any answer.

The question awoke in this author the thought that charge could be interpreted as a "braking" of motion in direction inwards; a conception that became the direct origin to this dimension model in 1970.
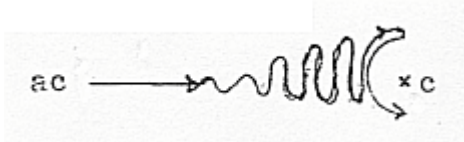
A car for example, with constant velocity 90 km/h, colliding with a concrete pillar, would lose some of its length and transforms along a new vertical coordinate axis. (Cf. objects, if with velocity of light, loses their length dimension according to Lorentz' transformations!)

The question what charge actually is, "in reality", can presumably only be answered by the physicists through other concepts or mathematical formula for connections that forwards the question to those other terms.
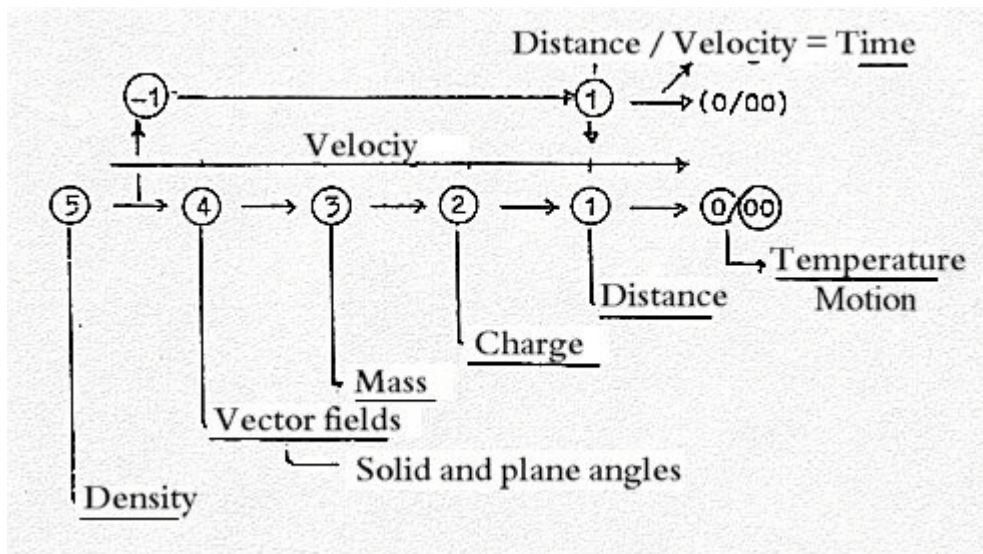
Charge as a 2-dimensional shell character:

According to first suggestions about physical quantities and their mutual relations and identifications in a dimension chain, Charge is **presumed to be a 2-dimensional quality** in relation to Mass when this is analysed as 3-dimensional (We could think of dimension degrees in a simple chain or perhaps level degrees in a superposed chain of levels.)

One simple argument is of course that (+/-)-charges implies a **polarization of matter**. And geometrically of 3-dimensional volumes in microcosm, in atoms in an inner nucleus and an outer electron "shell".

According to physicists the Charge **in atomic nuclei i**s also of a **shell character**, a shell that in heavier atoms is thickening inwards towards something like a high plateau and the the talking about potential barriers à la crater-walls.

(Of course, charge is hardly the concept for the creation of surfaces separating celestial bodies and vacant space in macrocosm, but should be viewed as related as everything in this model…See about FA- FG-forces and FE-FM-forces underlined here.)

Permeability:

Charge, interpreted as a shell building property, as a barrier, can be associated with the concept and physical quantity "permeability".
   The permeability is inversely proportional to the charge squared.

$$\text{Charge}^2 \sim \frac{1}{\text{Permeability } (\mu)} \qquad [\mu = (M \times D) / Q]$$

That is to say, the higher the charge, the more impermeability.

This seems to support the hypothesis about Charge as a "surface" property, as a 2-dimensional quality.

Embryo of an atom!

From the aspect of higher d-degrees towards lower degrees, the step Mass $\rightarrow$ Charge as Surface could be compared with the step from an embryo as a filled ball of cells to a "blastula", a cell membrane around an inner hollow with extra-cellular liquid - as a first "built-in anticenter":
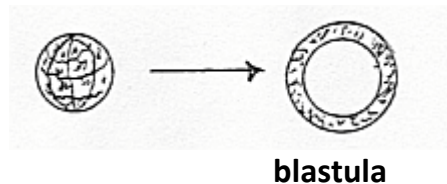
blastula

(Note that at the blastula stage the cells get differentiated roles depending on angles of direction, with the "animal pole" upwards and the "vegetative pole" downwards. Compare the differentiation of electron shells around an atom through the so called "quantum numbers", which reasonably should have its correspondence in the nuclei.)
   Cf. further down about quarks.

Negative (inward) and / or "inverted" velocity?

In a dimension chain there are 2 d-degrees "branched off" at d-degree 3, and looking the other way around from d-degree 0/ 00 of Motions inwards, in "negative" direction, we can see them meeting in the middle of the chain.
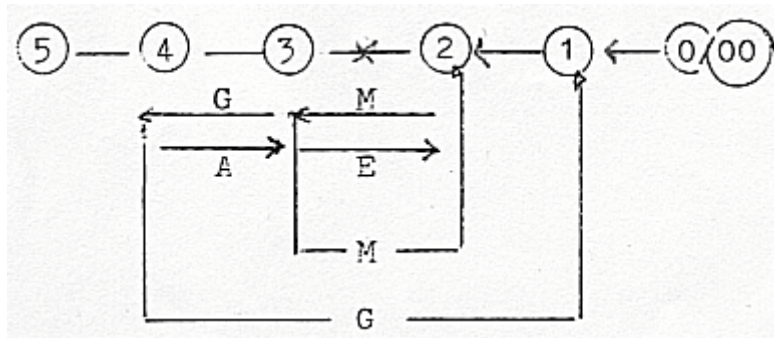
That is a view connecting Charge as property with negative - and or "inverted" velocity inwards or the like; perhaps squared, perhaps also with an added factor of acceleration? (Velocity, outwards, in this model identified with the d-degree steps, the "quantum jumps" outwards.) Cf. the relation Mass - Gravitation - negative Acceleration.

How If we should transform the physical qualities Mass and Charge into expressions for distance and time, metres (m) and seconds (s):
   Suppose that Mass is interpreted as 3-dimensional and coupled to negative acceleration (~ gravitation), and that Charge is interpreted as 2-dimensional and in some way seen as derivative of Mass:
   Instead of Time as of d-degree 1 (one pole of this d-degree), we have to presume that this pole represents the inverse of time, 1/T, the frequency f, with d-degree 1. What do we get, in terms of derivatives?

- Mass (M): $\underline{M \sim - m \times f^2 =- m/s^2}$
(Mass as equivalent to negative acceleration.)

- y´(derivative with respect to the frequency)

- Charge (Q): $\underline{Q \sim - m \times f}$ (Charge as negative velocity, - m/s)

- y´´ (secondary derivative of Mass, derivative of Charge)

- Distance (D): $\underline{D \sim -m}$, the right d-degree and quality but in negative !

Charge becomes the integral of negative distances! (Cf. the speculation about the strong interaction force.)

EM-fields and Charge:

Charge as property is coupled with EM-fields according to established, well founded science - in the same way as Gravitational fields are connected with the property Mass.
   As written about **forces and "MEGA"-fields** the EM-force is here seen as differentiated and identified as such in d-degree step 3-2.
   The EM-force or field becomes the inner connection and binding force between charges of complementary structure and signs in d-degree 2 as presumed here: Charges seen as the results of an underlying em-field,polarized and "inverted" to particle-like structures through a d-degree step.

We have two aspects at least on this presumed "inversion":

1. One is the change from electromagnetic waves outwards to inward (negative) direction. The dimension chain seen from the d-degree of motions we get built-in

motions and curved 1-dimensional potentials at d-degree 2, the more particle like character (see about EM-waves here).

Compare first when quanta of em-waves (with motions in 3 dimensions) in inward direction gets absorbed by an atom and transform into higher, "circular" amplitudes of the electron orbitals.

Then we have the fact that a photon with enough of kinetic energy can give birth to pairs of electrons, e-/e+: Yet this only occurs, so it is said, in the neighbourhood of heavy atom nuclei (or atoms?), "which can absorb the momentum of the photon".

Why? We could interpret this condition in such a way that heavy atom nuclei as Masses define the direction of the photon (a unit of waves) **as inward direction** - that is towards higher dimension degree.

If so, this could give cause for the first hypothetical interpretation of "Charge" as a property developed as "surface" out of "a braked motion" in direction inwards, connected with negative velocity.

Further, in direction outwards, zero-charged elementary particles as $\pi°$ and $\sum°$ can disintegrate directly into electromagnetic radiation. This seems to show on a primary "inversion" of em-waves into unpolarized zero charges..

2. "Inverted" could also mean a role exchange between E and M, the two forces FE and FM in the em-field:

Within **plasma physics**, as said elsewhere, there are formulas which describe the proportionality between p and e related to M and E respectively:

$$p+ \quad \sim M^2$$

$$e- \quad \sim E^2$$

The underlying EM-field shall perhaps be considered as **squared** - ? - in the transformation into "particles". And p+ and e- should repre**sent opposite complementary relations of the combination E and M.** (Anti-matter the inverse.)

If we in **em-waves** can see the magnetic component as the anticenter pole from "vacant space"(with heritage from the 00-pole), the proton - with most of the mass gets the center role, the electron the anticenter one.

As said about **"MEGA"-fields**: with the proton responsible for the most of the mass of the atom, the electron for the kinetic energy, and mass related to the G-force, these formulas seem to show on a connection between G- and M-fields, A- and E-fields.

(If p+ is proportional to M^2 according to the formulas, it could perhaps be interpreted as result of a minus-energy squared giving plus-energy ?)

(According to definitions of old classical mechanics Magnetic flux and flux density is proportional to Mass, while Mass appears as proportional to Electric field intensity. Electric flux and flux density is proportional to Charge, while Charge appears direct proportional to Magnetising field intensity. Electric field intensity.

Reading these definitions in a very simple way, we could perhaps see them revealing a role exchange between the poles M and E from field intensity to flux.)

If we take the quotient E/M of these physical concepts, we get the expression:

$[Q^2 / M]$ x $[s / m^2]$ for flux and flux density, the inverse expression for the field strength. In the factor $[s / m^2]$ or the inverse we could imagine one time factor (s) transformed to a distance factor (m) in the relation for acceleration: m/s^2. (See about motions.)

The potential barrier?

About the formulas with components of EM-fields squared: perhaps we could imagine the potential wall of the nucleus as 2-dimensional, squared to a 4-dimensional curve: The strong force Fst acting in the middle, the magnetic component Fm in the wall, the electric component Fe outside
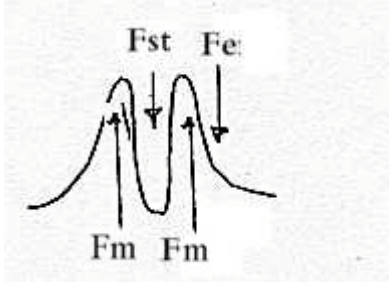
in opposite directions...?

Compare the "tunnel effect": α-particles able to pass through the potential barrier with much lower energy and expected. The α-particles then are said to have "negative velocity" inside the barrier.

   N.B. Here there is mentioned this **negative velocity** which here primarily is assumed to characterise the charge property.

Spin 1/2:

In opposition to the quantum of electromagnetic fields (the photon with spin 1) the charged particles proton and electron - and other elementary particles with mass, the so called "fermions" - has spin 1/2
   Something has happened in the step from force fields to matter.
   According to Hawking one can describe this property spin as how much the quantum has to be turned around to look the same again. The number 1 of the photon's spin means that the photon has to be turned one revolution, 360° Spin 1/2 means that the fermions, the more "material" particles, have to be turned around **2 revolutions (!), that is 720°** How explain that?

The first suggestion here is to imagine a band witch is twisted once to an "8", giving two loops: If we start at the outside of one loop, we will after one rev come to the inside of the other loop and then after 2 revolutions back to the starting point on the outside again.
   The condition for this interpretation is that we have a 2-dimensional "band", with an inner side and an outer side.
   Hence, this could be another argument for interpreting charges as 2-dimensional structures. (And of course for interpreting Matter as a question of structure complexity. Quanta of forces are attributed integer spin. Yet note that these "carriers" of forces in the standard model concerns the outer relation or interaction between units, in terms of the model here, not the same as the inner bond as common origin.)

We could also imagine a wavelength of a sine wave as "reflected", turning back again, inside and outside coupled to directions and (+/-)-signs of coordinate axes.
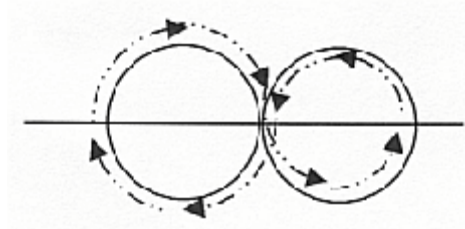
Even if this aspect on spin has relevance, there are **problems** too: Electrons with apparently simple structure has spin 1/2.

(Electron paired through opposite spin as taking opposite directions in the double-loop above, starting from inside and outside respectively? Cf. illustrations of the electron figurations in different atomic shells: some electrons parted with half along the (+)-axis, half along the (-)-axis of the coordinate system.)

Neutrinos has spin 1/2 too, but it's not sure if they have any mass. And the recently found, invented or produced W-bosons, as carriers of the weak force, have both charge and are extremely heavy - but are attributed spin 1.

This implies that there isn't any simple correlation between the complexity of structure (the mass property), charge and spin number. We should at least have untwisted "bands" too for the property of charge.

Physicists point out that **spin isn't an ordinary rotation** of a particle. We could probably (?) associate it with that one d-degree of motion which according to first fundamental postulates in this model is attributed to the 4th d-degree of vector fields: Opposite spin directions with roots in the inward / outward directions of 4th d-degree. Built-in motions of polar field components, geometrically transformed in lower d-degrees.

(Could there possibly exist some correspondence in macrocosm? Not only does the planet Mercury rotate around its axes and in an elliptic orbit around the sun. Also the (geometrical) plane, the orbit itself as a 2-dimensional "structure", rotates (if rightly understood), in a way which Einstein solved, setting it in relation to the gravitational force. Connections ???)

More about Spin **here**.

Quarks - partial charges and gastrulation:

The physicists observed something like three divided parts or areas in the proton, and experiments with shooting quanta on the proton and registering the spreading pattern gave the theory about protons consisting of 3 "quanta", the quarks. These should have the charge **+2/3, -1/3, +2/3** (to get the charge unit +1).

In spite of this "quanta view" on these quarks, they have never been possible to set free, and the assumption for the present is that they cannot be. (Well, we cannot pick out the rooms from a three-room flat either.)

Where do we else have such a construction?

A suggestion here is to look at the embryology step from a blastula to gastrulation. The blastula as a shell of cells already has a defined "animal pole" and "vegetative pole" in opposite directions:

Animal pole

Vegetative pole

Animal pole
Vegetative pole

Animal pole
~ invaginates to nervous tube
celom
From original intestine develop
outwards "celoms" on both sides

→
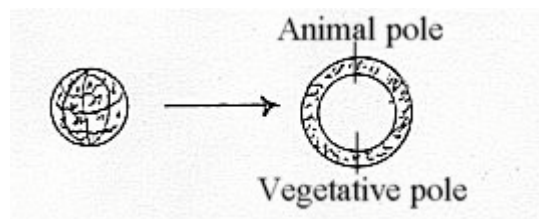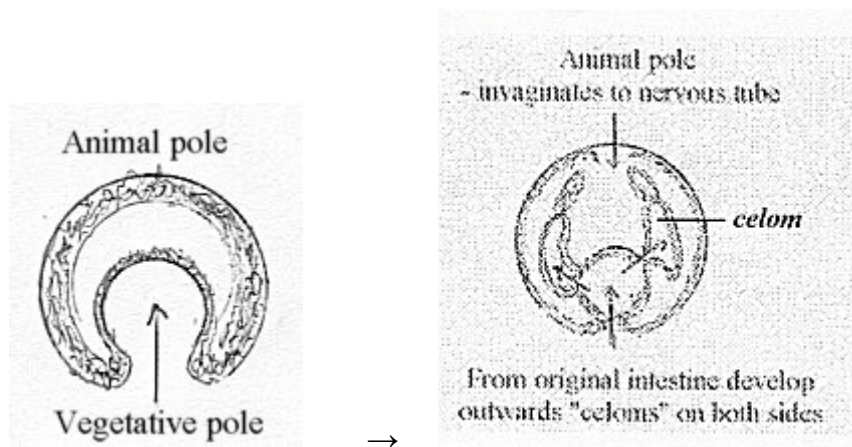
The vegetative pole invaginates into the blastula, as drawn inwards and forms the intestine and the device for nourishment from outside (the original mouth), read for the proton the "vacant space" (see about **Matter**). The process illustrates the (partial) building-in of the 00-pole, the surroundings.

   From this original intestine the cell membrane as "2-dimensional" evaginates on both sides "outwards" to hollow forms, so called "celoms" which develop upwards.

   The Direction of the first invagination of the vegetative pole is inwards, to read as "negative" energy which could be associated with the presumed negative charge of -1/3 of the d-quark.

   The Direction of the evagination of the celoms is outwards, which then could be associated with the positive charge of the 2 "up"-quarks in a proton, two times +2/3.

   According to estimates the two "up"-quarks have also only half the energy (~5 MeV) than the "down"-quark (~10 MeV).

The process illustrates
- the building-in of vacant space into the nuclei,
- a certain combination of positive and negative energy in interaction,
- charge as 2-dimensional structures like the cell membranes,
- the reason for the difficulty to set the quarks free,
- and, not least, a "negative curvature" of space (where surfaces grow faster than proportional to the radius squared),but inwards!.

Hence, **already the proton could reveal** this main principle in biology for the development towards life.(*See in Genetic Code.)*

It could be that we also have a combination of what the mathematicians have called an **elliptic and a hyperbolic geometry.**

Perhaps we could bring the similarity a bit further:
It's from the inner membrane of the celoms (read positive up-quarks) that the **sexual organs** are developed: compare the proton's relation to electrons - and the sexual polarization with that of charges!

   What about the **animal pole** (its development not included in the simplified figures above)? Apparently in charge of the whole! The central part of its membrane invaginates, induced by a meeting with the ventral membrane, to form inwards the tube of the central **nervous system.**

   We could possibly imagine this small invagination as the electron in **a neutron*** when it disintegrates into p+ and e- (and v) outside an atom, that is without the drawing force from the complementary pole. Remember the central nervous system as responsible for also the communication with the outer world - and ditto for the electrons, forming molecules and so on...!

The other membrane around the animal pole is growing circular downwards, forming the surrounding skin of the embryo (while the vegetative pole is growing radially in its invagination). So does the electron shell around the proton.

** Why more neutrons in heavier nuclei? One association
is to oxygen molecules H2O where H-atoms can attract
the other side of the O-atom in another H2O-molecule.(?).*

In simple geometries: these complementary growing directions of the membrane, circular and radial, illustrates the postulated poles of 3rd d-degree in geometrical terms, between which the 2nd d-degree of surfaces is presumed defined. (And we have of course a lot of "convex and concave" forms of surfaces too, as in sine waves.
 The embryo development concerns batrachians (frog type).

The embryo simile, spin 1/2 and p ~ M^2, e ~ E^2:
The development of the membrane from cells around the neural plate is a growing both outside, downwards, and inside along this surrounding membrane, with circular form. This could illustrate the interpretation of spin 1/2 too: one loop of the "8" or twisted band turned into the other. (Skin and its deeper layer, "epidermis" and "dermis".)
    Perhaps there is also a connection with he formulas from plasma physics which indicated squared relations between p and M^2, e and E^2?

Phase-displacement between E- and M-components?

Can we guess that there is another phase displacement between E- and M-components in Charge (or between charged particles) than in electromagnetic waves (90°)? One of 45° ?
The preliminarily supposed angle in d-degree 2. Tan +/- 45° = 1, taken as unit for the charge of p and e?
   Compare the phase displacement of 90° in **<u>EM-waves</u>** as a **means to propagation**. Charges do not propagate as enclosed units.
   Radiation outwards also **implies jumps** between (energy) levels, as d-degree steps. Not charge as a mostly "static" property coupled with "particles" of inward direction.
   If we should believe in the simile with embryo development above, and interpret the opposite forces as E- and M-components, we have both the polarity of c-ac, 360°, the antiparallel of 180°, and circular to radial, 90°. representing the angles in d-degrees 5-4-3 according to first suggestions.
   What about a phase displacement or angle of 22,5°- 45°, in d-degree steps 1-2, which should be closer to a parallel (!) relation? Is there anything like that, perhaps in squared forms in plasma physics perhaps, according to the relations p ~ M^2,
e ~E^2? Eventually connected with the development of quarks?

Keeping to the embryological approach we have a curious thing in the development on the 2-cell stage: the so called "grey half-moon" of the membrane at the lower, vegetative side, somewhere in the direction of 11,25°--22,5° --45° as it seems: This area must be represented if an individual shall develop.
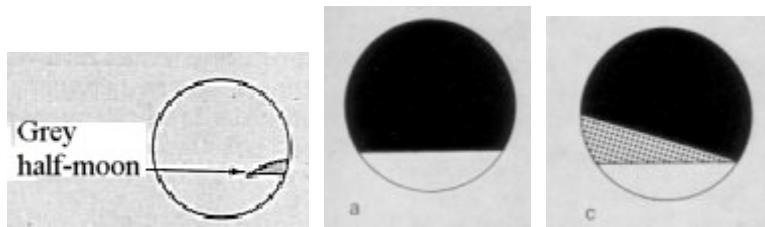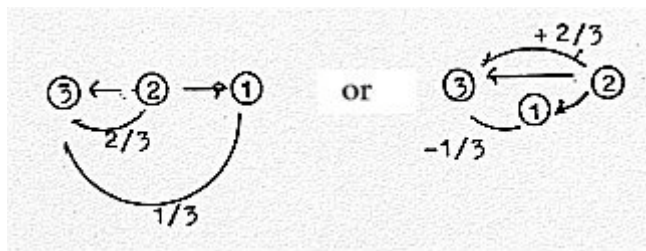
a, c: Grey half-moon before and after its creation
(Figure from R. Olsson: Koordatzoologi Stockholm 1971 and P.E.Lindahl et al:
Zoofysiologi, Stockholm 1967.)

We could perhaps also note the direction of celom evaginations from the original mouth or intestine above.

Another aspect on the angle of 45° concerns what the electron shell reveals: 8 electrons make a full shell: 360/8 = 45°. There are many other angles in these shells through all "quantum numbers", and they surely should correspond to the nucleus, revealing its structures.

A third aspect is to imagine these smaller angles connected with the partial charges of quarks. Most simplified:

2 < 2a------(1)-------2b
3 <3a------(2)-------3b $\sqrt{2}$, +/-1 = tan (45° +/-22,5°).
4 < 4a------(3)-------4b

Some mathematical operations (??) :

Arctan 1 - arctan 2 = arctan **-1/3.**

Arctan 3 - arctan 2 + arctan 1 = **+4/3**, divided 2 x (+2/3)

Arctan 5 - arctan 1 = **+2/3**
= Arctan 1 - arctan 1/5 (45°- 11,3°).
(0,2= tan 11,3°: cf. presumed rest angle 11,25°.)

Tan 45° +/- 22,5° = $\sqrt{2}$, +/- 1

Tan [arctan 3, +90°] = - 1/3   (arctan 3 + arctan + ∞ !)

Arctan 7/4 - arctan 1/2 = arctan **+2/3** (33,69°.)

Arctan $\sqrt{2}$ has values: sin = $\sqrt{+2/3}$, cos = $\sqrt{+1/3}$:
$[\sin(\arctan\sqrt{2})]^2$ = **+2/3**, $[\cos(\arctan\sqrt{2})]^2$ = +1/3*

An association to numbers in The genetic code, see these texts.:

$\sqrt{1/3}$: 0,5̄7̄7̄3̄5̄0̄2̄6̄9̄1̄

Two-figure numbers

> Sum   1011

= sum of the "exponent series",
see about the the genetic code.

$\sqrt{2/3}$: 0,8̄1̄6̄4̄9̄6̄5̄8̄0̄9̄

Alternately numbers $\sqrt{1/3}$ and $\sqrt{2/3}$, upper and lower series

05 08 77 16 35 49 02 65 69 80 | 57 81 73 64 50 96 26 58 91 09

Sum	192	352	367	100
	292–100	252+100	208 + 159	100
	|	|	| |	|
x100:	$5^{2/3}$	$4^{2/3}$	$3^{2/3}$ $2^{2/3}$	$1^{2/3}$

31 14 41 15 59 | 92 26 65 53 3̲5̲

14 41 14 42 21 | 13 35 56 62 23

45 55 55 57 80   105 61 121 115 58

292	460	
100 192		
"5"	"4 + 3"	(exponent 2/3, x 100)

*E- and M-components, if associated with sine and cosine numbers, should perhaps be squared to trace the charges: In the other direction then, at least one of the numbers is reasonably an imaginary one, coupled to inward direction.
  (And what about sine-cosine relations and numbers in a non Euclidean room?)

Other operations:

a. Geometrical series:

$$a \quad + \quad ak^1 \quad + \quad ak^2 \quad + \quad ak^3 \ldots + \quad ak^n :$$

Sum of the series for $k > -1$ and $< +1$: $\dfrac{a}{1 - k}$

Suppose a = 1, k = charges of quarks: then we get the sum of the series to number 3 divided with the 5-4-3-2-1-numbers, - in this order:

(The proton charges should then include or enclose one factor from 3-4-step, connected with mass and gravitation, and two of the d-degree 1 in relation to 3.).

b. 2/3 = sum of the series 1/2 + 1/8 + 1/32...etc, next number always a quarter of the previous one.

c. If partial charges were interpreted as 10 power exponents(!):
   Cube root out of $10^1 = 10^{1/3}$, out of $10^2 = 10^{+2/3}$

Through three operations repeated, all numbers through oscillation approach and end up in these +2/3 and -1/3-numbers as exponents to 10.
   1. x 10,
   2. Inversion (/\ ).
   3. Extracting the square root, $\sqrt{\ }$.

$10^{+2/3} - 10^{+1/3} = 2,48$ = the difference in quotients between the n/e and p/e, proton and neutron in relation to rest mass of electrons: 1838,6 - 1836,12.

Attraction - and Repulsion between p and e:

In closer analysis physicists have noted factors of both attraction and repulsion.
   There are certainly several ways to explain this fact, but one could refer to different, complementary impacts from E- and M-components in the protons. (Simplest perhaps imagined as a repelling force from the negative built-in vector field in the proton, an attracting force from the positive partial charges.)
   Some such view should be able to explain why electrons not "fall into" the nucleus (as planets not fall into the sun, in spite of gravitation).

Critical notes:

According to basic proposels in this model higher d-degrees act as binding forces in (next) lower degrees, and lower d-degrees as polarizing forces towards higher ones.
   How is it possible to define "volumes" of d-degree 3 - unpolarized - as such a binding force? What should it be? Easier to define Mass + Vacant space as poles 3a and 3b as this binding force. Do we have any representation of the unpolarized unity of Mass and Vacant Space?
   Nest question: the d-degree of **Motion**, 0/00, movements to and from each other, should be the force separating charges +/-, creating and defining Distance as concept. But this concept is of course much wider, defined through each d-degree step where 1 d-degree is "lost".

*

Spin

What is Spin ?

Physicists seem to have difficulties describing - or deciding - what this property of elementary particles is - in reality. This could leave the field free for some guesswork!

Still, the mathematical definition is clear, and here are some aspects of physicists in different sources:

1) Spin is **not really a movement of rotation**; it should be physically false to say it was. This is emphasized.

2) Spin is defined as a kind of angular momentum of elementary particles, in a direction where this is maximal. It gets the same physical quantity as h, (Js), **Planck's constant**, and is quantified in a way which makes it either an integer of the expression **h/2π** or one-half of it.

This quantum number for elementary particles was invented by Pauli to explain his "exclusion principle": the fact that no two electrons in an atom can have all properties in common.*
   The spin quantum number is expressed in units of **h/2π**.

* This Pauli exclusion principle, essential in modern physics, could in **the dimension model here** be interpreted as an expression for the fundamental postulate of polarizations through a dimension chain. Cf. all other quantum numbers in e-shells.

3) According to **Hawking** (*later readings*) spin concerns the view of an observer and expresses how much a particle or quantum has to be rotated to look the same again: half a rev, 180°, (or less), or **1** rev, 360°, or 2 revolutions. The latter implies the quantum number 1/2 (for fermions), which gives the quantum number **h/4π, 4 π** = 2 times the circumference of a circle, 720°.

4) According to the physicist **Newman** spin can be put in connection with a centrifugal force and a Coriolis force. (No more said about this in the reference.)

Rotation in the form of structure?
Is it possible to unite these different aspects?
(Some parts from the page about **Charge** repeated here.)
   In some way it sounds like the invisible blood system in animals, developed from a simple string to a doubled system to heart and lungs in higher animals.

We could start with a suggestion that spin is a kind of rotation form of the structure itself, which should be in accordance with Hawking's view: the form possible to analyze as shaped by bound motions.

It would agree too with the general aspects in the dimension model here:
   With analysis optional, structures as assumed 2-dimensional "particles" would be possible to analyze in terms of motions too, or 1-dimensional curves as potentials with direction.

0/00←1← 2← 3←4←5   degree of Motions
 5 → **4**→ **3** → **2** → **1** → **0/00** d-degree of Structure,


With the view on atomic "particles" born out of "inverted" vector fields and forces, it's not astonishing to find concepts as momentum and direction appropriate for the structure itself.
   The spin numbers 2 - 1 - ½ also supports the idea of halvings in the **hypothesis about angle steps** - but in opposite direction than presumed in the Presentation in connection with structures! From 180° (graviton) to 360°→ (photon) to 720°→ (fermions, the more "material" particles). Yet, this could be said to imply a way towards a stepwise more specified direction according to the postulated principle in this model.

Suppose motions, doubled, form 1-dimensional potentials - or "vector lines" - which were attributed motions in 4 d-degrees according to our simple postulates:
   Rotation is a 2-dimensional motion, and an "impossible" or imaginary, simultaneous rotation in two different planes, or complementary directions, could perhaps express such a 4-dimensional rotation of the structure?

Each curved surface or wave form has an inside and an outside - as complementary"poles". A simple sine wave, one wavelength and return, can illustrate how a particle has to be turned 2 revolutions (720°) to come back to the same "starting point again", or look the same again (From page about Charge.)
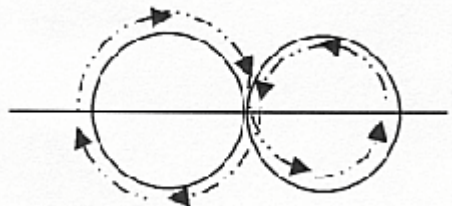
It means that the fermions with spin 1/2 could be interpreted as a combination of the complementary poles of d-degree 2 (as "inside" and "outside" here, or "convex-concave"). One revolution to the right, one inside to the left. Opposite directions of the revolutions should represent the opposite spins of electron pairs in an orbital around the atom.
   (Compare perhaps the similar forms { **OO=** }:of the 9x2 tubules in **cilia** on superposed levels of biology, organelles for external motions?!)

With the illustration of a twisted band (a Möbius band) loop, 2-dimensional, the outside in one loop becomes the inside of the other

A sine wave can be described as a circular plane that has been broken open, read polarized. We get a wave* in outward direction of the dimension chain. In inward direction we can imagine one loop invaginating into the other, giving a double "membrane", a more "material" structure, as said on the page about Charge.

   * **On the open sea "monster waves" arise not so seldom, which lately has been explained through evolution of Schrödinger's wave functions for the probability of electrons' existence somewhere. Perhaps fermions with spin 1/2 could be interpreted as such breaking monster waves in microcosm ?**

In the gastrulation of an embryo (see **Charge**) we have an invagination from the vegetative pole (without any over-crossing, forming via mesoderm an inside layer of the skin, while material from the animal pole grows to form the outside layer of the skin.
   How if we should see the 180° polarity between the animal and vegetative pole in the early phase of the embryo as representation of spin 2 of the assumed graviton - in

relation to the FA force. And the simple spherical polarity of 360° of inside-outside in the gastrula as representative for spin 1 of the photon, the quantum of the EM-field ? (Cf. Biology.)

In connection with cells:
Motions as polarized lines according to the definition in this model, could also be thought of as generating, step by step, their own 1-dimensional structure of a pathway, in a similar way as cells, copying themselves with help of the surroundings (the anticenter pole), and dividing, produce a long row of equals, as steps, - forming a "line" and a surface on the biological level. This said as an illustration of motions going into structures (without any rotation of the structure as a whole).

In any case, spin has been called an intrinsic property and is attributed to both quanta of forces (bosons) and quanta as protons, electrons etc. (the fermions).
   In this model it could probably express direction and structure of motions in the counterdirected chain of motions.
   This spin property seems to be both useful and **necessary to express the polarization principle**, at least in three steps: from $2 \rightarrow 1 \rightarrow 1/2 \rightarrow +/- 1/2$.
   It is obviously not a simple result of polarization in charges +/-. Not connected with mass either (neutrinos are attributed spin 1/2, but perhaps only as a loss ?)

Centrifugal and Coriolis "forces":
What about Newman's view that spin is connected with a centrifugal force and a Coriolis force? Both these "forces" are seen as fictitious ones in classical physics. They are both experienced as results of a real rotation motion.
   The **centrifugal force** is outward directed (antiparallel to gravitation in macrocosm and equal in strength, but reveals itself - if the bond inwards should be cut off - as a tangential direction or vector (that is in 90° to the inward direction). One has called it an effect of "inertia".

Could it possibly be underestimated as a force,
- with a new recognition of expanding Vacant Space as an **FA-force**,
- with the interpretation of matter as composed of built-in "vacant space" too,
- with carriers of forces as an interaction between opposite poles,
- and if we interpret rotation as a result of a combination of both the gravitational force **FG** and this **FA**-force?
   We have in this model too assumed that the d-degree step
$4 \rightarrow 3$ implies an angle turning from 180° to 90°, as in the case of the centrifugal effect. The angle step could have impact also on the **FA**-force or Space.
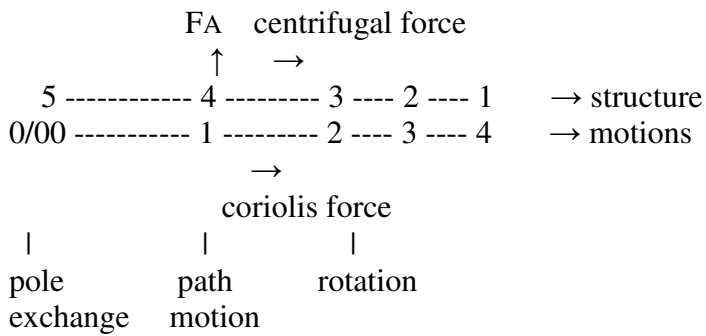   And what "inertia", connected with mass, could we attribute to quanta of forces?

The rather insubstantial or apparently powerless **Coriolis force** has a similar character:
   It can be described as that turning towards rotation which a straight path way (with uniform velocity) shapes itself to, when put in relation to a rotating spherical surface and goes in right angle to the rotation. (Also called an effect of inertia).
   (The way of the Gulf Stream for instance - and of winds on the earth are examples of its effects.) Hence, it's also an effect of rotation and implies angle turnings - and a relation to the surroundings - as the centrifugal force.
   (Seen as a kind of relative forces, they seem to have relations to Einstein's transformations of laws between coordinate system in rest and in motion in his general relativity theory.)

```
              FA    centrifugal force
               ↑      →
   5 ------------ 4 --------- 3 ---- 2 ---- 1       → structure
 0/00 ----------- 1 --------- 2 ---- 3 ---- 4       → motions
                  →
                coriolis force
    |             |           |
  pole          path        rotation
exchange       motion
```

Spin compared with other physical quantities:
Defying the fact that spin isn't depending on mass or charge, what does Planck's constant h - and spin - look like, translated into other physical quantities as Mass M, Distance D and Time T,? According to classical physics we get:

$$\frac{M \times D}{T \times T} \quad \overset{\frown}{} \quad \frac{D \times D \times M}{T}$$
$$\text{mechanical force} \qquad \text{spin}$$

Ignoring first the 2π-factor in the denominator of spin, we can see one Time factor of Force through inversion transformed* to a Distance factor in spin. We could in this operation see a step from d-degree 0/00 of motion with Time as a property, inwards to d-degree 1, less of motion, more o a structure.

* **(Einstein mentions how a difference in time can be translated to a difference in distances in the transformations between different reference systems - but of course not in connection with "inversions".)**

With the 2π-factor interpreted as a Distance factor, we get a relation as between acceleration and velocity, in "inverted" or negative forms connected with <u>Mass</u> and <u>Charge</u> respectively, in d-degree step 2-3 according to hypotheses on those pages.

We get too that

(Planck's constant) = (Magnetic flux) x (Charge)

Compare the statement by a physicist that the magnetic moment "totally depends on the spin of the photon". (The concept Charge disappears in the right product.)
   What is depending on what? In this model magnetic vector fields are seen as a force in its own right, the complementary pole to electric fields, and belonging to and a manifestation of this "Vacant space" in relation to Mass as the complementary pole.
   Referring to the earlier remarks above about the eventual role of "vacant space" as surrounding, we could ask if the "dependence": spin - magnetic moment isn't mutual?

Parallel and orthogonal spin axes:
In spite of spin not being a real rotation, some illustrations cannot avoid the similarity. They seem to indicate that the spin axis of the graviton is parallel (or antiparallel) to the path line, while that of the photon is perpendicular to the path line.
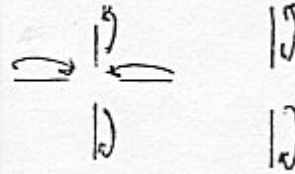
 In that case it would agree with the hypothesis about gravitation as a force in d-degree 4, related to the angle 180°, and the electromagnetic force arising out of d-degree 3, related to the angle 90°.

   It should also correspond with the difference between longitudinal waves (hypothetically gravitation waves are of that character) and on the other hand transversal waves (the **electromagnetic ones**).
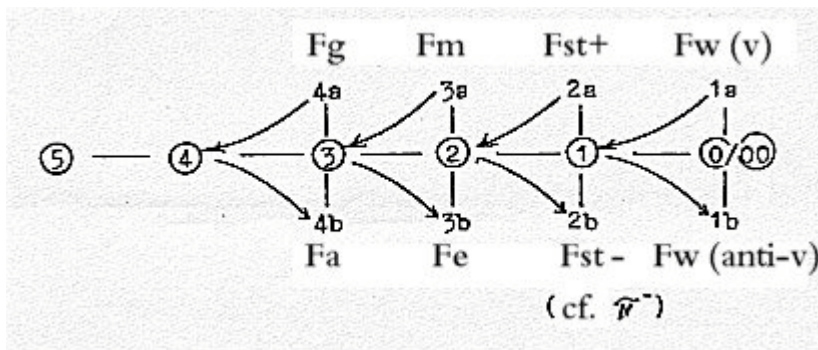
Three figures from the original texts,

the right interpretation of spin 1/2 according to Hawking not included, nor the suggestions above or on page Charge. Still giving something of an outline of the views here:
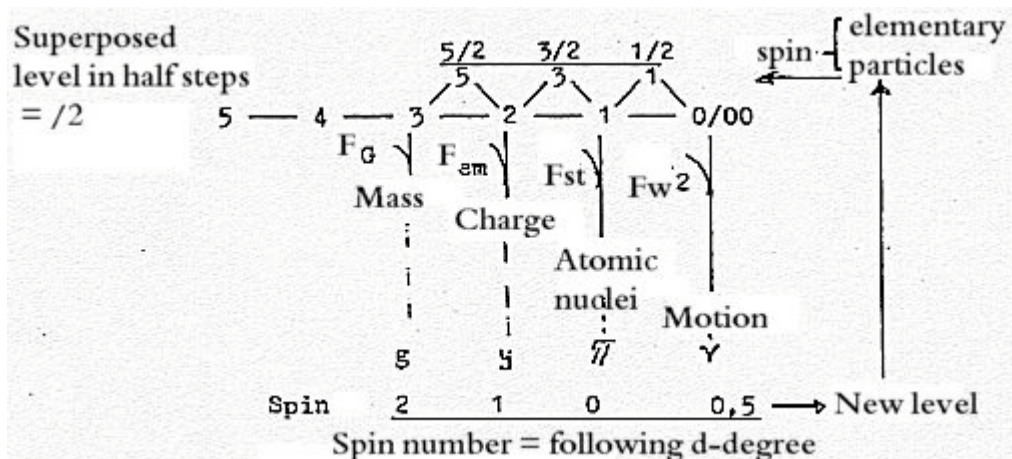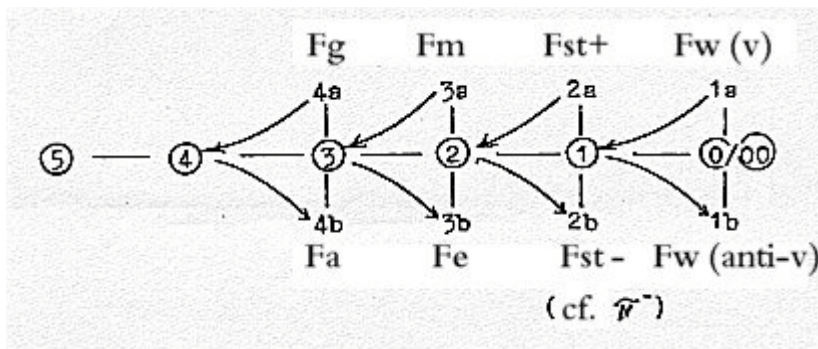
(Spin 0 for the π-meson implies that it looks the same in all directions (Hawking), which seems to be a result of two opposite spins that cancel each other. Cf. perhaps that d-degree 4 in this model corresponds to "all directions" and both inwards and outwards.)

*

Electromagnetic waves

articles and waves - the double nature:

The double nature of matter and waves - or of their behavior - as both particles and waves seems to have been a problem among physicist.

In the "dimension model" here this apparently contradictory behavior is traced back to the fundamental opposition between inward and outward direction and the geometries of opposite, complementary d-degree poles, including angle steps:

- particle character in inward direction, enclosed centers,
  circular geometries,
- wave character in outward direction, radial geometries,
  direction towards more motions.
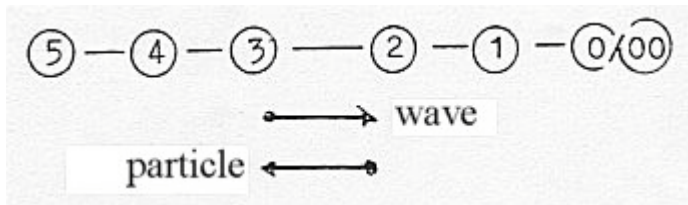
Three simple facts could illustrate the view here:

a) Photons of light waves with high energy can create electron - positron pairs in the neighborhood of heavy atoms "which can absorb their momentum", according to the interpretation of physicists.

In terms of the model here we can say that the heavy atom as neighborhood defines the radiation of photons as inward direction, and the absorption of momentum as one d-degree less of motions (~ higher degree of structure).

b) The so called photoelectric effect, which implies that there is need of a certain energy in the single beam, equivalent to a certain frequency, for the beam to knock out an electron from an atom shell, is an example of the particle-like or quantum-like property of the light. This is also an example where light has the inward direction.

c) When atoms absorb a light wave quantum, coming in inward direction, it is transformed to a higher "circular" amplitude of electrons in the atomic shell. With return of the electron to a lower level, the energy is transformed to outward directed, radial radiation (waves).

* Even **electrons** has this double nature as particle like and waves, which should be possible to interpret in the same way: dependent on the direction, but in another d-degree than the photons of electromagnetic radiation.

In outward direction from the atom nucleus as center, the electron should get its wave character, while as directed inwards towards the nucleus get its particle-like character.

This can be thought of as two moments in the Coulomb relation.
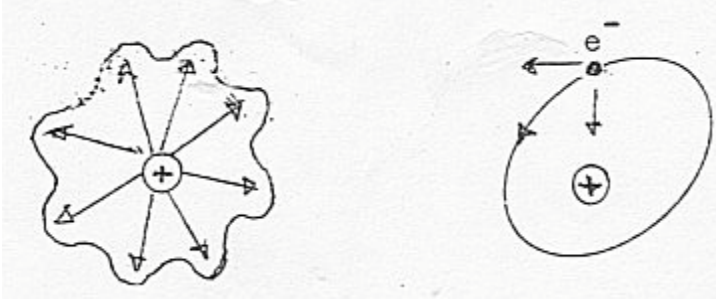
Outwards and inwards directions translated into the poles of 3rd d-degree: circular-radial:
- a centrifugal impulse moment, and in the rotation a tangential and a centripetal vector.

The aspects here give two different models of the atom, which can be said to depend on the direction of view: outward direction gives radially waves or electrons as "clouds"; (cf. Schrödinger's wave functions), inward direction gives electrons as particles in orbitals (as the Bohr model) ?

The dimension chain with indicated directions in point 4 above should rather, perhaps, be drawn as in the figure below, with charges and radiation in different steps:
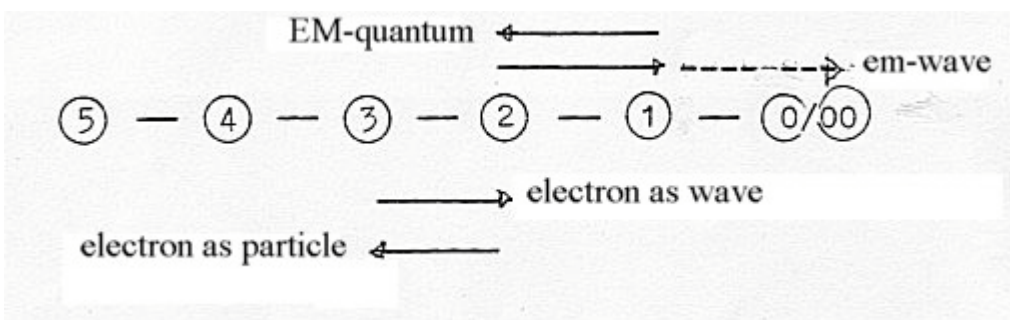
The general interpretation here of **matter** (properties of Mass and Charge) with particle like character is seeing them as a kind of "inversion" of vector fields - in "negative" or inward direction.
   (Note that we even among human beings as "particles" have a kind of interference phenomena - grouping together and no mans land between them...
   And in embryology we have for instance cellular tissue of skin which gets extinguished between fingers.)

Longitudinal and transversal waves:
(Shortened: L-/T-waves.)

L-waves (as sound waves, variations of densities along the path way in a field, is a 1-dimensional motion, antiparallel motions "to and from each other", in a relation of 180°: $\leftarrow \rightarrow \leftarrow \rightarrow$.
They should represent the kind of waves in d-degree 4. (Compare the first **identifications** here, the "physical quantity" in d-degree step 5→4, identified only with the concept Density.)

We can presume that gravitational waves is of this kind, or rather the "GA"-waves, "G" for acceleration inwards, "A" for acceleration outwards, according to the interpretation of **forces** and "MEGA"-fields.

T-waves, the transversal <u>electromagnetic waves</u> (EM-waves) , implies motions in 3 directions, along both the path way and transversal to this in two orthogonal directions, that of the E- and the M-vectors as polarized planes, a 90° relation.

a. <u>Polarization:</u>
- L-waves: polarized in 1 dimension = that of the propagation   way.
- T-waves: polarized in 3 dimensions, one along the   propagation way.

b. <u>Propagation directions:</u>
- L-waves: propagates in 3 dimensions, spherically, around a   central source.
- T-waves: propagates in 1 dimension, linearly.

R-waves?
There is a need for a third kind of waves here, between these to kinds above, to get a scheme which fits in our dimension model: waves which should be polarized in 2 dimensions and propagate in 2 directions. *Connected with which fields?*

<u>Wave types and different temperature motions:</u>

```
        vibration      rotation      translation
            1             2              3
            \             |              /
                 d-degree of motion
```

- L-waves: connected to and generated by vibrations
- R-waves connected with rotation ?
- T-waves: connected with translations of charged particles,

R-waves generated by rotation? The rather unknown "rotons" of circular structure (vortices) are mentioned in studies of liquids as liquid Helium.
  Why shouldn't they exist also in the development of macrocosm from fields to aggregated masses?

<u>Quanta of waves:</u>

vibration   rotation   translation
[phonons]   [rotons]   [photons]

<u>Wave types and their connection with elementary physical quantities:</u>
In this model identifications of elementary physical concepts (qualities rather than quantities) with the different dimension degrees has been done as below (see the **presentation**):

```
 5   →   4   →   3   →   2   →    1   →    0/00
 Density Vector  Mass     Charge  Distance Motion
         fields  Space
```

One could eventually presume a description of wave types as follows:
- L-waves: Density variations in vector fields ?
- R-waves: Field variations in masses / space ?
- T-waves: Mass-Space variations in charges ?
Reasonable or not - ? - the waves can be understood as expressions for the motions out of lost d-degrees in structure of a unit. The <u>variations</u> conceived as the source of the waves.

(Since energy and mass are equivalent, we ought to have at least a little mass variation when the atom absorbs or emits electromagnetic radiation = T-waves.)

R-waves again: it seems as these waves or "rotons" are created at borders, through the polarity (and friction?) between solid matter and liquid, or more generally by difference in just Densities (and/or or velocities). If so, they could perhaps be interpreted as "derivations" from L-waves. (More about the 4→3-step and rotation here.)

A summary of d-degree aspects:

	L-waves	R-waves	T-waves
D-degree of the physical quantity that varies	4	3 ?	2
D-degree of propagation	3	2 ?	1
Wave motion as structure	1	2 ?	3

We have the dimension chain of motions in the opposite direction to the dimension chain of structure.

The role of waves in polarizations of d-degrees to lower d-degrees - ?

L-waves as motions become an aspect on the separation of matter→← →vacant space: matter in maxima, vacant space in minima, in universe.
   (Together with eventual "R-waves" in next step polarizing matter in orbital planes…?)
   Perhaps could also the separation of plus- and minus-charges in microcosm be interpreted in terms of longitudinal and rotational waves? E

Formally in this model lower d-degrees, ultimately motions, are assumed as polarizing forces in relation to the higher d-degrees. If we see waves as these motions, and these waves meeting "from outside", "the other way around", the 1-dimensional L-waves should polarize d-degree 4 to 3, 2-dimensional "R-waves" polarize 3 towards 2, that is to the property of Charge,
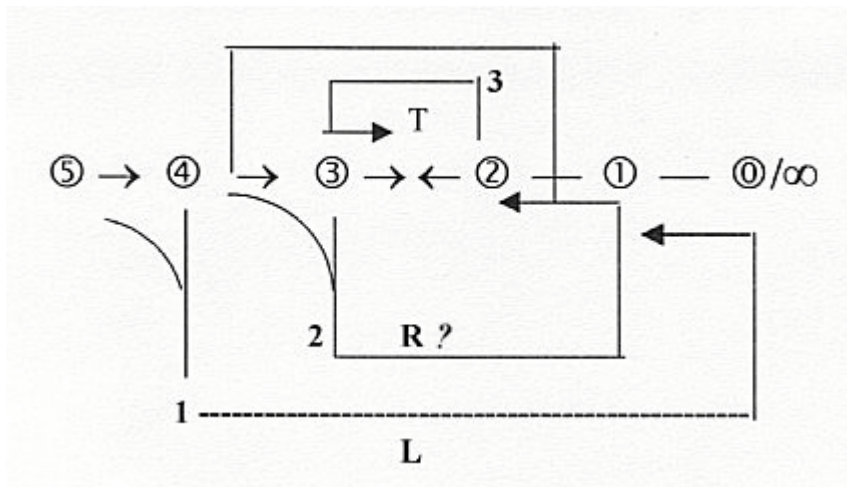
and with 3-dimensional T-waves we get a turn in the direction,
in the middle of the chain, so T-waves should uphold and confirm themselves and the existence of charges as their source!.

(Longitudinal waves on the 4-dimensional field level are perhaps also expressed in what we conceive as the expansion of Universe and its counterdirection Gravitation, contraction?)

Critical notes:

Here as elsewhere the difficulty with this model appears: where to find the unpolarized d-degrees 4 - 3 - 2 - 1 which according to the model are binding forces in relation to lower d-degrees? They seem to have only a geometrical existence, not possible to identify in the physical world? (Einstein's 4-dimensional space-time is of course accepted but as a geometrical, mathematical concept.) More **here**.

According to the model we should have 2-dimensional waves (sea waves are one example) in d-degree 3, related to Masses and 3-dimensional Space. They should imply the loss of 1 d-degree in the spreading or propagation, to "orbital" planes. We could probably see such waves in the Schrödinger's wave functions for electron shells, and as a physicist has proposed in late decades, behind maintaining of the (plane) structure of the spiral arms of our galaxy (what he called "density waves" (if so derived to d-degree 2).

  Are they then connected with rotation, the typical 2-dimensional motion, or are there another principle behind the degradation of 3-dimensional propagation to 2-dimensional planes?

  If coupled with rotation of masses, they could possibly be interpreted in connection with the despised centrifugal force (cf. about **spin**).

  Then we have (presumably) other types of 2-dimensional waves in pure electric fields and pure magnetic fields?

  The bigger problem in this model is that we have "no place in the dimension chain left" for a new pair of complementary forces as d-degree poles between G-A-forces and M-E-forces!

  Could the weak force Fw be connected with R-waves in 2 dimensions -?? - with some counterpart in macrocosm? Or rather the strong force? Or should one assume that the A-G-forces as poles 4b-4a of d-degree 3 **not** are connected with L-waves but with 2-dimensional "R-waves", rotations an expression for these "waves"?!

  L-waves spreading in three dimensions should in that case be attributed to the not polarized 4-dimensional fields created between the poles center and anticenter. (In ordinary physics seen as the 4-dimensional space-time). (Cf. perhaps the physicists concept vector bosons as quanta of field waves?)

And what about 4-dimensional waves in d-degree 1 of structure, with poles assumed as charges +/- ? They should, according to the scheme, spread or propagate in 0 dimensions - ! - or in Time only!

EM-waves
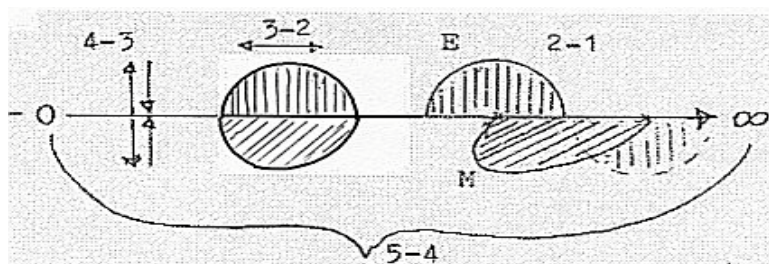
Structure:

Polarization:

- Nodes 0 ---- 00 (or ac - c - ac - c for a wavelength along the path line, defined by the electron jumps in the atoms:
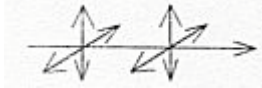   ← 00 → 0 ← 00 ← 00 → 0 ← 00 → 0 ← *path line*
    D-degree 1 of motional structure in d-degree 4.

- To --- from the path line, the variation directions in the   EM- vectors.
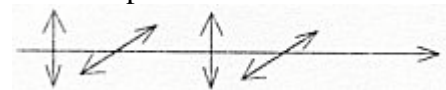   ↑↓ — ↑↓ — ↑↓ — ↑↓ — ↑↓ ——> *path line*
    D-degree 2 in d-degree 3.

- E -- M-vectors, orthogonal (90°) to each other:

    D-degree 3 in d-degree 2.To this comes

- Phase displacement 90°:

D-degree 4 (including Time) in d-degree 1

(Since analysis is optional according to this model, an electromagnetic wave should be possible to analyze as a 5-dimensional motion too, To the motions in 3 directions (x, y, z) comes plane and circular polarization of light.
   Unpolarized light: the vibrations define volumes, d-degree 3
Plane-polarized light: vibrations define planes, d-degree 2.
   Unpolarized light is often described as motions "in all planes perpendicular to the path line". There must be a change of aspects (?) in this formulation: there is only one plane perpendicular to the path line, seen in the direction of propagation, while all other planes of variation include the path line, seen from the side.)

In simple geometry definitions:
According to a roughly sketched elementary hypothesis, the 3rd d-degree will be polarized into **radial and circular structures.**
This polarity, in the dimension chain of motions, is transformed to the amplitude variations of the radial vector fields, defining a circular circumference in the transverse wave.
   In d-degree 2 then we have the complementary poles of E- and M-field variations, defining perpendicular planes, and the line, the d-degree of Distance, he common coordinate axis for the two partial planes E and M, in motions as sine/cosine waves (convex/concave forms)..

A wave period (or wave length) should most likely be seen as structured in simultaneousness (backwards-forwards at the same time). In some respect should then a time division within a wavelength be impossible. (This perhaps a fact with coupling to Heisenberg´s uncertainty principle?)

Added here:
As the electromagnetic T-waves includes both longitudinal factors and the doubly transversal ones, we could ask if not the assumed type of waves in **gravitational and outward acceleration fields (and eventual "R-waves") take part in these T-waves?**
Behind the typical character of interference for example we could perhaps trace the influence from FG - FA-waves?

Propagation:

How electromagnetic waves can propagate through vacant space has sometimes been seen as a mystery

   With the dimension model here the Vacant Space (in line with Dirac etc.) is interpreted as the complementary pole to matter. With this starting point matter and vacant space should be interpreted as coupled via underlying level or higher d-degree as simultaneous results of a polarization. Coupled as "negative" energy and positive energy:
- E-field: as outward direction from the atom, from matter as the   center pole..
- M-field, as inward direction, from vacant space as   antimatter, the anticenter pole 00.

Negative energy -Emc² raised to zero:

The meeting with the complementary vacant space as "negative" energy" should imply a momentary depolarization on some level. We could presume the description that the **negative energy repeatedly is raised to the E0-level, that of the path line.**

Phase displacement as the cause:

The phase displacement between E- and M-fields seems as the real cause to the propagation and the condition for it, the possibility of pacing out a distance, - as the two legs of human beings in walking, while center of gravity oscillates...

Energy E0 as the source:

The propagation way itself as a series of nodes 0-00-0-00… should be defined as energy zero or an E0-line, the border between E- and E+ as polar energy forms.
   The secondary plus-energy (E´+), expressed in the frequency of the wave, depends on **how often the wave passes this E0-border.**
   We can say that the wave **actually gets its energy from E0 as the primary source** of complementary energy forms, with roots in the 5th dimension degree.

Breathing vacant space:

The light wave is **breathing vacant space,** that is another way to express the E/M-relation. As the atom does according to assumptions here. And that its existence as a partial structure with positive energy is established through this respiration still more directly than that of material particles.
   In this context we could remember the deflection of light passing the sun. Einstein's interpretation in terms of the curved space-time met critics who suggested that the magnetic field around the sun could be responsible for this deflection. This seems reasonable according to the view here: the light wave disturbed by this magnetic fields orientation, "undernourished" or eventually overfed in its dependence on it (the inward directed "negative energy" of Vacant Space "sucked out" around big masses in some sense). The effect could be the curved Space and shouldn't necessary contradict the view of Einstein?

Life reproduction:

The propagation of the waves can be interpreted as a kind of consecutive copying out of the vacant space, with vacant space as "material", and in a real sense then the propagation shows **the fundamental structure of biological reproduction.**
   Compare for example the construction of lipids for cell membranes   /\/\/\/\/\ as an illustration of a periodical <u>decimal fraction (1/7)</u>, and how cells through copying with help of material from the surrounding and division are feeding their own proceeding existence.

Hence, the light can be seen as the very model for eating and reproduction: the biological partition and duplication (out of the environment).

Lumosomes as chromosomes:

We have the similarity too between a light wave and the DNA spiral or "helix": the complementary bases G - C, A - T (even if two pairs in chromosomes, and something like a phase displacement and the turning around its axis - similar to a circular polarized light wave ...

The backbone as a light wave!

These E- and M-fields with a phase displacement give the picture of **two counterdirected gradients** with origin in one another.
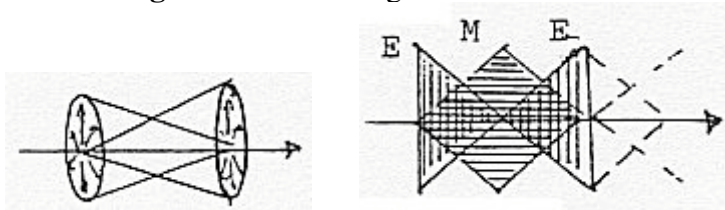
(In the figure above has the perpendicular direction of vibration been ignored.)

We can compare this structure with the way in which the **chord string and the backbone vertebrae** are build-in into one another or joined during certain stages in the embryonic development of vertebrates. (Then discs between vertebrae as a softer kind of "antimatter" ...).

Light waves reproducing themselves:

A dimension chain has the meaning too of 5 "derivation steps" leading to a secondary 5-dimensional unit, according to postulates. Such a mathematical chain in 4 steps is the example below:

___sin x _____cos x _____-sin x_____-cos x___

y_____ y´_____y"_____y'" _____y"" |

(5th step as a pole exchange 0/00?)

Numbers of a dimension chain inverted:

Arc tan 1/3 + arc tan 1/2 + arc tan 1/1 = 90° = the angle and phase displacement between E- and M-field components in the light wave. Electromagnetic waves generated in d-degree steps 3 → 2 →1 according to viewpoints here.

Amplitude - Frequency:

Amplitude and frequency is joined physical quantities in a simple electromagnetic sine wave. They are expressions for complementary energy forms:

  - **potential energy: - amplitude,**
  - **kinetic energy: - frequency.**

They could be seen as results of a polarization of energy E0 in 3rd d-degree, a polarization of the type circular / radial.

An energy quantum as an amplitude difference in the atom gets translated outwards to energy expressed in the frequency of the electromagnetic wave. That is, we could say, a conversion of the energy form from **circular to radial**, from amplitude to frequency, from potential energy to kinetic energy.

These energy forms are translated into one another at absorption and emission of radiation:
- amplitude becomes a measure of received and absorbed energy,
- frequency a measure of emitted energy.

A → f : outwards

f ← A   inwards

The difference in energy forms can be described from the viewpoint of forces:
- amplitude can be interpreted as a measure of the strength of the **polarizing force**, acting inwards.
- frequency inversely interpreted as a measure of the strength of the **binding force** (strongest furthest in), at translation outwards.
   The translation - or inversion - from frequency to amplitude represents inward direction. The inversion from amplitude to frequency the outward direction.

(A little letter symbolism: f as in frequency can be written 1/T for Time. In DNA, the gene code, we have the base pair A--T,   T representing the binding between the to chains of DNA, that is in its "inward direction". In its outward direction, when copying to RNA, the T-base is replaced with the U-base. Compare the development of speech sounds from u to v, from v to f, f as in frequency!)

Amplitude - as connected with inward direction, absorption of energy, is then related to the 00-pole, with anticenter. Frequency, emitted energy, is related to the 0-pole, with the center.

Concepts as **"strong" and "weak" energy becomes complementary**, not only degrees of something on a scale. One step for an electron between high amplitudes (high potential energies) gives radiation of low energy, low frequency. One electron jump between low amplitudes (near the nucleus) gives high radiation energy, high frequency.

Frequency modulation gives a longitudinal information wave, a density variation along the propagation way. **Amplitude modulation** gives a transversal information wave, perpendicular to the propagation direction. - That means a relation at right angles, as radial versus circular geometry from the viewpoint of the atom.
   The **same relation occurs in the nervous system**: There is amplitude modulation of nerve signals in the membranes of nerve cells - to compare with atom shells, and frequency modulation in the nerve fibers - to compare with the EM-waves radially emitted from the atom.

Higher amplitudes could be thought of as corresponding to increasing potentials towards lower d-degrees in a dimension chain, longer distances to the E0-line:

Size is translated into numbers, numbers translated into size. Size: amplitude. Number: frequency.
   Inverse quantities (or qualities) in a simple sine wave.
(A dimension potential, which in a d-degree step outwards gets polarized to outer poles in next lower d-degree, will also be translated into quantities or numbers signifying the

potential value of the lower d-degree. This according to a hypothesis in in this model. A certain d-degree step could in that case represent a certain number of something.

It ought to imply that a number of equal units of something, for example of wavelengths - primarily should be quantified in groups of different sizes, representing d-degrees. And mean that nothing will happen before such a group has been "added up".?)

Lyman-Balmer-Paschen-Brackett-series:

There is a beautiful formula and series for possible electron jumps in hydrogen atoms (H), the so called Lyman-Balmer-Paschen-Brackett series. If we count with only 5 of the possible jumps, we have them as in he figure below:

Ordinal numbers
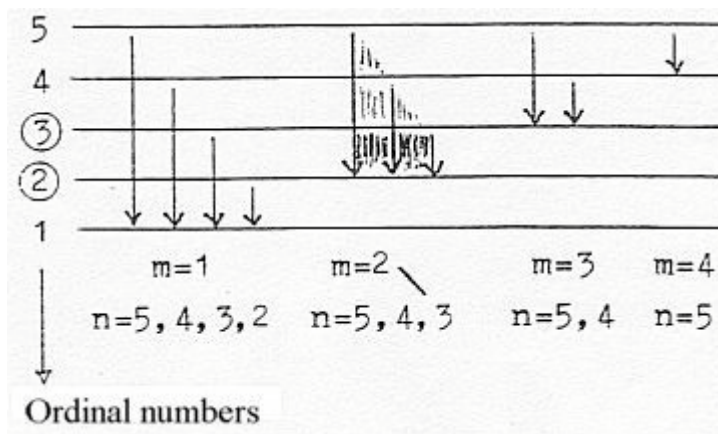
Dimension chain numbers as in opposite direction.
Visible light marked with shading. The formula:

$$\frac{1}{\lambda} = \text{constant} \quad R \left(\frac{1}{m^2} - \frac{1}{n^2} \right)$$

Rydberg's constant for the spectral lines of H, hydrogen:
$R_H = 1{,}0967758 \times 10^7$ (x 1/m)
For $m = 2$, $n = 5 - 4 - 3$
we get these wave length below
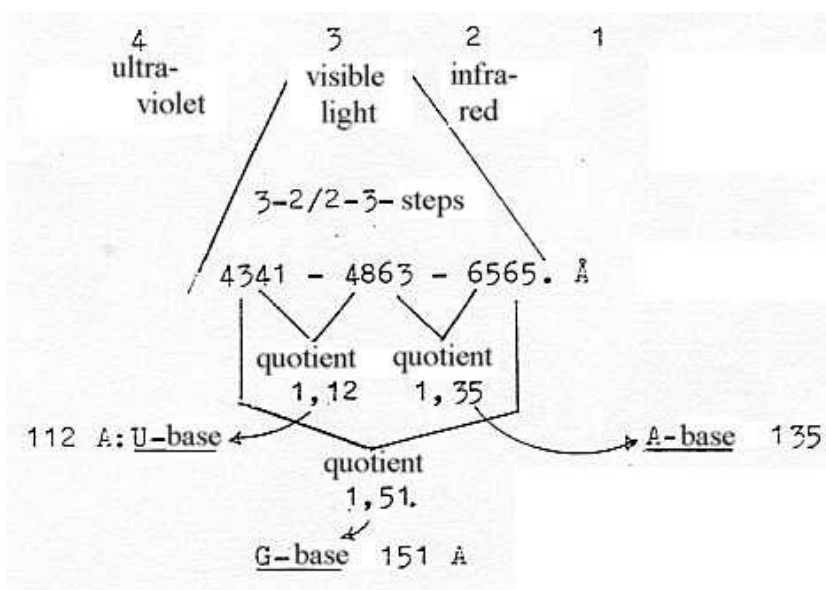
The quotients between them, times 100, give reduced the A-numbers for three of the RNA-bases: U-A-G.

   UAG and UGA is stop codons in the process of protein synthesis, and AUG, the codon for Meth, is starting the process.

   What about the C-base, 111 A? Lowest spectral line of oxygen (O) is 4368 Å, divided with the H-line in the middle above 4863 Å is 1,11..... (Other possibilities ?)

And what should these spectral lines have to do with A-numbers of the RNA-bases? Or why shouldn't they?

   Compare all numbers we can get for amino acids, grouped after the codons, from the number chain of 5 - 4 - 3- 2 - 1...See **The Genetic code**.

Chromosomes too seems to have a double nature of particles / waves, in some respects follow the same structure model as light waves, although on a much superposed level
- There are chromosome "granules" - and spiral wave forms on different levels of organization and / or in different phases.
Chromosomes are sometimes drawn as knots on a string.

   It is the parted chromosome, the single thread which copies itself through material in the environment, in processes of the cell and its reproduction.

To EM-waves - additional aspects and hypotheses:

Light velocity
Length of a photon?
Hypothesis about polarizations between long and short EM-waves.
Hypothesis about "side waves"
Phase waves

EM-waves - additional aspects and hypotheses

The velocity of light:

Why is the velocity of light c limited and a constant in vacant space?
   An answer could be that this constant is a quotient, as the number π in Euclidean geometry between the circumference and the radius in a circle. For EM-waves that "quotient" would be the relation between E- and M-factors of the fields, according to the views here. (Cf. the polarity radial - circular of d-degree 3 in this model. M-fields closed, "circular" field lines, electric fields open "radial" field lines.)
   The velocity depends on the "medium" (not on the source) and the "medium" is "Vacant Space".

If the same aspect is applied to the "gravitation waves", so difficult to detect, or sooner GA-waves, what says that these waves should have the same velocity c ?

And why c^2 in the expression $E = mc^2$?
A transversal wave marks 2 orthogonal coordinate axes. We could see these as forming a coordinate system for the 2nd d-degree, for surfaces, indicating an multiplicative operator.
   With one of the axes representing inward direction, corresponding to negative sign, we should get something like

   $+ c \quad x \quad - c = - c^2$ (in ordinary mathematics)
   $\overline{\hspace{4cm}} \rightarrow$
   $\leftarrow \overline{\hspace{3.5cm}}$

the way back doesn't work, taking the root out of a negative number. Hence, the imaginary number $\sqrt{-1}$ (x c^2) is introduced in mathematics.
   We can imagine that the c^2-factor in Einstein's expression for the energy of Mass is inward directed, that is the imaginary direction, built in into the mass - as "inverted EM-fields" as written on page about Mass and matter,
(More about Velocity as concept **here**.)

Some numbers (from 1973):

Distance scale, meter:

10^{-15} —————————→ 10^{+26}:   Middle $10^{+5,5}$
Φ atom nucleus   Φ Universe

 Time scale, seconds:

10^{-23} —————————→ 10^{+18} Middle $10^{-2,5}$

Time for light   Age of Universe
to pass a
proton

Quotient between middle of scales $\mathbf{10^{+5,5} / 10^{-2,5} = 10^8}$,
m/s, the 10-power of light.

Another operation:
$[0,1 \text{ x } (5x4x3x2x1)]^2$, x (5x4x3x2x1) → squared again.

= 2,985984 x 10^8 ,

ca the velocity of light, 2,997925 x 10^8 m/s

A third note:
In a pentagon the inner angle is 72°. The root out of 72 is 8,48..., circa log c in meter/seconds. Gives c = 3,0569 x 10^8.
2 % wrong.
   What should the square root of an angle represent ? ! Madness?
45°, (the assumed angle in d-degree 2):
Arctan 1/√ 45° = 8,4787., closer to 10log light velocity 8,4768.

The length of a photon ?:

One quantifying of EM-waves is the wavelength. But the
quanta of EM-waves, the photons, is another question. What quantifies them? How much light, how many meters of light makes a quantum, a photon? Or how many wavelengths?
   According to only oral information there has been experiments to measure the length of a photon: two light beams were sent parallely into a box with two slits. If they have the same starting time and velocity they allow interference, they give a common wave pattern on the screen in the box.
   If one of the beams is delayed by passage through a staff of glass, in which the light velocity is about 2/3 of that in vacuum, the interference between the beams ceases, if the delay corresponds to circa **1 meter** of light.
   Presumably the length of the photon depends on the wavelength? In the experiment visible light was used (wavelengths between 4000 - 7000 Å). In the meter system the number of wavelengths per photon becomes the inversion of the wavelength if the photon is 1 meter.
    Could this relation of inversion between number of wavelengths and photon length - if about 1 meter - reveal a principle from the world of mathematics underlying the physical world? Perhaps it is both obvious and natural? A certain amount of bound energy in the atom, released and translated to a certain number of crossings of the "E0"-line?

[If number of wavelengths in a photon of 1 meter is $10^{2\pi}$, the wavelength will be 5210 Å, near the value where the human eye has its best color sensitivity (circa 5300 Å). 2 π, the circumference of the unity circle, as a log number.]

**Hypothesis about polarization between radiation
of longer and shorter wavelength:**

Hypothesis:
A quantitative degree of difference between radiation of different wavelengths turns over to a qualitative structure difference under certain conditions turns over to a complementary polarity with features of the type
- center /anticenter, 0/00
- outwards / inwards direction
- radial /circular…

Condition for this: a coupling between the radiation waves - and energy or frequency relations corresponding to certain d-degree or level steps.

Could we imagine - most tentatively that for instance longer wavelengths can have a "gravitational" or aggregating effect on shorter ones, shorter wavelengths an "electromagnetic effect" - or integrating and differentiating on longer ones?

"Lissajou's figures" are created by bodies oscillating in two directions. Wave motions with wavelengths in integer relations to each other give closed Lissajou figures
   We could eventually turn this geometry the other way around and presume that waves which interfere in this way can give rise to bodies as closed figures? A 4-dimensional "meta-wave" field through step 4→ 3 give closed material bodies. (Cf. MEGA-fields, chapter **Forces**.)

In astronomy one has observed strong sources of radiation in the radio frequency range beside a star: Can eventually a polarization between frequency ranges (radio versus visible light) be a part of the explanation? (Cf. human ears on the side of the head, eyes in front!)

Within plasma physics,with its innumerable wave phenomena, perhaps some wave types, geometries and discontinuities more generally could be explained with the hypothesis here?

Biology
Different frequencies of radiation emanate from different (quantified) shells, levels, angles etc. in the atom. It seems very natural if these different frequencies take part in angle polarizations of molecule structures to complementary chemical roles and other such polarizations:
   revealing and reshaping the geometrical and "quantum number" differentiation of its origin in atomic shells.

The organization of the retina would be one example - and its interpretation of complementary colors.

As a parallel on superposed levels: energy differences of certain degrees in nerve signals would lead to a complementary "casting" between nerve cells…?

Concerning vibration frequencies we have the fact that certain frequencies give resonance in different organs of the human body.

There are the so called "window effects" too: that biological organisms seem to be sensible to radiation in certain spread regions of the wavelength scale. This should eventually be possible to explain with the hypothesis on changed angles at certain quotients between wavelengths?

Meteorology and the like
In meteorology as a superposed level there are some phenomena, which have been considered difficult to explain, and which perhaps could be interpreted in terms of this hypothesis (even if explanations in other physical terms simultaneously would be possible):

Currents in water and air (wind) are not primarily "waves" but their relative velocities could be a real analogy to frequency relations of EM-waves and other oscillations.

- Smaller circular sea currents has been discovered which has been difficult to explain (evidently then not a result of the Coriolis force). Quantitative differences in velocities but also in temperature and density could possibly lead to a polarization between a tangential and a circular current during certain conditions.

- The same seems to be valid for tornados - with air as structure carrier, where there seems to be an angel change from horizontal currents to vertical.

- The "polar front" over the North Pole shoots down from the pole 4-5 tongues of cold air, (cf. 5 steps in a dimension chain !) This wave front pendulates to and fro with a period of 4-6 weeks, the so-called Rossby waves.
   From the wave-front "cells" of air are tied off, isolated air masses as centers of low pressure and high pressure. Perhaps the hypothesis above is illustrated in this geometrical development - as well as in the angle relation between warm and cold fronts within a low pressure cell?

Hypothesis about "side waves" in EM-fields:

A transversally swinging string generates longitudinal "side waves" in the air. In the same way an electromagnetic wave, where half of the wavelength gives the picture of a swinging string, could be thought of as generating longitudinal waves in the surrounding "empty" space, laterally around the propagation way of the electromagnetic wave ?
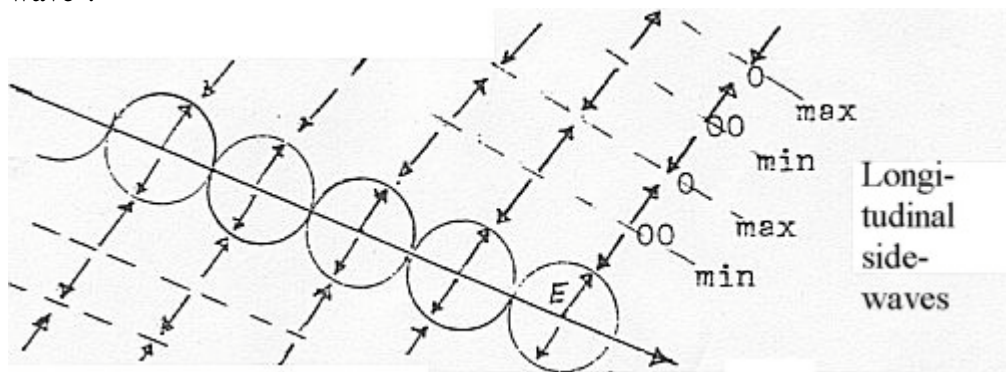
The condition would be that each motion gives rise to a countermotion, in the same way as each force has a counterforce, which we can assume.
   Another condition is that "empty space" is not an undefined "nothing" but a that kind of "negative" energy which we have assumed in other chapters hear, and can be graded, even if it is the plus-energy that grades it.
    A third condition would probably be that "vacant space" as medium is totally unplastic ("elastic") in its negative property (!) , which it reasonably should be (in spite of Einstein's view)?

From a circular radiating source, for example a star, the longitudinal "side waves" should be more or less circular, separating radii of maxima and minima.
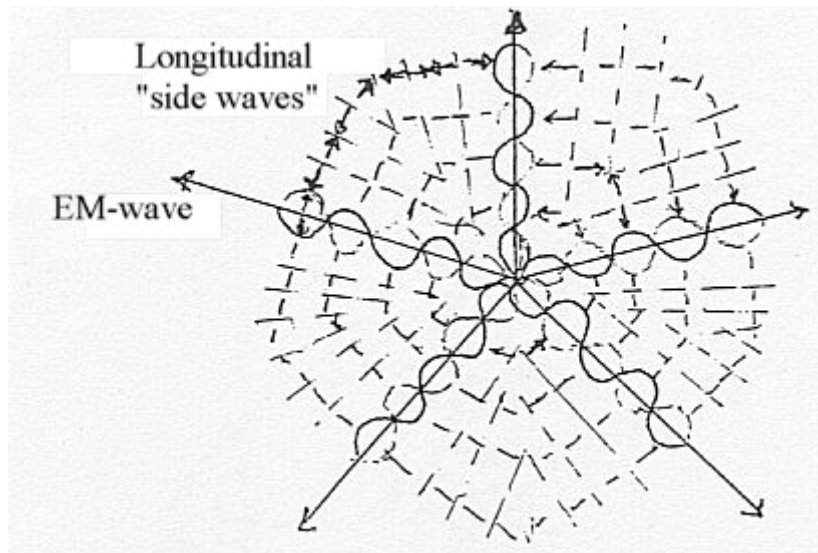
Cf. leaf nerves and leaf cell domains.

Such side waves could also be compared with the interference pattern, like longitudinal waves, which an EM-wave give rise to after the passage of slits in a screen:
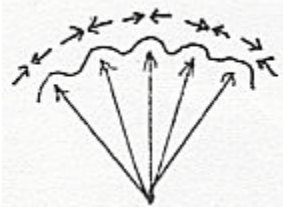
What else could actually explain such interference patterns in radially spread light beams, interference seen as the typical character of the "wave" property ?

According to general principles too in this dimension model it should be possible to find more high dimensional waves as components in wave types of other d-degrees, such as L-waves in T-waves.) If we could presume such "side waves", they should in some way be connected with "gravitation waves", at a guess ? Or at least constitute a component in gravitation?

Nearest the light source or center should the vectors in the "negative" energy of empty space not have room enough or should "overlap" each other. What happens there? Some type of bonds through overlapping? Definitions of new centers (as gravitons)? Extinction - in the nearest field ?
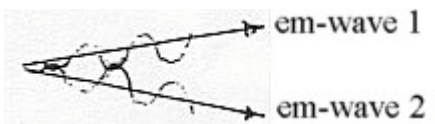
(If the linear propagation of an EM-wave demands room sidewise for at least 1 longitudinal wavelength in empty space, and the empty space field was restored through each step of propagation of the EM-wave, one could imagine that some type of "overlapping" or bond in the extreme near field hampered a restoration - and with that also the further linear propagation of the EM-wave. This could in that case possibly be a way to interpret celestial bodies which are so dense, with gravitation so strong, that not even light can escape ("black holes") ?)

Phase waves:

Some sketched notes with question marks
Source of information from the 1970th forgotten.

Phase waves originate from a phase displacement between 2 other waves (as electromagnetic waves or waves as variations in current, charge or voltage…).They can be described as a result of polarizations in angles, when waves are viewed as projected) from vector rotation in a unity circle.

One example: When a light wave is polarized, a phase displacement arises between the right and left polarized light wave, which gives a phase wave as an "illusory rotation", "Faradays rotation". This is still another polarization in a light wave, which gives the phase wave.

- In a single light wave we have the phase displacement of 90° between the electric and the magnetic vector fields. If this description is correct (**preceding page**) , we could ask if not ordinary light waves could be seen as phase waves too, on a deeper level?
- The phase waves here, as expressions for relations between two other - but usually "similar" - waves, represent a relation and a connection between these.
- It seems as something like a parallel to the two polarizations between 1) opposite charges as proton-electron (cf. M-E) and 2) as pairings between electrons (and protons?) of opposite spins?
   The "illusory rotation" in a polarized light wave is also called its spin.
   We have also the fact that α-particles have the resulting spin 0, which should imply that the 2 protons - and neutrons - should have opposite spins - as a principle for pairing. (How about H_2-molecules?)

Other bits of information:

- A phase wave has also been described as motion of a point, i.e. of a 0-dimensional entity.
- Phase waves can have velocities both less and higher than c, the velocity of light.
- They approaches zero (0) at absorption, approaches infinity (00) at "cut off".
   It sounds as if we could presume some kind of a connection of phase waves with the last step 1→ 0/00 in our model here, a step towards "motion as such" - *and* a relative history, that is: a history of relations - as all other potential lines in Universe... Step 1 in this model , polarized into poles 1a —— 1b, identified as
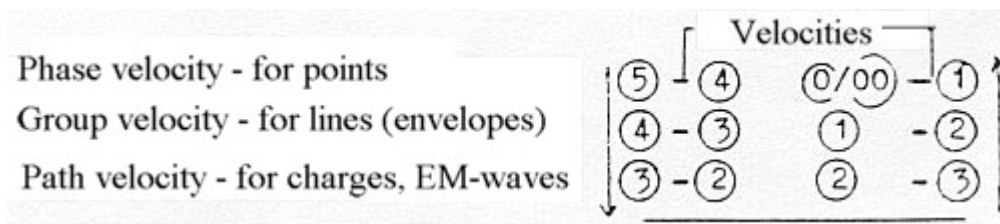   1a: converging "movements towards each other", defining a zero, a secondary 0-pole.
   1b: diverging"movements from each other", defining an anticenter, a secondary 00-pole.

A 4-dimensional, radial vector field between first center and anticenter (0 —— 00) contains all thinkable phase displacement, as angle steps between vectors. All these angle steps could be thought of as potential phase waves - realized through rotation of the vector fields and following steps in the chain to the last d-degree of Motion.
   "Cut off" is possibly equivalent with a break of the coupling or relation between the two carrying waves The waves following separate courses defines an anticenter The velocity of the phase wave goes towards 00 (~ anticenter)?

Concerning velocities, could we eventually (?) see a scheme like this:

		Velocities	
Phase velocity - for points	⑤ - ④	⓪/∞ - ①
Group velocity - for lines (envelopes)	④ - ③	① - ②
Path velocity - for charges, EM-waves	③ - ②	② - ③

[Group velocity seems to concern "wave packages", and particles with mass are sometimes viewed and analyzed as such. In this model Mass is presumed to be identified in d-degree 3 and charge as a property of particles in d-degree 2.]

   According to some information group velocity should be the derivative of phase velocity. If this is correct, it sounds a bit back to front, even if it fits in the scheme above. The light velocity should then be the last derivative, the constant c?

More bits of information:
- Phase waves can have negative velocities. Perhaps equivalent to say that their direction is inwards, towards higher d-degrees or underlying levels, according to the views in this model.
- Their equations can give imaginary roots. These roots should then be possible to discover in other revelation forms?
- Phase waves can be absorbed. Or reflected towards a too high density.

"Negative" direction, interpreted as inward direction in this model (cf. other pages) and coupled with imaginary factors indicates that phase waves also are included in matter. Externally 3-dimensional bodies created out of 4-dimensional space-time fields. Compare how a 4th dimension in 3-dimensional bodies have been illustrated as built-in "holes" of different forms.
   In matter, if analyzed as sewed together by "inverted" fields, "curled lines, stratified shells" etc., with multidimensional motions, there ought to be a crawling with phase waves!
   Matter itself could eventually be interpreted as "phase waves", a network of relations between polarized (and "inverted") 4-dimensional field lines, according to the postulate that level of analysis is optional.

Between the so called "field lines" in the **magnetic field of earth** for instance there could exist phase waves in their mutual relations ? These waves could eventually be revealed in the incorporation of cosmic particles:
   With the dimension model follows the aspect or postulate about a **gradually increasing substantiation,** from dimensions to fields to matter etc., through counterdirection from other dimension chains. Therewith also growing centers: from points to elementary particles to atom nuclei…
   Between the so called "field lines" in the **magnetic field of earth** for instance and variations in these, there could exist phase waves in their mutual relations ? These waves could eventually be revealed in the incorporation of cosmic particles.
   Hence, **captured elementary particles and nucleons in the magnetic field, spiraling around the field lines**, should be possible to interpret as "the motion by points" in phase waves - on a superposed level.

Inside bodies, within biology and in the nervous system, there should exist a lot of phase waves and phase displacements, absorption or "cut offs", responsible for biochemical reactions, with molecules perhaps as the "points" . Hunger for example

*could be such an expression for growing "phase displacement".*
  According to new information this seems also to be a common view in biochemistry.

Energy:
Phase waves don´t carry any energy, according to fundamental physics. That´s why they can have velocities higher than the light velocity, without contradicting the law - or Einstein's postulate - that c is the maximal velocity in nature - implicit: for transition of energy or "information" .

This statement that phase waves don´t carry energy could as a suggestion be connected with the interpretation of phase waves as motion in d-degree 0/00.
  The main axis in a dimension chain, the axis of the quantum jumps has in this model been assumed to represent an "E0"-axis or E0-line. Energy 0 (Zero)
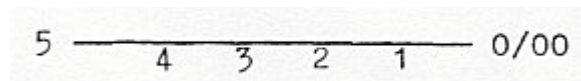
(The energy of EM-waves for example defined as proportional to number of passages of this E0-line. (per time interval = frequency. Or by distance to this E0-line (potential energy or amplitude.)
  The motion of the point, characterizing a phase wave, could in that case be thought of as occurring along this main axis.

(Another, contradictory, formulation of this lack of energy:
If the phase wave is described as motion by a point on the circumference of a unity circle, in opposition to waves generated by vector rotations in this circle, it implies that the point is moving along the anticenter of the circle, never has contact with the vector center in the middle. The phase wave spiraling around the E0-line never crosses it.)

The aspect of information:
It is said, a bit vaguely, that phase waves don´t mediate any information, as not conveying any energy.
  Information is usually quantified (as in connection with data) in "bits" or number of polarizations, options at ramifications.
  Hence, we could believe that a phase wave as expression for 1 polarization, i.e.,phase displacement between 2 energy-carrying waves, should at least give 1 bit of information - about just this phase displacement ? *

Information out of polarization as ramifications means information about couplings between different units or poles. A phase wave is such a coupling between 2 waves, isn´t it? Especially should the relations between different phase waves be able to mediate much information?

Thoughts as phase waves or relations between these?
The thought reaches the furthest limit of Universe on less than a second, while the light needs billions of years. Only a phase wave should manage that, shouldn´t it !?

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* This view seems today (and perhaps since long?) accepted: phase wave modulation is used for transition of information besides frequency and amplitude modulation.

Motions

1) First general aspects:

- In mainstream physics with its "4-dimensional space-time" motion as such seems to be hidden in the concepts of Time - or Velocity - or "Interaction", without any place in its own right. (Why all these motions?) Yet, motions are perhaps the main object for the physicists' studies and their equations.

- Motion as concept could be expressed as **the communication between +E= mc^2 and - E= mc^2** and between "matter" and "antimatter in all different d-degrees of complementarity.
   In what occurs motions? A relatively empty space as "anti-matter" is a condition for external motions of material bodies. (Even physicists as Mach who didn't like the concept of a Space with an own reality, had flats to move around in.)

- Motions is also to perceive as **the transformation of the 5th d-degree, the Entirety**, into all lower dimension degrees, all motions of Universe as the expression for the Entirety as first binding force, a perpetual translation...
   Doesn't "anti-matter" in some sense exist just in all cases of *events*!

- Time has been called "an aspect on the relative motions of bodies" Distance as concept could of course likewise be called an aspect on the relative positions of bodies, and Motions an **aspect on the relative changes in distances**.

- Hence, Motion becomes **the derivative of Distances**,

- Motion has been identified as **a relative history** since Galilei.
Yes, there is obviously a need for something external to relate the motion to for the possibility to observe it. But at the same time Einstein who stressed this relativity, still regarded - or used - the velocity of light as "absolute" in some way. How can velocity be "absolute" but motion not ?

- Motion could also be described **as a "transformation of Distance into Time"**: 30 miles to our goal, time zero; 0 miles to our goal when we arrive, time +5 hours.
   But behind our backs, the Distance reappears again!
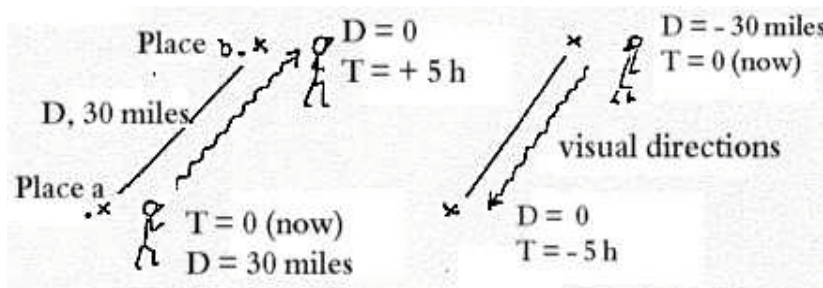
- **Distances is double directed, Time one-way directed**. According to main principles in this model, this indicates that Time is a result of more polarizations, a polarization of Distances.
   Hence, it should not be quite logical to see Distance and Time as complementary poles of d-degree 1 as in the original texts but rather perhaps the "quanta" of Distances in motions:

Motion as polarization of lines:

- In this model Motion is identified as polarization of a line, that is of an 1-dimensional entity: - into the poles 1a (movements towards each other, and 1b (movements from each other):
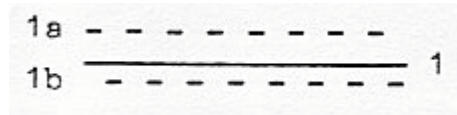
All inherent motions implies 2 poles and should be possible to describe as an pendulating between two poles of convergence and divergence in some meaning. As striding. (And swimming, crawling, flying.) Even the chemical currents in movement of an amoeba (perhaps as changes in density). A half step doesn't lead anywhere. In walking the pendulating of the gravitational center of the body means a repeated crossing over the straight gravitational line.
   Is this aspect true also for rotating motions, the rotation of a planet around its own axis for instance? We shall return to the question further down.

(Compare the figure perhaps with the polarization of a light wave in left-right polarized photons, (some comments later about fundamental experiments in **quantum physics**) and of light waves into electron/positron pairs.)

- **Distance** - or 1-dimensional potentials, is according to this model the nearest **binding force in motions**,:that is between motions from and to.
   In human life this is mostly obvious, with goals for human walk and ways for transportation. But what is the goal for an emitted light wave or the like?
   In the motion of waves we have to look at the small displacements as quanta of distances, passing one change as energy to next one in linear propagation, - or as the phase displacement between E- and M components in electromagnetic waves, the common center displacements along the propagation way, creating the longer distances.
   Compare human beings who are pregnant with their own further propagation, giving birth to next generation ("in empty space"), a transportation of "energy packages", not of themselves, into the future.

Motion as a force in itself

or only a result of forces? In classical physics motions or changes in motions were seen as the result of forces. But of course motions motions must be seen as forces in themselves too, as in this model.
   Each d-degree step towards lower d-degree in this model means 1 d-degree "branched off", translated into motions. And with d-degrees of structure seen as binding/polarizing forces in relation to one another, motions become results of forces. But as the last step in a dimension chain they should also be interpreted as the ultimate polarizing forces in underlying levels and binding forces in superposed levels.
   More elementary: a motion as a stroke in a battle is of course an acting force on the opponent (or call it "communication" !), but at the same time an expression for an inherent force (or "will") in the acting fighter.
   When physicist of today talk about forces as "interactions", they obviously see motions as forces, particles throwing bosons or other quanta on each other, or as simple push and pull activities.

Entropy

- and the opposite: With the dimension model here we have assumed a primary one-way direction from higher to lower d-degrees and more and more motion moments. This is in accordance with the theses in physics about entropy, about a development towards ever more of "disordered" thermal movements, lower energy forms. But the validity of this law in the whole universe, not only in partial systems, has been questioned. Life, for example, is apparently a contradiction to it.

There is also this development towards superposed levels and life:motions translated to bonds, to structure, in the opposite direction of entropy.

In this dimension model we also have two possibilities,:to see it "linearly" (5→4→3→2→1→0/00) - or to look at it "perpendicular", (5→4→3→ | ←2←1←0/00) as developed from 5 and 0/00 inwards towards the middle step 3-2. This would mean that lower degrees and motions are incorporated and bound in structures of higher d-degrees.

According to the model we have also 4-dimensional fields in Universe underlying matter, which we can assume continue with structuring processes in cosmos, shaping stars and planets - and probably life.

We could presume that the first steps 5→4→3→ in the development of Universe from Big Bang have the nature of "exothermic" reactions, to borrow a concept from chemistry (and inflationary?).

2) Structure of motions:

As said in the Presentation of the model here we assume that each step in a dimension chain, implying a branching off of 1 d-degree,is translated into eternal movements. We get a dimension chain of motions in the opposite direction of the chain of structures or potentials.

$5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 0/00$ Structure, d-degree:
$0/00 \leftarrow 1 \leftarrow 2 \leftarrow 3 \leftarrow 4 \leftarrow 5$ degree of Motions

1. Path movement — describes a line

2. Rotation — describes a surface

3. Spiral forms of movements or
   other 3-dimensional movement — describes a volume

4. Expansion / contraction — describes a 3-dimensional room,
   volume + directions inwards / outwards

5. Pole exchange (0/00) — describes center / anticenter
   in one moment.

Hence,
- we should be able to identify an 1-dimensional path (or "translation") movement in 4-dimensional, radial vector fields, and attribute

- rotation to material bodies as 3-dimensional structures,

- spiraling or translations along 3 coordinate axes to charges or waves when analyzed as 2-dimensional structures,

- expansion / contraction to 1-dimensional, linear entities as distances (an obvious fact in cosmos or a formalistic madness ?, see comments further down),

- pole exchanges (0/00) to 0-dimensional "units" or entities.

Comments and critical remarks:

One first general, critical comment is that there seems to be more motions than corresponding to "lost" d-degrees. A planet as the earth for instance seems to have both a rotation around its own axis and a path way movement around the sun - and its axis also rotates slowly over thousands of years.
   It seems as if we have to count on an accumulative scheme, corresponding to different levels of d-degrees involved for the "3-dimensional" bodies ?

*1-dimensional motions in **4**th d-degree*:
What kind of 1-dimensional motion could we relate to 4-dimensional vector fields (or a 4-dimensional "room")? The essence of the propagation concept, the Big Bang as creating distances, distances quantified in what we later call longitudinal waves as the assumed gravitational waves,$\rightarrow 0 \leftarrow 00 \rightarrow 0 \leftarrow 00 \rightarrow 0 \leftarrow 00 \rightarrow 0 \leftarrow$, also a quantifying of Density?. In the more materialized world the vibration of individual quanta, or halved such vibration implying translation, path movements, $0 \rightarrow 00$?
   A convincing identification of such a motion in 4-dimensional fields is of course essential for this 5-dimensional model. The newly recognized expansion of Universe (of "Vacant Space") is presumably the first, most obvious expression for this motion. It has been said in this connection that celestial bodies are not "flying away" from us, they are "carried away" by this expansion of the Space.
   The opposite pole - the inward direction, from anticenter 00 with in infinite multitude of starting points for the vectors, can be understood as an answer to "Big Bang".
   The two forces together - or 4-dimensional fields, would then give the result of curved, bound orbitals as path lines for celestial bodies as the earth or the sun: About d-degree step 4-3: more **here**.)
    Hence, we should be able to assign all such path movements (or translations) to a 4-dimensional field level. (So too in the propagation of electromagnetic waves, quantified 0-00-0-00 etc. through the quantified bonds in the atoms.)
   Still, there remains a question mark: in the seemingly static gravitational field around the earth or the sun for example, or in a seemingly static electric potential between a plus and a minus pole, do we have some "external motion moment", perhaps not identified as such ?
   The magnetic field of the earth has been slowly reversed over time. Perihelium of the planet orbitals is very slowly rotating, which Einstein explained for Mercury in some terms of gravitation. And perhaps, in microcosm, the **weak interaction force** (Fw), changing circumstances in atomic fields, could include expressions for such motion?

2-dimensional motions in 3rd d-degree:
Rotation, the 2-dimensional motion, is rather curious: Why all this rotation of big bodies in cosmos - planets and stars and galaxies - and of particles in microcosm ? Here meaning around their own axes. Shall it really be necessary?
   Which terms should we use to be able to call it an explanation for it ?

One explanation in line with this model here is just that rotation as 2-dimensional is **the necessary translation of energy** when 2 d-degrees are lost in the structure (and matter as 3-dimensional is an effective way to pack energy).

Another more intricate view is an explanation in terms of **coordinate axes**: With one axis the nearest way between the outer poles is the diameter. With 2 orthogonal axes the nearest bond between outer poles seems to be π, the arc of a circle.

We should perhaps count on a polarization in "an elliptic and a hyperbolic geometry" with the angle step from 180° to 90° in d-degree 4→3 (between masses and vacant space) ?

In this model there is also the principle of center displacement towards superposed levels, where the anticenter on one level through pole exchange in the last step becomes the center on next level etc. Then the surface of a closed unit could be regarded as center in relation to superposed levels. (Cf. an external push on a ball toward its anticenter, giving in a rotation.)

3-dimensional motions in 2nd d-degree:
It will of course be more difficult in the 3rd step to draw the border between structure and motions of 2-dimensional phenomena.

One example is electromagnetic waves, where we have simultaneous motions along 3 coordinate axes: the variations in the electric and the magnetic component as orthogonal - and the propagation. The wave could be described as a 2-dimensional field in translation between an electric and a magnetic component during propagation.

A superposition of rotation and translation gives a spiral as motion through 3 dimensions. One example is electric charges in spiral movements around the magnetic field lines of the earth.

Concerning atoms: With a change from a particle model of atoms to a shell model, there ought to follow one more d-degree in motions: does it ? Probably it should be seen in connection with the Schrödinger wave functions for electron shells and the impossibility to decide positions for electrons as particles at the same time. This means the impossibility to make an analysis of the structure in both d-degree 3 and 2 simultaneously; the transition between d-degrees as quantum jumps appearing as uncertainties.

On superposed levels where the 2nd d-degree has been substantiated to material layers, shells (or liquids relative to the chemical phase of solid bodies), 3-dimensional motions can be found for instance as spiraling streams in liquids, discovered in research of turbulence; probably too in currents in the sea and in magma streams in the earth or plasma streams in the sun.

Cell membranes with their invaginations and evaginations etc. are other, obvious examples as well as the behavior of membranes during the embryonic development. (See later parts of this work.)

4-dimensional motions in **1st** *d-degree:*
- a "formalistic madness"?
1-dimensional, linear structures are of course very difficult to point out as just structures on an elementary physical level. They should be attributed motions in 4 dimensions, as expansion / contraction, motions in 3 directions, added a motion double-directed outwards / inwards relative to a center. (Also spiral motions, rotation plus propagation plus growing circumferences outwards, shrinking inwards, can illustrate such a 4-dimensional motion.)

This means among other things that it should be the distances as 1-dimensional that grow and shrink at the expansion (and eventual contraction of Universe), not the space or vector fields as 4-dimensional in this model. A sophisticated difference !

Where can we find such motions?

We could imagine such a combination of structure - motions as a photographic"negative" to the 4-dimensional vector fields with assumed motion in 1 dimension.

   Perhaps gravitational collapses and nova explosions can be analyzed in these terms. If the so called "field lines" in vector fields are seen as a reality, not only a help construction, we we could imagine them contracting inwards, - also as factors in the concept of "Mass" (see page **Mass - Matter**...) - expanding outwards - also as factors in creation of Space.

   Magnetic processes in the sun and its protuberances could perhaps be other examples.

With the suggested interpretation of the weak interaction force (see **here**) and weak disintegration, it could be possible to connect it with this "1-dimensional structure" and perhaps see its "carrier" in terms of 4-dimensional motions curved into quantified "vector bosons"?

On more substantiated levels we have the pumping of the heart muscle e.g.. The motion is a result of actinium and myosin threads as materialized 1-dimensional "lines" in the "shell" of the muscle, which "expand" / "contract" in relation to one another:
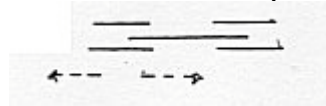
The motion of the single threads seems mostly linear, but myosin is more accurate a double spiral of protein chains with hooks which attach to actinium and undergo angel changes, so the relative motion of the protein "lines" could possibly fulfill the demand of being 4-dimensional, not only the heart as a whole.

   (More about such motions in "**Biology**")

   The DNA-chains have got several other motions on: spiraling and contracting or stretching, turning inside out when copying etc.

Still there are difficulties in our imagination to isolate 1-dimensional structures, and attribute motions in 4 dimensions to them. What about single dimensions as 1-dimensional, used as a bit metaphysical "building stones" in this model? - or some kinds of chemical bonds, perceived as 1-dimensional?

   Here we can add that the **string theory** should include some answers, even if we have postulated in the model here that the same patterns will show up on all superposed levels.

5-dimensional motion in d-degree 0/00:

In the last step in our dimension chain, we have pole 1b as motions from each other, defining a secondary pole 00', and pole 1a as motions towards each other, defining a secondary pole 0'. This implies a pole exchange between outwards and inwards, and together it re-creates a 5-dimensional entity of pure motions: a 5-dimensional motion attributed to 0-dimensional "units".

   Two meeting or converging (crossing) path lines define first a new center, a 0-pole. After passage, when path lines diverge, this 0-pole has been redefined as anticenter, a 00-pole.

   In this pole exchange, representing the least thinkable time, we can see **the germ of motion** and we can see this "area" where it occurs as a new complex "point" or center for development of a new dimension chain.
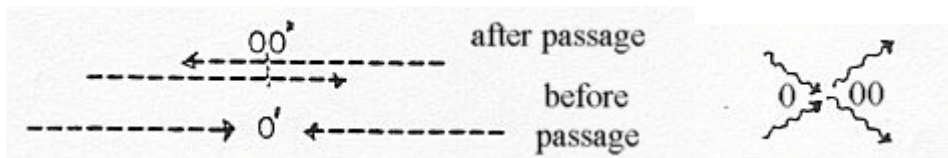
Compare the physicists' detested infinities sometimes appearing in their calculations when they operate with particles as 0-dimensional points? (More about that here.)

The 4 motion arrows in d-degree 0/00 would be possible to interpret as translation of d-degree 4, with the pole exchange momentarily redefining the 5th d-degree..

(Perhaps we also should include the changes and discontinuities as +00/-00 of tangent at 90° in such a view, sine/cosine as
1 / (+/-0) in the coefficient of direction.)

Attraction - Repulsion:
   → ←   ← →

The concepts attraction and repulsion could be used for converging and diverging motions respectively. Observe then that these patterns of motions should be expected as complementary - and only in the 4th degree antiparallel, with the assumed elementary geometries in this model.
   In 3rd d-degree the attraction as motions inwards could be expected taking a circular form, while repulsion motions as outward directed are taking a radial form: an aspect on why planets not fall into the sun or electrons into the atomic nucleus.
   Most orbital path motions (or "Translation") in nature seem to be more or less elliptic. Here we can trace the inward-outward direction of d-degree 4, as a result in d-degree step 4-3. We could connect it with the general view that the poles of lower d-degrees should be interpreted as complex compounds out of the higher d-degree.

   If we go on and accept the hypothesis about angle steps through the dimension chain, the relation between attraction and repulsion in d-degrees 2 - 1 would be more and more parallel (with a difference of only 22,5-11,25° in direction): this could be one way to perceive the p-p-bonds forming atomic nuclei.

Miscellaneous about patterns of motion:

a) **Two examples or illustrations** of dimension degrees of motions:
- An air current from a ventilation outlet: linear motion (1), Whirls at the borders of the stream (2), growing whirls in solid angles (3)…
- The driving system of a car: explosion (4), piston movement (1), the rotating rod (2), the gear drive rotation in 2 planes (3.

b) **The growing complexity of path movements:**
For material celestial bodies, seen from outside, we have an increasing dimension degree of the path movement, for example in the motion of the Moon around Earth, around Sun, around the Galaxy:
- the own linear movement of the body (1),
- this closed to rotation around a secondary center (2),
- the spiraled path, seen as relative to a tertiary center (3),
- spiraling of the spiral path around a forth /quaternary center…(4)…
The dimension development of the movement could be illustrated with a dimension chain seen perpendicular, in the two opposite directions, with "lost" dimensions meeting

"the other way around":
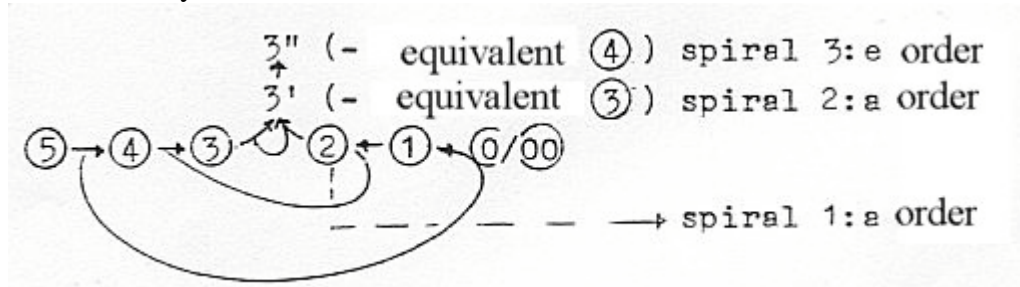
We can find a similar development of motion e.g. in the rolling up of the DNA spiral to chromosomes:

Figure from unknown source with hope of permission
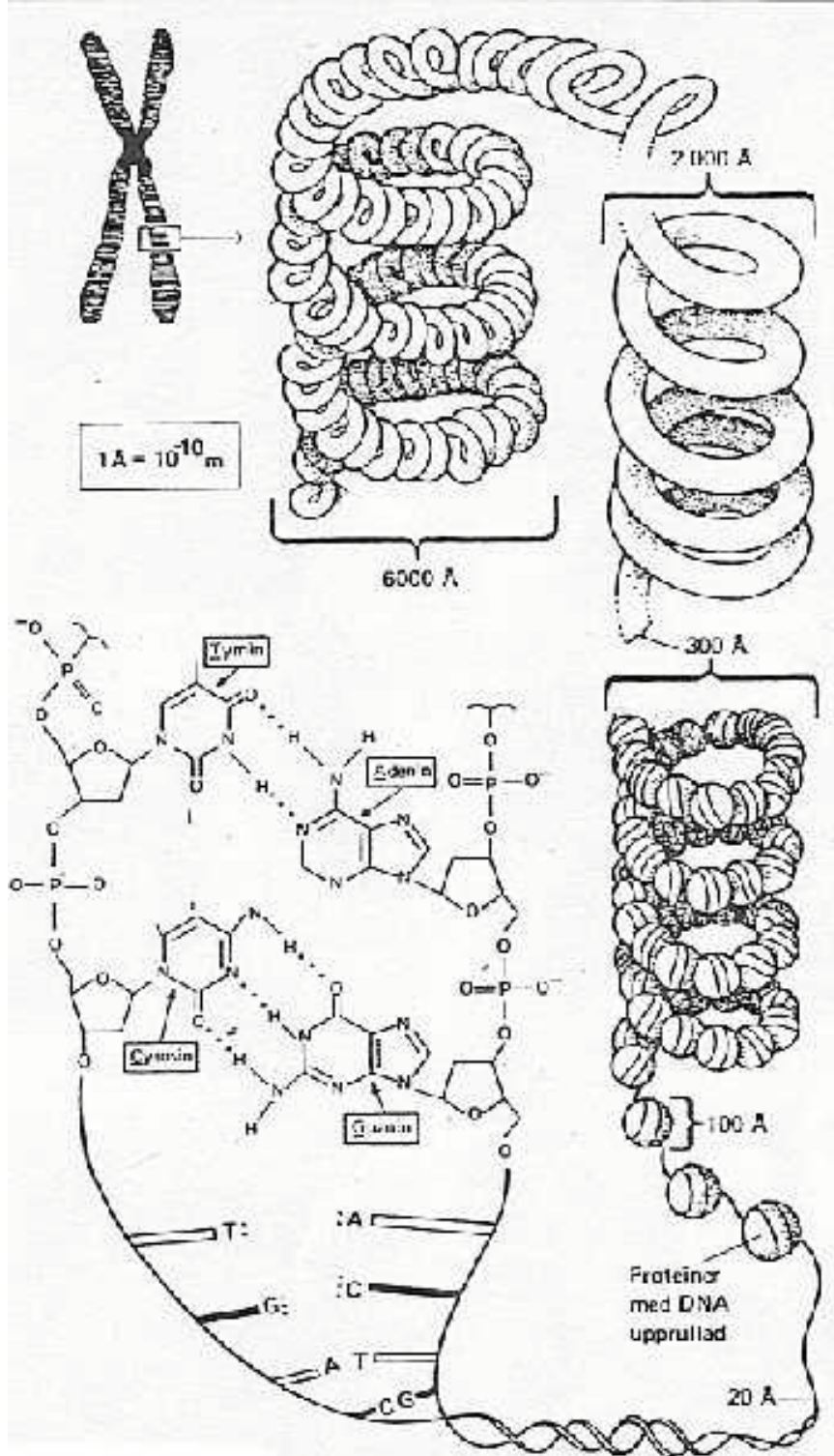
c) **Chemical and cyclic processes**: Generally speaking we should be able to analyze the pattern of motions as a dimension chain, chemical and cyclic processes as well as cosmic motions.

| Counter-direction | Rectifi-cation | or | Vibration | Rotation |
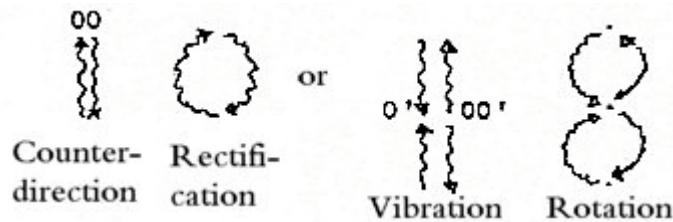
Movements towards / from each other could give a basis for cyclic processes through pole exchanges as change of path and change of direction:

Motion in d-degree 4 as 1-dimensional, linear, translated to 2-dimensional movement in d-degree 3: a combination of the motion moments of both poles.

A rotation movement is then a composition of 2 half-turns. Original 0-pole and 00-pole (anticenter) give the basis for elliptic rotation.

Pole exchange, path change, increasing one-way direction, direction change, polarizing (parting), combination, inversion - all become aspects on or key words for the changeover from linear to rotational movement in the step 4 →3 of the structure chain. As well as "the other way around", via 00, anticenter.

d) **Motions as building workers, motion patterns gradually substantiated:**

An aspect from the end of the dimension chain would also be possible: motions as primary phenomena, gradually substantiated:

On the biological level we have embryonic blood islands as "points" which join to blood "lines" or ways which then form blood vessels, 2-dimensional tubes, which later get partly curved as through counterdirected blood streams, forming a tube heart, a center which then will develop to a 2-3-4-room heart.   And tubule in the cell plasma of nerve fibers could be interpreted as substantiated chemical rotation superposed a chemical path propagation movement?

e) **Energy aspects:**

Does it exist something like pure kinetic energy ? Without a carrying mass? Obviously even massless quanta as the "carriers of forces" like the bosons represent energy. (And neutrinos for instance has been said to be mostly kinetic energy. It's still uncertain if they have any mass.)

A body, once set in motion, will in empty space, without friction, continuously go on with the same velocity and this motion, if following a straight line, doesn't represent any energy according to Newton. No force is needed to uphold it. But are there any straight line motions in Universe for celestial bodies? And if so, at least the first action which sets them in motion represent energy which is carried on with the body, with its "linear momentum", depending on the velocity.

With curved path lines it is another thing, To explain them, a force is demanded according to this classical physics. That is gravitation.

But how if the curved motions of planets and stars are interpreted as the border line between +/- E, between the fields of inwards and outwards acceleration forces, as it appears in d-degree 3: an "E0-line" between complementary forms of energy or forces. Compare Einstein's curved space and bent path lines as the nearest distances in this space in the neighborhood of attracting fields.

In the model here we have identified the inward directed vector field in d-degree 4 with so called gravitation, and assumed that Mass (versus Vacant Space) in d-degree 3

is a result of inward directed or negative acceleration. We have assumed that the fields of vacant space and masses together forms a curved, non Euclidean structure in d-degree 3, according to the hypothesis about angle steps.

Then d-degree 4 as double-directed binding force underlying structures in d-degree 3 would still be regarded as a force. At least half of this force would represent gravitation, even if the space is already curved and the "lost" d-degree is translated to motion: rotating motions along "E0"-lines. It seems difficult to totally replace gravitation with the curved space.

See some comments to
Einstein and about
d-degree step 4-3

Velocity- some notes
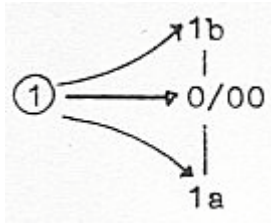
1. Velocity as d-degree steps:

Velocity is, according to hypothetical viewpoints in this model, identified with the dimension degree step $1 \rightarrow 0/00$,
a polarization of a path into the physical quantities or concepts Distance / Time.

Hence, Velocity, will be defined as a translation of one d-degree into motion, the steps (or quantum jumps) between d-degrees as changes of motion.

2. Velocity as a quotient between forces:

Velocity, as a quotient between Distance and Time as the two poles of Motion, becomes a relation between a binding force and a polarizing force, when these primarily are identified with the 0-pole and the 00-pole respectively.

$1/0 = 00$ (polarizing force)

$1 \,—/—> 0/00$

$1/00 = 0$ (binding force)

3. Five quantum steps as a series of derivations ?
 - With respect to what ? To Time or to Distance ?

a) with respect to Time, v = velocity, a = acceleration:

$$5 \longrightarrow 4 \longrightarrow 3 \longrightarrow 2 \longrightarrow 1 \longrightarrow 0/00$$
$$v \longrightarrow a \longrightarrow m/s^3 \longrightarrow m/s^4 \longrightarrow m/s^5$$
$$\text{or} \qquad f \times a \; —f^2 \times a —f^3 \times a$$

Hence, if Mass in d-degree 3 (according to the proposals on other pages) is coupled with negative (inward) acceleration, then Charge, assumed as property in in d-degree 2, (as m/s^3) will not be connected with only negative velocity but with frequency times negative acceleration.

If we take it the other way around :

$$5 \,——\, 4 ——\, 3 ——\, 2 ——\, 1 ——\, 0/00$$
$$m/s^5 \longleftarrow m/s^4 \longleftarrow m/s^3 \longleftarrow a \longleftarrow v$$
or $f^3 \times a — f^2 \times a — f \times a$ ....

This seems more in accordance with the high frequencies of matter as de Broglie waves. But of course it does not agree with the comments on Einstein's equation $E = mc^2$ on the page about **Time**, where we have velocity squared. For getting it to agree, we have to interpret "Mass" as $- f^2 /m = - 1/(s^2 \times m)$.

b) Deriving with respect to Distance, m = meter ? :

$$5 \longrightarrow 4 \longrightarrow 3 \longrightarrow 2 \longrightarrow 1 \longrightarrow 0/00$$
$$m^4/s — m^3/s — m^2/s — m/s = v$$

or in the other direction, which seems to be a very silly result:

$$5 \longrightarrow 4 \longrightarrow 3 \longrightarrow 2 \longrightarrow 1 \longrightarrow 0/00$$
$$m/s \quad 1/s \quad 1/s \times m^{-1} \quad 1/s \times m^{-2} \quad 1/s \times m^{-3}$$

We leave the question about derivations here to the professional physicists and mathematicians.

In Einstein's general relativity theory there is a formula about tensors (as secondary vectors) which include a constant

$$k = - [8 \, \pi x \, G)) \, / \, c^4$$

Reading this in a simpleminded way, we have

1). a negative sign which we can attribute to negative values for c, the velocity of light,
2) 8 πwhich indicates 4 turns, making a complicated kind of circular structure,
3) velocity c squared 2 times as denominator, inverted, "underground".

Perhaps we should derive:
$- 1/c^4 \longleftarrow -1/c^3 \longleftarrow -1/c^2 \longleftarrow 1/-c$,
to get some similarity with the views on **Mass** and **Charge** in the model here, Mass connected with negative (and inverted?) acceleration and Charge connected with negative (and inverted ?) velocity.

4. Positive and negative velocity:

The relation between positive and negative velocity is reasonably coupled with the complementary energy forms +/-E. and directions inwards / outwards.

If $\sqrt{-1}$ for Time as one-way directed gives the denominator of velocity, D/T, the velocity gets complex. Equations with complex numbers give both real and imaginary roots. The imaginary roots should be found inwards the dimension chain, inwards in the matter.

A general assumption here is that when an a formula gives imaginary roots, it should indicate that the analysis ought to be moved to another level, underlying (or eventually superposed?), or to another dimensional degree, in order to get real values for the imaginary quantities or qualities.

(Number 10, the "E-number" as sum of poles in d-degree 4, with index as time squared, -1, gives the number 0,1. Multiplied with dimension chains as products and squared in 2 steps gives:

$0, 1 \times 5x4x3x2x1 \rightarrow x^2 \rightarrow x5x4x3x2x1 \rightarrow x^2$,
$= [(10^{-1} \times 5!)^2 \times 5!]^2 =$

$= 2,985984 \times 10^8 =$ ca. light velocity in meter /seconds ($2,997925 \times 10^8$, year 1973).

Time - some annotations

1. Time is called "an aspect on the relative motions of bodies".

Two parallel motions with the same velocity cannot define any time, that is show any change, but 2 antiparallel motions can. The two motions must be convergent or divergent in the mutual relation. That presumes - or defines - a 0-pole, a center - and a 00-pole, an anticenter.

It implies too that Time is described through increasing / decreasing distances. As well as distances are defined through relations between times. From one viewpoint in the same way as the complementary poles 1a — 1b are defining one another, in "interaction".

Defining time - and distances - from relative movements, doesn´t imply that they are more "relative" than other physical quantities. Also surfaces and matter are "relative" concepts. It isn´t likely that a neutrino or a gravitation field experiences a floor or an electron shell as a surface. And each concept must be defined through a relation between two (or more) other concepts as "poles". Definitions follows in this the dimension model, arise as "outer connection" à la "potentials" by a polarizing step.

2. Time out of converging motions?

Distance as quality (in opposition to "closeness") is at the same time defined out of diverging movements. What could justify that we - in some respect - see Time as defined by the 1a-pole, out of converging motions?

Time and Distance seems to have a certain a parallel in the M/E-components of an electromagnetic wave, they seem to be complementary in a similar way. Electric charges in motion give rise to magnetic fields (as distance changes give time). And when the electric component in the wave decreases, the magnetic component increases, and inversely: it looks like a transformation between them. The relation can be compared with the both halves of a hour-glass
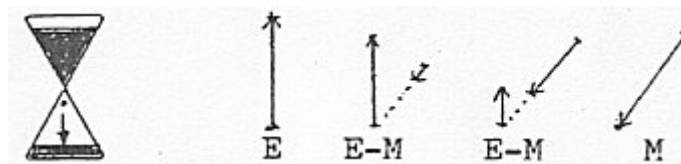
In the walking of a human being, it is the divergence of the legs that measures out distance. Convergence is represented by displacements of the center of gravity, and this center is representing an inner 0-pole. Convergence towards a pole exchange 0/00.

Time as originating from crossings of the "E0-line", between paced distances, polarized to anticenters around this "0-line".
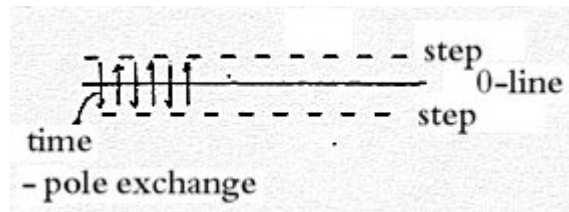
Another aspect on the polarity Distance / Time as counterdirected divergent - convergent could perhaps be illuminated by the factors *kinetic energy* versus *potential energy* in a vibration. "Movements from" in direction outwards leads to outside positions, distance as relation between positions, expressions of potential energy; while movements towards the middle line, equal to kinetic energy or motion, express Time.

3. Space-time and time as "surface":
If we want to describe the world as "space-time" and interpret space as 3-dimensional, time should be 2-dimensional in a 5-dimensional model!

In expressions for energy we have the time factor squared and inverted.

$$E = mc^2 = \frac{Mass \times Distance^2}{Time^2} \qquad \text{(Einstein)}$$

$$E_k = \frac{m \times v^2}{2} \qquad E_k = \text{kinetic energy proportional to the velocity squared}$$

In a simpleminded reading: Time squared to a surface, in the underground of Masses in a 5-dimensional space.

(We have Time squared too in the relation between orbital times of the planets and the cube of their distance to the sun:

A^3 / T^2 = a constant. And space 3-dimensional.

The 5th dimension degree divided to a quotient!)

In the ordinary Cartesian coordinate system Time is introduced as a 4th coordinate axis which usually is designated as $\sqrt{-1}$ (i), which hints a quadratic time = -1.
   Remember; Einstein's equations had also the solution $E = -mc^2$, which Dirac pointed out and Dirac's hole theory became a consequence.
   Hence we could imagine Time as a negative "surface" - in direction inwards, built-in into matter.
   And the surfaces could have "negative curvature" (where some surfaces are growing faster than proportional to the radius squared).
   Compare negative curvature inwards (a principle in living structures), as invaginations and multi-layer structures (see **Biology).** See also "Einstein - some comments" **here**.

4. Time poles 0 and 00:

The "moment" is a 0-pole of Time, the eternity its 00-pole. (But if we want to count from the starting point of Universe, from "Big Bang", we have another 0-pole there, and the moment will be a secondary one, a displaced center, or just a current origin.)

In the dimension model here "eternity" will be that anticenter which is created of diverging motions "from each other". And the moment, "the Now", will be defined by motions "towards each other".

Motions "from each other" describes an interval, draws out an interval. Motions "towards each other" define a borderline or a meeting point.

Eternity as interval and as continuum. The moment as a limit and as quantified.

The pole-exchange 0/00 from moment to eternity is a discontinuity (a kind of quantum jump). With 0/00 equivalent to 5´, the 5th dimension degree will also be a "turnstile of time".

In relation to a point, a 0-pole, everything else is anticenter, representing the 00-pole. Eternity as the 00-pole of Time is according to this interpretation built-in everywhere in our world. Near center and furthest out and everywhere in between, in units of lower dimension degrees with relative motions.

Time is coming to a standstill at both its end: in the moment, "time 0", and at the other end increased to infinite, where time has stopped in another sense, is idle like a coordinate axis. Time has expired. Like velocity ceases at the turning points in a vibration.

5. The past and the future as directions of Time:
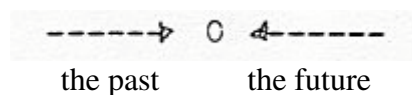
the past   the future

The both directions of time will be complementary, in the same way as matter / vacant space has been described as complementary poles.

(The "Now" or the moment is the Future´s designing of the Past. Future and past could be said to meet on all levels within a human being, in the chemical processes and in the genes, in the inner organs as well as on the surface. Each separate local event is a collision between 2 (or several) things, and collisions create the moment, center for new outward direction. Hence, the Big Bang of Universe could be said to occur everywhere, in each course, locally as well as centrally.)

What other kinds of expressions from the "empty" future do we have as directed inwards towards the present? We could probably see the future in motions with negative kinetic energy?.

Or in the all bonds between poles, between units as halves on some level: the potential counterdirected other half: expressed as "the still not realized", as dream, as goal, as "needs".

We could talk about "want-projections" into the future as a minus-field. Or about resonances between past and future. At bottom then coupled via an underlying, double-directed Time. Analogous to the relation Matter - Vacant space.

A usual expression for Time as something irretrievable one-way directed, is that actions and events are irreversible: they cannot be enacted backwards, as when a movie is turned backwards.

One way to formulate this could be what was said above about pole exchange: that which a moment ago was the present, the 0-pole, has been eternity, a 00-pole, by definition. The gap of eternity has opened behind the back of the present moment. We should need an "eternity of time", as "the other way around" to come back to that past

moment.
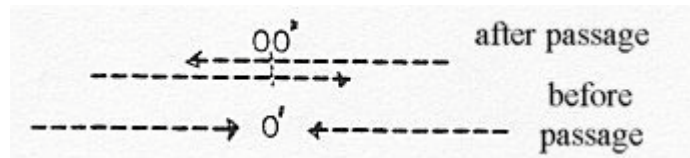
Another way to formulate the same thing is perhaps to say that every motion and every event is just a part of the entirety, and if it should be possible to reverse one event, then also that which preceded the event has to be reversed - and so on to the beginning of Time. Everything previous exerts pressure (as a wall behind). Perhaps a reversing would be possible if one simultaneously could give the whole Universe summertime.

*

Temperature- some notes

1. Temperature is a concept for motion in microcosm, dimensionally dimension degree 0/00 in this model:

When, with rising temperature in an atom lattice, the oscillation amplitude of the particles exceeds about 1/10 of the length of the bond between them, the bond is breaking, so it´s said. This number relation could eventually be thought of as originating from the last step 1→0/00 in the dimension chain, read as numbers.

2. **Factors in kinetic energy of gases dimensionally interpreted:**

Formula:

$$E_w = \frac{m \times v^2}{2} = \frac{3(\to 5 \times 7)}{2} \times c \times T$$

Ew = kinetic energy   constant   temperature

Interpretation of the d-degrees of motion:

Vibration: = motions towards / from each other,
     d-degree step 1 → 1a/1b.
Rotation: = a) around own center c_1 , b) around bond center c_2, (2 planes)
in d-degree step 2 →2a/2b
Translation: = rectilinear motions in 3 coordinates of space
     (path movements), in d-degree step 3 → 3a/3b.

Motions of d-degree 1 - 2 - 3 in the dimension chain of structure:
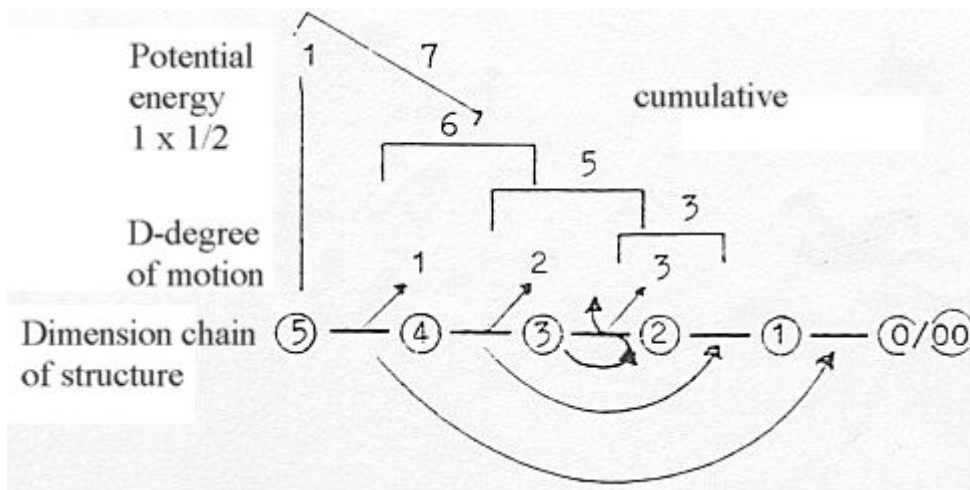
Energy Ew, numbers 7 - 5 - 3:

Monatomic gas: Translation: 3 x ½ k x T = 3/2 x k x T
Two-atomic gas, also: Rotation: + 2 x ½ k x T = 5/2 x k x T
              Vibration: + 2 x ½ k x T = 7/2 x k x T

Hence, vibration and rotation only concern two-atomic gases, while translation concerns monatomic gases too. Two-atomic gases, with bound atoms, could be seen as representing a higher d-degree.

- We can observe the increasing one-way direction of the motion, from vibration to rotation to translation, *from the viewpoint of an individual coordinate axis*, this in accordance with the general aspects on the dimension chain in this model, that multi-directions gradually "crystallize" or are more precisely defined, that is more and more one-way directed, towards lower d-degrees.

- Numbers 7-5-3: note numbers of a dimension chain:
543 + 210 = 753.

A note about "micelles":
Concerning the relation vibration - rotation: compare so called "micelles" in cell biology:

- Vibration gives a picture of micelles in laminar order, an arrangement when density is high.
   Vibration out of d-degree step 5 → 4, density as the physical quantity.

- Rotation gives the picture of micelles in circular order, the arrangement when density is lower.
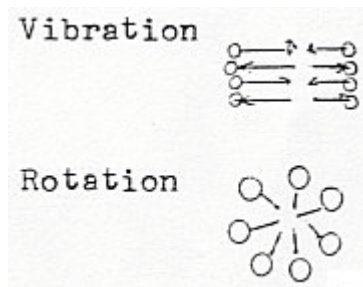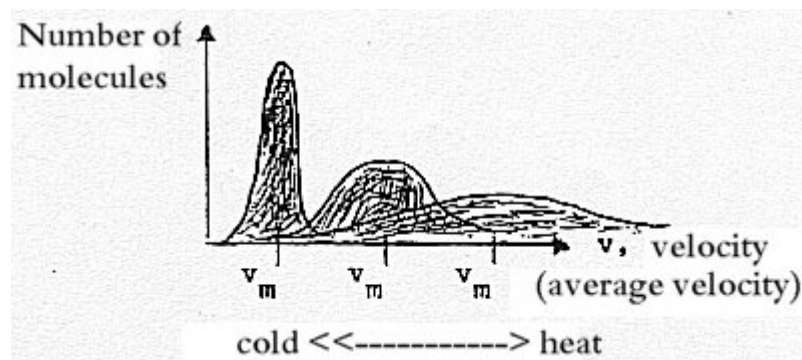

3. Temperature in relation to velocity:

Temperature has also been defined as
   "a measure of the width of the spreading of velocities"
of particles. (The quotation from a context concerning molecules.)
   The higher temperature, the greater spreading of velocities of the molecules. (Valid in volumes of lower density at least. For gases, plasmas?)

(Inversely then the fusion scientists should be able to get higher temperatures in their plasmas with some kind of velocity spreader, shouldn't they? But fusion should rather demand the opposite, the same velocity for all nuclei, gathering them.)

Outer poles of temperature, extrapolated, would give v max - v min in right angles towards one another, the bar of molecules falling together with the coordinate axes in the figure above.
   Hence, cold and heat can be seen as perpendicular quantities dimensionally.

The different aspects on temperature as velocity spreading could perhaps elucidate the relation between the physical quantities Temperature (in dimension degree 0/00) and Density (in d-degree 4 with outer poles = 0 and 00), and an inversion from radial to circular form between vector fields in d-degree step 4→3 to 3-dimensional masses?

Temperature: degree numbers
- read in a dimension chain:

If just the division into degrees of the Celsius scale should have any general validity, which seems absurd, it should depend on the fact that water, H2O, is central in life, and in the dimension chain: that it "happens to be" just the atmospheric pressure on the earth surface that gives level development to life, which here is supposed to develop along a main axis of levels.

Numbers of H2O in a $2x^2$-chain, x = 5-3-3-2-1-0:
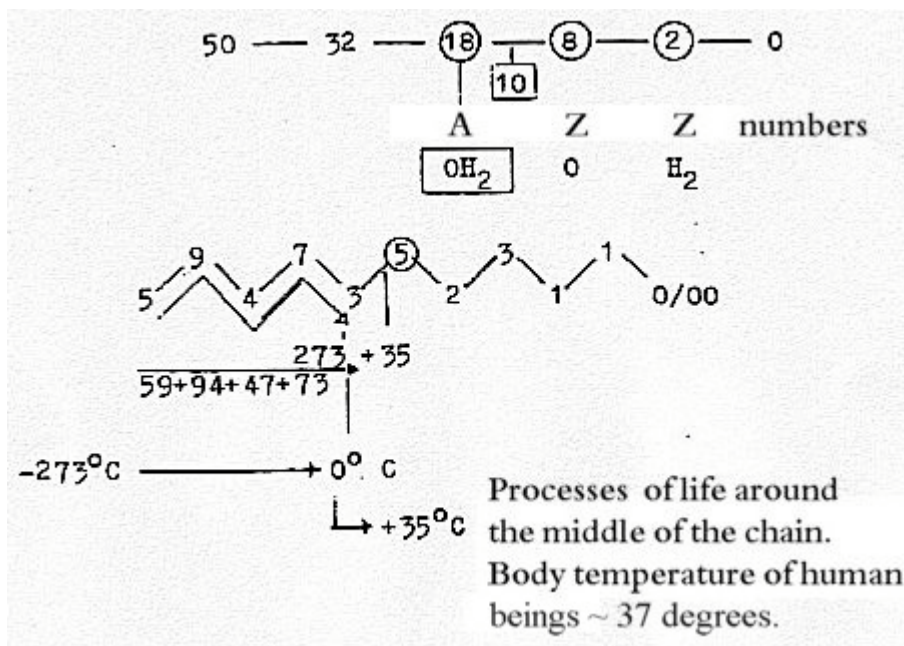
(An amusing thing: reading numbers in opposite direction of that giving number 273, temperature interval in water in solid phase, one gets 37+74+49+95 = 255. 255 Kelvin = 0°. Fahrenheit. But not the freezing point of water.)

According to earlier interpretation temperature motions originate from d-degree steps 5→4, 4→3, 3→(2), as from steps inwards from the other end of the chain, (3)← 2, 2← 1, 1← 0/00. One could then imagine that the development of temperature went on through the 3-2-step "perpendicular" to the chain towards superposed levels.

A couple of number operations:

$$\sqrt{97/13} \times 10^2 = \mathbf{273{,}158}$$

Cf. $\sqrt{975/135}$, x $10^2 = 268{,}74$.
Critical temperature of He = 268°
Boiling point of He = 269°...

Physics
More detailed survey of content in files on physics

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- Forces as concept
- Assumption about angle steps
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- Mathematics, one example

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  - and strong (Fst) and weak (Fw) interaction?
- The reach of the forces
- G-M-p and A-E-e:, relationships
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• Mass as inertia
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- Rotation of celestial bodies
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- From bosons as "superpositions" to fermions
- M-fields and Mass
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21. 0 and 00, Singularities and the problematic infinity
### *- A little stirring in the conceptual soup:*
- General comments on the infinity problem
- Black holes
- Matter - Gravitation - Density
- Singularities of opposite kinds 0 and 00 (Weyl)
- In terms of forces
- About curvature of space-time
- Space and Time "shifting place"?
- Definitions (apart from black holes)
- Transformations
- Inversions

_____

Curious things - a few from start of this site

1) Weak 0: **Spectral lines of the H-atom and the RNA-bases**
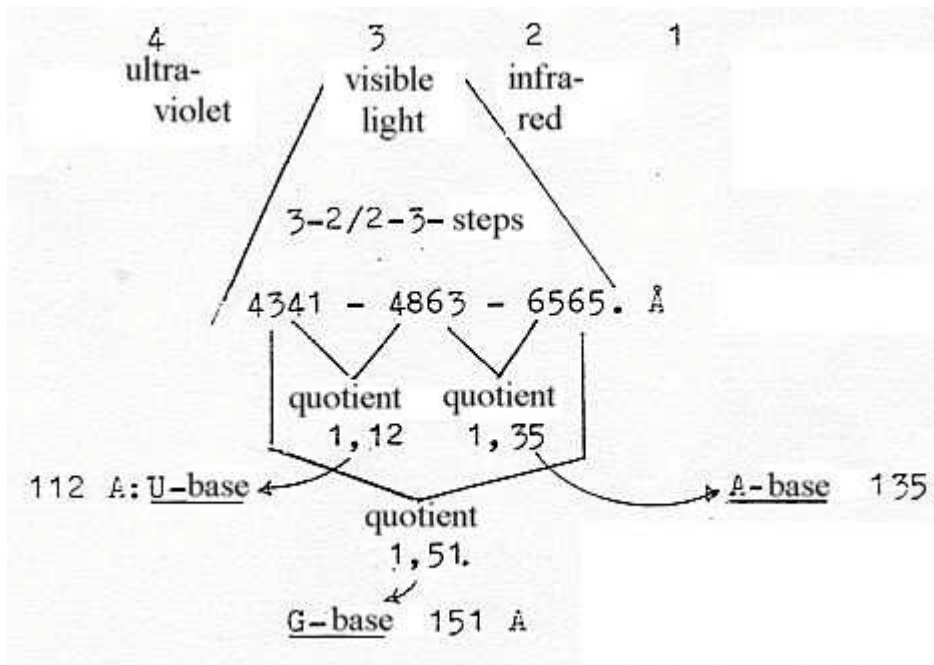
The curious thing of the week:

Spectral lines of the hydrogen atom, quotients between their wave lengths - and the numbers of the RNA-bases U, A, G:

Ordinal numbers
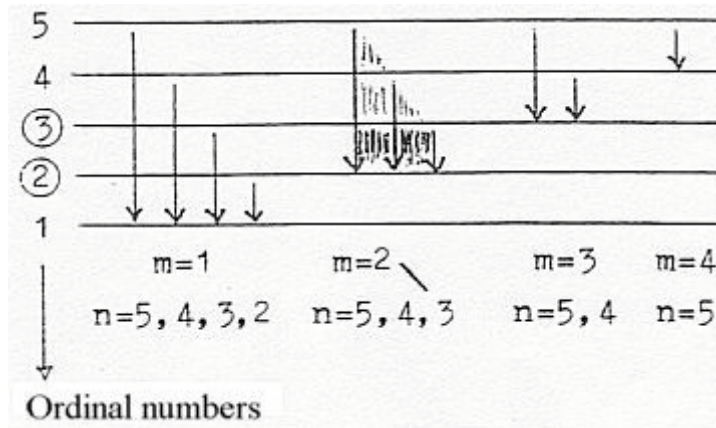
$$\frac{1}{\lambda} = \text{constant} \quad R \left(\frac{1}{m^2} - \frac{1}{n^2} \right)$$

Rydberg's constant: $1,0967758 \times 10^{-7}/m$

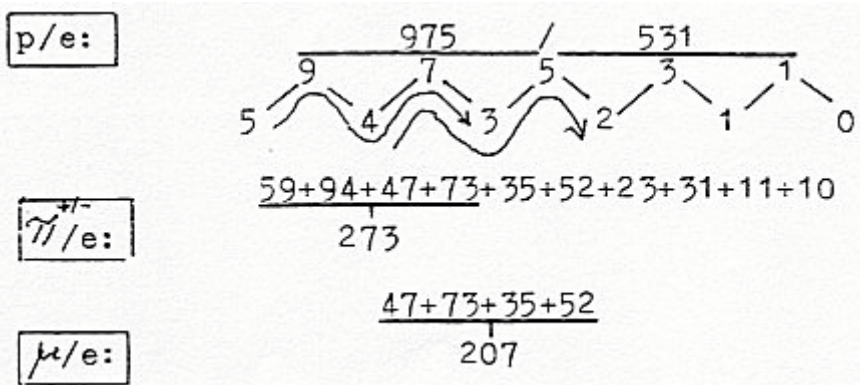See **Electromagnetic waves about the Lyman-Balmer-Paschen-Brackett-series**

2) **Elementary particles: Mass quotients in a dimension chain:**

p/e =1836,12....   975.000 / 531 = 1836,158

p/e - π - μ - numbers - and a K -meson: $x10^3$

K°/e = 975, disintegrates into π-mesons. (Cf. **here**)

3) To 30 Mars 2006: **Uranium 238 A, 92 Z in a dimension chain**

Curious thing of the month   *(see Menu, "Chem. Elements")*

Uranium 238 - heaviest element in Nature
Mass number A = 238
Charge number Z = 92, Neutrons in the atom: N = 146

Triplet numbers out of a 5-dimensional chain

**Compare 975/531 x 10^3 = 1836,156.~ the mass quotient
proton / electron.**

975/531 = 2 x 91,8. x 10^{-2} **2 x 92**
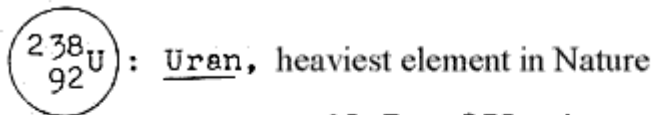= Z+N equal as in alpha-particles.
531/975 = 54,46., x 10^{-2}: **54**. = surplus of N.

4) To 22 May 2006:

Curious thing of the month   *(see Menu, "Chem. Elements")*

$\left(\begin{smallmatrix} 238 \\ 92 \end{smallmatrix} U\right)$: <u>Uran</u>, heaviest element in Nature

$$92 \; Z, \quad 238 \quad A$$

Dimension chain: $5 - 4 - 3 \qquad 2 - 1 - 0$

Mass   Charge

543 $\triangle_a$ x 1/2, x 10^5 = 92,08   ≈ 92. = Z U
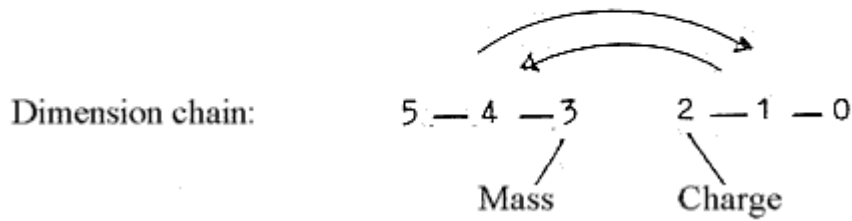
210 $\triangle_a$ x 1/2 x 10^5 = 238,09   ≈ 238. = A U

5) To 2006-08-02:

Curious thing of the month: the natural logarithm e:

$$5 \; - \; 4 \; - \; 3 \; - \; 2 \; - \; 1 \; - \; 0$$

$$5-e = 2,2817 \qquad e = 2,71828\ldots$$

$$\frac{543}{5-e} = \underline{238}. \; (237,98) \; \text{Uran.} = \text{A-number}$$

$$\frac{210}{5-e} = \underline{92}. \; (92,04) \; \text{Uran.} = \text{Z-number}$$

6) To 2006-10-08:

Curious thing of the month:

<u>Distances - scale of Universe, meter:</u>
10^{-15} —————————→ 10^{+26}:   Middle $10^{+5,5}$
Φ atom nucleus   Φ Universe

<u>Time scale, seconds:</u>
10^{-23} —————————→ 10^{+18} Middle $10^{-2,5}$
Time for light   ~ Age of Universe
to pass a proton

Quotient between middle of scales $10^{+5,5} / 10^{-2,5} = 10^8$, m/s,
~ the 10-power of light.

7)To 2006-11-04:

The curious thing from week zero:

Spectral lines of the hydrogen atom H:

The Balmer series: (R = Rydberg's constant)

$$\lambda = R\ \underbrace{(1/2^2 - 1/5^2)}_{a},\ R\ \underbrace{(1/2^2 - 1/4^2)}_{b},\ R\ \underbrace{(1/2^2 - 1/3^2)}_{c}$$

a/b x 100 = 112 = mass number for **base U** in RNA
b/c x 100 = 135 =   -- " --   for **base A** in RNA
a/c x 100 = 151.2 151 = mass   for **base G** in RNA

And what about the C-base? A later complement to G ?
Starting codon in protein synthesis = AUG. UAG = Stop.

See links *Bases*, *EM-waves*, *543*.

8) T0 2007-04-18:

The curious thing for the month:

The String Theory with 7 folded up dimensions:
cf. *Fatty acids* for cell membranes and *file 1/7.*

3/7: $0,\overline{428571}$ $\dfrac{42+85+71}{28+57}$ > **283** = *fatty acid C18*

>3/2   ↕ -chsrged

2/7: $0,\overline{285714}$ $\dfrac{28+57+14}{85+71}$ > **255** = *fatty acid C16*

[Cf. **the quotient proton/electron**:
$(0,428571..)^2 = \underline{1836,\ 7346\ 9387}\ .x\ 10^{-4}$
                                |
                    = 4 x 1836,7346 ... etc.
$42,85^2 = 1836,12\ 25 = $ p/e.]

END