Fractal Quantum Space Model (FQSM)

A Foundational Ontological Model

Part 1 – The Geometry of Reality

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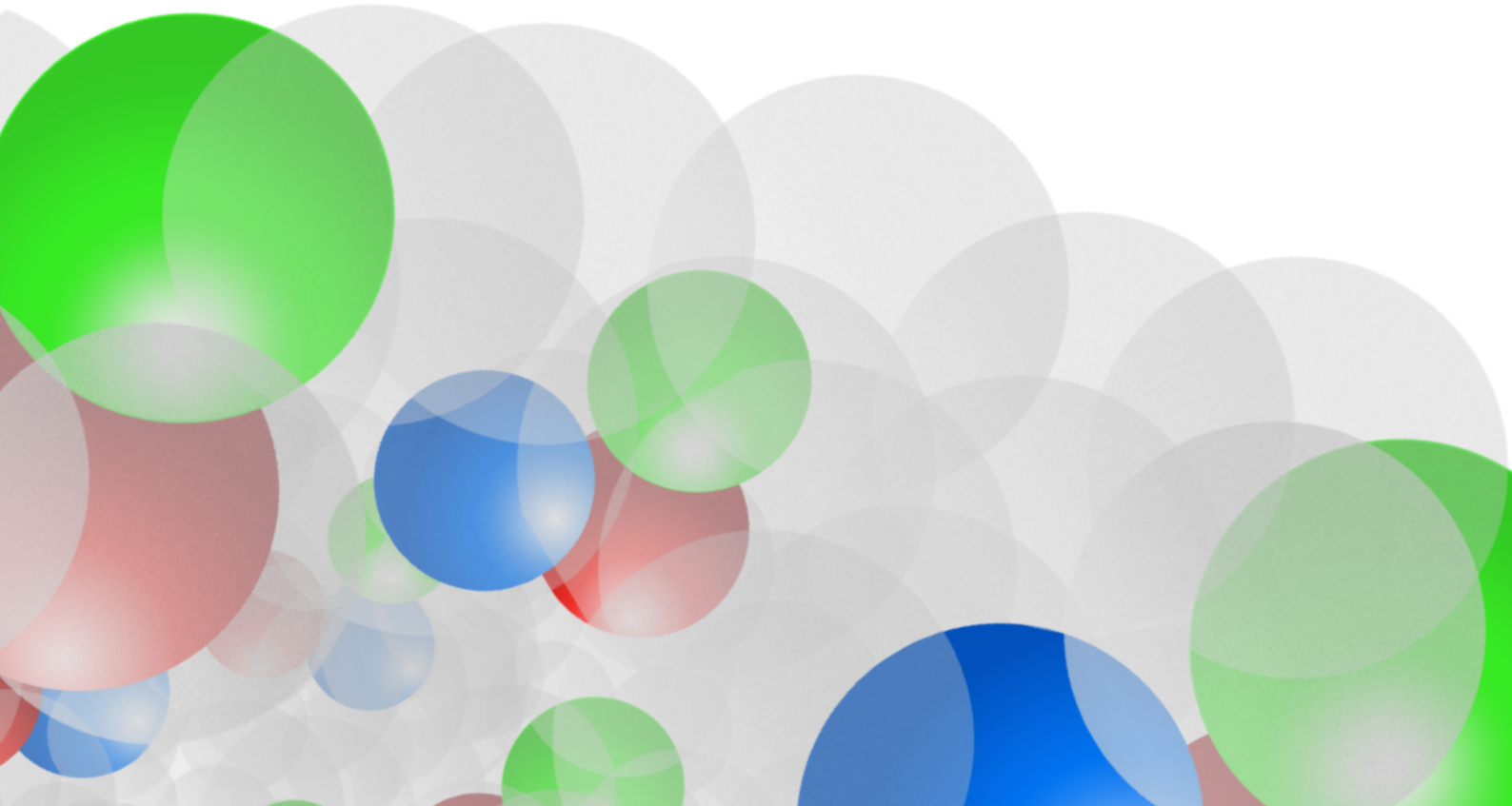
Version 1.1



Document history

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1.0	24 July 26	Frank Hafer	kontakt@akasha-interview.com	Document published.
1.1	29 August 27	Frank Hafer	kontakt@akasha-interview.com	A fundamental review of the structure, terminology and presentation of the Fractal Quantum Space Model (FQSM).

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Abstract

The Fractal Quantum Space Model (FQSM) is a foundational ontological model of reality that describes its fundamental components and relationships. Building on this, the individual parts of the model develop selected dynamic mechanisms and classify physical phenomena at a more fundamental level.

In the FQSM, reality is not described in terms of matter and its interactions, but in terms of quantum spaces and quantum points. Each quantum point possesses a determination which defines its properties within its quantum space. Determinations form the basis of the manifestations and processes described in the model.

The FQSM is not intended as a replacement for existing physical theories. It describes the ontological and geometric prerequisites on the basis of which established laws of nature and physical phenomena can be classified at a more fundamental level.

The term *fractal* refers to the self-similar structure of the model and not to a fractal geometry of space. The fundamental quantum spaces follow the same ontological structure comprising quantum points, their determinations and the relationships between them.

This first part describes the ontological and geometric foundations of the FQSM. Building on this, the subsequent parts develop the model's dynamic mechanisms. References to later parts serve solely to contextualise the model as a whole. Their content is described in the respective subsequent parts.

Within the FQSM, consciousness is assumed to exist. However, its structure is not the subject of this model; rather, it is described in the Fractal Levels of Consciousness Model (FCLM).

Notation used

For the sake of simplicity, the following notation is used throughout the Fractal Quantum Space Model.

Definitions of terms

Symbol	Meaning
FQSM	Fractal Quantum Space Model
FCLM	Fractal Consciousness Layer Model
FD	Foundational Domain
QS	Quantum Space
QP	Quantum Point
QL	Quantum Layer
SL	Subtle Layer
ML	Material Layer
DT	Determination
MQP	Manifesting Quantum Point
FPQP	Fundamental Projecting Quantum Point

The symbols used are intended to provide a concise and consistent description of the model. They constitute an internal notation for the model and should not be regarded as a complete mathematical formalisation.

1. Axioms of the model

The Fractal Quantum Space Model (FQSM) is based on a small number of fundamental axioms. All further descriptions of the model are based on these axioms.

Axiom A1

There exists exactly one primordial substrate. Within this, there exists exactly one foundational domain.

Axiom A2

The foundational domain contains all quantum points.

Axiom A3

Every quantum point has a unique identity, a position within the foundational domain, and exactly one determination.

Axiom A4

The quantum points of the foundational domain are permanently assigned to quantum spaces by the fundamental space selection.

Axiom A5

Every quantum point belongs to exactly one quantum space.

Axiom A6

The assignment of a quantum point to its quantum space is immutable.

Axiom A7

The foundational domain encompasses all quantum spaces.

Axiom A8

The spatial extent of each quantum space corresponds to the spatial extent of the foundational domain.

Axiom A9

The determination determines the specifications for a quantum point. The resulting processes and manifestations are governed by the laws of the respective quantum space and the interactions that occur.

Preliminary remark

The axioms formulated in this document do not constitute physical laws. They define exclusively the fundamental ontological and geometric premises of the Fractal Quantum Space Model (FQSM) and form the starting point for all further model descriptions. As the model is further developed, supplementary axioms may be formulated.

2. Basic concepts

Die folgenden Grundbegriffe definieren die zentralen Begriffe des Fraktalen Quantenraum-Modells (FQSM). Sie bilden die Grundlage aller weiteren Beschreibungen.

2.1. Primordial Substrate

The primordial substrate is the continuous medium within which the foundational domain exists.

2.2. The Foundational Domain (FD)

The foundational domain constitutes the fundamental space of the universe. It encompasses the entire spatial extent within which all quantum spaces exist. The quantum points are arranged within the foundational domain in a discrete spatial matrix. Regions of the primordial substrate remain between the quantum points. Both the quantum points and the intervening regions belong entirely to the foundational domain and together form the basis of the structures described in the FQSM.

2.3. Fundamental Space Selection

Fundamental space selection describes the distribution of all quantum points in the foundational domain across the various quantum spaces. Each quantum point is permanently assigned to exactly one quantum space. Space selection is not an ongoing process, but a fundamental property of the structure of the FQSM. Once space selection is complete, the assignment of each quantum point remains unchanged. Figure 1 illustrates an example of space selection.

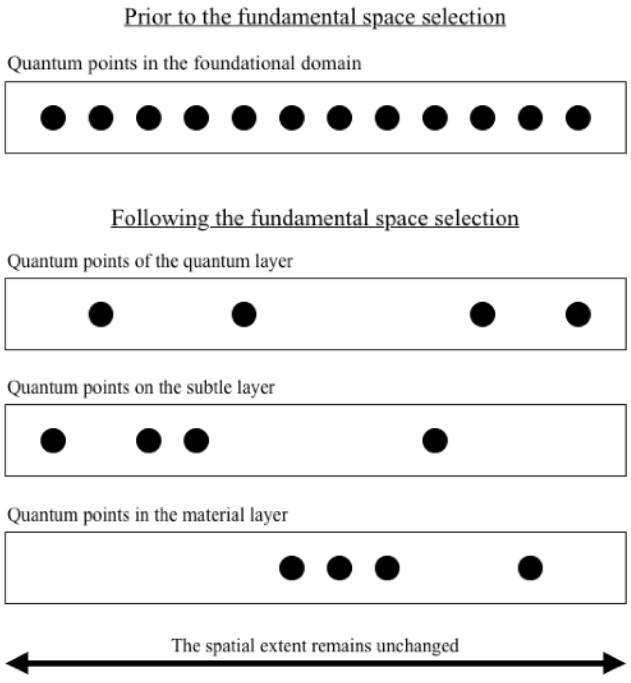

Figure 1: Fundamental space selection
of a sub-area of the FD

2.4. Quantum Space (QS)

A quantum space consists of the totality of quantum points assigned to it by the fundamental space selection. Each quantum space has its own set of laws, which determine the properties of its quantum points. Several quantum spaces co-exist within the same foundational domain without sharing any quantum points.

2.5. Quantum Point (QP)

Every quantum point has a unique identity, a position within the foundational domain, and exactly one determination. Through fundamental space selection, every quantum point is assigned to exactly one quantum space. Changes to its determination do not alter its identity or its position (see Figure 2).

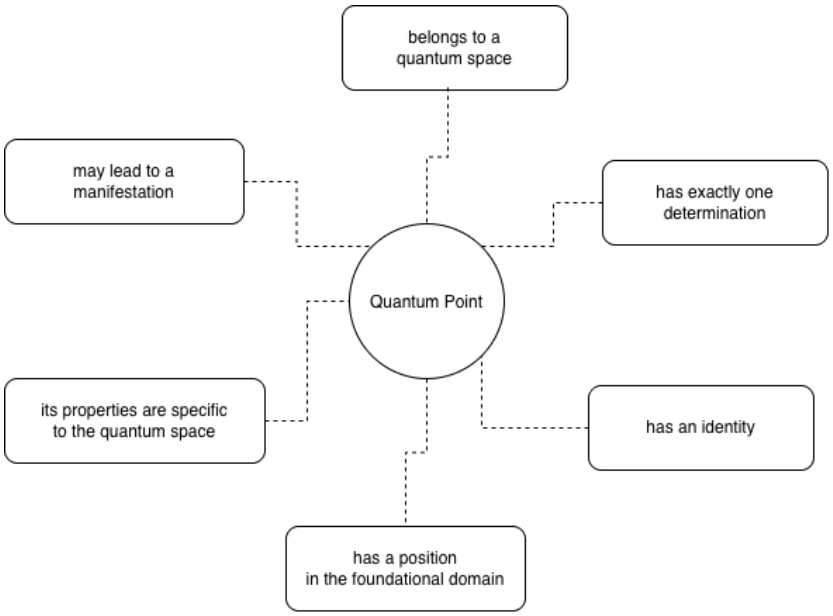

Figure 2: The properties of a quantum point

2.6. Projection Pair

A projection pair consists of a quantum point on the subtle layer and a quantum point on the material layer that is permanently associated with it.

2.7. Projection Coupling

Projection coupling is the functional assignment of a quantum point in the quantum layer to a projection pair of a triadic coupling. It serves to project the determination simultaneously onto the subtle layer and the material layer.

2.8. Determination (DT)

Determination is the fundamental specification assigned to a quantum point. It forms the basis for the manifestations that arise within the respective quantum space. Every determination contains the fundamental determination of the respective quantum point and can be expanded.

2.9. Basic Assignment

The permanent structural connection between the quantum points within a fundamental triadic coupling.

2.10. Fundamentally Projecting Quantum Point (FPQP)

A quantum point of the quantum layer which exists as a permanent carrier of a basis assignment within a fundamental triadic coupling and projects the determination via the projection coupling.

2.11. Manifesting Quantum Point (MQP)

A quantum point of the quantum layer which does not possess a permanent projection coupling to a triadic coupling. It projects its determination via a temporary projection coupling.

3. The fundamental quantum spaces

Through fundamental space selection, the quantum points (QP) of the foundational domain (FD) are assigned to various quantum spaces (QS). QS differ in terms of their respective laws, which determine the properties of their QP. In the Fractal Quantum Space Model (FQSM), three fundamental QS are initially considered (see Figure 3):

- Quantum Layer (QL)
- Subtle Layer (SL)
- Material Layer (ML)

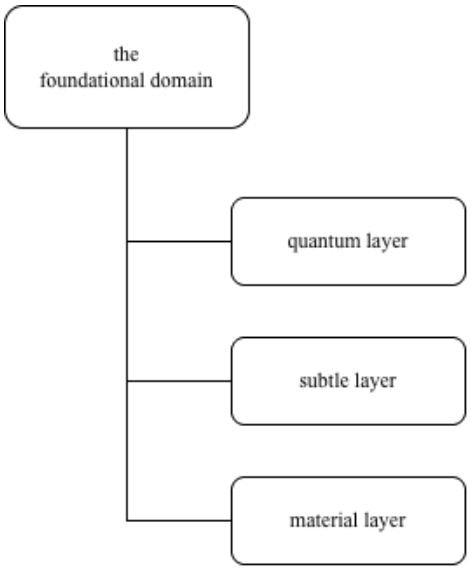

Figure 3: Mapping of quantum spaces

Quantum Layer (QL)

The QL is the only one of the QS described here to possess both fixed and movable QPs. It occupies a special position within the FQSM and forms the basis of the FQSM's projection mechanisms.

Subtle Layer (SL)

The SL consists exclusively of fixed QPs. It acts as a projection surface for the QL and enables the manifestation of subtle structures.

Material Layer (ML)

The ML consists exclusively of fixed QPs. It also acts as a projection surface for the QL and enables the manifestation of material structures.

4. Coexistence of quantum spaces

Following fundamental space selection, several quantum spaces (QS) coexist within the same foundational domain (FD). Each QS has its own assigned quantum points (QP), which, taken together, are distributed across the entire FD. The three fundamental QS collectively form the reality of the Fractal Quantum Space Model (FQSM). The QS do not exist either sequentially or in different locations, but coexist within the same spatial extent. They are separated solely by fundamental space selection. Figure 4 is intended to illustrate this coexistence schematically.

The FD forms the common geometric basis of all fundamental QS. The quantum layer (QL), the subtle layer (SL) and the material layer (ML) therefore do not each have their own FD, instead, they exist simultaneously within the same FD. The spatial extent of all QS thus corresponds to the spatial extent of the FD. The difference between the QS lies exclusively in the QPs of which they are consisting.

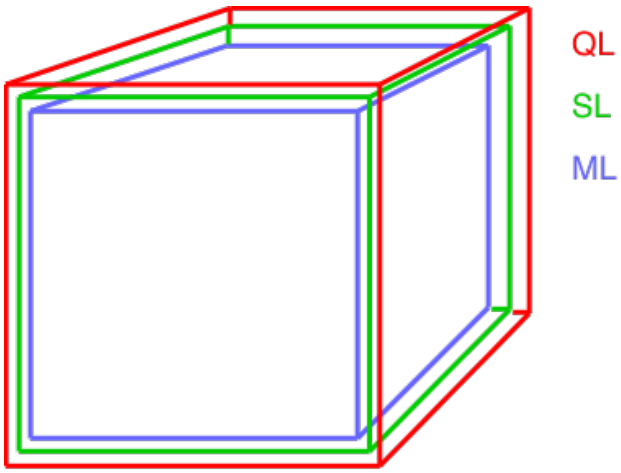

Figure 5: Coexistence of quantum spaces in the FD

4.1. Common origin

All QS originate from the same foundational domain and arise through fundamental space selection. They therefore do not constitute universes independent of one another, but rather different QS within the same reality. Fundamental space selection describes the unique mapping of each QP to a QS. This mapping can be represented mathematically as a function.

$$R : Q\_FD \rightarrow \{QL,SL,ML\}$$

Here,

- R denotes the fundamental space selection,
- Q_FD denotes the set of all QPs of the FD,
- → means ‚assigns to' or 'maps to',
- { } denotes a set, which in this case consists of the three fundamental QS.

The equation states that each QP of the FD is assigned to exactly one of the three fundamental QSs.

4.2. Common spatial extent

Even though QSs consist of different QPs, they all have the same spatial extent and make full use of the FD. The fundamental space selection does not alter the space itself, but performs solely the determination of which QPs are assigned to a QS. As a result, each QS extends across the entire space of the FD, without any areas of the FD being reserved for individual QSs. Mathematically, the QSs therefore do not differ in terms of their spatial extent, but solely in terms of their respective sets of QPs. The FD remains fully intact as the common geometric basis and is shared by all QSs.

This can be written as

$$QS\_i = (FD,Q\_i)$$

Where

- QS_i denotes any QS.
- FD denotes the shared foundational domain.
- Q_i denotes the set of QPs of this QS.
- The brackets ( ) denote an ordered pair. Here, they describe a QS by means of the shared FD and the corresponding set of its QPs.
- The index i stands for one of the three fundamental QS (QL, SL or ML).

The equation states that all QS share the same FD. They differ solely in terms of the QP assigned to them by the fundamental space selection.

4.3. Illustrative monitor example

The following example is intended solely to illustrate the principle of fundamental space selection. It is a thought experiment and not a physical analogy. The properties of a monitor described here must therefore not be directly applied to the FQSM. The sole purpose is to illustrate the permanent assignment of different QP groups within a shared spatial region.

This principle can be illustrated using a monitor's RGB matrix. Imagine a display area consisting exclusively of red, green and blue pixels. The pixels are evenly distributed across the entire display area, and each pixel permanently has exactly one colour.

Now imagine that each of the three colour groups could, independently of the others, produce a complete, identical image. Although only the pixels of a single colour are used for each image, every image extends across the entire display area. Between the pixels used, the pixels of the other two colours remain unused.

All three images therefore have the same spatial extent. Nevertheless, each image uses only its own pixels. No pixel belongs to two images at the same time. Although all three images occupy the same image area, they remain completely separate from one another due to their different pixels.

Applied to the FQSM, the image area corresponds to the FD. The pixels correspond to the QP, whilst the three colour groups represent the three fundamental QS. As in the thought experiment, all QS make full use of the same FD. They differ, however, in that each QS uses only those QP that have been permanently assigned to it by fundamental space selection. The example illustrates that the QS

do not share the space, but rather divide up the QP within the same space. It serves solely to illustrate this structural principle and does not claim to provide a complete representation of the mechanisms of the FQSM.

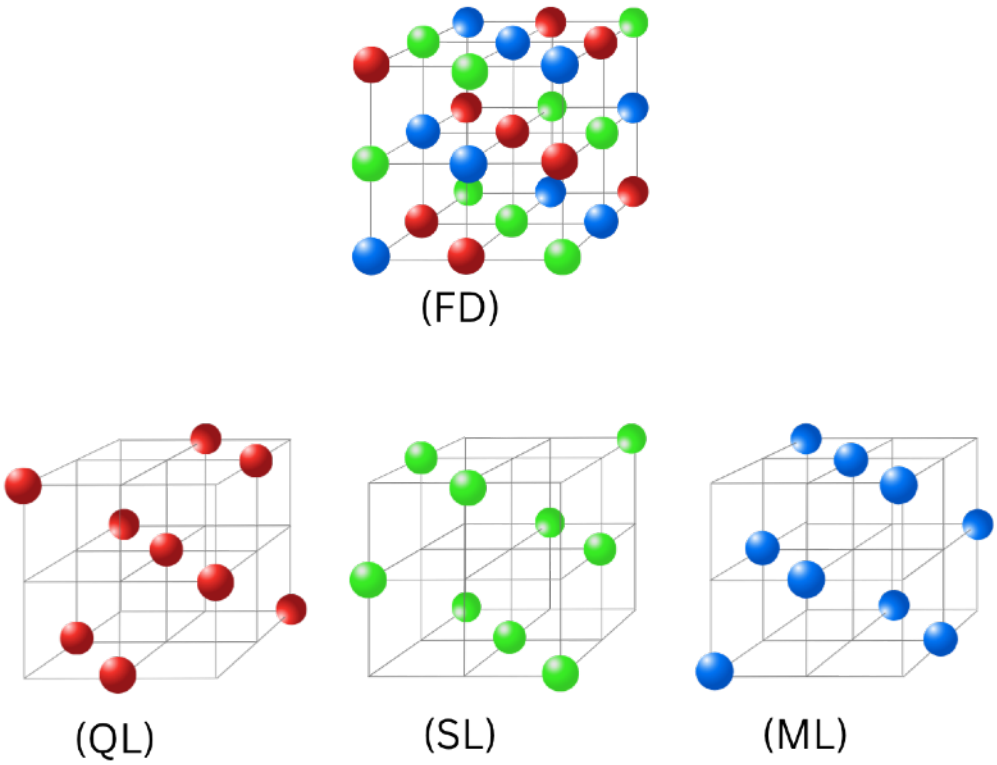

Figure 5: Schematic illustration of fundamental space selection

Figure 5 illustrates the fundamental space selection schematically and clearly. From a shared section of the foundational domain (FD), the QPs are permanently assigned to one of the three fundamental QSs through the fundamental space selection. The colours (red, green and blue) serve solely to distinguish the QS graphically. In the top figure, all QPs are shown together within the same spatial grid. The three lower figures show the respective quantum spaces separately from one another following fundamental space selection.

5. System architecture

Now that the fundamental quantum spaces (QS) have been introduced, their basic relationships with one another can be described. The Fractal Quantum Space Model (FQSM) regards reality as a hierarchical system comprising several QS. The system architecture describes these relationships exclusively.

5.1. Hierarchical structure

The FQSM uses three fundamental QS. This representation does not describe a chronological sequence, but rather their fundamental interdependence. The subtle layer (SL) is built upon the quantum layer (QL). The material layer (ML) is built upon the SL (Figure 6). All three QS exist permanently and simultaneously.

5.2. Directions of projection

The determination (DT) of a projecting quantum point of the QL is simultaneously projected onto the corresponding projection pair of the SL and ML via projection coupling. The fundamental direction of projection runs simultaneously from the QL to the SL and to the ML (Figure 6).

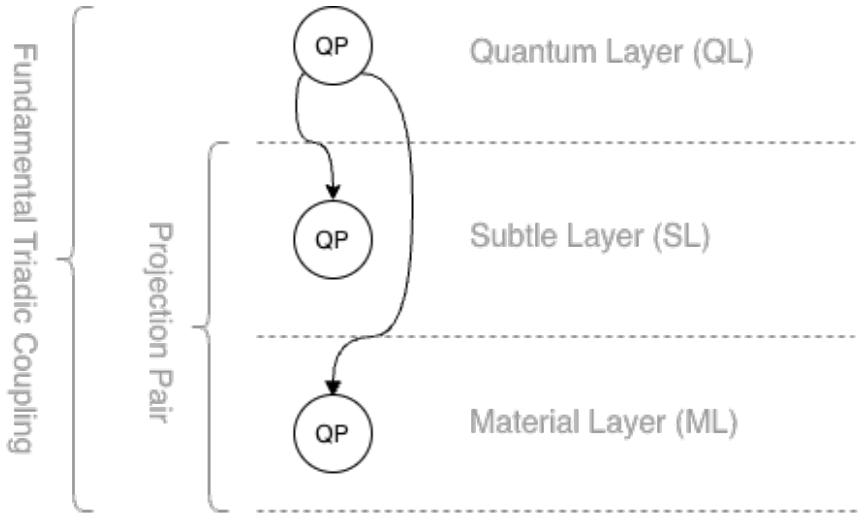

Figure 6: Direction of projection of the determination

5.3. The Fundamental Triadic Coupling

Fundamental triadic coupling represents the permanent basis assignment between the quantum points of the three quantum spaces. A fundamental triadic coupling consists of a quantum point (QP) of the QL and the QPs of the SL and ML coupled to it. The three QPs remain permanently in their respective QS. No QPs are transferred or exchanged between the QS.

The fundamental triadic coupling describes exclusively the permanent assignment of the QPs (Figure 7). This assignment forms the basis for the subsequent projection of determinations (DT). The specific mechanisms of this projection are not the subject of this chapter.

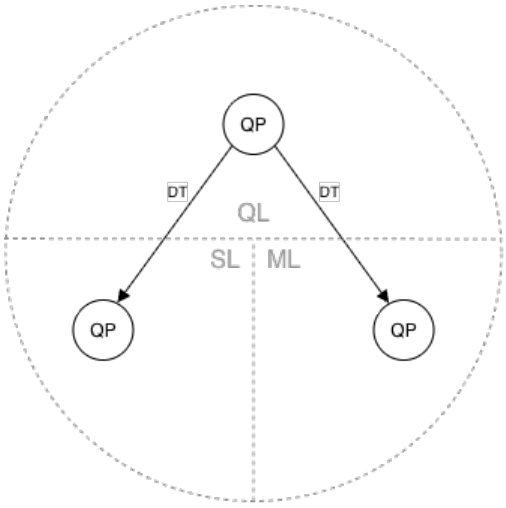

Figure 7: The Fundamental Triadic Coupling

5.4. The independence of quantum spaces

Although there are structural relationships between quantum spaces, each quantum space remains an independent system. Each quantum space has its own quantum points and its own laws. The fundamental assignment of quantum points to a fundamental triad does not alter the independence of the quantum spaces. It merely describes which quantum points of the various quantum spaces are structurally linked to one another.

6. Quantum Points

Quantum points (QP) form the fundamental components of quantum spaces (QS). Each QP has a unique identity, a position within the foundational domain (FD) and exactly one determination (DT). Although all QPs share the same fundamental properties, they differ in accordance with the laws governing the respective quantum space to which they have been assigned by fundamental space selection.

6.1. Quantum points of the quantum layer

The quantum layer (QL) contains fixed and movable quantum points (QPs). The movable QPs are not covered by the FQSM and are described in more detail in the Fractal Consciousness Layer Model (FCLM). The fixed QPs of the QL can perform various functional tasks within the FQSM.

- A fundamental projecting quantum point (FPQP) is a permanent component of a fundamental triadic coupling and the carrier of this basis assignment.
- A manifesting quantum point (MQP) is not a component of a fundamental triadic coupling, but may temporarily utilise the projection pair of a triad within the context of a manifestation.

Fundamental triadic coupling forms the permanent basis assignment of the QPs. Within the context of a manifestation, an MQP may temporarily utilise the projection pair of a triad. The specific assumption and release of a projection pair by an MQP, as well as the associated projection processes, are described in the next part of the FQSM.

6.2. Quantum points of the projection surfaces

In the FQSM, the subtle layer (SL) and the material layer (ML) function as projection surfaces. A projection surface is a QS whose fixed QP carriers are projected DTs. The geometric arrangement of these QPs remains unchanged and forms the geometric basis of the respective projection surface. The QPs of a projection surface are subject to the laws governing the respective QS. Under these laws, the respective manifestations and their changes arise from the DTs of the QPs and the interactions occurring within the QS.

6.3. Manifestation on the projection surfaces

A manifestation refers to a structure that arises within a QS. It is not restricted to a single QP. A manifestation may be initiated by an MQP or stimulated by interactions within a fundamental triadic coupling. The specific processes through which a manifestation arises and changes are described in the following parts of the FQSM. Manifestations arise neither through the creation of new QPs nor through changes to the geometric arrangement of a QS. Manifestations need not be observable or measurable.