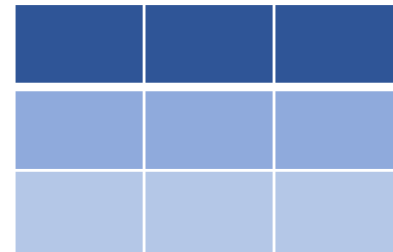


From Triads to Enneads



(3)



(9)

... and connecting with modern physics.

Ian Thompson

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Love-Wisdom-Use

- A common pattern of influx: from Swedenborg
- It can be seen in many places, spiritual & natural:
 - Spirit, mind and nature.
 - Celestial, Spiritual and Spiritual-natural heavens – in spiritual.
 - Loving, thinking, and acting – in mind (mental)
 - Principles, causes and events – in natural physics.
- Each of these has love-wisdom-use within itself
- DLW 79: “Divine is the same in things greatest and least”. Each reacts according to its nature.

So: Triad(3) → Ennead(9)

1. Love	2. Wisdom	3. Use	3
1.1 Love for love itself	2.1 Wisdom about love	3.1 Use from love	9
1.2 Love for wisdom	2.2 Wisdom about wisdom	3.2 Use from wisdom	
1.3 Love for use	2.3 Wisdom about use	3.3 Use as use itself.	
Internal mind (spirit)	External mind (every day)	Natural world	

Degrees and sub-degrees. And sub-sub-degrees too!

All of these sub/degrees are related by influx:

Downward/rightward production
selected according to previous actions.

Influx produces correspondences between structures and functions.

Natural sub-degrees. Should be related to physics!

3.1 Use from love

3.2 Use from wisdom

3.3 Use from use

But no longer spiritual, but in nature (natural)

.

So let us rename more as 'natural':

	Swedenborg
3.1 Action from ends	Gravity
3.2 Action from form	Magnetism
3.3 Ultimate action	Air

Swedenborg LJP 320:

The **three natural atmospheres arising from the sun of the world** are

- 1) the purer ether, which is the universal atmosphere, from which springs all gravity;
- 2) the intermediate ether, which forms a vortex around the planets and surrounds the moon and other satellites, from which springs magnetism; and
- 3) the lowest ether, which is air.

Relation to quantum physics!

So let us rename more as 'natural':

3.1 Action from ends	Making spacetime and its ends
3.2 Action from form	Electromagnetic and quantum fields
3.3 Ultimate action	Physics of objects (quantum & classical)

Let us separate 'making spacetime' (by immediate influx) from the individual 'ends' that come by mediated influx through created spirits.

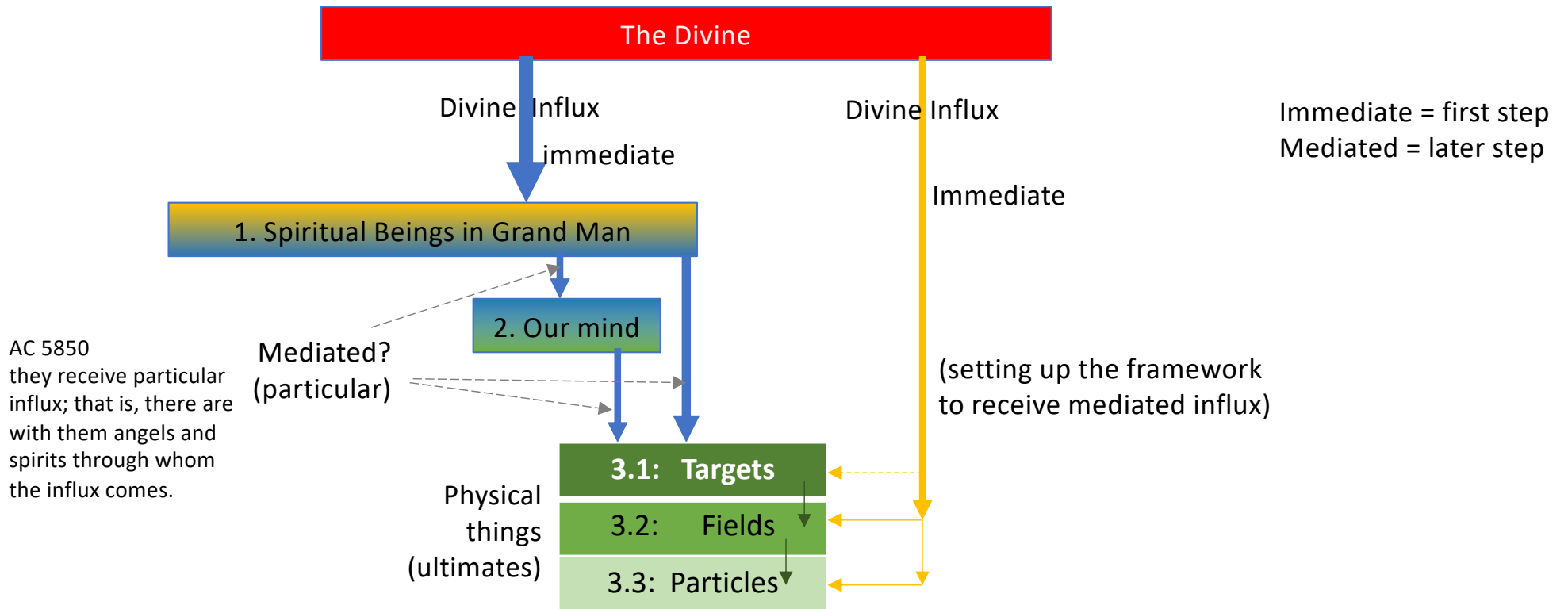
Influx into nature

Swedenborg AC 7270[4]:

God's truth, which flows into the third heaven nearest to the Lord, at the same time flows right down into the last and lowest degrees of order as well, without undergoing consecutive degrees of formation.

Every single thing at that level is also directly governed and provided by Him who is the First. In this way the consecutive degrees are held together in their proper order and connection.

Immediate and Mediate Influx



AC 5850
they receive particular
influx; that is, there are
with them angels and
spirits through whom
the influx comes.

Sub-sub-degrees too!

Previous:

3.1 Action from ends	Making spacetime and its ends
3.2 Action from form	Electromagnetic and quantum fields
3.3 Ultimate action	Physics of objects (quantum & classical)

From DLW 79: “Divine is the same in things greatest and least”, expect sub-sub-degrees of all of these:

3.	Principles	Propagating causes	Effects
3.1	3.1.1 Reception of targets	3.1.2 Causes to arrange targets	3.1.3 Arranged specific targets
3.2	3.2.1 Lagrangian: Principles for quantum fields	3.2.2 Propagation of quantum fields for all future options	3.2.3 Results of quantum fields
3.3	3.3.1 Hamiltonian: kinetic + potential energies	3.3.2 Quantum wave function	3.3.3 Actual selections e.g. Measurements

3.3 = ordinary quantum mechanics. 3.2 = quantum field theory. 3.1 = ? unknown

Quantum physics we understand

3.1 Action from ends

3.2 Action from form

3.3 Ultimate action

3.2 degree is physics of electromagnetic fields

- Also gluon fields
- Generates forces that act between 3.3 individual objects
- By principles of “Quantum Field Theory” (QFT)
- Determined by ‘Lagrangian’ with given couplings constants.

3.3 degree is physics of individual objects

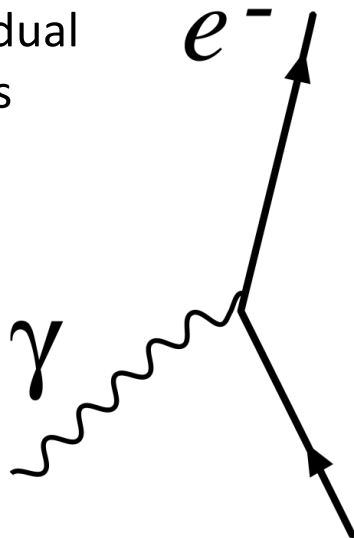
- Molecules, atoms, nuclei, quarks, etc.
- Seemingly well understood:
 - By wave functions in quantum physics.
 - By forces on masses in classical physics.
- ‘Measurement problem’ still a puzzle. But only small effects.

A difference between 3.2 and 3.3: 'bare' and 'dressed' interactions

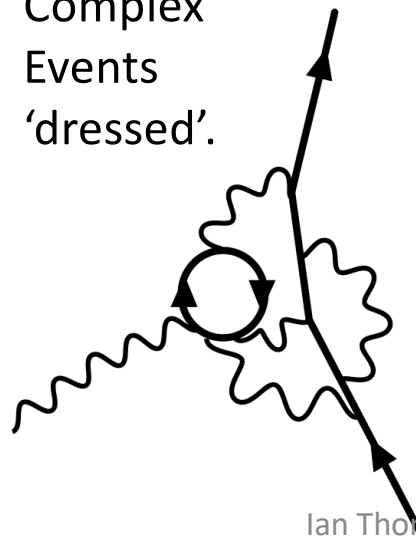
- There are input masses, charges
- 3.2.1/QFT uses 'bare interactions'
- 3.3.1/QM uses 'dressed interactions': combined effects of all possible events.
- QFT gives the result of calculations for QM: must give measured mass & charge.

3.2.1 Lagrangian: Principles for quantum fields	3.2.3 Virtual events
3.3.1 Hamiltonian: kinetic + potential energies	3.3.3 Actual events

3.2:
Individual
events
'bare'.



3.2 for 3.3:
Complex
Events
'dressed'.



'Dressing' changes the total
strength of the interaction:
charge is effectively changed.

**Need to adjust bare interactions so
dressed charge
agrees with experiment.**

'Renormalization': an issue in QFT

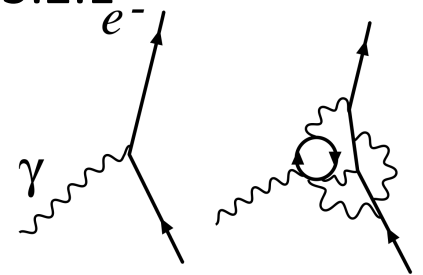
- Question! How do we 'adjust'?

How do we know what 'bare charge' to put in Lagrangian in 3.2.1 in order to get the correct 'dressed charge' in 3.3.1?

- 'Renormalization': method invented in QFT:

(a) Do calculation is at fixed resolution.

(b) Vary bare parameters to get physical dressed as in expt



- This seems to work remarkably well!

Results found to be not sensitive to the chosen 'fixed' resolution as long as it was fine enough. Very accurate predictions made and seen in experiments.

- But Nature has to use with fixed inputs, even if fluctuations at the finest level (e.g at Planck length).

How could it work?

- Maybe there 'fine tuning' which adjusts inputs to give the regularly observed outputs?

Physics we do not understand

3.1 Action from ends

3.2 Action from form

3.3 Ultimate action

3.1 degree of gravity ??

- Big debate for last 90 years on how to link the gravity of Einstein's "General Relativity" with quantum physics.
- Can we formulate 'quantum gravity'? No luck so far.
- Still no explanation for the very low vacuum energy density

3.1 degree for 'fine tuning' parameters in QFT ??

- QFT does not deliver 'out of the box', input values adjustable:
- "Renormalized parameters" have to be fine-tuned to observed values, to fix:
 - Higgs mass (a hard problem)
 - Quark masses, electron mass, unit charge (a bit easier)

3.1 linking the spiritual with the natural ??

- No-one trying that yet ! Should we try? After lunch.