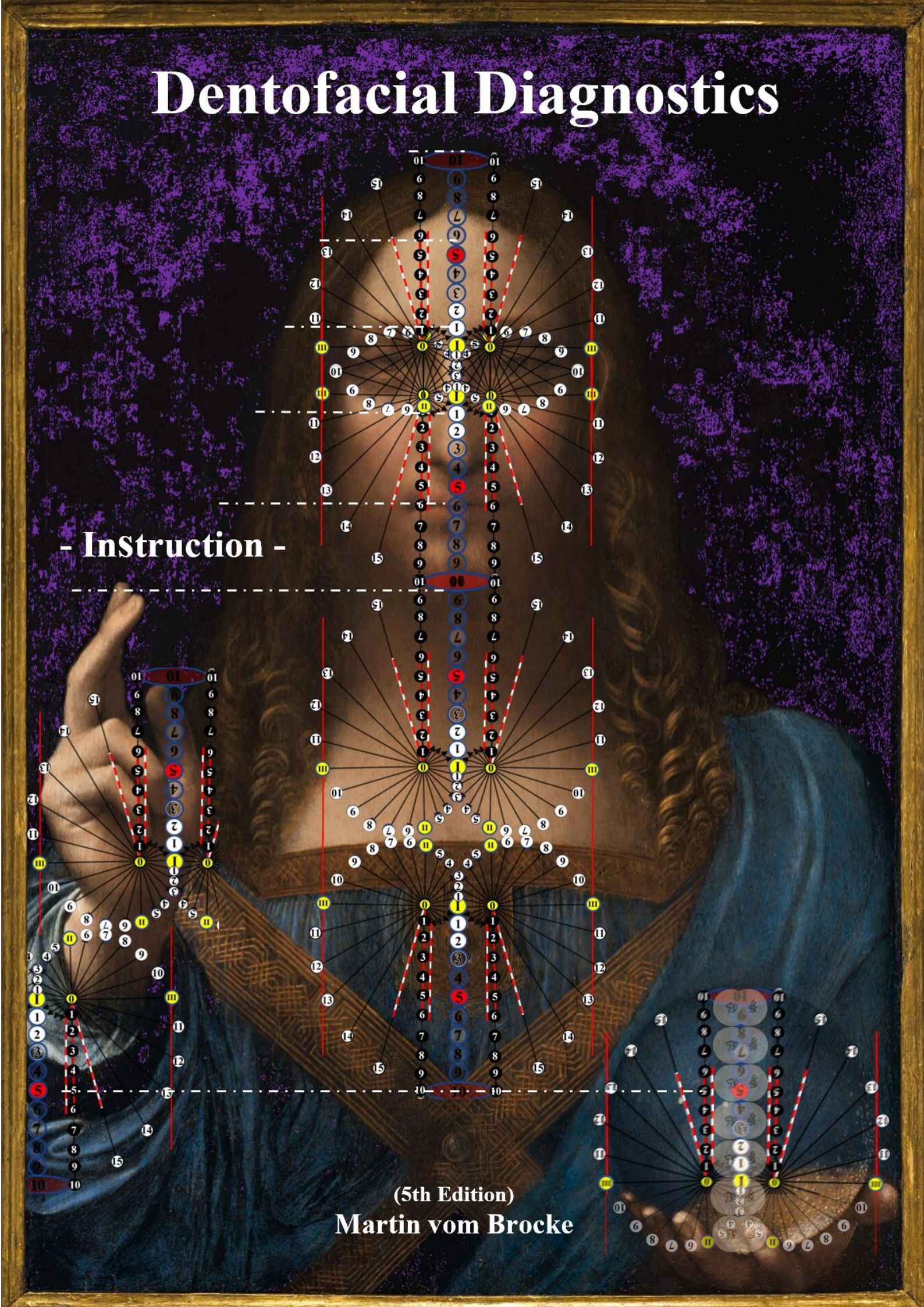
Dentofacial Diagnostics



- InStruction -

(5th Edition)

Martin vom Brocke

This book is dedicated to ANNA from Chur (CH),

who died unexpectedly in June 2024

at the age of 20

and if the orthodontist

who treated her from 2014 to 2020

had had the knowledge in this book,

she might still be alive today.

(See case presentation in chapter 10 and evidence in chapter 15)

Martin vom Brocke

Dentofacial diagnostics

Martin vom Brocke

Dentofacial diagnostics

- Instruction -

(5th edition)

VERLAG INSPIRATION UNLIMITED

EDITORIAL

This 5th edition - the original German version was published on 25.12.2024 - is the scientific basis for all who recognise the Swiss Society for Dentofacial Diagnostics and because it contains many improvements over the 4th edition, the following rather strict copyright still applies:

The globally recognised word creation dentofacial is intended to remind us

that at least two interdependent characteristics must be considered pretherapeutically,

because if only one disease characteristic is taken into account on the basis of an associated measured value,

then this does not automatically mean

that this measured value, if it is abnormal, is also the cause of the disease.

It is not the measured value that is important, but its relationship to the environment,

because for a successful therapy it must be possible to explain in an understandable way

what is ‘too little’, ‘normal’ or ‘too much’ in relation to which constant reference.

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SEVEN FOREWORD-PAGES

SOMETHING ABOUT NEW THEORIES

(Published on 27 November 2024 in the newspaper *büwo*; p. 8-9)

Today, clinical researchers find it difficult to publish new theories because there is no suitable journal for them. For example, a structural theory of gravity can be formulated which states that humans had to develop a particularly large number of facial features during evolution that fit harmonious proportions because they adapted to the new balance of gravity by walking upright. Such a 'non-exact' theory is immediately rejected by physicists or chemists because it cannot be proven mathematically. It can only be examined for recordable findings using mathematical tools and dusty theories can hardly be constructively criticised today.

For example, Leonardo da Vinci probably used the ratio of A4 sheets – $1/\sqrt{2}$ or $\sqrt{2}\,/1 = \sqrt{2}$ – as a stencil surface for two paintings in order to integrate harmonic ratios. And if he had known a spiral template of the type $R\mathbb{N} = R_N = \sqrt[(1\cdot2\cdot3\cdot4/\mathbb{N})]{(1+2+3+4)}$ that matched the gravitational field, these paintings would probably have turned out even more idealised (see Fig. 01 and also p. 23).

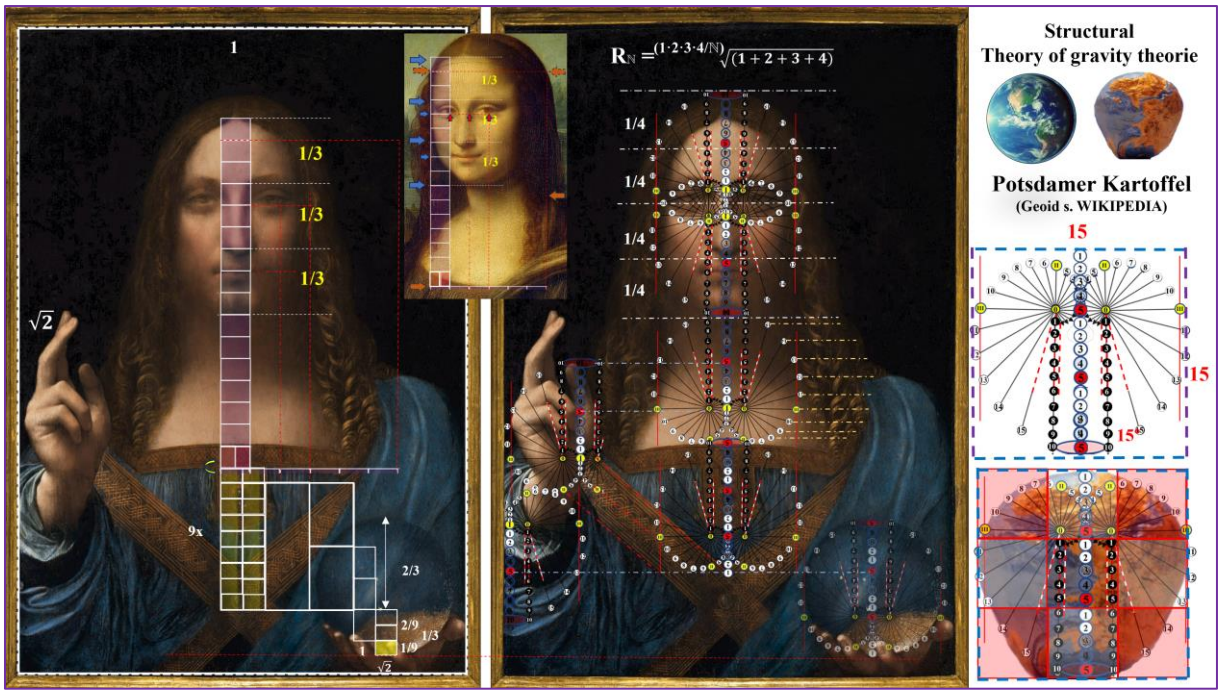

Figure 01 | Templates as an aid: (a) shows how L. da Vinci (* 1452; † 1519) used a surface grid for his painting Salvator Mundi, the aspect ratio of which almost corresponds to that of an A4 sheet of paper. With his 'Saviour of the World', he had to depict a relationship between an opaque force - a fragile-looking sphere held high - and a harmonious-looking human being - Vitruvian proportions ('A4' proportion rectangles and numbers were added here). The main indication for this theory is the recordable fact that he chose a sphere diameter characterised by a nine-part proportion - 9 = number of perfections. (A) shows how the same method can be used to explain the thirds of Mona Lisa's face as well as the position of the dress, pupils, pimples, hair and other features. (B) shows that a single 4D growth point pattern can be used to formulate analogies between the gravitational field and the hand formation, the eye cavities, the robe, the hair coils and da Vinci's painting talent.

This assumption becomes a credible proof with more appropriate mathematics; see chapter 14.

The term *theory* is made up of the word parts *the* (from theatre) and *ory* (from original) and therefore means representable cause. With this knowledge, the terms conjecture, indication and proof can be distinguished from the term theory. For example, it can be speculated that L. da Vinci deliberately integrated errors into his paintings in order to draw universities' attention to different growth ratios and the proof that the formula $R_N = \sqrt[(1\cdot2\cdot3\cdot4/N)]{(1+2+3+4)}$ produces a harmonious growth spiral uses the structural theory of gravity to make the established assumption of a relationship to human structures a credible suggestion (Fig. 02).

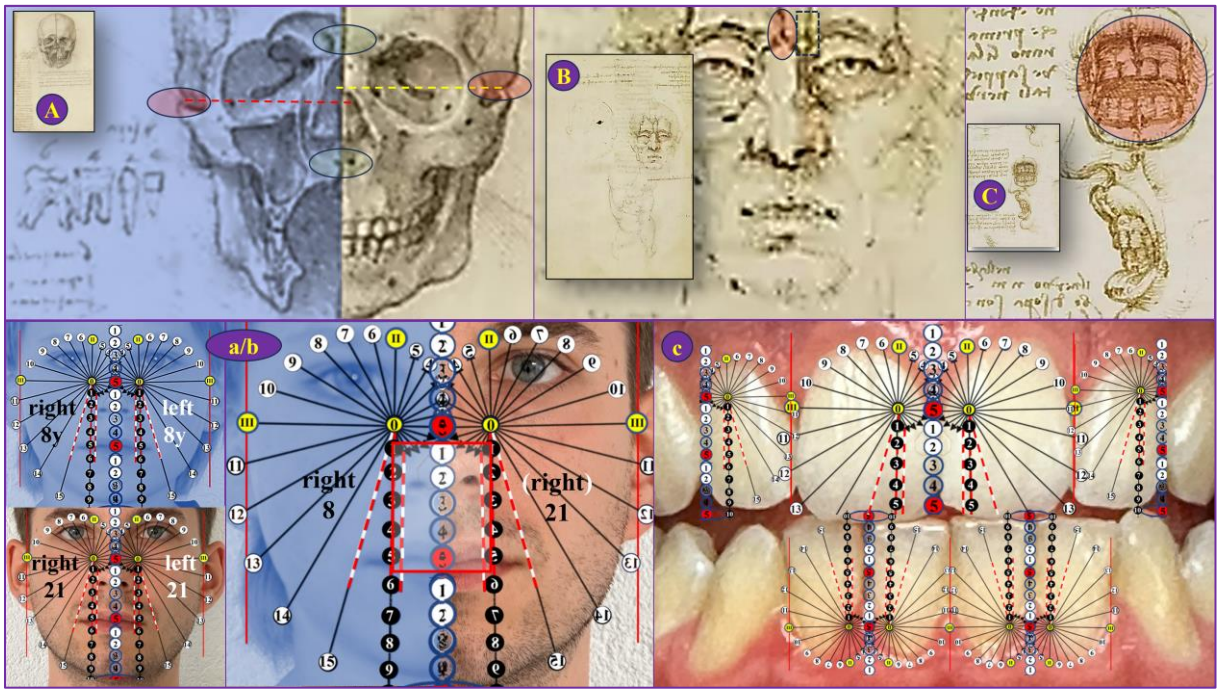

Figure 02 | Presumption, evidence, proof and theory: (A) - from Windsor, Royal Library (9)19018; marked here - shows da Vinci's skull study with two differently high attachments of the zygomatic bone but equally high upper eye borders and nasal bones. The milk teeth on the right indicate a half 'child's skull'. (B) - from Windsor, Royal Library (9)19058; here marked in colour - shows his nerve study, where the supraorbital nerve is missing on the right (too little), in the middle there is one that does not actually exist (too much) and on the left it is correctly drawn (normal). (C) - from Windsor, Royal Library (9)19055; marked here in colour - shows da Vinci's mouth study with wide-open lips and eight visible incisors of equal width. Normally, twice as many teeth are visible when the lips are parted and the upper lateral incisors are clearly smaller. (a/b) shows my own facial study of my son, methodically superimposed with the spiral template. In the area of the nasal and oral entrance, the width ratios remain unchanged in the period from 8 to 21 years, but not above and below. (c) shows the proportions of his incisors, which fit together with astonishing precision.

Even today, universities are still institutions that promote specialists for measurements but not specialists for measurement ratios on the principle of 'divide and rule'. Ignorance of ratios makes it difficult to check the training of doctors because doctors cannot be forced to record findings in a standardised and classifiable way - *too large; normal; too small*.

National institutions for the evolution of protocols have been needed in medicine for five centuries [IEP-National]. Medical knowledge should be understandable and accessible to all so that the long-term success of therapies can be verified with statistical hypotheses, because otherwise our healthcare system will be overloaded and its structure will collapse - chaos will ensue.

(See the article in the newspaper büwo of 18 September 2024: IEP-Switzerland or see chapter 13).

SOMETHING ABOUT THE RELEVANCE OF NEW THEORY

(Published on 11 December 2024 in the *büwo* newspaper; pp. 16-17)

In 2015, it became known which parental genetic material leads to which of the ten bone-muscle modules of the face and that each descendant receives a newly combined face thanks to biodiversity.[1]
But why does no one talk about whether a **dis**harmonious fit of facial parts could also be of vital importance after puberty? This should be done because: In 2024, the 20-year-old 'ANNA' died unexpectedly with us, and neither an autopsy nor genetic analyses could explain why she no longer woke up. On the other hand, a growth spiral that matches the gravitational field can objectively show a nose that is too narrow and explain her death with an analogy to *gravity* = *mass attraction* as follows (see also Fig. 03): It is possible that her upper jaw (= nasal cavity) came from her father and all the other facial modules came from her mother. And since the upper jaw has no muscle attachments, it could be that the other modules slowed down the growth of the upper jaw through *tissue attraction* because a male upper jaw needs more time to develop than a female one (girls are fully grown more quickly). The nasal openings would remain too small, making it difficult for her to breathe, putting chronic stress on the heart despite mouth breathing, and having consequences.

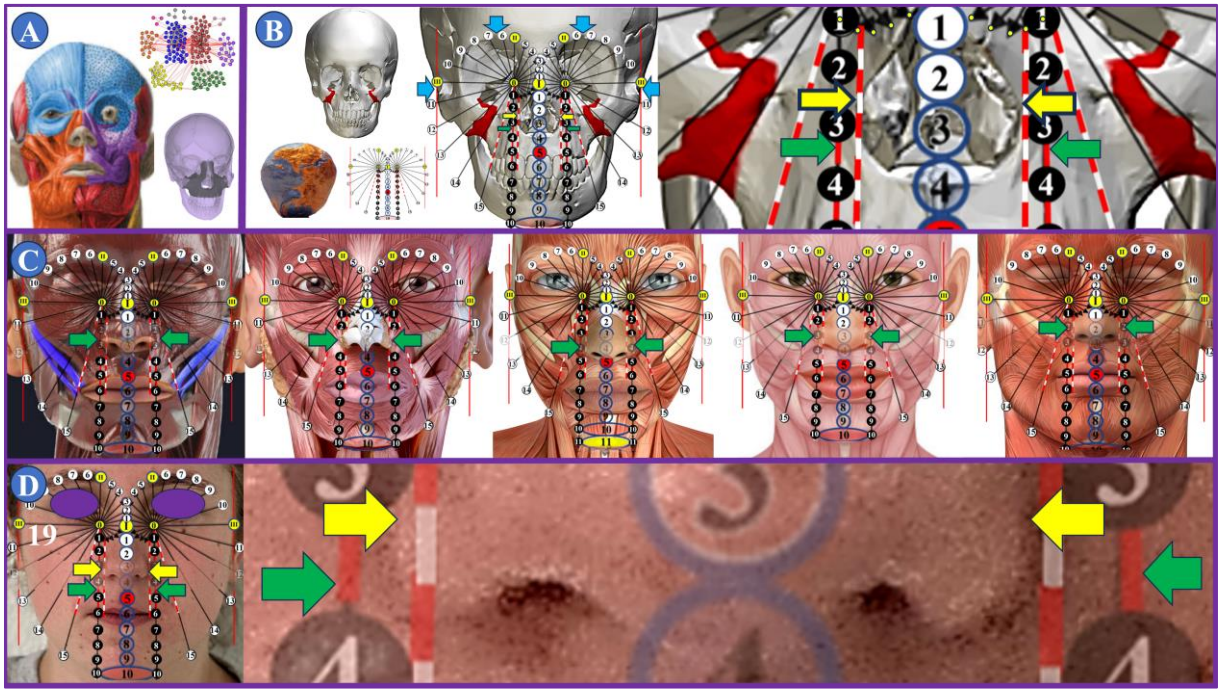

Figure 03 | Nose openings that are too small: **(A)** from [1] shows a representation of the ten heritable musculoskeletal facial modules, which is supposed to prove that practically no musculature originates from or attaches to the upper jaw. (B) from [2] shows the zygomatic process of the upper jaw marked in red. An added overlay with the growth spiral (matching the gravitational field – Potsdam potato) proves that normally the skeletal nasal opening is narrower by one step (yellow arrows) than the mathematical functional space of the template (green arrows). **(C)** shows study plastic models with growth templates methodically superimposed in the same way, in which all the nasal widths fit the template functional space with astonishing precision. **(D)** shows the 19-and-a-half-year-old female patient, who had a nose that was too narrow (yellow arrows) and thus too small a nostril. She died unexpectedly a year later.

[1] ESTEVE-ALTAVA B et. AL (2015) *Anatomical networks reveal the musculoskeletal modularity of the human head*. Scien. Reports, 5(8298).
[2] BodyParts3D (2024) The Database Center for Life Science, presented in the English WIKIPEDIA (2024).

In 2020, an endocrinologist diagnosed ANNA, who was still 16 years old, with hypothyroidism due to a reduced blood hormone concentration and replaced the missing hormones with medication, which alleviated the symptoms. He assumed that the cause of the hypofunction was an autoimmune disease that triggered a chronic inflammatory reaction in the thyroid gland – *Hashimoto's thyroiditis* [HT]. This was a good fit because women suffer from HT more often, a familial predisposition was suspected, and the time after puberty is also typical for the onset of HT.

It is still unknown what actually causes HT autoimmune disease, and to the best of our knowledge, no Swiss university – or any other university in the world, for that matter – is investigating a possible connection with the upper jaw as a potential cause of the breathing problem. However, this is something that universities should be doing, because there is a crucial link between the oxygen supply in the blood and HT.[1]

It is possible that HT is caused by a narrowing of the airways in the upper jaw resulting from a lack of biodiversity. This only becomes noticeable when the body has grown to such an extent that it needs more oxygen than the lungs can take in at rest. From this point on, the brain is stressed and it permanently prompts the thyroid gland to produce hormones until the gland swells due to overloading, collapses and is then broken down again via an autoimmune reaction (Fig. 04).

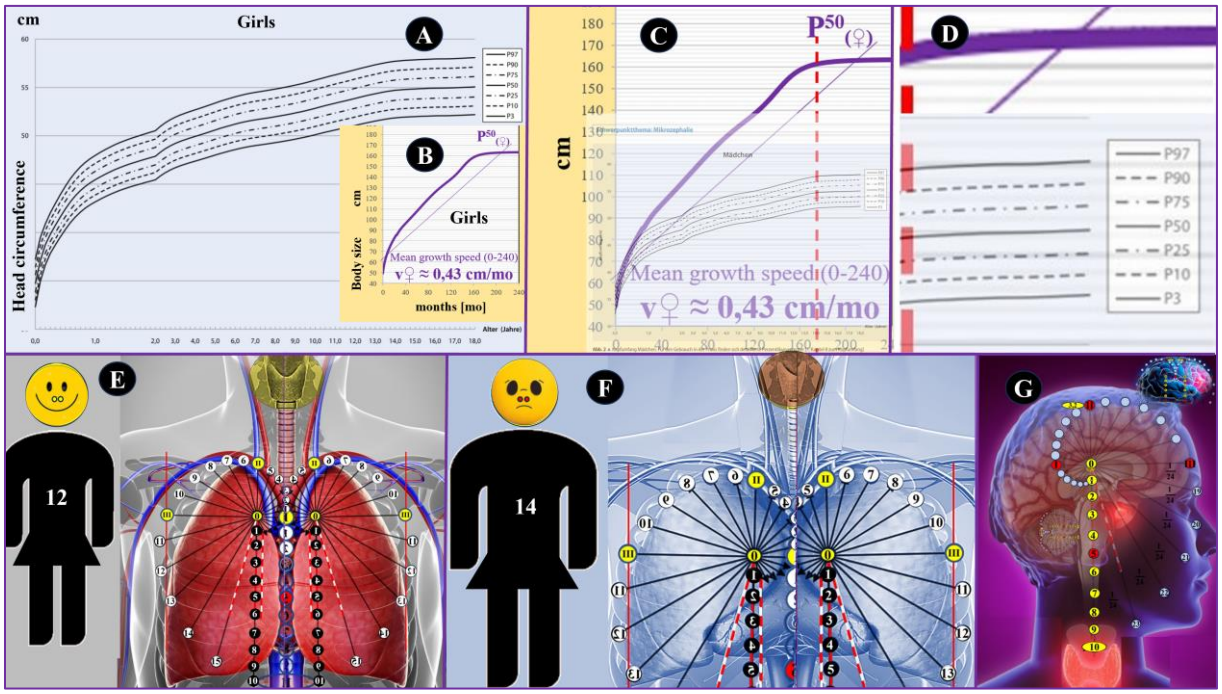

Figure 04 | The body needs harmonious breathing: After being superimposed on each other, the graphs (**A**) from [2] and (**B**) from [3] show (**C**) that the increase in height and head circumference in girls from the age of 14 years onwards runs in parallel (**D**). Before that, the body grows faster than the head. After that, only the body gets heavier, which is not shown here for reasons of space. (**E**) shows how, in principle, the lungs of 12-year-old girls fill without further effort and (**F**) shows how this becomes more difficult in principle for girls from the age of 14 because the body is heavier but the nasal passages do not get larger. (**G**) shows a representative diagram of the harmonious interaction between the brain, pituitary gland, cerebellum, thyroid cartilage muscle and thyroid gland.

[1] SOETEDIO NNM ET AL. (2024) *The impact of thyroid disorder on cardiovascular disease.* IJC Heart & Vasculature 55; 1-8.
[2] SCHENKIEWITZ A ET AL. (2015) *Kopfumfang bei Kindern und Jugendlichen in Deutschland. Medizinische* Genetik 4; 341-344.
[3] VOM BROCKE M (2022) *Die Norma Klassifikation zur Unterkiefergrösse. Dissertation.* Verlag Inspiration Un Limited, London-Berlin.

WHY DO WE NEED A NEW THEORY IN DENTAL ORTHODONTICS?

(Published on 18 December 2024 in the *büwo* newspaper; p. 18)

In 1852 the American sculptor H. Greenough coined the phrase *form follows function* in connection with the organic principles of architecture. By this he meant that the shape (outer form) of objects can be derived from their function or purpose.[1] On the basis of this premise, E. Munch, for example, painted an anxiety attack in his painting '*The Scream*' in 1893, in which he succinctly intensified the symptom 'shortness of breath' by positioning his hand on his face (Fig. 05A).[2] In 1899, E. Angle used the words 'harmonious and normal' to justify moving teeth and jaws with an analogy to the '*first molars'* as a reference (Fig. 05B).[3] At that time, he could not have known that the upper jaw could be on both sides of the same parent or that one side from the other parent [4] and he would certainly not have been able to explain why, for example, in the case of *Lujan-Fryns syndrome*, the maxilla can only be too small on one side, or why this 'syndrome' is only a conglomerate of several genetic units (Fig. 05C). [5, 6]

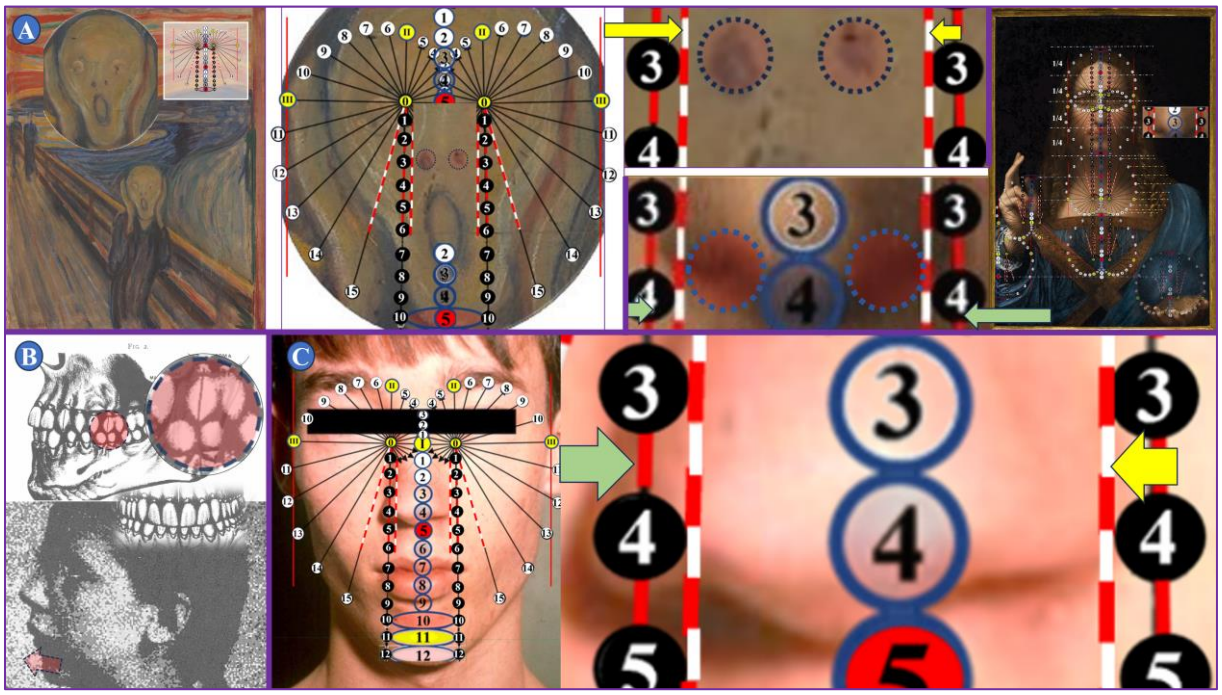

Figure 05 | Need for theory: The painting *The Scream* by Munch (A) shows the isolated component of the relative nostril width as a central element of fear in the event of shortness of breath in comparison with the relative nostril width according to the mathematically harmonious considerations of L. da Vinci. (B) from [3] shows the principal goal of orthodontic therapy, with the addition of colour: non-normal interlocking should be transformed into normal interlocking. (C) from [5] shows a patient with an maxilla that is too narrow on the left side (yellow arrow).

A theory is needed for a textbook on the instruction of a constant growth reference, so that a protocol aid for diagnostic images is available in future practice and therapy.

[1] MECARTERT ET AL. (2010) *Frank Lloyd Wrigth.* London (6. Auflage), S. 14.
[2] BEITIN AF (2004) *Der Schrei. Kunst- und Kulturgeschichte eines Schlüsselmotivs …* Dissertation. Universität Münster. S. 198.
[3] ANGLE EH (1899) *Classification of malocclusion.* The Dental Cosmos; a monthly record of dental science: Vol. 41:248-264.
[4] ESTEVE-ALTAVA B ET. AL (2015) *Anatomical networks reveal the musculoskeletal modularity of the human head*. Scien. Reports, 5(8298).
[5] VAN BUGGENHOUT G ET AL. (2006) *Lujan-Fryns syndrome (mental retardation, X-linked marfanoid habitus).* Orphanet J Rare Dis.
[6] HACKMANN ET AL. (2016) *… of Lujan-Fryns … – A conglomeration of different genetic entities?* Am J Med Genet A; 170A(1):94-102.

After 22 years of self-employment as a dentist and orthodontist, I know how important it is to be able to document the findings so that even your own mistakes in therapy decisions can be uncovered, which you as a doctor would not want to admit. Looking back, I didn't want to realise until ANNA died that accepted doctrines can be misinterpreted: University professors still teach today that thyroid hormones regulate bone remodelling, and I assumed that ANNA's nasal cavity had remained small from the diagnosis of *hypothyroidism HT* – she was 16 years old then. However, at the end of 2024, after refining the method – *the old method was without sub-division of the functional area, see 10. appendix; slide 17* – I realised that ANNA's nose had already been too narrow when she was 11 years old. This means that it was not the HT that caused the narrowed width of the nose, but rather that her too narrow width of the nose had caused the HT (Fig. 06).

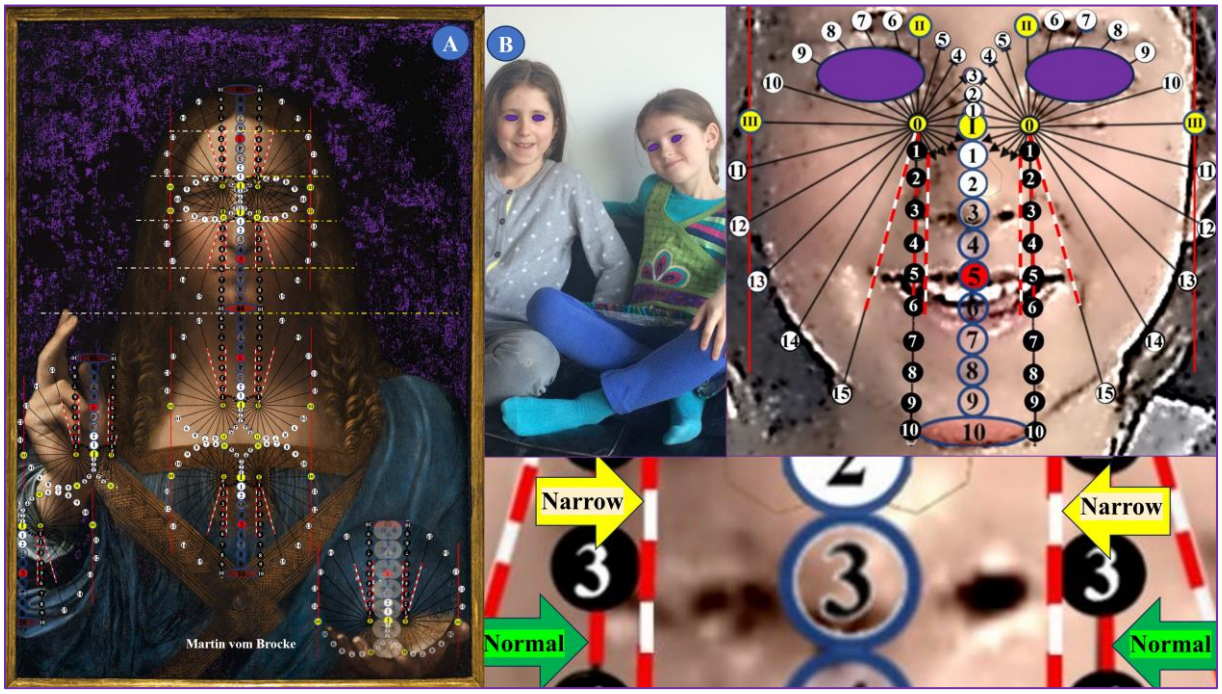

Figure 06 | Instruction: (A) shows the mystical book cover, which represents the fact that the structural theory of gravity cannot be proven, but can be used with the appropriate instruction for applying reference methods, which are characterised by a tripartite division – too little, normal, too much – and which can be associated with an analogy to the structural theory of gravity. (**B**) shows 11-year-old ANNA with her younger sister. An analysis of her face, using the harmonic growth template as a reference, shows that her nose is too narrow in relation to the width of her face. Her sister's nose width is normal.

I am convinced of the connection between breathing and HT because I have been intensively researching the phenomenon of harmonic structure formation for over ten years. [1,2,3,4,5,6,7]

[1] VOM BROCKE M (2015) *Struction – The harmonious theory of relativity*. ISBN: 978-3-945127-04-9.
[2] VOM BROCKE M (2015) *Strukturiert - Wie lassen sich mit DVT orale Strukturen vergleichen*? Masterthese. ISBN: 978-3-945127-07-0.
[3] VOM BROCKE M (2015) *Tooth Orthopaedia – A new Reference in Orthodontics and Dentofacial Orthopedic*. ISBN: 978-3-945127-12-4.
[4] VOM BROCKE M (2015) *Strukturieren – Fördert strukturiertes Lernen den Studienerfolg.* Dissertation. ISBN: 978-3-945127-06-3.
[5] VOM BROCKE M (2016) *Struktur – Warum sehen unsere Köpfe nicht aus wie Steine?* ISBN: 978-3-945127-08-7.
[6] VOM BROCKE M (2022) *Scientific Basis of the structural gravitation theory*. ISBN: 978-3-945127-38-4.
[7] VOM BROCKE M (2022) *The Norma Classification for Mandible Size.* Dissertation ISBN: 978-3-945127-407.

SOMETHING TO BAD AND GOOD REFERENCES FOR FACIAL GROWTH STUDIES

In 1899 E.H. Angle had published a classification with the molars (Fig. 05), with which 32 years later the first apparatus for teleradiographs was sold.[1] G. Broadbent recommended these images in connection with the Angle classification in 1931. He failed to mention that the skull base and molars are not in contact with each other and he believed that he could assess facial growth without further analysis (Fig. 07).

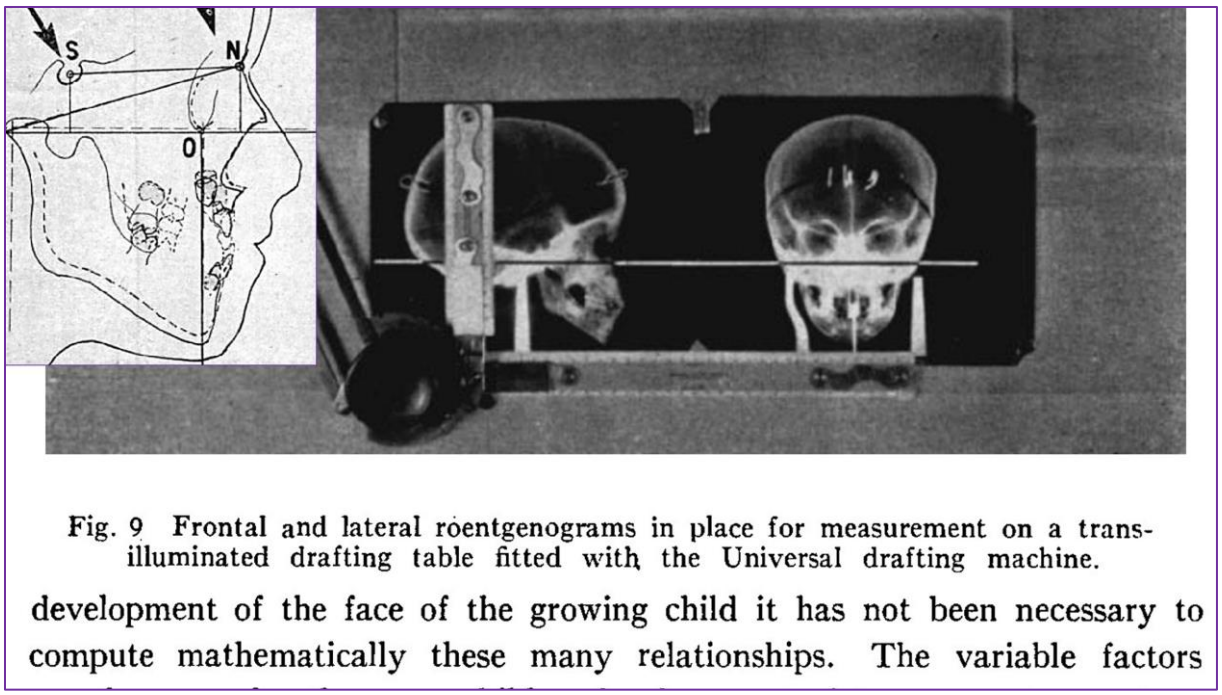

Fig. 9 Frontal and lateral roentgenograms in place for measurement on a transilluminated drafting table fitted with the Universal drafting machine.

development of the face of the growing child it has not been necessary to compute mathematically these many relationships. The variable factors

Figure 07 | Publicity: 07 shows a section of the article by G.H. Broadbent from 1931 (p.53) – here with one of his illustrations on the analysis of cephalometric radiographs {skull base points S (sella turcica) and N (nasion)} – supplemented. The frontal image was not analysed.

The use of references that are not directly related to one another in order to make a coherent statement is permitted in advertising, but in medicine, this approach is disastrous because the human being is a conglomerate of genetically predetermined characteristics that can be diagnosed individually but can usually only be treated in coherent relationships. The 4-D growth template is therefore very well suited as a reference, as can be seen from the facial growth of a pilot patient – see page 23. This book, with instructions on how to use harmonic growth templates, can be recommended to all universities and industry as a reference for comparative studies.

With template diagnostics, syndromes can be more easily recognised and databases created for therapy comparisons. Matchmaking with dental and facial geometry is possible and Hashimoto's thyroiditis, among other pathologies, can be plausibly explained.

[1] BROADBENT BH (1931) *A new X-ray technique and its application to orthodontia.* The Angle Orthodontist, Vol. I, No 2: 45-66.

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1. INTRODUCTION

1.1. The first three-part classification for therapeutic decisions in orthodontics

It took about 400 years from the first head and tooth examinations by Leonardo da Vinci († 1519),[1] until the first therapy protocol for orthodontics was published;[2] Edward Angle in 1899, how two findings – mesial and distal occlusion – can be classified using the upper first molars and, together with other unclassified tooth misalignments, can result in three diagnoses – malocclusion I, II or III. [3] He also received general recognition for a theoretical facial correlation and an analogy to the monkey bite (Fig. 1).[4, 5]

However, the assumed correlation of the facial findings with the molar findings can only be considered a coincidental correlation,[6] because its classification, among other things, has the weakness that it does not differentiate laterally and, strictly speaking, only allows the first lower molars to be pushed forward or backward. However, laterality is important because the upper and lower jaws may have come from different parents and the sides of the upper jaw may also have come from different parents.[7]

In the meantime, a morphological classification system for more findings has been published,[6] which has fewer weaknesses than the Angle classification[8] and with which dentofacial coincidences can also be recorded (see chapter 3). A system of this kind, which is geared towards a range of causal therapies, is necessary to ensure that anamnestic statements (Fig. 2) and objectifiable findings (Fig. 3) become diagnoses. Orthodontics is concerned only with aesthetic needs, but it does entail a certain risk (see lecture 2 in the appendix), which the patient must be informed of along with the diagnosis.

Figure 1: The first three-part classification

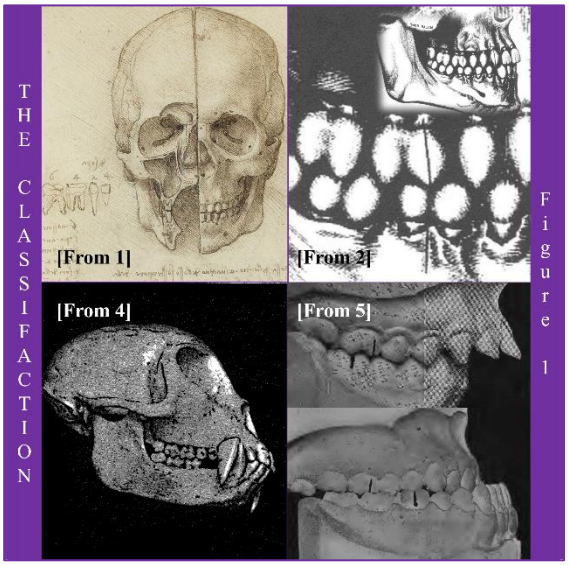
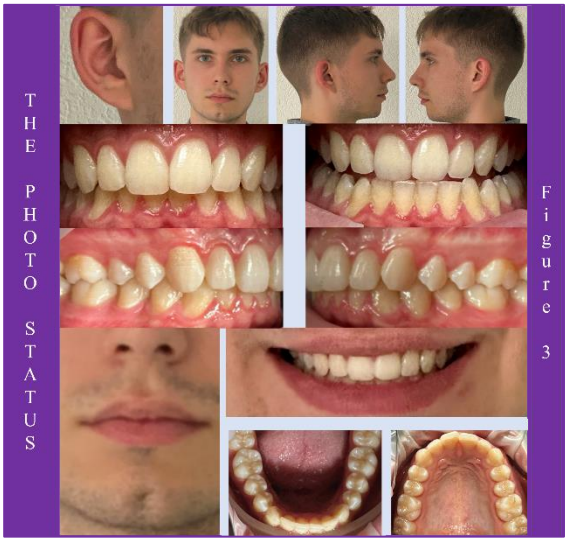


Figure 2: The anamnesis

Figure 3: Photo status



1.2. The three X-ray images to confirm orthodontic treatment plans.

Orthopantomographic radiographs [OPT], with a radiation exposure of less than 45 µSv, are two-dimensional tomographic images that provide a clear overview (Fig. 4) of dento-alveolar structures and adjacent tissues, as well as the maxillary sinuses and the two temporomandibular joints.[9] This also makes it possible to identify unexpected findings, such as supernumerary teeth. The disadvantage of OPTs is that they do not allow a three-dimensional assessment of the tooth roots, for example.

Digital volume tomography images [DVT] are three-dimensional X-ray images used in orthodontics when, for example, tooth roots or impacted teeth need to be assessed (Fig. 5).[10] Due to the radiation exposure, the DVT volume is indication, which allows the X-ray dose to be reduced from around 300 µSv to below 30 µSv.[11] However, whole-head scans are not recommended for routine estimation of growth patterns in relation to the skull base because of the increased radiation exposure.[12]

Cephalometric radiographs [Ceph] are two-dimensional X-ray images of the head with a largely parallel beam path, which have been available to orthodontics since 1931[13], although the first cephalometric analyses for recording angular characteristics – e.g. the SNA, SNB or ANB angles – and therapy (Fig. 6).[14, 15] Today, there are likely to be more than 100 different Ceph analysis methods and over 200 measurement points.[16] The latter further increases the importance of the critical question: how to find the appropriate Ceph analysis for patients with mixed ethnicity? Since this is practically impossible, a person-related analysis of facial growth characteristics is needed, rather than a population-related one!

Figure 4: Orthopantomographic radiographs

Figure 5: Digital volume tomography images

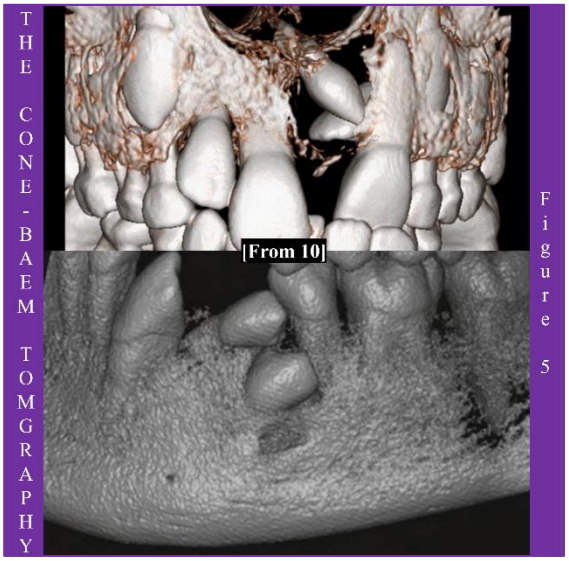
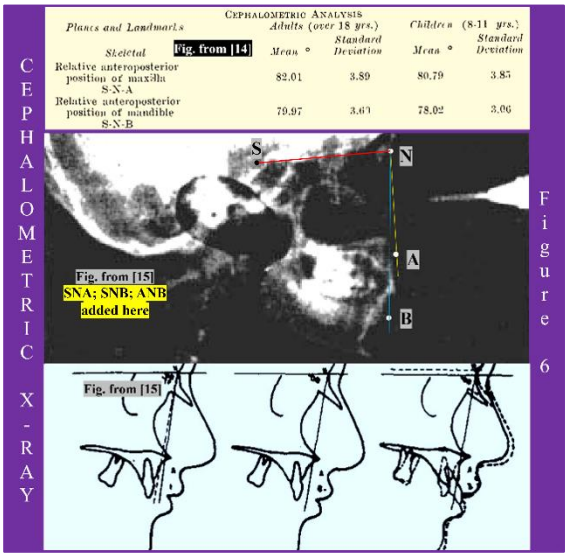


Figure 6: The cephalometric radiographs



1.3. What common starting point did da Vinci and Angle have with regard to growth analyses?

L. DA VINCI (*1452) and E. ANGLE (*1855) used the words *normally* and *harmonious* to describe anatomy because they were looking for an *ideal human* and an *ideal occlusion*, respectively. Thus, DA VINCI described the human body as a reflection of the harmonious form of the universe in order to paint a reference to God and health respectively (Fig. 7, WIKIPEDIA 2023), and ANGLE used the word *'harmonious'* 20 times and the word *'normal'* 35 times to describe a reference to health.[2]

If we consider the words *normal* and *harmonic* in the context of biological growth, then a numerical convention can be made here: the number 5 is assigned to the term *normal* – a hand has five fingers = 5. The term *harmonic* is assigned 10 = 2x5 (two hands, each with five fingers, fit harmoniously into each other; prayer as a unity, so to speak). If we assume that length (1), height (2), width (3) and time (4) are equally linkable[17] and analogously assignable dimensions, then a 4-dimensional structure spiral [4dR] can be constructed (Fig. 8 and 9), with which the terms *normal* and *harmonic* can be transferred representatively to the human being, because the real spiral $\mathbf{r_{\mathbb{N}} = e^{(\mathbb{N}\pi/12e)}}$ comes very close to a natural (numerical) equivalent with $\mathbf{r_{\mathbb{N}}} = \sqrt[(1\cdot2\cdot3\cdot4/\mathbb{N})]{\mathbf{1+2+3+4}}$. If this natural spiral is superimposed on the Vitruvian Man, then his body starts at level 1, his height is 10, the crotch region is at level 5, and the circle and square fit amazingly well. And if the mesiobuccal cusp of the first upper molar (Fig. 1) is used as a reference, then there are five buccal cusps and roots each mesial and distal to it (Fig. 9). This matches so well that the methodical approach for a person-related analysis has been found (see Chapter 3).

Figure 7: Metrology

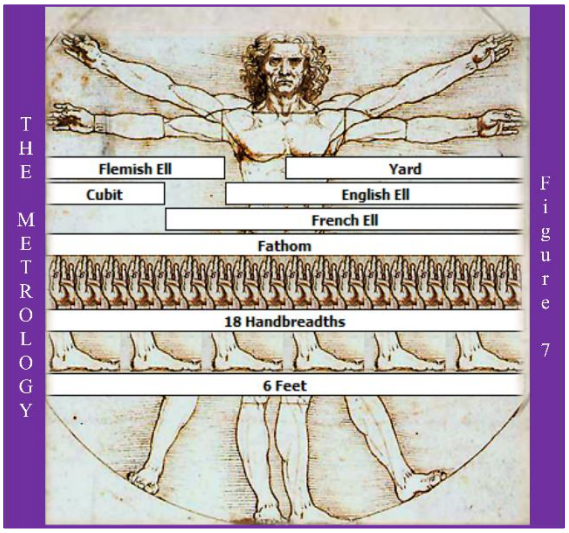


Figure 8: Normal 5; harmonic 2x5

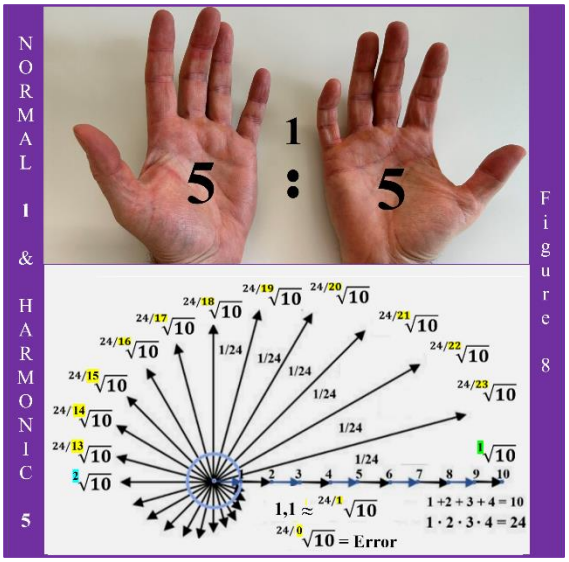
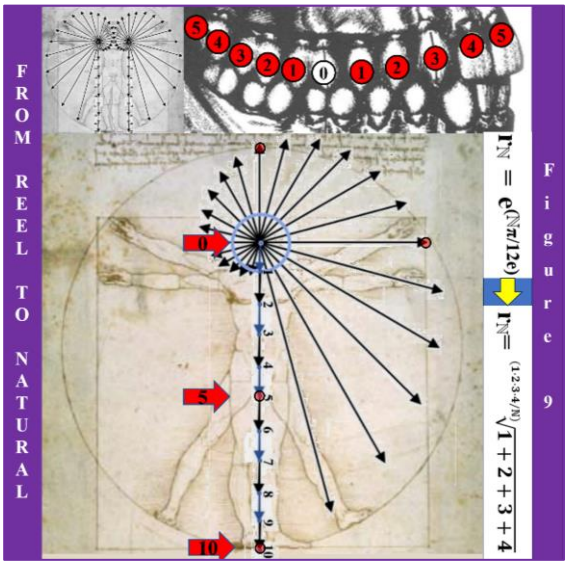


Figure 9: From reel to natural



1.4. The transcendence from the natural to a real 4-dimensional structure spiral.

Even if a morphological similarity can be seen in the superimposition of a duplicated structural spiral on the Vitruvian Man (see Fig. 9), a universally valid mathematical formula is still needed (Fig. 10) to enable the algorithmisation of the 4D structural spiral. Without its step-by-step transformation, no further harmonic growth patterns can be found that can be used as overlay templates to expand the angle classes (Fig. 11).

If, in the formula $r_{(\alpha)} = e^{\alpha/e}$, the opening angle α is represented as an integer multiple of 15° (= 3·5°) – 3·5, the word *ideal* – four orthogonal orientation points [ortho-points] result, which can only be calculated in ascending order with whole numbers using π and e. Since the spiral radius r at 360° is almost 10 (10.0890...), this real structural spiral is sufficiently similar to the natural structural spiral to be used to perform an examination of Angle Class I. Here, a superimposition of the first lower molar shows that the upper first molar was intuitively chosen very well as a relative reference by E. H. Angle (Fig. 11).

In addition to Euler's number e and π, *ln2* and *ln3*, among others, also have transcendental properties (Fig. 12), which is why the Hausdorf set $D = {}^{\ln 2}/_{\ln 3}$ is also useful when squared – D^2. If this is used in a structure angle [Sa] calculation $Sa(x) = \pi^4/(e \cdot D^2)^x$, then a transcendent angle template can be drawn which, at the value x = 1 – rectified (orthogonal) ratio – rounded 90° is obtained. If this is doubled by mirroring, it appears in a caterpillar-like form and is suitable for classifying facial profiles (see Chapter 3). But e alone can also be useful for classifications when mirrored (Fig. 12).

Figure 10: The structural spiral

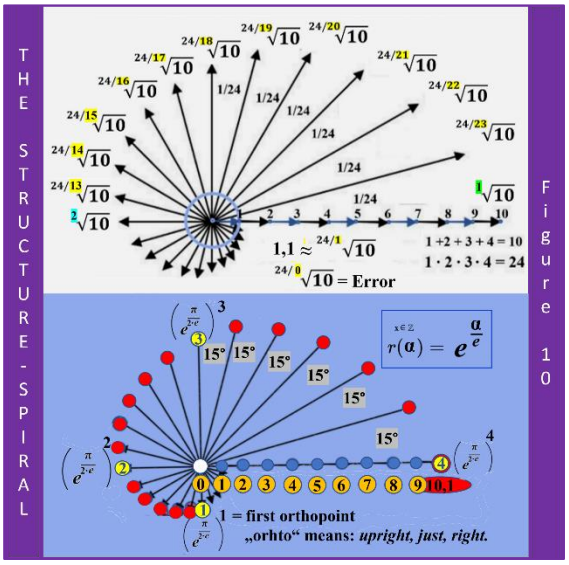


Figure 11: The first upper molar

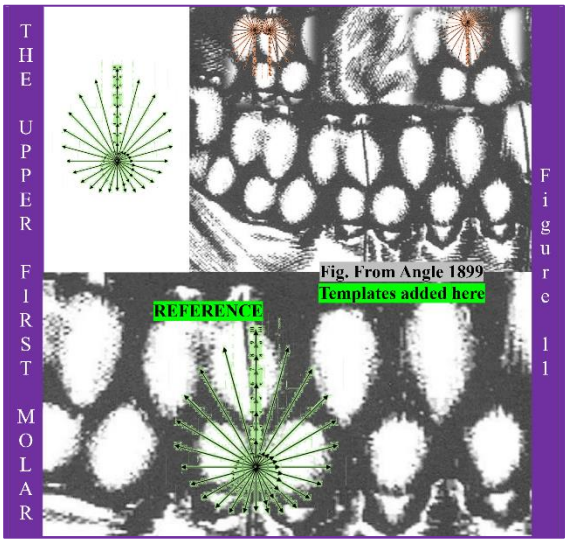
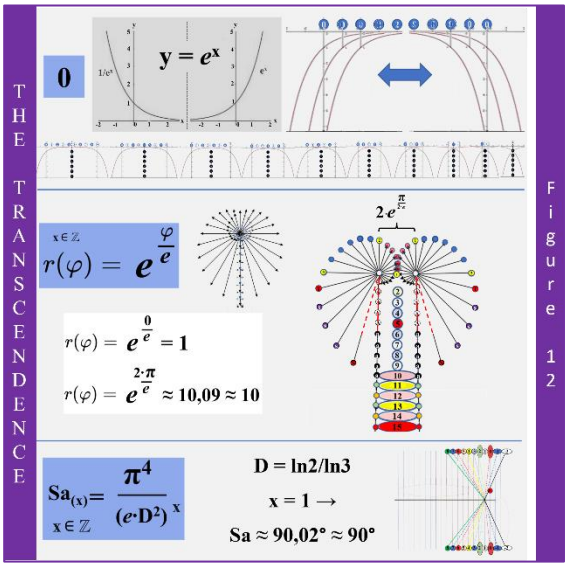


Figure 12: The transcendence



2. GOALS

The primary goal of this book is to publish a morphological system of superimposable orthotemplates [4dR-en] that integrates the Angle classification and expands it with 29 purely clinically recognisable three-part classifications. This is so that the associated patient complaints – too much or too little – are also available for 60 causal therapy decisions (Fig. 13; A to L) and a protocol system (Fig. 18). *The secondary objective* was to show that the 4dR-en are also useful in radiographs for finding causalities regarding the relative tooth widths and nasal space height (Fig. 13; M and N).

Is this system reliable (Fig. 14)? Yes, because the following four questions of trust could be answered positively: Is there an analogy to the individual orthostats in connection with a common basic theory? Is there a reproducible method for recording three independent findings? Do the classifications remain age-independent? Can classifications be used to check the relevance of previously published case studies?

The third goal is to make the amazingly simple classification methodology (see next pages), which is probably applicable to every biological growth, known worldwide. Only through global cooperation can a database for consultable case presentations that resemble one's own cases be created. Such a database for second opinions is important in order to better assess one's own therapeutic limitations. Fig. 15 represents the assumption of a universally normal harmonic growth, which can already be seen in 500-million-year-old shells, because shells must also have been influenced by gravity, which is why it is also referred to as a *structural gravity theory.*[18]

Figure 13: The 90 clinically objective findings.

90 CLINICAL FINDINGS

Pr	15 (A-L) clinical relations and its 30 features	60 possible complaints	Therapy
A	Face height: Maxilla & mandible	To much; ideal; to little	Yes; no
A'	Face morpho.: Nose width & face laterality	To much; ideal; to little	Yes; no
Br	Face profile right: Maxilla & mandible	To much; ideal; to little	Yes; no
Bl	Face profile left: Maxilla & mandible	To much; ideal; to little	Yes; no
C	Mouth height: Philtrum & chin	To much; ideal; to little	Yes; no
D	Tooth-arch with: Maxilla & mandible	To much; ideal; to little	Yes; no
E	Tooth-cups position: Maxilla & mandible	To much; ideal; to little	Yes; no
F	Molar bite sagittal: Right & left	Much; harmonic; little	Yes; no
F'	Molar bite vertical: Right & left	To much; ideal; to little	Yes; no
G	Canine free space: Right & left	To much; ideal; to little	Yes; no
H	Incisor free space: Right & left	To much; ideal; to little	Yes; no
I	Incisor length: Right & left	To much; ideal; to little	Yes; no
J	Incisor support: Right & left	To much; ideal; to little	Yes; no
K	Incisor presence: Right & Left	To much; ideal; to little	Yes; no
L	Incisor reflection: Maxilla & mandible	To much; ideal; to little	Yes; no
M	24 Tooth widths ratios in OPT-XR	To much; ideal; to little	Causal?
N	2 Nosespace ratios in Ceph-XR	Much; harmonic; little	Causal?

Figure 13

Figure: 14 The pillars of trust

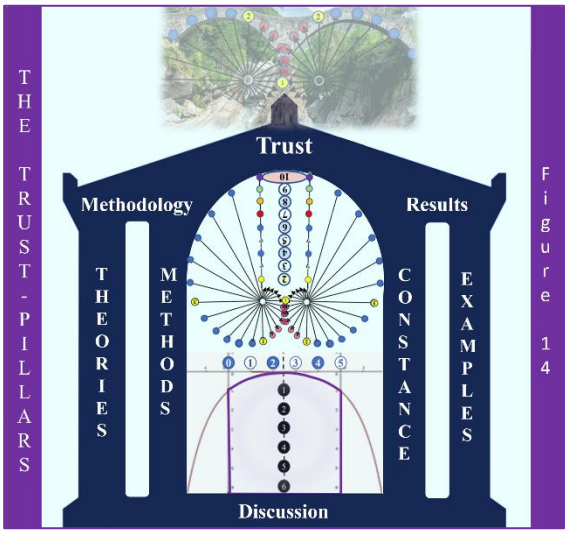
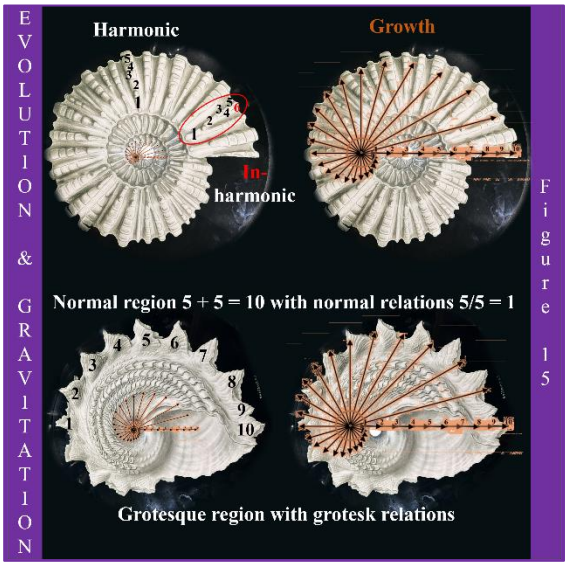


Figure 15: Evolution & Gravitation



3. METHODOLOGY

3.0. General

The standardisation (Fig. 16): To prevent selection errors [bias] from occurring when the photographs are superimposed on the orthotemplates, the minimum age of the patients is set at three years or at a complete loss of deciduous dentition. This is despite the fact that milk tooth development probably correlates with other developmental convergences [20] but it can be assumed that the nasal width ratios remain constant postnatally. Fig. 16 shows how, at just two months of age, the nasal width ratios already almost correspond to those at almost 21 years of age.

The scientific basic theory (fig. 17): The scientific basis of the structural gravitation theory is used as the basic theory for all theoretical considerations regarding the orthostats.[18] This assumes that human structures are shaped according to the properties of gravitation and are epigenetically adapted to necessary functions. For example, the same anatomical structure can be removed from all relatives for 5000 years and yet it will be there again in the next generation: *body follows function*. This is impressively demonstrated in humans by the ability to learn how to make decisions.[19]

The protocol principle (Fig.18): Fig. 18 shows with the hands the principle of the three-part classification and the **F**ace-**O**cclusion-**I**ncisor-**T**oothwidth protocol [**FOIT**]. Five fingers per hand represent normal [I], four fingers are one too few [II], and six fingers are one too many [III]. The 4dR findings are recorded as follows from 1 to 9: II/II = 1; II/I = 2; II/III = 3; I/II = 4; I/I = 5; I/III = 6; III/II = 7; III/I = 8; III/III = 9. Protocols 3 and 7 represent the most striking and thus contrasting relationship. E.g. lower to upper jaw or left to right side. A protocol = 5 represents a harmonious relationship.

Figure 16: The standardisation

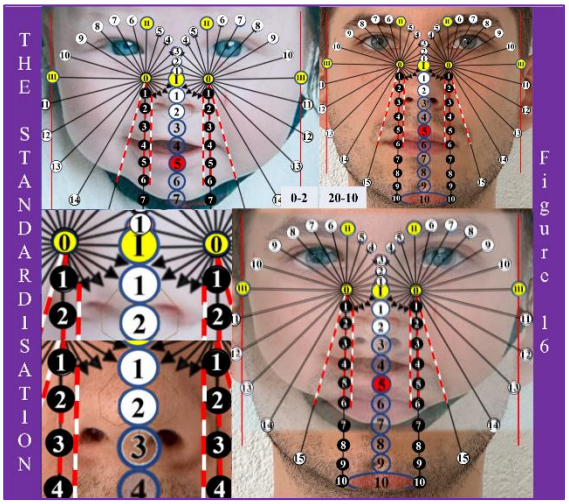


Figure 17: The scientific basic theory

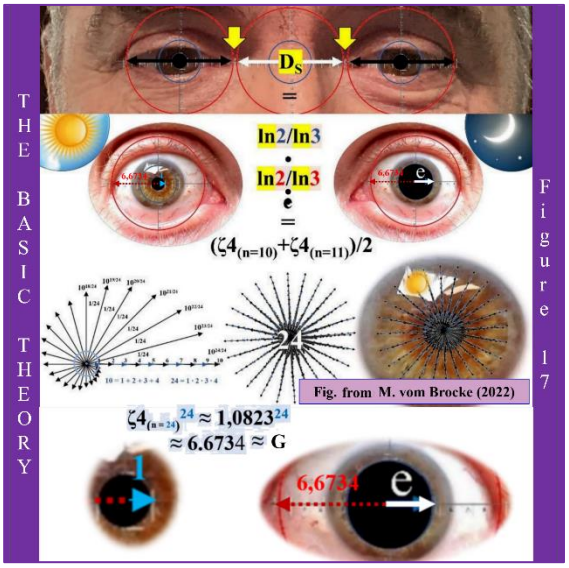
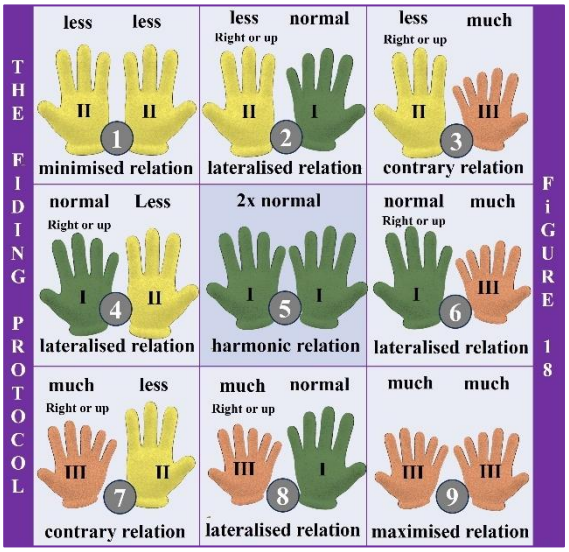


Figure 18: The protocol principle FOIT



3.1. A-template: *Facial height and asymmetry*

The A-A' theory (Fig. 19): *Just like apples, faces can have different lengths, cavities and shapes, which is important from an orthodontic point of view because harmonious and normal facial formations look better than long or short and/or asymmetrical facial contours and/or wide or narrow noses.*

The A-A' analogy (Fig. 20): The more freely an apple grows hanging from a branch, the more similar its shaped sides become because they are balanced. The more an apple is pushed to one side, the more disharmonious it grows. Isaac Newton († 1727) noticed that an apple falls vertically downwards and published his gravitational formula as a result. The head balances itself on the atlanto-occipital joint.

The A-A' method (Fig. 21): The patient photo is aligned horizontally according to the eyes. The A-template is then enlarged diagonally until the third orthodontic points reach the width of the face (Os zygomaticum). Then the A-template is pushed up to the centre of the lip so that the second ortho points reach the starting point of the eyebrows and at the same time an integer division is created [upper jaw height = lip centre to the spiral starting point (connection of ortho points III)]. The right side of the face defines the A-protocol; the A'-protocol can be equalised (see (B); A'-cl. = 5). Fig. 21 (a) shows an A-protocol [AP] = 6, elongated upper jaw (value 6 = A-cl. III) or the lower jaw height is shortened (value 4 = a-cl. II) and A'P = 5 - nose width is normal (in the red-white area means score = 0 and A-cl. I); too small or wide on one side ➔ score 1; on both sides ➔ 2). No asymmetrical contour means a'-cl. I (score = 0). (B) shows an AP = 7 and an A'P = 6. (C) shows an AP = 4 and an A'P = 5. (D) shows an AP = 6 - as in (A), except that the A score = 7 and A'P = 5).

Figure 19: The A-A' theory

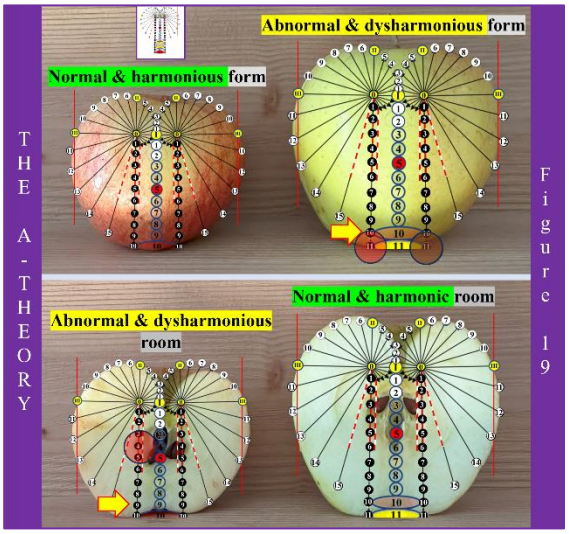
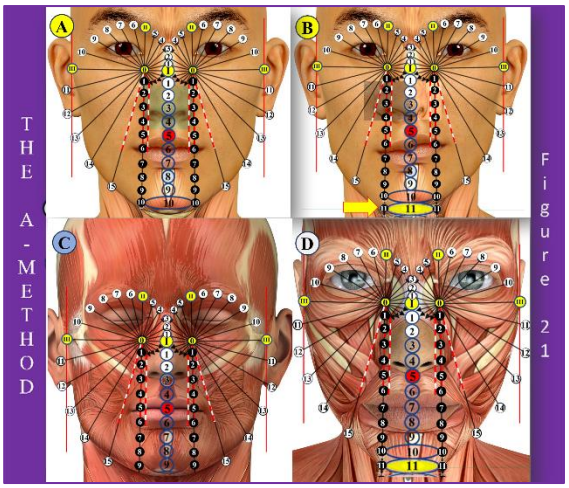


Figure 20: The A-A' analogy

Figure 21: The A-A' method



3.2. B-template: Face profile

The B Theory (Fig. 22): *Just like the front and rear wings of colourful butterflies, our middle and lower face can also be positioned differently in relation to a central structure (nose base). This is of orthodontic importance because straight facial profiles look balanced.*

The B analogy (Fig. 23): The longer a caterpillar hangs vertically downwards in its cocoon during its metamorphosis into a butterfly, the longer its structures adapt to gravity. In the process, the body is pulled apart by its own weight, which evolution uses as a structuring trick to harmoniously adapt the wings of the emerging butterfly to its target function in four dimensions. There is a harmonic series - zeta 4 - in the masthead, which is hidden in the cantor set D,[21] which is why the calculation of the structural angle Sa(x) (see Fig. 12) to the attachment point is plausible and $Sa_{(x)}$ can also be used to classify the attached lower jaw (lower face) or via the upper jaw (midface) in relation to the base of the nose as a reference region.

The B method (Fig. 24): The discrimination plane D of the B template is positioned with its apex (O) on the lowest nostril point (A) and its extension above the lowest attachment point of the earlobe (a). Sa to N‘ [N‘ = soft tissue nasion] defines the angle-dependent position of the upper jaw and Sa to P’ [soft tissue pogonion] defines the position of the lower jaw. The B-protocol B_P is here = 6, because the upper jaw with a value of B = -1 corresponds to a B-clade I. B = 0 would be a B cl. III; too far advanced; B = -2 would be a B cl. II). The lower jaw is too overgrown with b = 0. B - b describes a buccal profile of one side [B_P= B - b]: If B_P = 0 then the facial profile is straight; if B_P< 0 it is concave and if B_P > 0 the side is convex.

Figure 22: The B theory

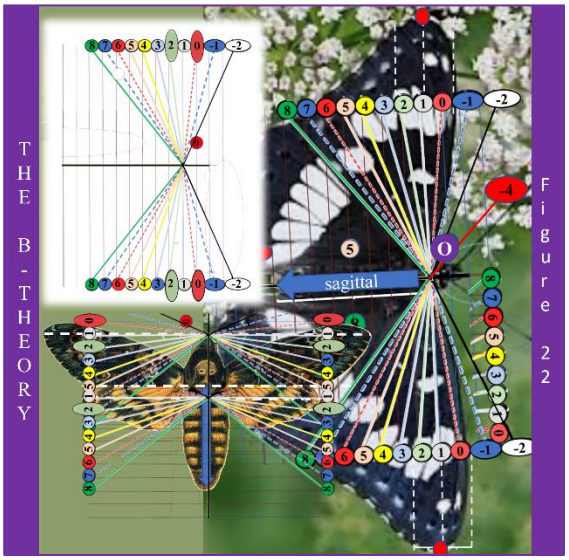
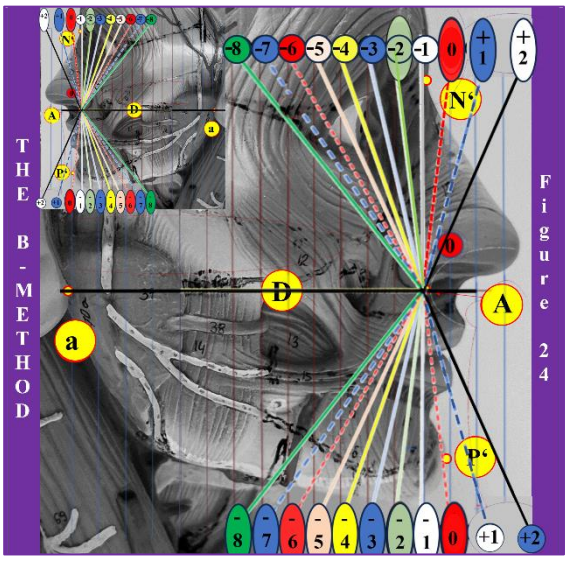


Figure 23: The B analogy

Figure 24: The B method



3.3. C-template: *Mouth height*

The C theory (Fig. 25): *Just as the chin-to-philtrum ratio [chin factor: C_f] can vary in monkeys, our chin-to-philtrum ratio can also vary, which is of orthodontic importance because a lower face with a C_f = 2 looks more harmonious than with a C_f > 2 or a C_f < 2.*

The C analogy (Fig. 26): Depending on the effort apes put into finding food, they have different subnasal ratios, because their vertical mouth ratios depend not only on the consistency of the food, but also on breathing through the upper jaw. The latter is important because not every ape reaches its food in the same way. If they have to move frequently - i.e. overcome gravity in a short time - to reach their food, then the shape of their upper jaw must enable rapid oxygen uptake: chimpanzees find their food both on the ground and in trees; gorillas tend to be ground dwellers and orangutans tend to be tree dwellers.

The C method (Fig. 27): The C template is enlarged diagonally to the width of the nose and positioned on the vertical centre of the lips. The distance from the centre of the lips to the lowest nostril points (A, B) gives the philtrum height = upper mouth height [C] and the distance from the centre of the lips to the lowest chin point (C) gives the chin height = lower mouth height [c]. Because the chin factor Cf is calculated with c/C and in humans C_f = 2 as a rule, the template is modified by a factor of 2 with regard to the philtrum height for pragmatic reasons (the m. orbicularis oris is not recognisable clinically): mCf = 5/5 = 1. In the example in Fig. 30, the C protocol = 5 because the philtrum height = 5 (C cl. I) and the modified chin height = 5 (c cl. I).

Figure 25: The C theory

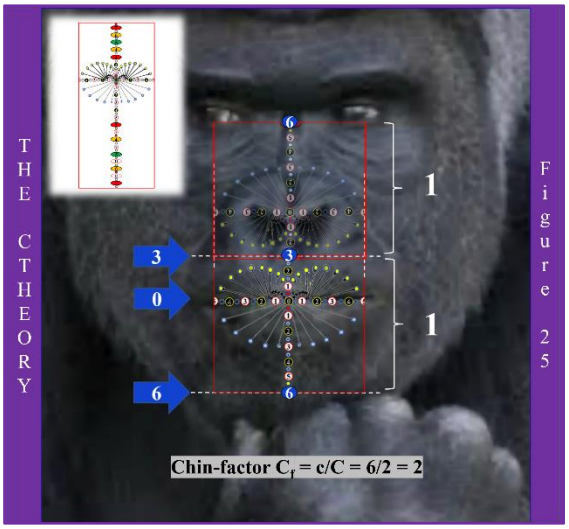


Figure 26: The C analogy

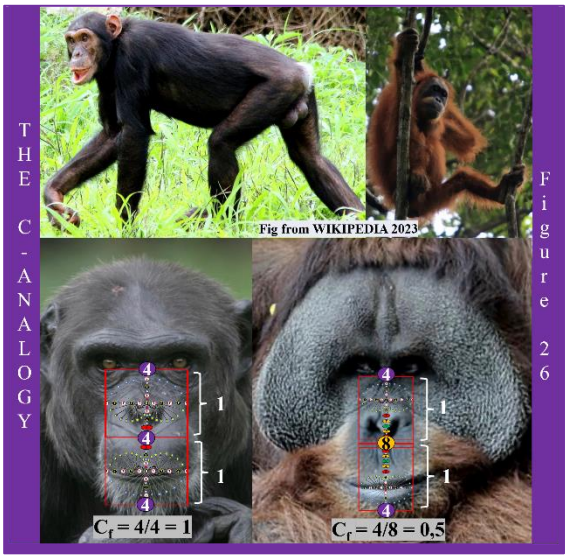
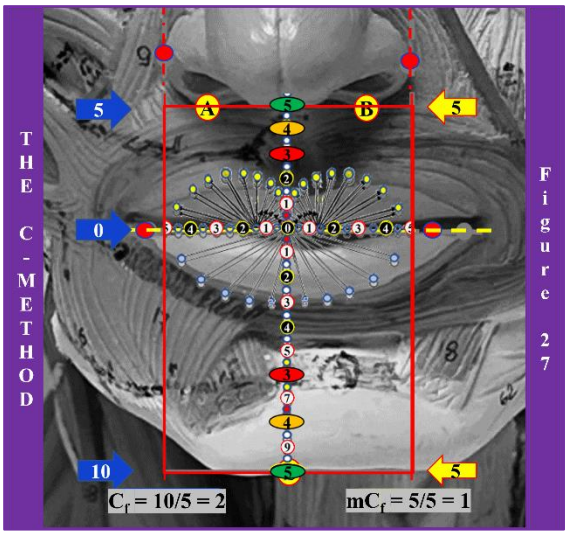


Figure 27: The C method



3.4. D-template: *Tooth arch width*

The D theory (Fig. 28): *Just like the dental arches of crocodiles - dragons - our dental arches in the area of the first six teeth can also be set at different distances from each other, which is of orthodontic importance because dentures with horizontally normal and harmonious dental arches look better than cross-bite dental arches.*

The D analogy (Fig. 29): The more consistently the jaws and teeth of crocodiles are aligned with gravity, the better this corresponds to normality. This is the case with the crocodile because it bites with the upper jaw and not with the lower jaw, which is attached horizontally to the body. The two dental arches are also not equally wide, otherwise it would injure itself when biting, and if the lower dental arch were wider than the upper one, the nasal opening would probably be pressed shut over time and not held as wide open as the crocodile needs for hunting..

The D method (Fig. 30): The template classifies the jaw width whose structural space fits between those of the first molars. The most oral point of the palatal root in the upper jaw and the most oral point of the mesial root (A) in the lower jaw are used for width scaling. At the same time, the template with the 6' baseline is placed over the distal contact point (B) of the first molars. In the maxilla (C) and mandible (D), the (presumed) buccal papilla of the central incisors is used as the classification decision. Fig. 30 shows a D protocol DP = 5 with the models superimposed in grey, because the maxillary dental arch is harmoniously (5) wide (D cl. I) and the mandibular dental arch is also (d cl. I). If there are only ten teeth, the D template is shortened to the 5 baseline instead of the 6 baseline (coloured blue here) and the same procedure is used for classification and recording.

Figure 28: The D theory

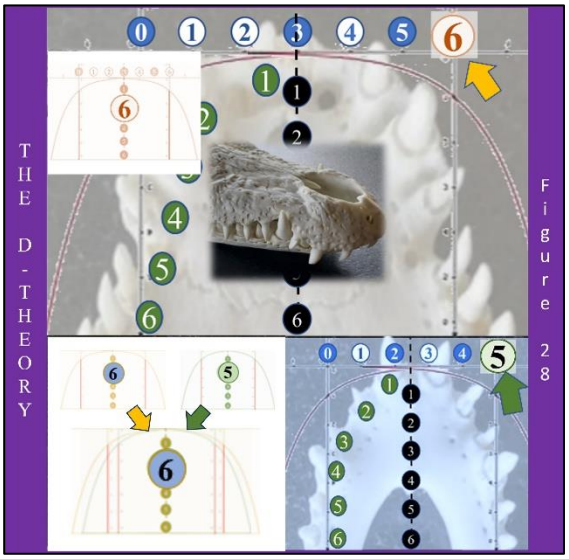
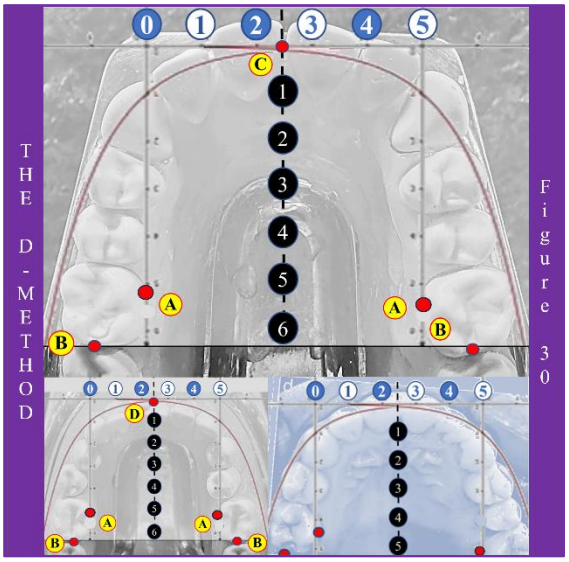


Figure 29: The D analogy

Figure 30: The D method



3.5. E-template: *Cusp position*

The E-theory (Fig. 31): *Just like the molar cusps in moose, our molars must also be supplemented mesially by cusp tips, which can fit differently and is of orthodontic importance because cusp tips that bite into each other look better than cusp tips that bite onto each other.*

The E analogy (Fig. 32): The heavier a mammal living on land is, the more the premolar cusps appear to resemble the molar cusps and not the canine crowns. The heaviest animals - elephant, rhinoceros, giraffe, bull, bison, horse and elk (which can also weigh over 800 kilos) - are all ruminants whose premolar cusps are more similar to those of the molars because they chew their food slowly and rely on the molars being supplemented by suitable teeth so that the molars do not erode too quickly. Predators, on the other hand, also use the premolars to tear apart their prey, which is why their cusps are more similar to canines. In humans, the premolar cusps are more similar to those of the molars (supplementary function).

The E method (Fig. 33): The E-template is placed like the D-template to record the cusp distribution in the secondary functional spaces per jaw. Fig. 33(A) & (B) show an EP = 5 because the upper and lower cusps are distributed symmetrically to the borders [E-cl. I; e-cl. I]. (A) still shows deciduous posterior teeth and an E value of 10 and an e value of 8 (only two cusps per deciduous molar). (B), on the other hand, shows an E value of 10 and an e value of 6. The permanent molar cusps are not counted. If there are asymmetrically many cusps outside the borders, but not orally, then a Class III would be present. If there is any doubt as to whether a Cl. II or Cl. III is present, then Cl. III is recorded. (C) shows a D class II and E class II with E value 7. (D) shows a D class III and E class I with E value 10.

Figure 31: The E theory

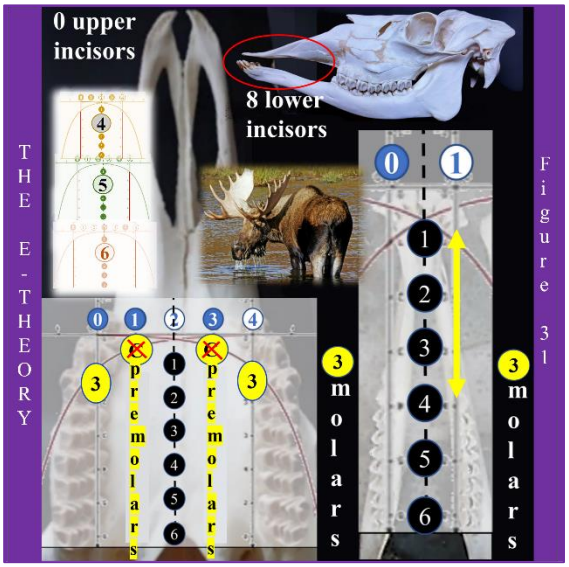


Figure 32: The E analogy

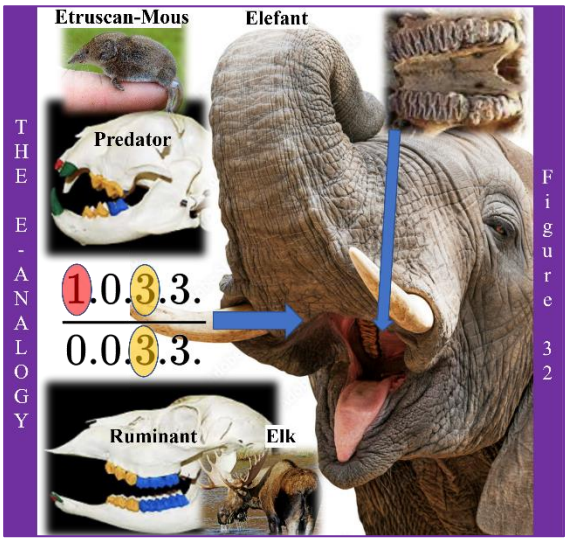
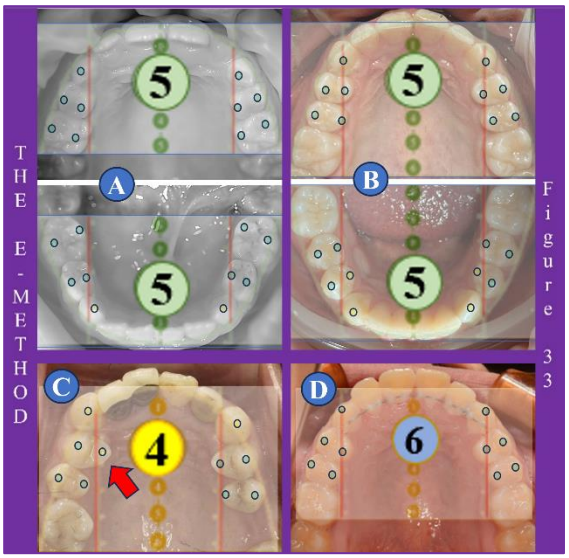


Figure 33: The E method



3.6. F-template: *Sagittal and vertical molar bite*

The F-F' theory (Fig. 34): *Just like the falling of water droplets, molar cusps can also transmit different amounts of pressure in relation to their impact surface, which is of orthodontic importance. This is because sagittally and vertically normal occluding molars look better than when they occlude too far back or too far forward.*

The F-F' analogy (Fig. 35): If a structure is pressed onto another structure, a permanent dent only occurs if the compressive forces cannot be distributed harmoniously. This is why human evolution has perfected the surface relief of molars. This can be compared with the erosion of existing mountain ranges - e.g. the Churfürsten - or mountain lakes - e.g. Lake Cresta: The water pressure washes away the less stable rocks, leaving behind jagged mountain ranges and mountain lakes. Why the nature of gravity is represented by the Riemann zeta function[22] must be explained by other authors.

The F-F' method (Fig. 36): The size of the F-guide is adjusted so that the orthodontic points 2 and 3 frame teeth 36 and 46 up to below the contact points (papilla tip): If the functional space runs over the mesial cusp tip of the first upper molar, then a sag. molar bite class I (score 4); if this runs distal to the mesial cusp tip of 16 or 26, then a class II (score ≤ 3) is present. If the score is ≥ 5, this is class III. If the image is not orthogonal, the actual value is estimated. The decision limit for F is the occlusion height. Fig. 36 shows an F record = 5, because an F cl. I is present on the right and an f cl. I on the left. The vertical molar bite at 16 and 26 is classified with the functional space transition to the gingiva: F'-I if F' = 11 to 15; F'-II if F' ≤ 10; F'-III if F' ≥ 16. f or f' represent the left side.

Figure 34: The F-F' theory

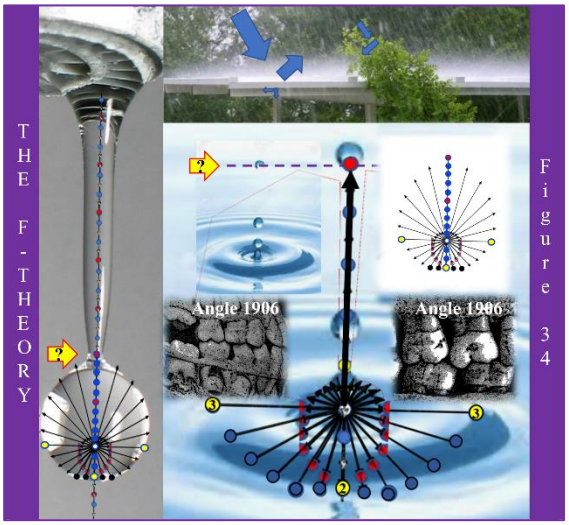


Figure 35: The F-F' analogy

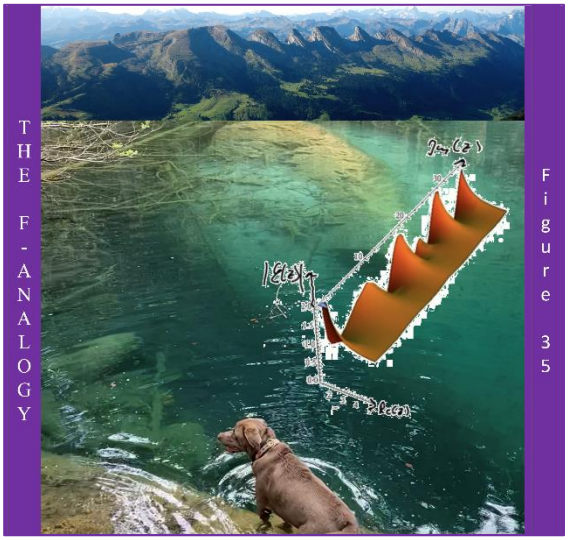
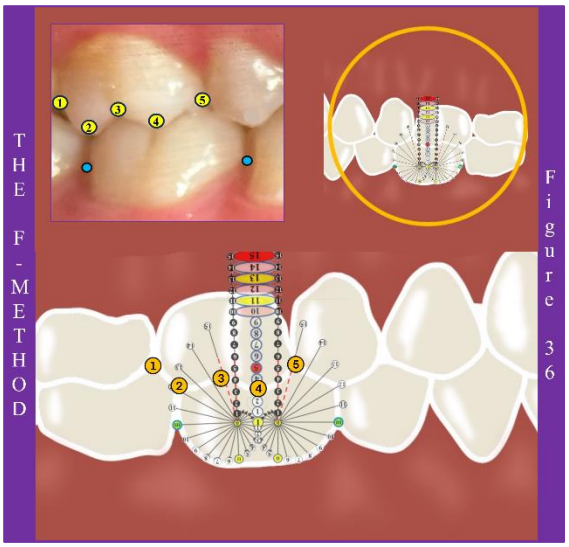


Figure 36: The F-F' method



3.7. G-template: Canine free space

The G theory (Fig. 37): *Just like the sliding direction of the fish, the eruption direction of the canines can also be different, which is of orthodontic importance because canines that are positioned normally to each other look better than canines that are misaligned or missing.*

The G analogy (Fig. 38): The idea of fish gliding - buoyancy versus gravity - is particularly elegant because it provides an analogy to therapeutic attachment and natural tooth eruption: After a tooth bud has formed from outer and inner enamel epithelial cells (a), which initially remains largely in place, it becomes a bell (b) because more ameloblasts migrate apical and at the same time odontoblasts form inside, which ultimately also form the roots. At about the time of mineralisation of this bell (c), the tooth germ begins to migrate coronally, whereby it receives help from a tooth sac, which resorbs away the structures in the way (38d-e). Since there are also teeth that have no roots and yet appear in the mouth,[20] it could be the crown shape that facilitates sliding (gliding) through the bone, receiving the necessary pressure from the jaw growth, whose weight, like that of all supporting tissues, counteracts gravity.

The G method (Fig. 39): The G-template is placed on the canine contour - enamel area - with the orthopoints 2' (2 for the deciduous canine) and 3 in line with the tooth axis and the distance [G] to the gingiva is used as a classification: G ≤ 15 means too little canine space. 15 < G ≤ 20 means a normal canine space. G > 20 means too much canine clearance. Fig. 39 shows a G record of 5 because a G cl. I or g cl. I is given; the milk canine 53 is also a G cl. I.

Figure 37: The G theory

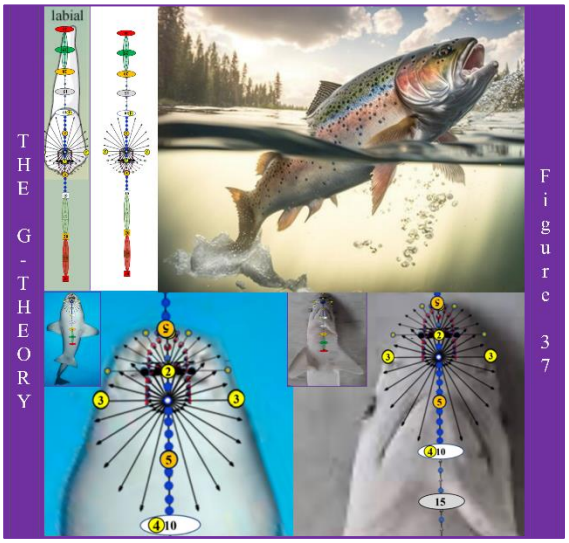


Figure 38: The G analogy

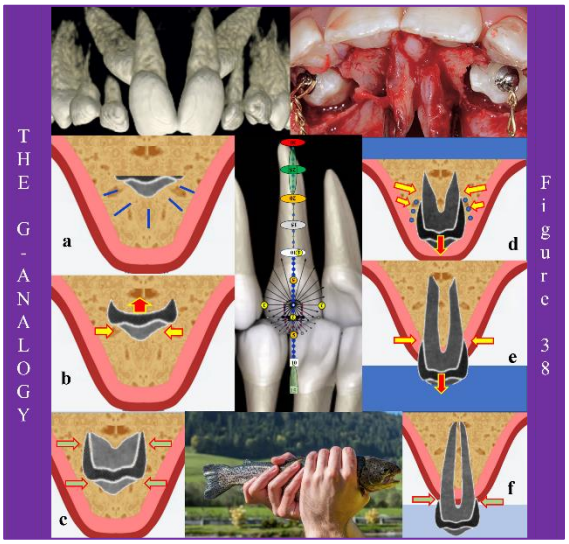
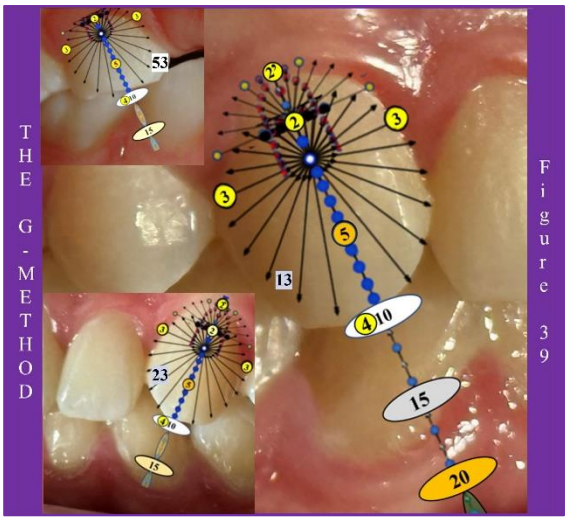


Figure 39: The G method



3.8. H-template: Incisor free space

The H theory (Fig. 40): *Just like the middle fingers of the hands, the upper central incisors can also protrude to varying degrees, which is of orthodontic importance because harmoniously (not extremely) positioned central incisors look better than central incisors that are too deep [deep bite] or too high [high bite].*

The H analogy (Fig. 41): The hands can only lift objects from the ground against gravity if these objects have previously been grasped with the fingers. The same applies to the jaws: the better their incisors are positioned, the easier it is to grasp something with them and bring it to the mouth. For example, this is only possible if the upper incisors also reach the lower incisors, which would be impossible with a frontally open bite.

The H method (Fig. 42): The H-template is placed with the orthodontic points 2 and 3 over the incisal edges of the central incisors and the distance H from orthodontic point 2 to the gingival border is used for classification. In the case of a crossbite, the H-template is rotated onto the lower central incisors and otherwise the same procedure is used for classification. H ≤ 5: High incisor bite (III). 5 < H ≤ 10 (I): Normal incisor bite. H > 10: Deep incisive bite (II). In the case of crossbite, there is a horizontally open bite, which is why it is categorised as class III. As no H value can be read here, which is very rare, it is assigned a general H value of 99. Fig. 42a shows an H record of 5, because there is an H class I on the right and also an h class I on the left. Fig. 42b shows a protocol bite of HP = 9 because there is an H cl. III on the right due to the crossbite and an h cl. III on the left also due to a crossbite.

Figure 40: The H theory

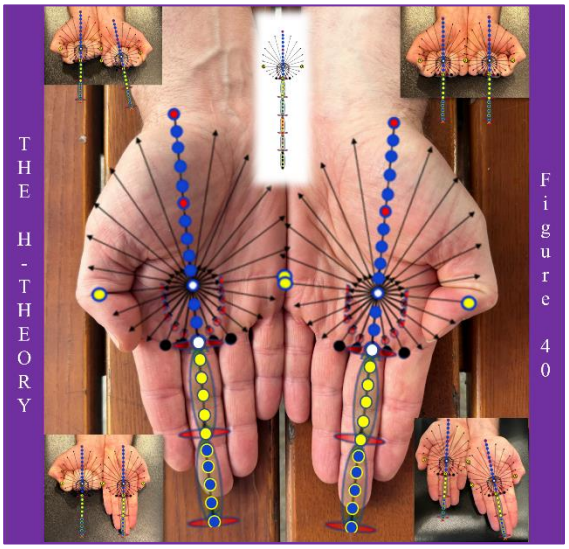
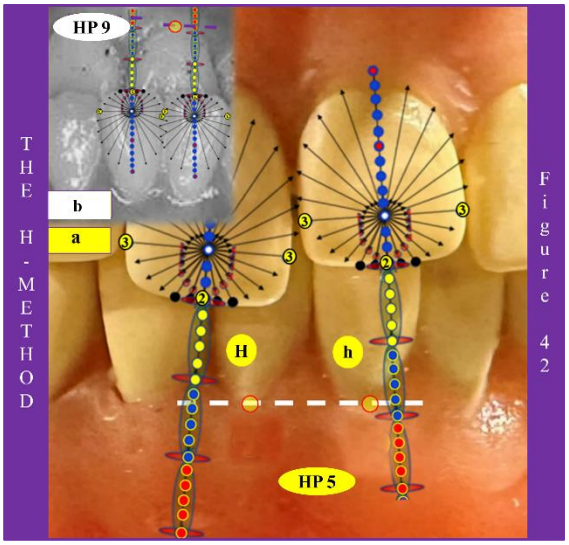


Figure 41: The H analogy

Figure 42: The H method



3.9. I-template: Incisor length

The I theory (Fig. 43): *Just like presumably all upper teeth, the upper lateral incisors can also differ in length when compared laterally, which is of orthodontic importance because harmoniously long upper lateral incisors look better than upper lateral incisors that are too short or too long (or relatively narrow).*

The I analogy (Fig. 44): An analogy between the lateral maxillary incisors and gravity can be found in the beaver. This herbivore has only one anterior tooth on each side of the upper and lower jaw. In the course of evolution, the canine, lateral and central incisors have joined together to form one continuously growing tooth per side and jaw. These powerful teeth serve as a facial support to help it glide through flowing waters in the best possible way, but above all to fell tree trunks for its dams. It thus moves against gravity in its own way, which explains its morphology. It seems that the lateral upper incisor is the tooth that most closely matches the relative width of the nose because it is positioned between the other anterior teeth.

The I method (Fig. 45): The I-template is placed with the orthopoints 2 and 3 over the incisal edge of the lateral incisors in order to determine their tooth length ratios based on the distance to the gingiva [I] and to be able to classify the tooth. Fig. 45c shows an I protocol of 9, because the upper right lateral incisor is 15 (3x5) in length [I class III] and the upper left lateral tooth also shows an i class III. If I = 10 ± 2.5, then these teeth would be of normal length, or they would be an I-Class I. If the I value were < 7.5, the teeth would be too short, or an I class II. Fig. 45b shows a peg tooth (I-Class III) and Fig. 45c shows a mesiodens - a rare and therefore unclassifiable finding.

Figure 43: The I theory

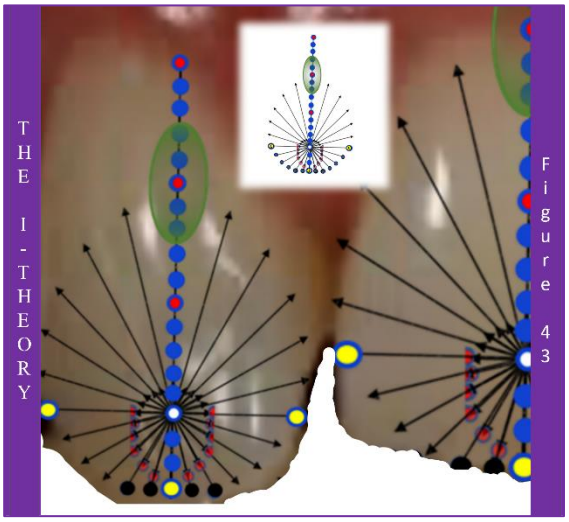
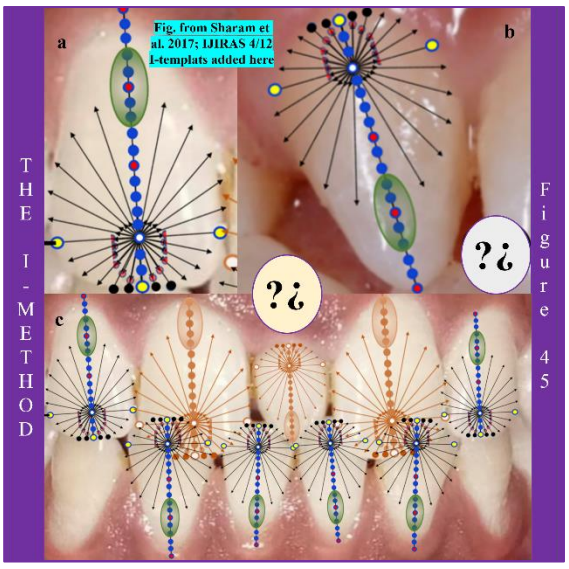


Figure 44: The I analogy

Figure 45: The I method



3.10. J-template: *Incisor support*

The J theory (Fig. 46): *Just like birds sitting on the same branch, the lower anterior teeth can also participate differently in a kind of joint venture, which is of orthodontic importance, because lower incisors that normally share the space harmoniously look better than an interlocked or loosened lower anterior region.*

The J analogy (Fig. 47): The more common contact surface in the same plane the two birds have on the branch, the less easily they lose their balance because they can support each other. If their bodies do not touch each other, this perching community is rather unfavourable. The agapornids (the lovebirds) seem to have understood this. The larger the contact surface, the more stable the situation on the branch is against the influence of gravity. In other words, the better the position of the front teeth is protected from the pressure forces during biting.

The J method (Fig. 48): The J-guide is placed with the lateral T-points on the distal contact points of the most distal lower incisors. This is done in order to assess the relative extent of the incisal widths in relation to the available space. As an initial classification, the number of distal contact points of the 2s and 1s per side is noted as a score: Fig. 48a shows a J protocol = 9, because more than one contact point (scoring for incisive support here is: J_r = J = 2; J_l = j = 1) is supported on both sides, not just punctually but over the entire surface. Fig. 48b, on the other hand, shows a J protocol = 5 with no extensive support but also no gaps (J cl. I; j cl. I). In the case of recognisable tooth gaps, the finding of excess space is clear and a J cl. II or j cl. II is noted because there is not even punctual support (scoring is then -1 or -2 per side).

Figure 46: The J theory

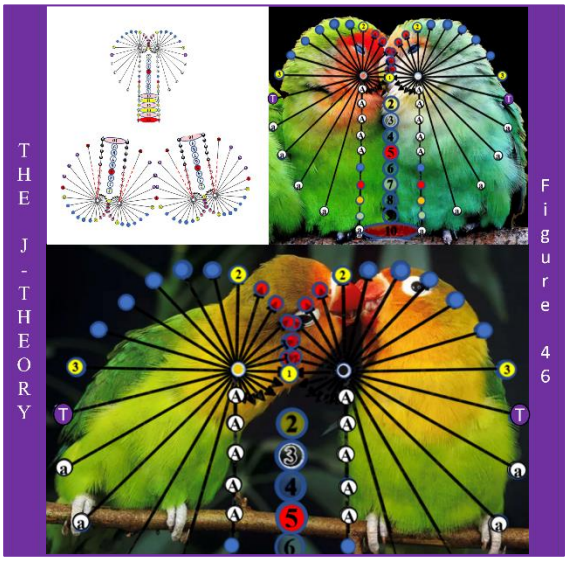


Figure 47: The J analogy

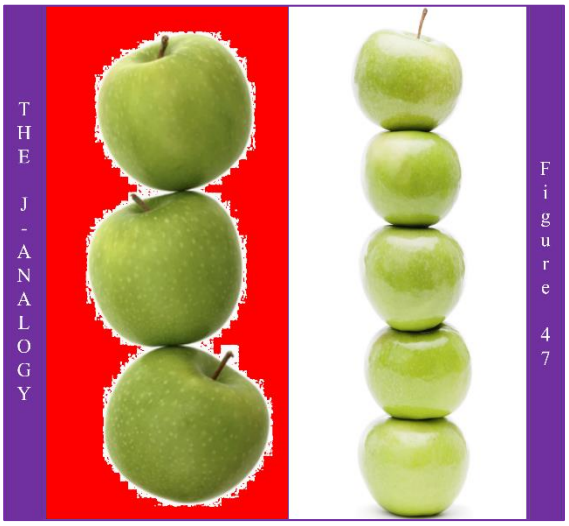
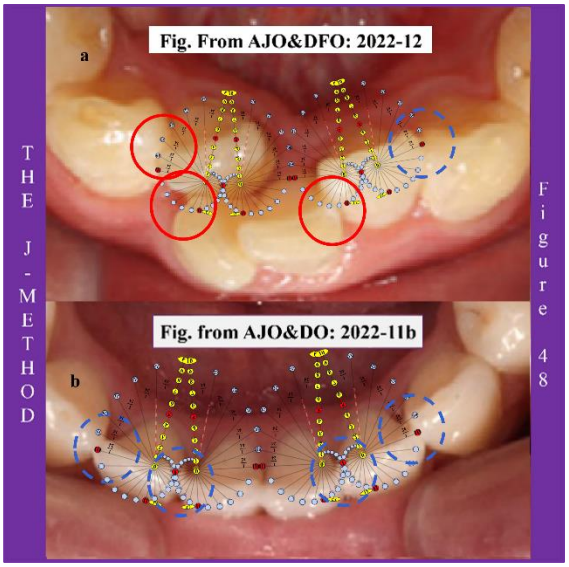


Figure 48: The J method



3.11. K-template: *Incisor presence*

The K theory (Fig. 49): *Just like the kissing mouth, the human smile can also be attractive in different ways, which is of orthodontic importance because a harmonious relationship between the visible gingiva and the presented tooth looks better than if too much or too little of the gingiva belonging to the tooth can be seen when smiling.*

The K analogy (Fig. 50): Mathematical simulation images of gravitational waves are suitable for visualising the analogy between gravitation (attraction) and the smile. If the gravitational waves of two black holes interact, representative numerical patterns emerge, which can be described in a useful classification pattern using four combined algorithmised structural templates. And finally, there is the not entirely serious question - a bit of humour in an otherwise serious text: Did the authors of the stories 'the frog prince and the frog princess' attract corresponding world fame thanks to the morphological similarity between the frog face and the kissing lips?

The K method (Fig. 51): The K-template is positioned with the third two orthopoints in the corners of the mouth in order to classify the vertical visibility of the upper gingiva. If the upper visible gingival papilla is located laterally to the central incisors within template lines 4 and 6, the situation is harmonious. Fig. 51a shows a K record equal to 5, because the gingiva is in the harmonious area on the right and left (K cl. I or k cl. I). Fig. 51b shows a K record = 9 because too much gingiva (K cl. III) is visible on the right and left between the upper lateral and central incisors.

Figure 49: The K theory

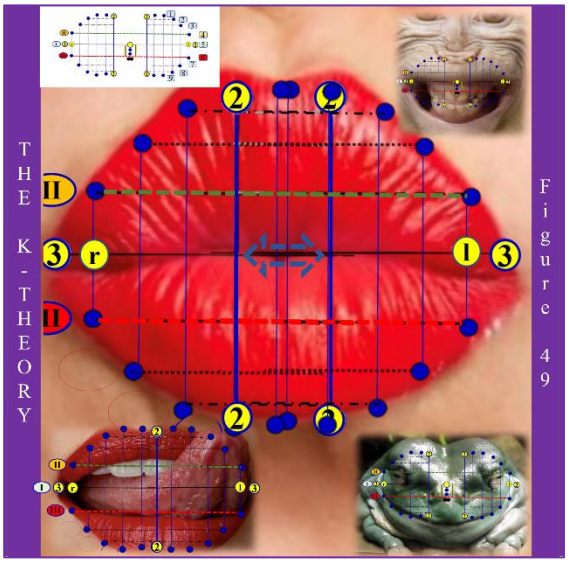


Figure 50: The K analogy

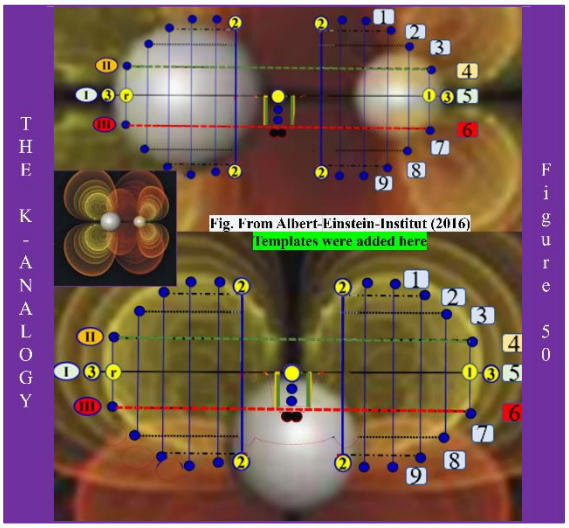
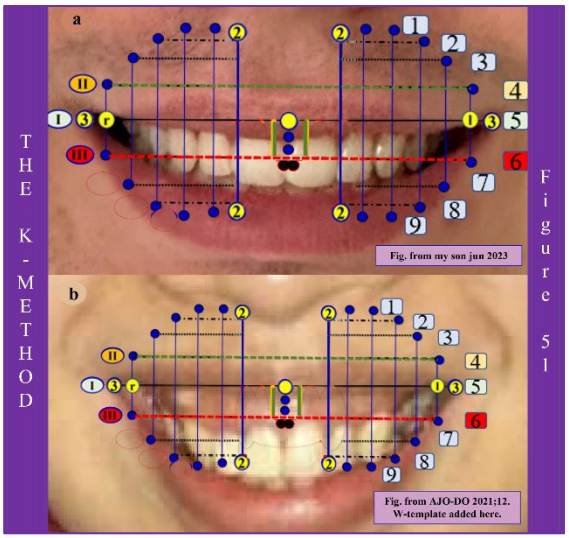


Figure 51: The K method



3.12. L-template: *Incisor reflection*

The L theory (Fig. 52): *Just like the reflection of light on a water surface, the incisor can also reflect light differently, which has a more or less attractive effect and is of orthodontic importance because a harmonious ratio of the reflected incisor colour looks better than if too little (opacity) or too much colour (discolouration) is visible when smiling.*

The L analogy (Fig. 53): The more harmonious the incisors are in comparison with each other, the purer the person standing in front of us appears to us. This can be easily recognised by the milk teeth in children in tooth replacement phase I, when the permanent teeth appear next to them.

The L method (Fig. 54): The incisive quality is classified without an L-template. This is because if $\mathbb{N} = 1$ is selected, the formula $R_{\mathbb{N}} = e^{(\mathbb{N}\pi/12e)}$ results in $R_1 \approx 1{,}1011010$. This radius is 0,1*01*1*0*1*0* larger than that of the unit circle, and this difference shows a four-part binary pattern, the sum of two consecutive numbers of which equals 1. This is at least representative of general color theory: Two color spectra are complementary if their sum produces the full spectrum of white light. [WIKIPEDIA 2023] They are therefore assigned to the incisors in the upper jaw L and the lower jaw l as follows. Opacity or discoloration means a class II, because less regular color is reflected - (Scores: One incisor/side affected = 2; several incisors affected = 1). Hypoplasia means a class III because the indentation increases the surface area or more light reflection (scores: one incisive/side affected = 4; several incisives affected = 5). Fig. 54a shows an L class II and an l class I □ L protocol: LP = 2. Fig. 54b shows an L class III and an l class I; □ L protocol: LP = 7.

Figure 52: The L theory

Figure 53: The L analogy

Figure 54: The L method

3.13. M-template: *Tooth type width*

The M theory (Fig. 55): *Just like the cap-to-stem ratios in mushrooms, the human tooth crown-to-root ratios can also vary, which is of orthodontic importance due to the space conditions, because a harmonious space distribution of the teeth simplifies oral hygiene and diversified tooth widths can explain physiological causalities in connection with the relative jaw sizes.*

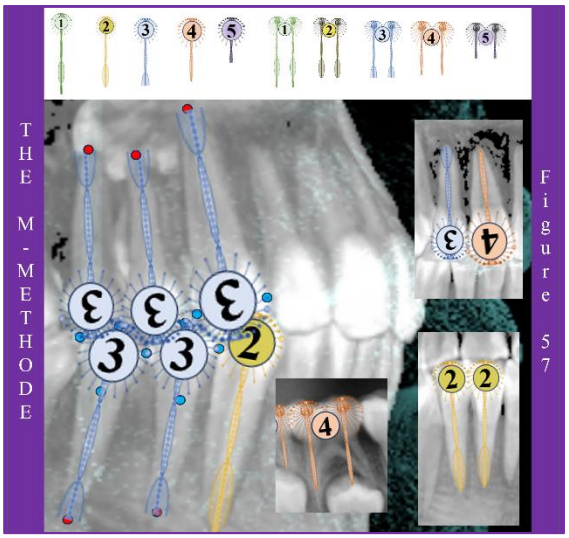
The M analogy (Fig. 56): The better the tooth widths match their available space, the larger the common occlusal surface will ultimately appear when all the teeth, held by matching roots, are in a row. This consideration fits in well with the road sections of stone bridges, which are held in the best possible position by pillars so that the objects on the bridge do not fall as a result of gravity.

The M method (Fig. 57): The relative crown width is classified using M-templates. A largely distortion-free X-ray image (OPT or DVT) is used to select the most suitable M-guide for each of the first 20 teeth. The head of the template should be used to narrow down the enamel area as much as possible. And in the case of milk molars, a double M-guide is used. The template that best reaches to the lowest point of the root (apex) determines the relative tooth width. A tooth width of size '3' corresponds to an M-Class I. As a rule, it is not necessary to determine the relative tooth width of the first permanent molars (or other permanent molars), as these teeth are not affected by the tooth change. The rather pointed cusps of the canines should be ignored because they will erode to a natural height over time. Of course, appropriate consideration should be given to extreme abrasion.

Figure 55: The M theory

Figure 56: The M analogy

Figure 57: The M Method



3.14. NO-template: *Naso-Oral-Space size*

The NO theory (Fig. 58): *Just as the development of the oral cavity (lower jaw) 400 million years ago from the nasal cavity (upper jaw) was decisive for respiration, the human nasal cavity and oral cavity formation are also of orthodontic importance, because a diversified matching of the two air intake possibilities can explain physiological causalities.*

The NO analogy (Fig. 59): The better the oral and nasal cavities fit together, the easier it is to achieve adequate functional equalisation. In principle, the functional equalisation corresponds to the facial profile situation, with the only difference being that the roof of the mouth absorbs the changing tongue pressure. If this is not successful, as in patients with cleft palates, for example, dysfunction occurs.

The NO method (Fig. 60): The nasal cavity size (N class) is classified using a more delicate B template [NO template], which is placed on the image as follows: The discrimination plane D of the template is placed with the apex on the spina nasalis anterior (= intersection between the spina planum and the nasal wing) and its extension over the spina nasalis posterior. It is then scaled to the height of the N-point (Nasion: Sutura naso-frontalis) in order to make a relative classification of the size of the nasal cavity to the lower jaw: If the downward-mirrored relative nasal cavity size runs over P [pogonion; score = 2] as in Fig. 60, then an N class I is present (normal-sized nasal cavity. If it runs more over the B point, then it would be an N class II (relatively small nasal cavity). If it ran more over M [Menton], then it would be N class III (relatively large nasal cavity). The evaluation of the size of the oral cavity - O class - is determined by the angle to the B point P. Fig. 60: O = -23 or an O class II. If O = -12, then the oral cavity would be of normal size or O class I. O = -0 or more means an O class III.

Figure 58: The NO theory

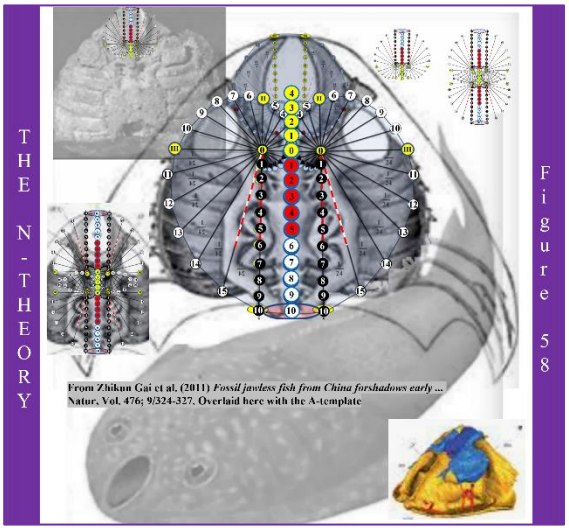


Figure 59: The NO analogy

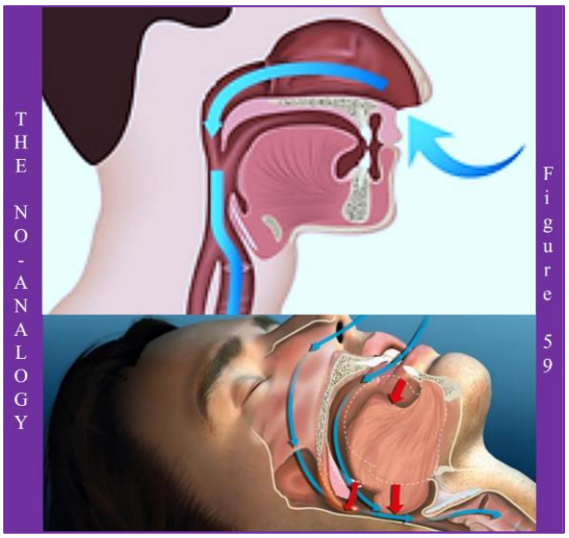
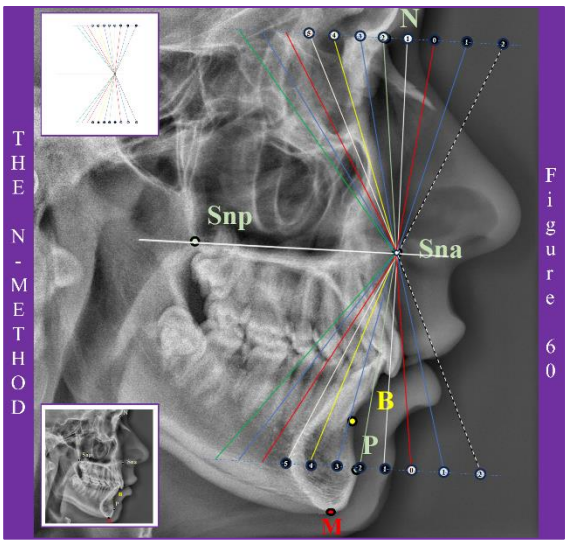


Figure 60: The NO method



4. RESULTS

As a review (quasi the result) of the classifications made, a long-term observation of the constancy of the classes, examples are presented and observations for further studies are discussed.

4.1. A-A‘: *Facial height and asymmetry*

4.1.1. The A-A' consistency: Fig. 61 shows a long-term observation of the pilot patient. Here the A protocol [AP] from 8 to 17 years = 4; from 18 years the AP = 7, because from this age the template fitted better after being moved up one position. The A' protocol remained unchanged at A'P = 5. His lower jaw remained too little long (too short) the whole time (a=4). Nevertheless, from the age of 18, a normal facial length (A+a=10) was revealed due to a too long upper jaw (A=6) and a too short lower jaw (a=4).

4.1.2. The A-A' examples: Fig. 62 shows A and A' protocol examples from the *American Journal for Orthodontics and Dento-Facial Orthopedics* [AJO-DO] and the *Angle Orthodontic Journal* [AOJ]. After an overlay with the A-guide. (A) Cleft lip and palate; (B) Acromegaly; (C) Apert's syndrome; (D) Hemifacial microsomia; (E) Gummy smile; (F) Open bite with crossbite.

4.1.3. The A-A' observation: Fig. 63 shows, among other things, the height of the father's upper jaw, which matches that of the 21-year-old son with an almost mystical precession. The upper jaw height of Salvator Mundi, on the other hand, is one value greater and only the lower jaw heights match for all three. The reason for this may lie in the doctrine of VIT-RUV (1st century BC), who observed that the lower third of the face should begin at the base of the chin and end at the nostrils. Was Vitruvius only basing his observation on a single study? Probably yes.

Figure 61: The A-A' consistency

Figure 62: The A-A' examples

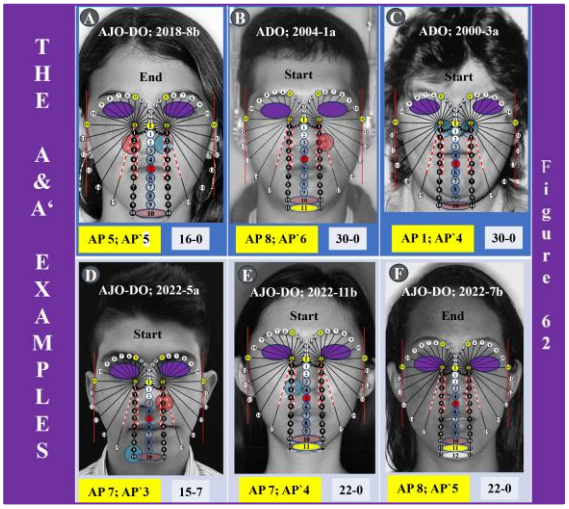
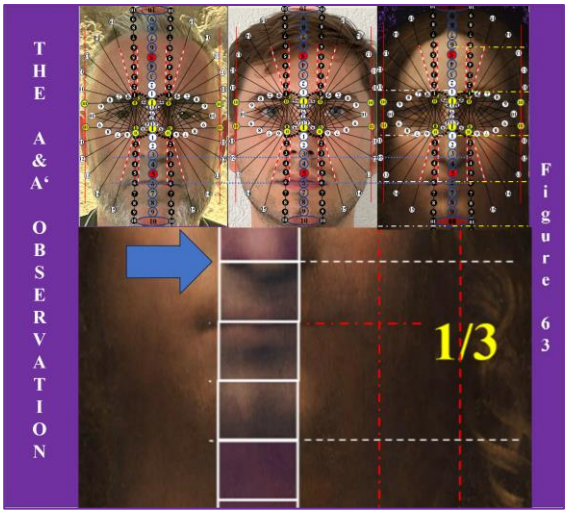


Figure 63: The A-A' observation



4.2. B: *Face profile*

4.2.1. The B Constance: Fig. 64 shows a long-term observation of twelve years. Here the Br protocol BrP = 6 remained unchanged. The pilot patient had a Br value of 0 or a progenic upper jaw on the right (Br class III) at eight years and still had it at 20 years. The lower jaw, on the other hand, remained constantly retrogenic with a br value of -3 (b class II). Overall, B_P = B - b = 0 - (-)3 = 3, i.e. he has a slightly convex facial profile on both sides. However, the patient had no therapeutic concerns regarding his facial profile, which is why no orthodontic treatment was offered in this regard.

4.2.2. The B examples: Die in der Abb. 65 gezeigten neun B-Protokoll-Beispiele stammen aus dem *American Journal for Orthodontics and dentofacial Orthopedics* sowie dem *Angle Orthodontic Journal*. Hier ein paar originale Stichworte zu deren Therapien: a) Aligner und Minischrauben; b) Extraktion 11 und Lückenschluss; c) Kieferchirurgie; d) Augmentierte Kortikotomie; e) Extraktion von ma-xillären zweiten Molaren; f) Mini-Implantate und gerader Draht; g) Kieferchirurgie; h) Mini-Implantate und gerader Draht; i) Kieferchirurgie.

4.2.3. The B observation: Fig. 66 from the *AOJ* is representative of the question: At what point should a facial profile be therapeutically harmonised with which aid? In 2015, the *AOJ* published a twin study on this topic, which confirmed that the surgical solution (b) has a more stable long-term prognosis. An ortho-template superimposition allows the criticism that the facial convexity in case (a) was more pronounced on the right side. There was probably a hidden asymmetry here, as a gummy smile is visible on the right and not on the left - (a) was treated with an Herbst hinge, which only affects the lower jaw. Experience has shown that a slightly convex profile is still referred to in the literature for a $B_P \leq 3$. $B_P \geq 4$ is considered convex; $B_P \geq 7$ is considered strongly convex.

Figure 64: The B constancy

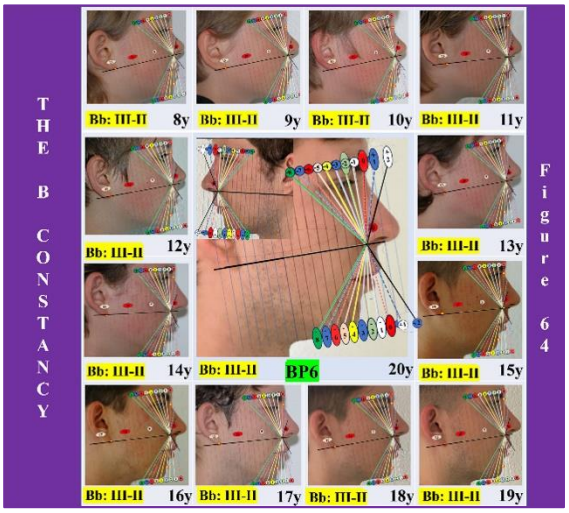


Figure 65: The B examples

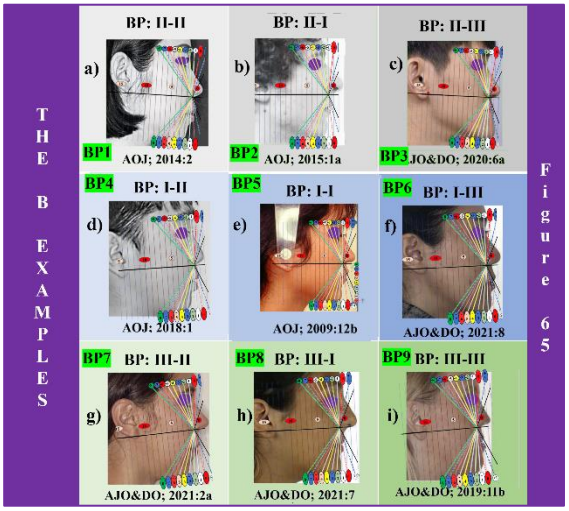
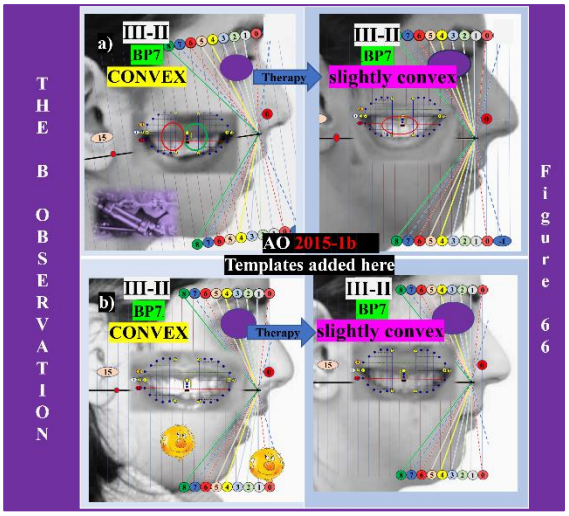


Figure 66: The B observation



4 3. C: *Mouth height*

4.3.1. The C constancy: Fig. 67 shows a long-term observation of twelve years. Here the C-protocol CP = 9 remained unchanged. The pilot patient had a C value = 6 or an elongated philtrum (C cl. II) at the age of eight and still had it at the age of 20. The same applies to his chin with a c-value of 6 (c-cl. III). Overall, his modified facial drift is 1, which corresponds to a normal philtrum-chin ratio, which is why no orthodontic treatment was offered in this regard.

4.3.2. The C examples: The nine C-protocol examples shown in Fig. 68 are taken from the *American Journal for Orthodontics and Dentofacial Orthopedics* and the *Angle Orthodontic Journal*, whereby the illustrations here have been superimposed with the ortho templates. Here are a few original keywords for their therapies: a) maxillary premolar and mandibular incisor extraction; b) lower incisor retraction; c) rapid palatal expansion; d) mandibular distraction osteo-genesis; e) correction of a deepbite and maxillary anterior protrusion; f) jaw-surgery; g) ramus distraction; h) edgewise appliance and miniscrews; i) autotransplantation..

4.3.2. The C observation: Fig. 69 shows a case published in the AOJ in 2012 in which a bite elevation was achieved by straightening the occlusal plane and thus the chin ratio was brought into the normal range (6/6 =1) CP = 8 became CP = 9. This case is good evidence of an orthodontic result through pure dental orthopaedics. Fig. 69b shows the desired target area, Fig. 69c the initial position and Fig. 69f the final result. Fig. 69e shows where the causality lay here: insufficient lateral tooth support abnormalised the chin/philtrum relationship and aligning and straightening the occlusion normalised it.

Figure 67: The C constancy

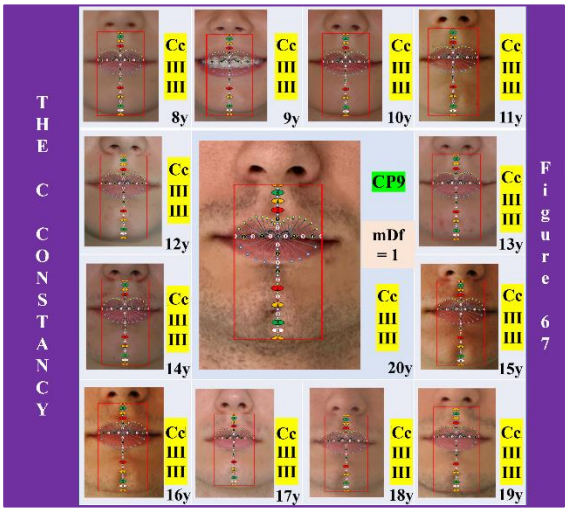


Figure 68: The C examples

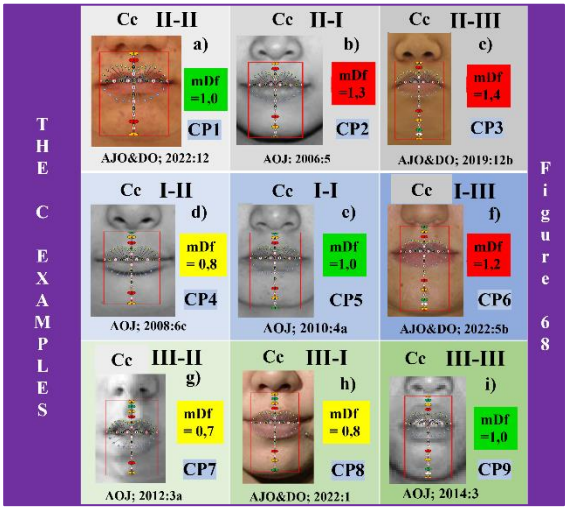
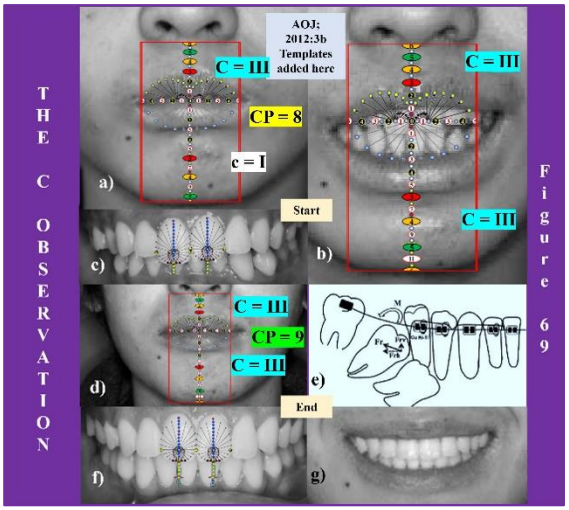


Figure 69: The C observation



4.4. D: *Tooth arch width*

4.4.1. The D Constance: Fig. 70 shows a long-term observation of twelve years. Here the D-protocol DP = 5 remained unchanged. The pilot patient had a D value of 5 or a harmoniously wide maxillary dental arch (D cl. I) at the age of eight and still had it at the age of 20. The same applies to the mandibular dental arch with a d-value of 5 (d-class II). The patient therefore had a normal dental arch bite for twelve years, which is why no orthodontic treatment was offered in this regard.

4.4.2. The D examples: The nine D-protocol examples shown in Fig. 71 are taken from *the American Journal for Orthodontics and Dentofacial Orthopedics* and the *Angle Orthodontic Journal*, whereby the illustrations here were superimposed by the ortho-templates. Here are a few original keywords for their therapies: a) extractions; b) rapid palatal expansion; c) jaw surgery; d) head-chin-cap; e) autotrans-plantation; f) en masse retraction; g) toothtarch widening; h) jaw surgery; i) lingual appliance..

4.4.3. The D observation: Fig. 72 shows the result of a first observational study on cleft lip and palate: If all case presentations of the AJO and OD as well as the AOJ between January 2000 and 2022 (total N = 465 + 176 = 641 cases) are analysed with the ortho templates, there are 21 cases with a cleft lip and palate problem. In 17 of these cases there is also a photo of the upper dental arch that was taken too obliquely (AOJ 2010:5b), which is why 16 cases remain for a D analysis. Of these 16 cases, eight cases had a D-width = 4 and eight cases had a D-width = 7. Not a single case had a D-width = 6 or a D-width = 5.

Figure 70: The D constancy

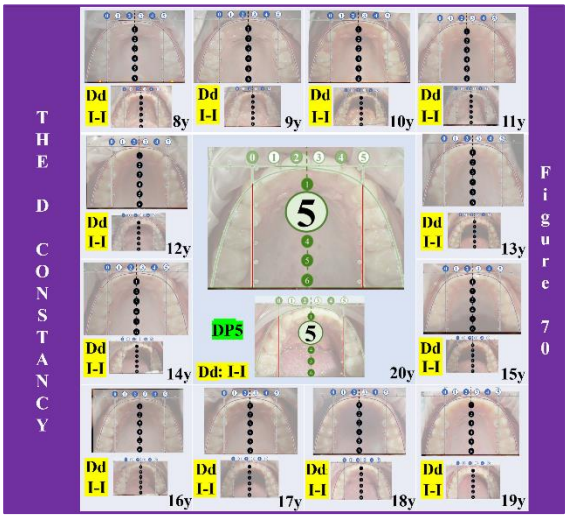


Figure 71: The D examples

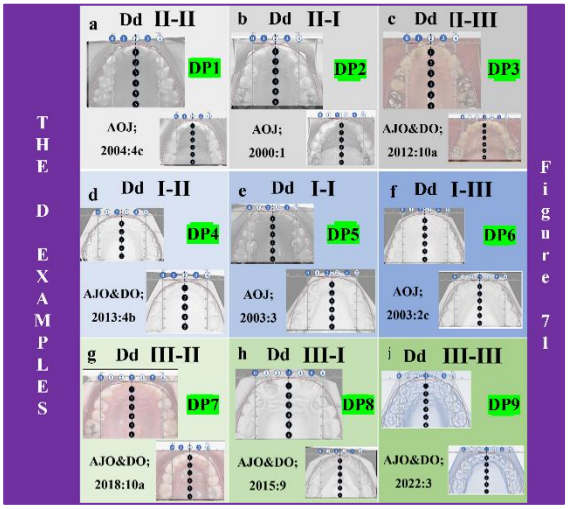
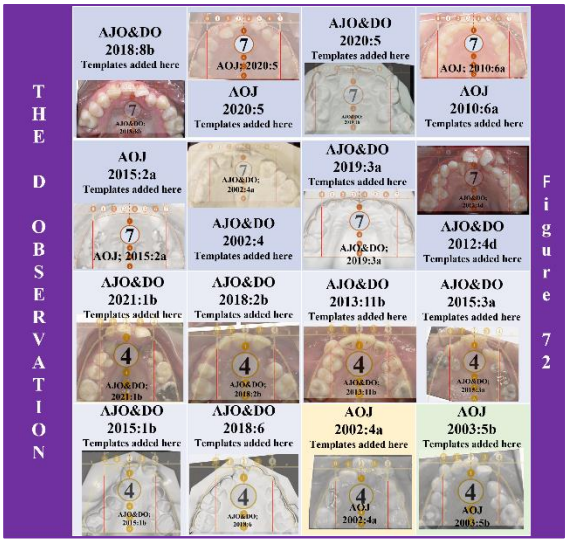


Figure 72: The D observation



4.5. E: *Cusp position*

4.5.1. The E constancy: Fig. 73 shows a long-term observation of 13 years. Here, the E-protocol remained EP = 4 until the age of 19 years and 6 months, after which it became EP = 5. The pilot patient had an E-class I or - sym-metric - cusp distribution in the upper jaw with regard to the support zone at the age of eight and still had it at the age of 21. The same does not apply to the lower dental arch: From 8 to 18 years, it had an e-class II and thereafter an e-class I. Here, the growth itself led to a harmonious cusp distribution.

4.5.2. The E examples: The nine E-protocol examples shown in Fig. 74 are taken from the *American Journal for Orthodontics* and *Dentofacial Orthopedics and the Angle Orthodontic Journal*, whereby the illustrations were superimposed with the ortho templates. Here are a few original keywords for their therapies: a) extractions; b) distractions osteogenesis; c) extractions; d) extraction; e) distractions osteogenesis; f) distal molar movement; g) super-elastic nickel-titanium alloy wires; h) distractions osteogenesis; i) extractions.

4.5.3. The E observation: Fig. 75 shows the replacement of the second deciduous molar in the maxilla on the right with the second permanent premolar. It is easy to see how nature has developed an extremely precise morphological system over time to bring the premolars into the best possible position. Although the deciduous molar in the illustration is a good 2 mm wider mesio-distally than the subsequent permanent premolar, the excess space has already been used up before the deciduous molar has completely fallen out. This means that the root resorption times and eruption times are harmonised with each other. Tooth replacement must therefore always be monitored closely, because if tooth replacement is delayed or disrupted, malocclusion is inevitable.

Figure 73: The E constancy

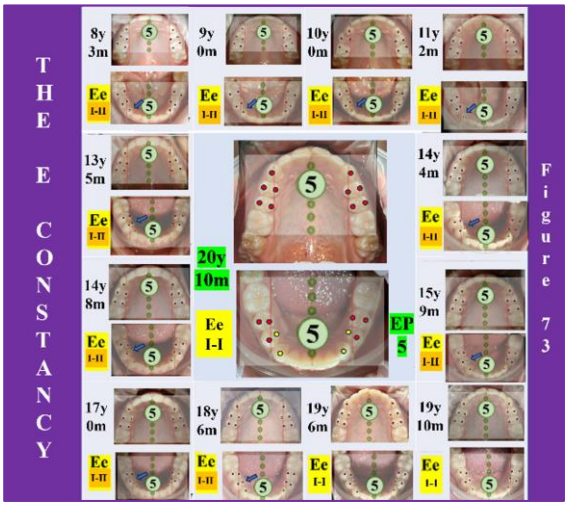


Figure 74: The **E** examples

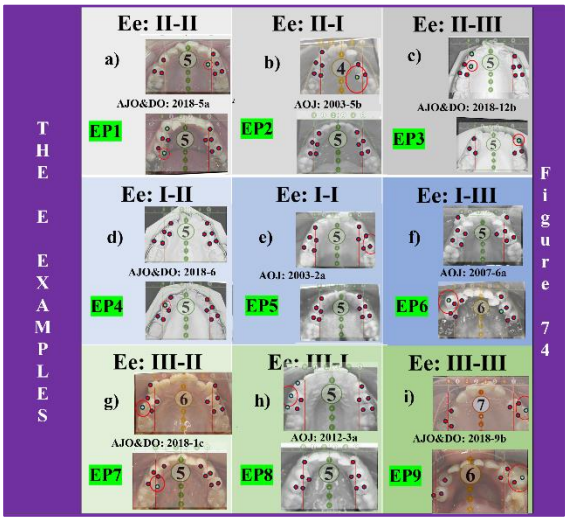
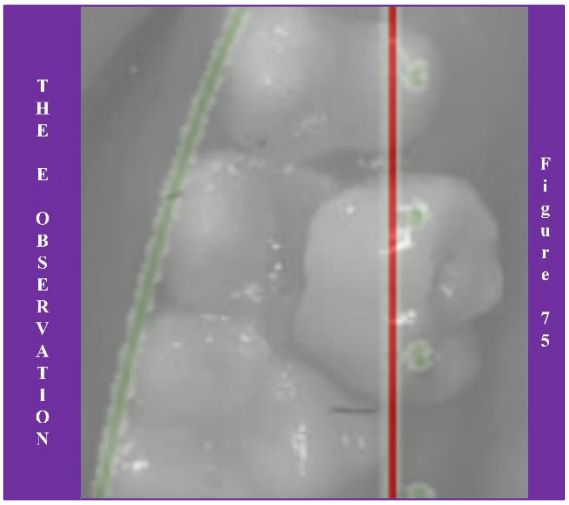


Figure 75: The E observation



4.6. F: *Sagittal and vertical molar bite*

4.6.1. The F & F' consistency: Fig. 76 shows a long-term observation of twelve years. Here, the F & F' protocol = 5 remained unchanged. The pilot patient had harmonious occlusions of the first molars on the right and left side at the age of eight - and still had them at the age of 20, which is why no orthodontic treatment was offered in this respect. Fig. 76 also shows that a 4dR with a functional space is more suitable here than without a functional space.

4.6.2. The F examples: The nine F-protocol examples shown in Fig. 77 are all taken from the *American Journal for Orthodontics and Dentofacial Orthopedics*, whereby the illustrations here have been superimposed with the ortho-templates. Here are a few original keywords about their treatments: a) lingual appliances in combination with a fixed Class II corrector; b) skeletally anchored dual-force distaliser; c) oral surgery; d) oral surgery; e) alignment of a displaced tooth; f) extraction of the mandibular first molar; g) unilateral extractions; h) oral surgery; i) skeletal Class III orthodontic treatment.

4.6.3. The F observation: Fig. 78 shows one of several results of an unpublished preliminary study on the validity of the orthotemplates (for further preliminary results, see Fig. 105). For this purpose, 736 images from the *AOJ* (77 published cases; January 2000 to Dec. 2022) and the *AJO and DO* (291 published cases; January 2009 to Dec. 2022) were selected and overlaid with the orthotemplates. The primary selection condition was that the authors had provided information on the ANB angle (see Fig. 6) and that intra- and extra-oral photos were available. For example, Fig. 78 shows a target frequency of 74% as a result for F-Class I. This proves that orthodontics does not have the unconditional goal of setting an Angle Class I, but rather aims to fulfil the patient's wishes.

Figure 76: The F & F' consistency

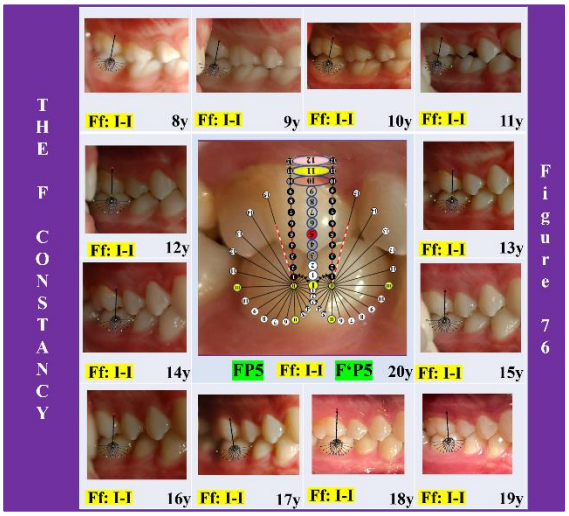


Figure 77: The F examples

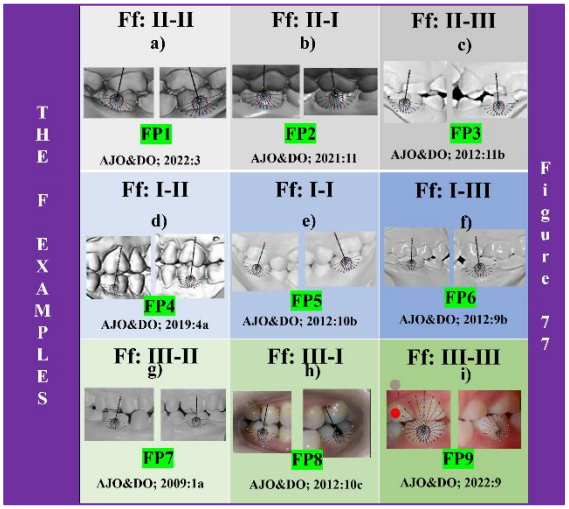
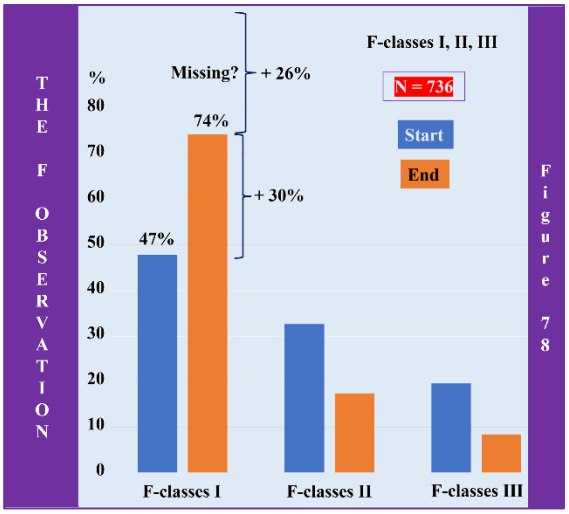


Figure 78: The F observation



4.7. G: *Canine free space*

4.7.1. The G-Constance: Fig. 79 shows a long-term observation of twelve years. Here, the G-protocol GP = 5 remained unchanged. The pilot patient had a G-Class I on the right side at the age of eight - i.e. a normal canine space - and still had it at the age of 20. The same applies to his left side (g-class I). GP5 is a normal canine clearance finding, which is why no orthodontics were offered.

4.7.2. The G examples: The nine E-protocol examples shown in Fig. 80 are taken from the Angle Orthodontic Journal and the American Journal for Orthodontics and Dentofacial Orthopedics, whereby the illustrations here were superimposed by the orthotemplates. Here are a few original keywords for their therapies: a) lingual arch appliance; b) customised lingual appliance; c) maxillary protection; d) orthodontic-orthognathic; e) autotransplantation; f) hyperdivergent; g) lower incisor extraction; h) extraction pattern; i) extraction of multiple molars.

4.7.3. The G observation: Fig. 81 shows the superimposition of the G-template with two toy spinning tops published by the German WIKIPEDIA in 2023. The selection of these two spinning tops for study can therefore be regarded as quasi-random. A superimposition of these two spinning tops with the G-template supports in many ways the convention for the number 5 as harmonic. If the orthopoints 2' and 3 are also used here to place the template, then the multiples of the number five (5, 10, 15) meet the structural boundaries of the spinning tops. Perhaps one day a physicist will be able to explain this to us.

Figure 79: The G consistency

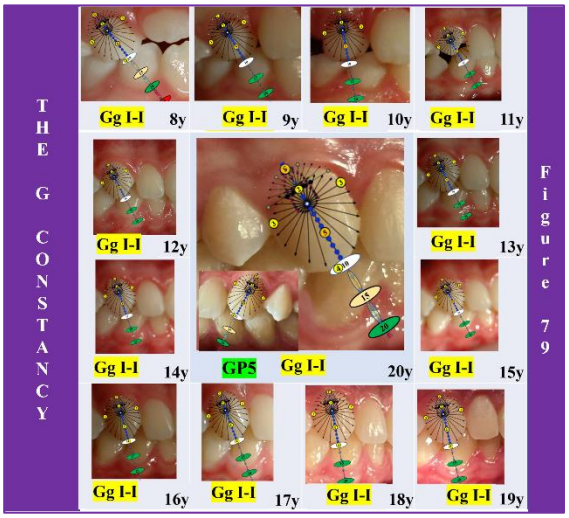


Figure 80: The G examples

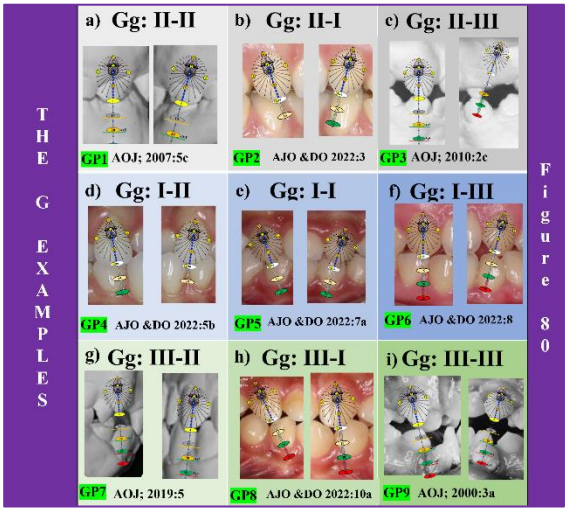


Figure 81: The G observation

4.8. H: *Incisor free space*

4.8.1. The H-Constancy: Fig. 82 shows a long-term observation of twelve years. Here, the H protocol HP = 1 always remained unchanged. The pilot patient had an H class II - i.e. a deep bite - on the right side at the age of eight and still had it at the age of 20. The same applies to his left side (h-class II). This is actually a finding worthy of treatment, but because it occurred on both sides at the same time and the patient did not express a corresponding wish, no orthodontic treatment was offered despite the insufficient anterior tooth space.

4.8.2. The H examples: The nine E-protocol examples shown in Fig. 83 are all taken from the *American Journal for Orthodontics and Dentofacial Orthopedics* and the *Angle Orthodontic Journal*, whereby the illustrations were superimposed with the ortho templates. Here are a few original keywords for their therapies: a) interdis-ciplinary approach; b) functional appliance; c) bondet tongue crip; d) jaw-surgery; e) impacted maxillary canines; f) condylectomy; g) orthodontic space closure; h) jaw-surgery; i) glossectomy..

4.8.3. The H observation: Fig. 84 from the AJO and DO shows the anterior teeth of a patient with a syndrome characterised by, among other things, a single maxillary central incisor. In 1997, Hall et al. gave this syndrome an acronym name: SMMCI: Solitary Median Maxillary Central Incisor.[23] The cause of this autosomal dominant inheritance is a mutation in the SHH gene (Sonic hedgehog),[24] which plays a crucial role in vertebrate embryonic development.[25] This incisor results from the fusion of two central incisors,[26, 27] confirmed by the A-template because it fits this incisor better than the H-template: *Common functional space*! The A-template even confirms the reason for the fusion: A maxilla that is too narrow (see nostrils) as the frontal tooth base.

Figure 82: The H constancy

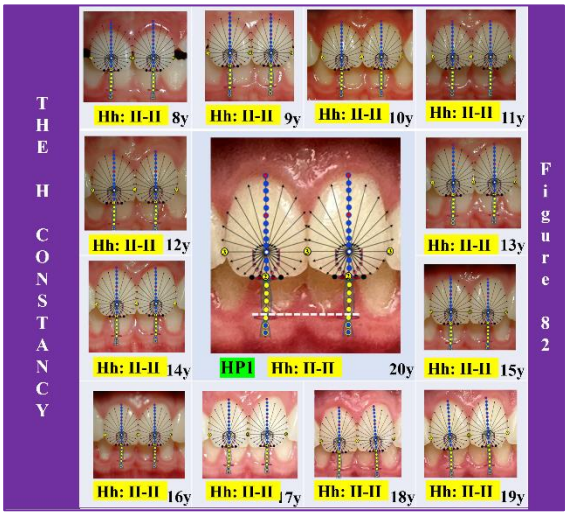


Figure 83: The H examples

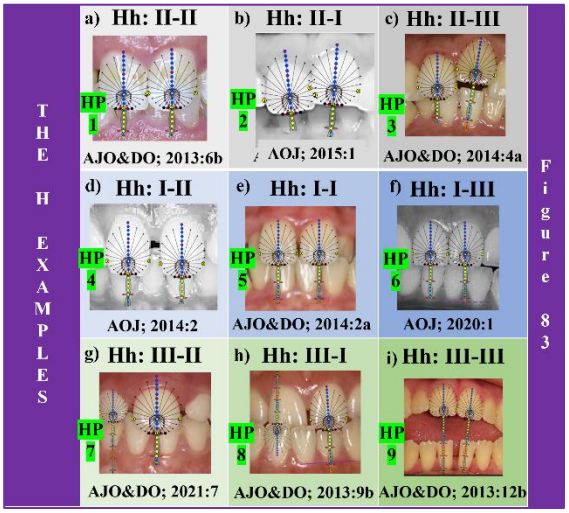
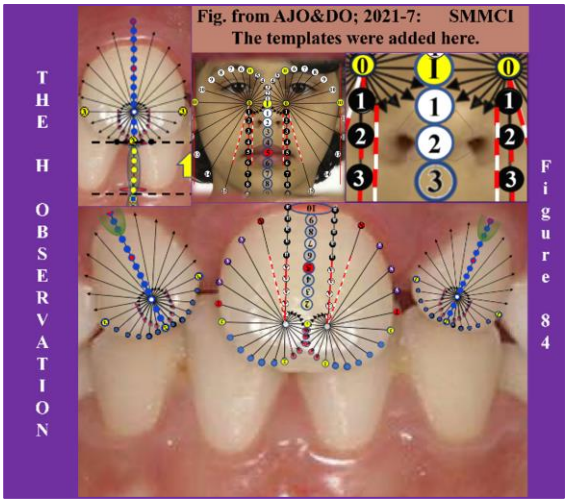


Figure 84: The H observation



4.9. I: *Incisor length*

4.9.1. The I-Constance: Abb. 85 zeigt eine Langzeitbeobachtung von 13 Jahren. Hier blieb das I-Protokoll IP = 5 zwei Jahre nach Durchbruch der oberen lateralen Inzisiven unverändert. Der Pilotpatient hatte mit zehn Jahren rechts eine I-Klasse I – also normale laterale obere Inzisiven – und mit 20 Jahren immer noch; Dasselbe links (i-Kl. I). Bei nicht orthogonaler Fotografie besteht die Gefahr einer Fehlklassifikation. Damit lag eine normale Situation vor und es wurde diesbezüglich auch keine Kieferorthopädie angeboten.

4.9.2. The I-examples: The nine E-protocol examples shown in Fig. 86 are all taken from the *American Journal for Orthodontics and Dentofacial Orthopedics*, whereby the illustrations were superimposed by the ortho-templates. Here are a few original keywords for their therapies: a) series of archwires; b) autotransplanted maxillary premolar; c) mini-implants; d) therapy with growth hormone; e) multiloop edgewise archwire technique; f) jaw-surgery; g) partial corticision; h) interma-xillary elastics; i) jaw-surgery..

4.9.3. The I observation: Fig. 87 from the AJO and DO shows the dentofacial conditions of a patient with Hallermann-Streiff syndrome, which is characterised, among other things, by a malformation of the eyes and a convex face (micrognathia inferior). According to the German WIKIPEDIA 2023, this congenital disorder is very rare (only around 100 cases are documented worldwide), the cause is unknown and the patients often have Womer's bones, which are considered a natural anatomical variation (Fig. 87a; yellow). The I-template shows a possible coincidence between the morphology of the nasal cavity and the upper lateral incisors as well as their ability to adapt their width to the normal harmonious growth of their surroundings.

Figure 85: The I constancy

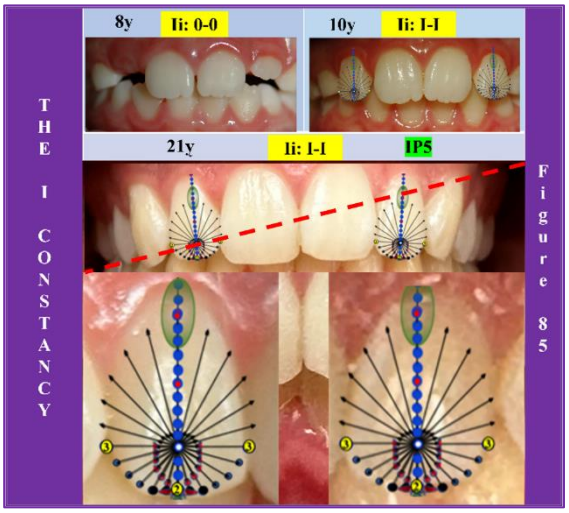


Figure 86: The I examples

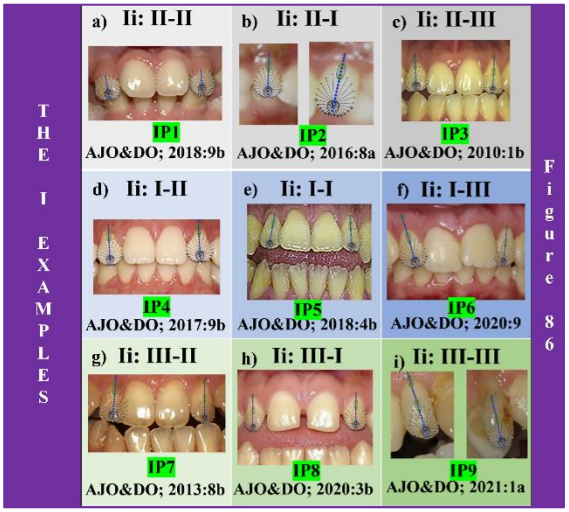


Figure 87: The I observation

4.10. J: *Incisor support*

4.10.1. The J-Constance: Fig. 88 shows a long-term observation of the pilot patient at the ages of 8 and 21. Here, the J protocol for incisive support in the lower jaw changed from a JP = 1 to a JP = 5 because the malocclusion was corrected shortly after puberty with partial arch braces from 33 to 43 and grinding of the proximal contact points (see case presentation in chapter 12).

4.10.2. Die J-Beispiele: The nine J-protocol examples shown in Fig. 89 are all taken from the American Journal for Orthodontics and Dentofacial Orthopedics, whereby the illustrations were superimposed with the orthodontic templates. Here are a few original keywords for their therapies: a) rapid palatal expansion; b) jaw-surgery; c) functional appliance; d) mulltidisciplinary; e) gate spring; f) elastics; g) split-type printing; h) en-mass protraction; i) atotransplantation.

4.10.3. The J observation: Fig. 90 from the *AJO and DO* from December 2022 shows a pronounced crowding in the lower anterior region in a 26-year-old patient. His first lower right central incisor was extracted and a lifetime retainer was bonded to create space. Even if this case was solved very well overall, it shows that the J-guide can objectify a treatment alternative here that would not have required a retainer: the extraction of teeth 41 and 31 and a widening of 42 and 32 in the contact point area would also have been possible.

Figure 88: The J constancy

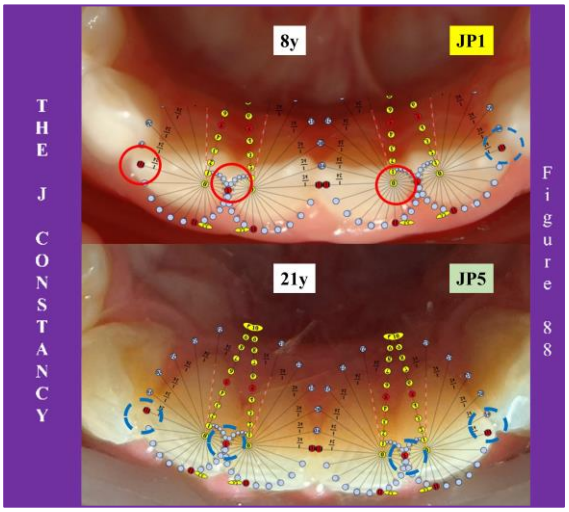


Figure 89: The J examples

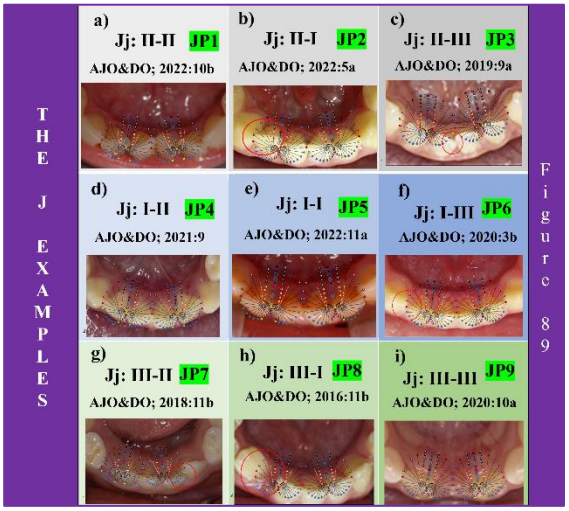
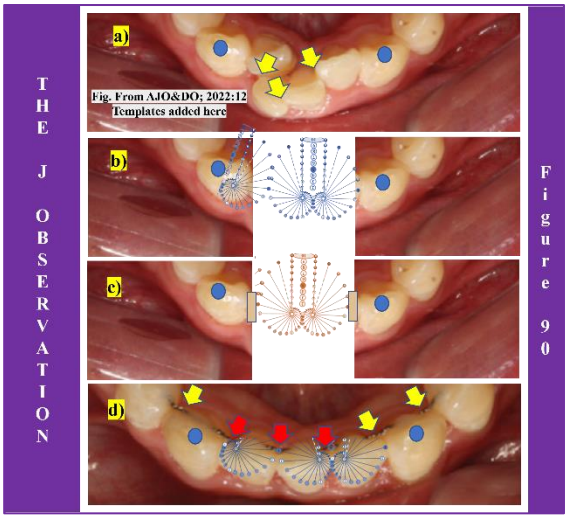


Figure 90: The J observation



4.11. K: *Incisor presence*

4.11.1. The K-Constance: Fig. 91 shows a long-term observation of twelve years in which the K protocol = 5 for incisor presence remained unchanged. The pilot patient had a K class I - harmonious presence - on the right side at the age of eight and still had it at the age of 20. The same applies to his left side (k class I). Therefore, the patient was not offered orthodontics.

4.11.2. The K examples: The nine K-protocol examples shown in Fig. 92 all originate from the American *Journal for Orthodontics and Dentofacial Orthopedics*, whereby the illustrations were superimposed by the ortho templates. No examples of K-protocol KP3 and KP7 could be found in the *Angle Orthodontic Journal* either, with all cases reviewed from January 2000 to December 2022 (N = 641). Here are a few original keywords for their therapies: a) extractions; b) anky-losed maxillary incisor, c) nothing found; d) jaw-surgery; e) extractions; f) lingual arches; g) nothing found; h) autotransplan-tation; i) frontteeth retraction..

4.11.3. The K observation: Fig. 93a shows that a pout in the pilot patient changes the K record = 5 to a K record = 1. Fig. 93b shows that there are patients in whom the fourth grid line of the K template can lead to a gummy smile diagnosis. Figure 96c shows that a classification could also have been made based on the number of visible teeth. Figure 93d shows a patient with Beckwith-Wiedemann syndrome, which is characterised by an excessively large tongue and an open bite, among other things. The formation of the ear is also striking here and the fact that the K-template almost perfectly delimits the mouth opening emphasises that we still know far too little about growth harmony.

Figure 91: The K constancy

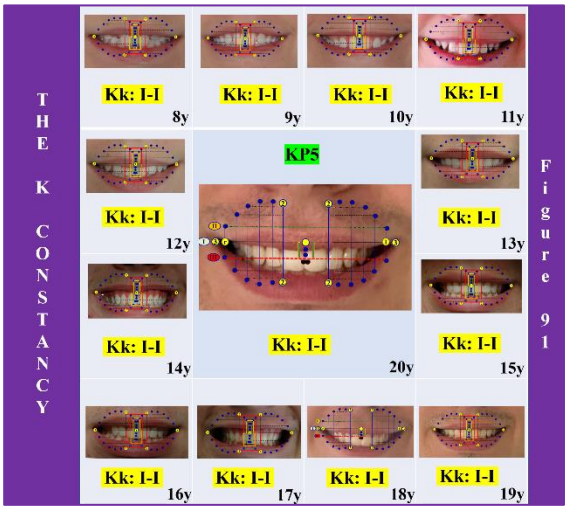


Figure 92: The K examples

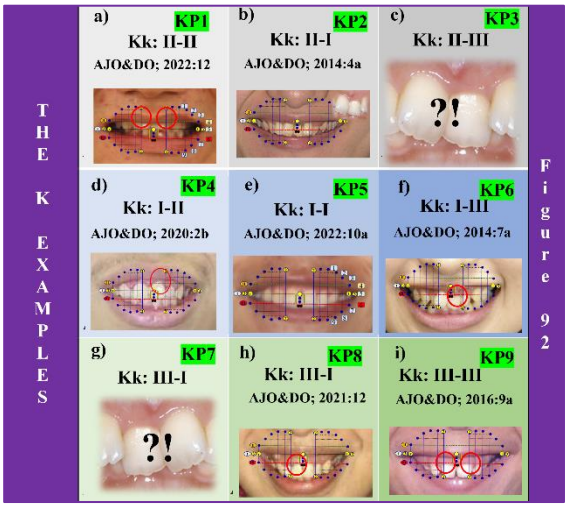
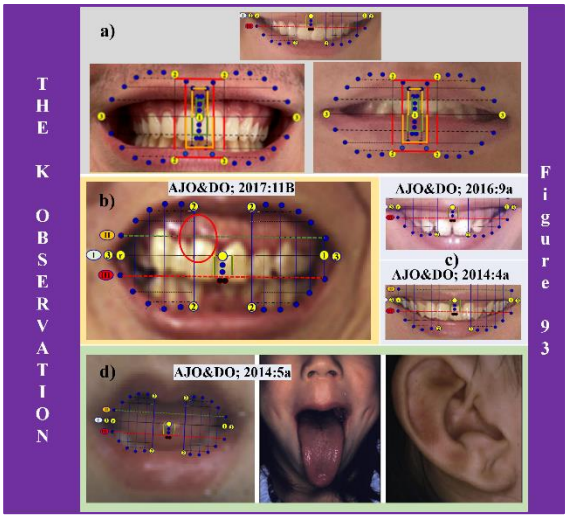


Figure 93: The K observation



4.12. L: *Incisor reflection*

4.12.1. The L Constancy: Fig. 94 shows a long-term observation of twelve years in which the L protocol LP = 5 for incisive reflection remained unchanged. The pilot patient had an L-Class I in the maxilla at the age of eight - score 3 - and still had it at the age of 20. The same applies to the lower jaw (L-Class I). Therefore, the patient was not offered any dental or orthodontic treatment.

4.12.2. The L examples: The nine L-protocol examples shown in Fig. 95 are all taken from the *American Journal for Orthodontics and Dentofacial Orthopedics*, whereby the illustrations were superimposed with the ortho templates. Here are a few original keywords for their therapies: a) lingual appliances; b) sleep apnea; c) cleft lip and palate; d) space closure of 2 incisors; e) molar uprigthing; f) corticotomy-assisted rapid maxillary expansion; g) hopless ma-xillary central incisor; h) interdisciplinary; i) hyper-divergent.

4.12.3. The L observation: The tooth colour may well be due to hypoplasia, in which all teeth have an unusual tooth width: Fig. 96a shows such an unusual darkening of the coronal half in the lower incisors and at the same time relatively narrow incisors. The suspected diagnosis of congenital tooth hypoplasia - I class III; rating 5 - is entirely appropriate here, even if this is not mentioned by the original authors. Fig. 96b shows a darkening in the cervical region, whereby the incisors still exhibit almost normal tooth width ratios. In this case, the suspected diagnosis of acquired tooth discolouration is more appropriate (l-class II; rating 1) than the diagnosis of congenital tooth hypoplasia. In this case, all teeth were crowned and it did not matter what the diagnosis was.

Figure 94: The L constancy

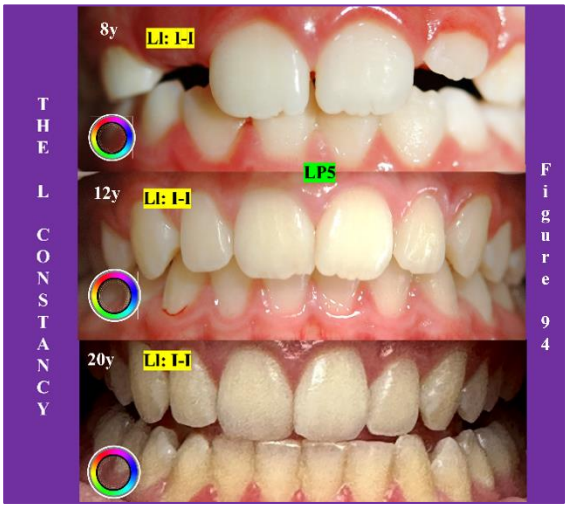
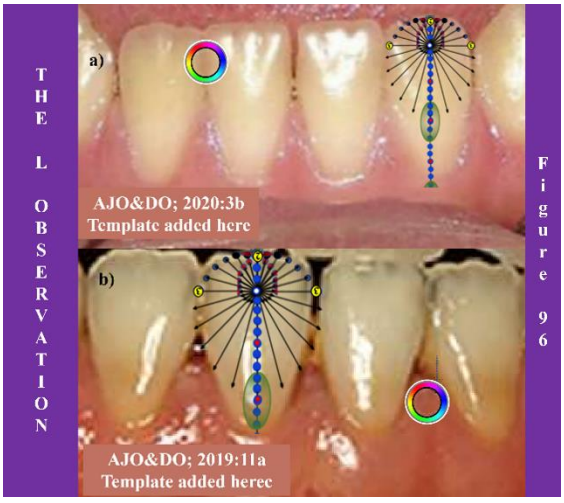


Figure 95: The L examples

Figure 96: The L observation



4.13. M: *Tooth type size*

4.13.1. The M constancy: Fig. 97 shows a long-term observation of 6.5 years with two CBCT radiographs. It proves that the ratio of the crown to the root does not change so much after tooth eruption that it results in a different classification.

4.13.2. The M examples: Fig. 98 shows five randomly recorded examples from our own practice, which demonstrate how dependent the tooth width ratios of the tooth types are on their jaw bases and how they vary most strongly in the mandibular incisor region: There, the sum of the four incisor widths in example (a) = 6, in example (b) = 8, in example (c) = 6; in example (d) = 4 and in example (e) = 12. The sum of the incisor widths cannot be regarded as a 'standard value' for a causal treatment decision due to the different facial geometry resulting from natural bio-diversity. If there is a lack of space in the anterior region, it is up to the patient to decide which treatment to choose - enlarging the jaw or reducing the teeth (see Chapter 12).

4.13.3. The M observation: Fig. 99 shows the overlapping of the lower incisors with M-templates: In the OPT image, strongly proclined anterior teeth may be misclassified due to distortion. In such cases, a CBCT with the volume of the entire dentition should be taken so that this region can be correctly assessed.

Figure 97: The M Constancy

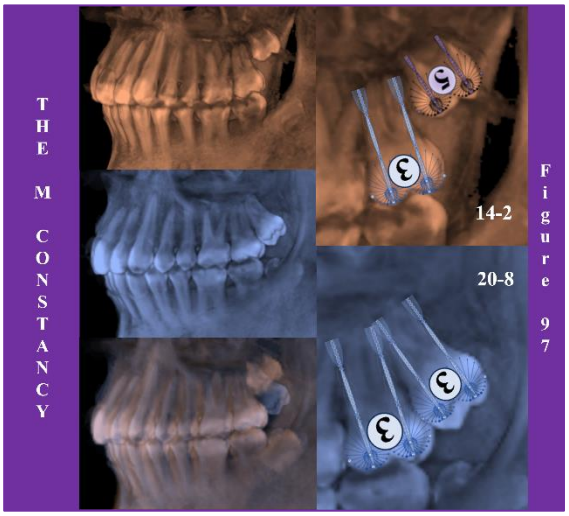


Figure 98: The M examples

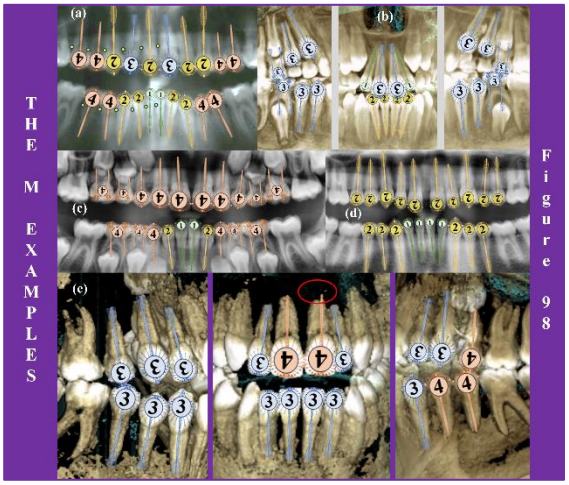
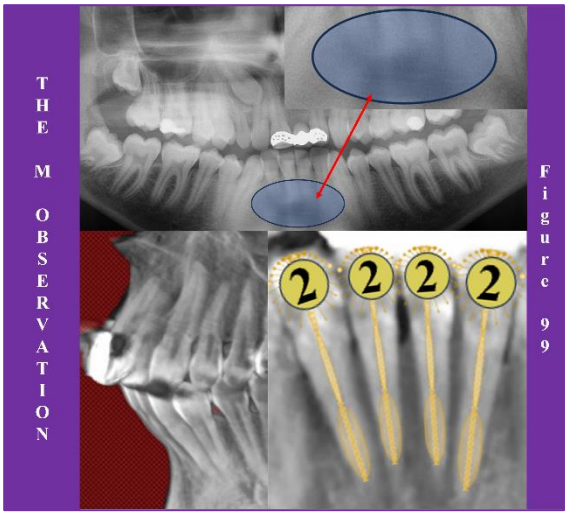


Figure 99: The M observation



4.14. N: *Air path ratio*

4.14.1. The NO consistency: Fig. 100 from [31] (added in colour here) shows two patients with an N cl. I (Pogonion = 2) and an O cl. I (O = -2). A long-term observation of 18 years with 18 FR radiographs allows the null hypothesis [H_0] that the mouth-to-nasal cavity ratio no longer changes significantly from the age of approx. 6 years (X = x). The apparent contradiction to the A classification can be explained by eye growth.

4.14.2. Three NO examples: Fig. 101 shows three examples. In the example O cl. II, the poor selectivity (blue circle) of the mandibular contour with laterality is also pointed out. For this reason, it is preferable to perform the jaw assessment possible in the cephalometric image in the anterior region. Hidden laterality can lead to a distorted diagnosis, which is a potential source of conflict when dealing with insurance companies (e.g. invalidity insurance in Switzerland).

4.14.3. A NO observation: Fig. 102 shows how, contrary to all expectations, the ANB angle in a patient had decreased by 7° (2° became -5°) within 10 years, i.e. an O cl. I (normal oral cavity size; O = -2) became an O cl. III (O = -1) without the N cl. I changing. An initial medical examination at the age of 21 years and 7 months revealed a hypogonadism that had existed for years, resulting in hypomineralised bones (low bone mass) [32]. This alone does not lead to an enlargement of the oral cavity, but at the age of 19 he had a motorbike accident in which he was unconscious for 20 minutes. The helmet (arrow) had compressed the os nasale (bone compression circled in red) and - as is assumed here - caused a growth disturbance as a result: Before puberty, the maxillary height was still normal (A = 5) and at the age of 21 the maxillary height was relatively too small (A = 4).

Figure 100: The NO consistency

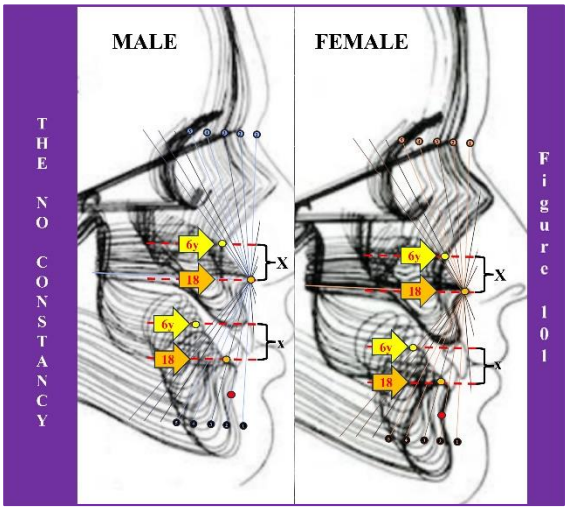


Figure 101: Three NO examples

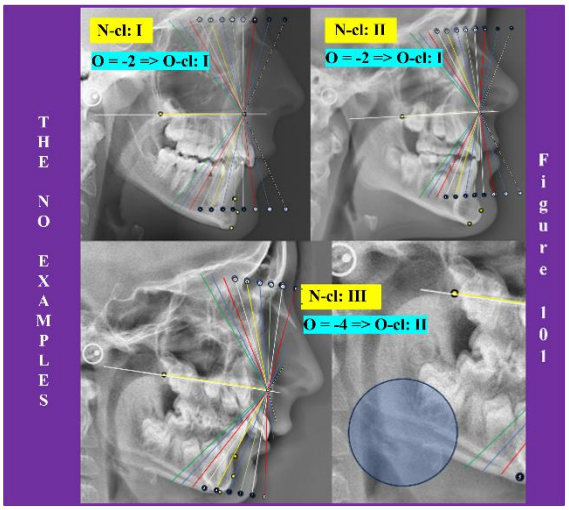
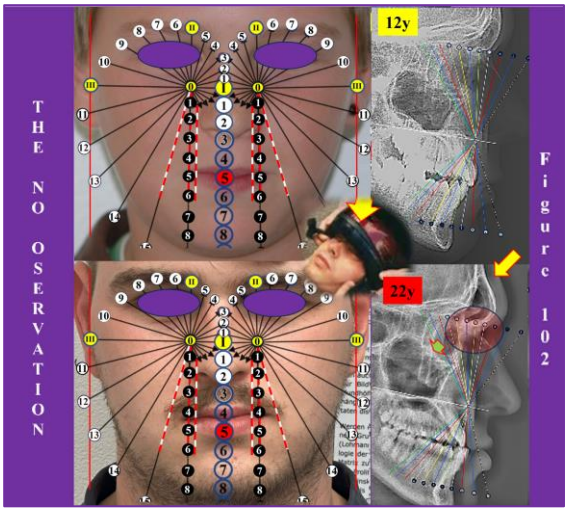


Figure 102: A NO observation



5. DISCUSSION

5.1. Two insights into the old classification

1 A comparative study of 641 published case reports from the AJO & DO and the AOJ from 2000 to 2020 showed that in around 40% of the findings either no information on the angle class was given or its sub-classification - class II/1; II/2 (Fig. 103) - was omitted.

2. A comprehensible classification system that also takes facial geometry into account has been lacking for over 100 years. Ortho templates, on the other hand, offer this system as a possibility.

5.2. Two insights into the new protocols

1. The assigned classes - with the exception of the frontal face classification at the transition to adulthood - remain unchanged for years.

2. Aesthetics are in the eye of the beholder and if there were no mirrors, the patient would hardly know how his smile looks (Fig. 104). For example, the gummy smile can be inherited[28] and for this reason alone, a patient should not be told thoughtlessly that their smile is not perceived as beautiful due to excessive gum exposure. Patients must experience for themselves how they are perceived by those around them and should not be stigmatised for ethical reasons.

5.3. Two benefits of the ortho templates

Two useful results were revealed during the preliminary investigations (see 4.6.3.) (Fig. 105):

1. The ANB angle can be estimated from the B classification: ANB ≈ 2·(B_P) - 2..

2.* T*he incisive space [IF] is between 6 and 10 in the target, which practically means that the incisal edge should not overlap the lower papilla, otherwise there is a 'deep bite = little IF'.

Figure 103: Two insights into the old classification

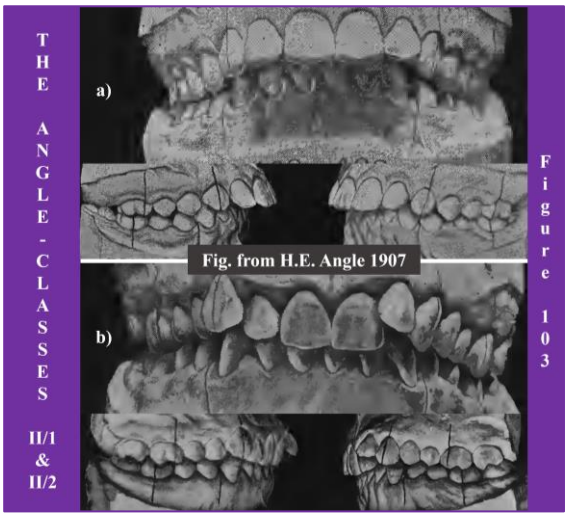


Figure 104: Two insights into the new protocols

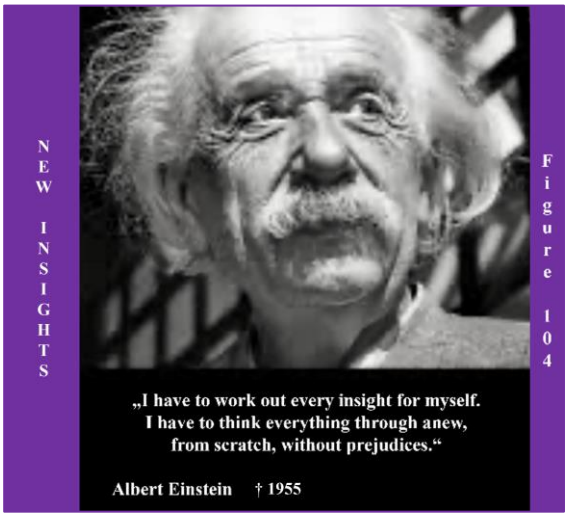
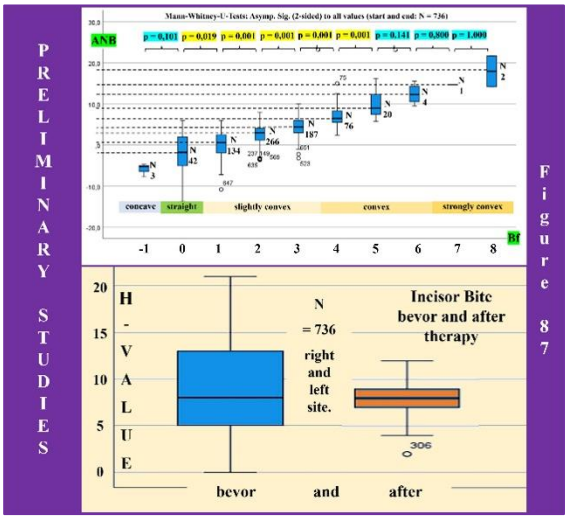


Figure 105: Two benefits of the ortho templates



6. CONCLUSION

All medical faculties should know that there is a classification system that is significantly better than all known protocol systems, because it can be used to create a database of published patient cases worldwide for all those involved to view. It can be anonymised, is numerically transparent and independent of gender and patient ethnicity. It is also recommended because it contains an analogy to facial evolution in relation to gravity and is based on a universal theory, which in turn demonstrates a global benefit (Fig. 106).

Therapists and their patients need such a database for therapy protocols because comparing measured values with standard values is counterproductive with ethnic mixing and it is uncertain how many saviours of the world it will take before a university administration recognises the need for such databases (Fig. 107).

It would be extremely important, not only for Switzerland, to have an Institute for the Evolution of Protocols [IEP-National] in medicine, because without independent control of universities, healthcare costs will continue to rise disproportionately (Fig. 108). In Switzerland, for example, health insurers are obligatory and their managers have little interest in reducing costs because they will earn less money. In addition, the few Swiss universities that offer medical studies are subject to cantonal law and therefore cannot be controlled by the federal government. An IEP could, for example, use artificial intelligence to utilise the five main symptoms of inflammation - swelling, dysfunction, redness, warming and pain - for comprehensible protocols that could be used to answer initial patient problems.

Figure 106: The structural theory of gravity

Figure 107: How many world saviours are needed?

Figure 108: Many national IEPs are needed

7. SUMMARY

Fig. 109 shows a cephalometric analysis with the mandibular base angle ML/NL angle, which is a central problem in orthodontics: Standard values are determined for ethnic populations to establish causality, even though there are practically no ethnically undiversified patients due to global mixing. As a result, there are no suitable norm values as a therapy goal and there are too few trustworthy diagnostics due to laterality. A universal reference with an analogue as a guarantee of causality is required for a comprehensible treatment protocol.

Fig. 110 summarises all diagnostic images and their 4dR ortho templates for their image analyses in an overview diagram: Maxillary and mandibular height (A); facial asymmetry (A‘); bilateral maxillary and mandibular prominence ($B_{r/l}$); chin and philtrum height (C); dental arch width (D); dental cusp position (E); molar bite sagittal (F); molar bite vertical (F’); canine clearance (G); incisor clearance (H); I: Incisor length (I); incisor support (J); incisor presence (K); incisor light reflection (L); tooth type widths (M); nasal space size (N) and oral space size (O). The overview scheme (see chapter 11 for details) is used for diagnostics and recording so that a treatment proposal based on experience is possible. It represents harmonised, minimised, maximised, lateralised or bilateralised ratios as protocol numbers from 1 to 9. For example, a feature with the clinical protocol = 5 should preferably not be changed because it represents a harmonious morphology. Secondly, it summarises a radiological protocol that serves to determine orthodontic chewing quality. From an ethical point of view, this should only be carried out in a second session <u>after</u> the patient has consented to the first treatment proposal.

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Figure 109: The lack of laterality in cephalometry

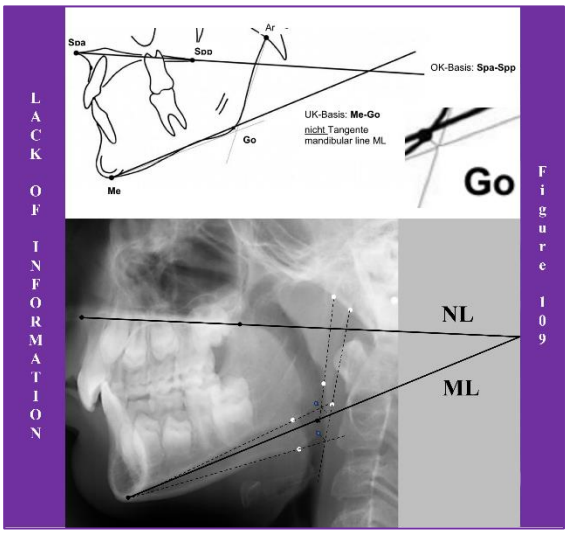
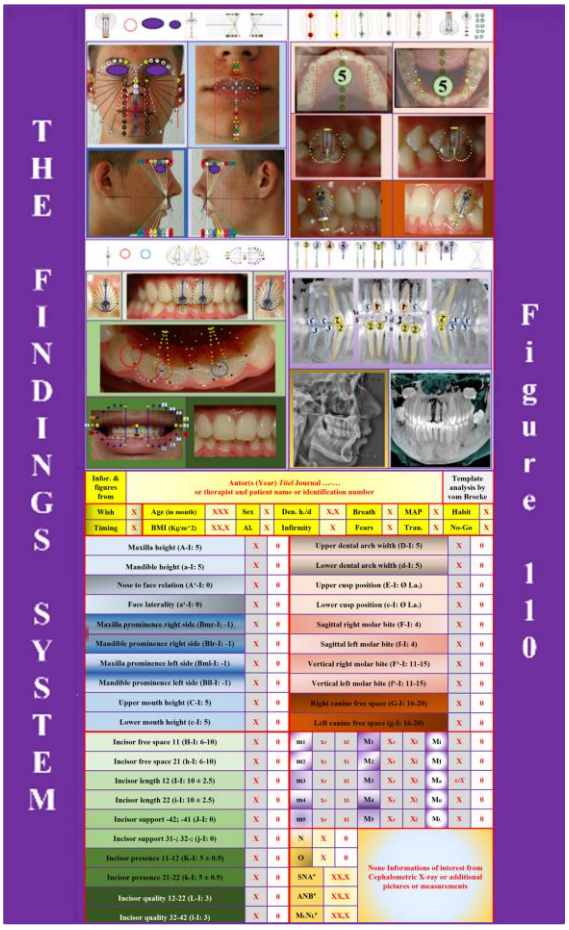


Figure 110: The findings pictures for 4d analysis



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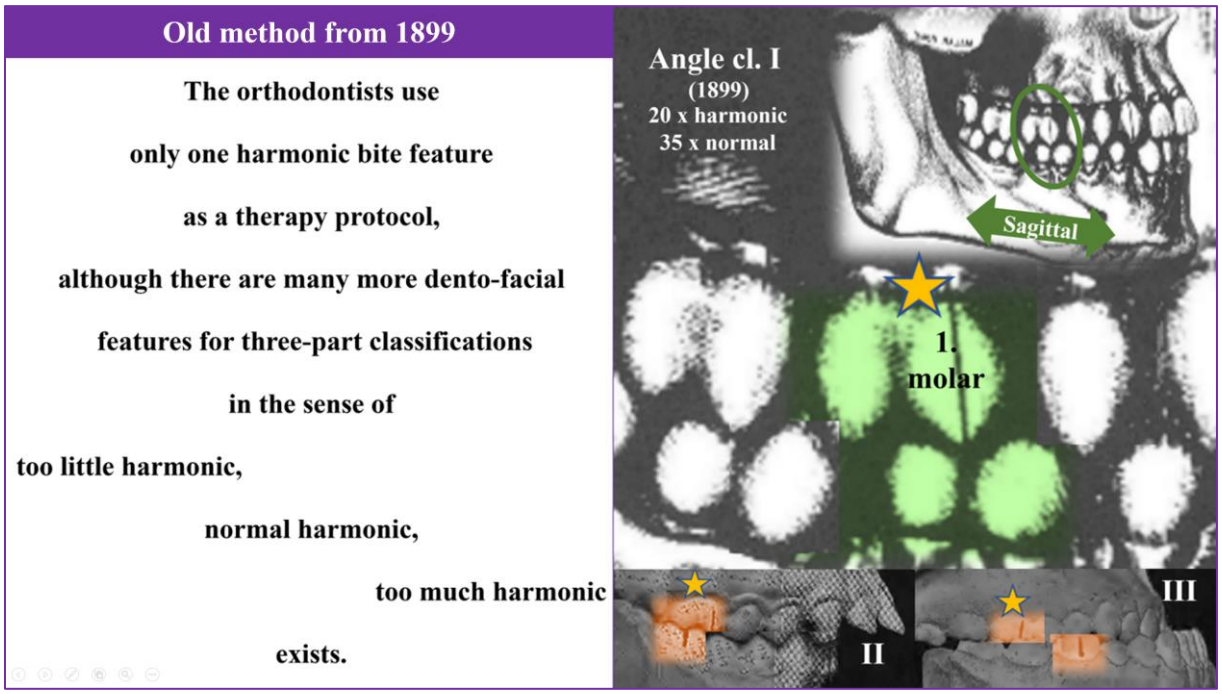
10. **THREE LECTURES**

10. 1. Lecture: Book and relevance

Slide 1.1

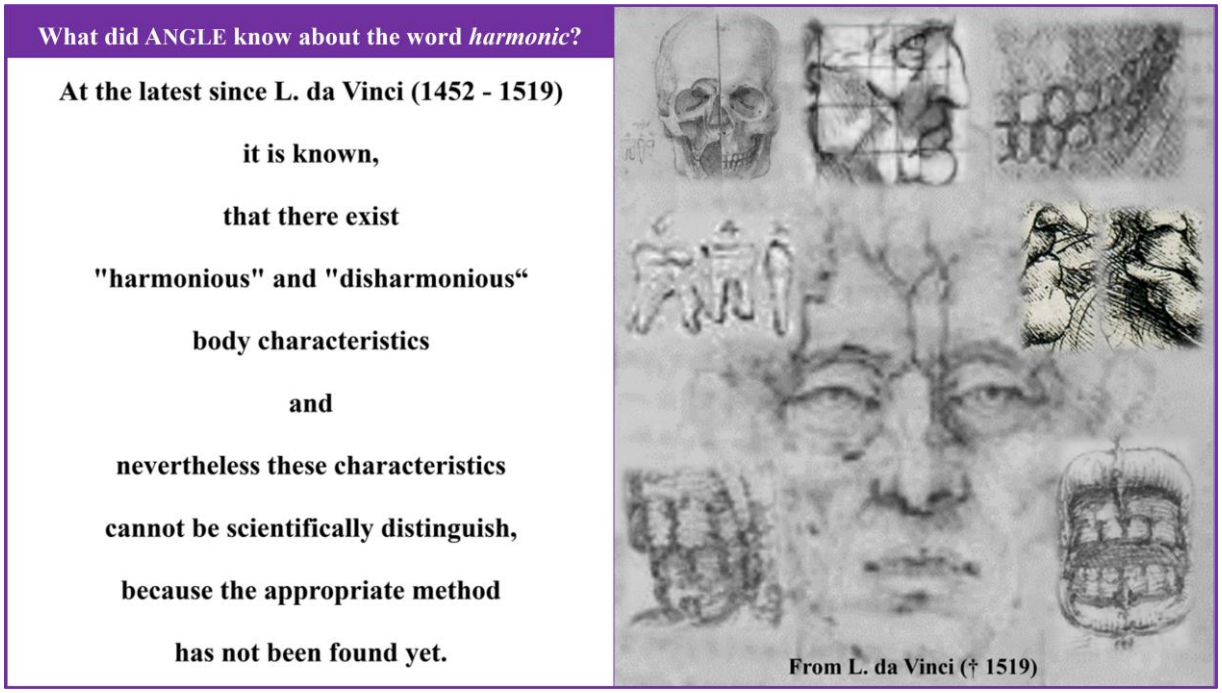
Slide 1.1: Thanks to the structural gravitational theory, a system of findings is available for 60 causal treatment decisions, which improves the 3-part molar classification of E.H. Angle (1899) by a factor of 29.

Slide 1.2



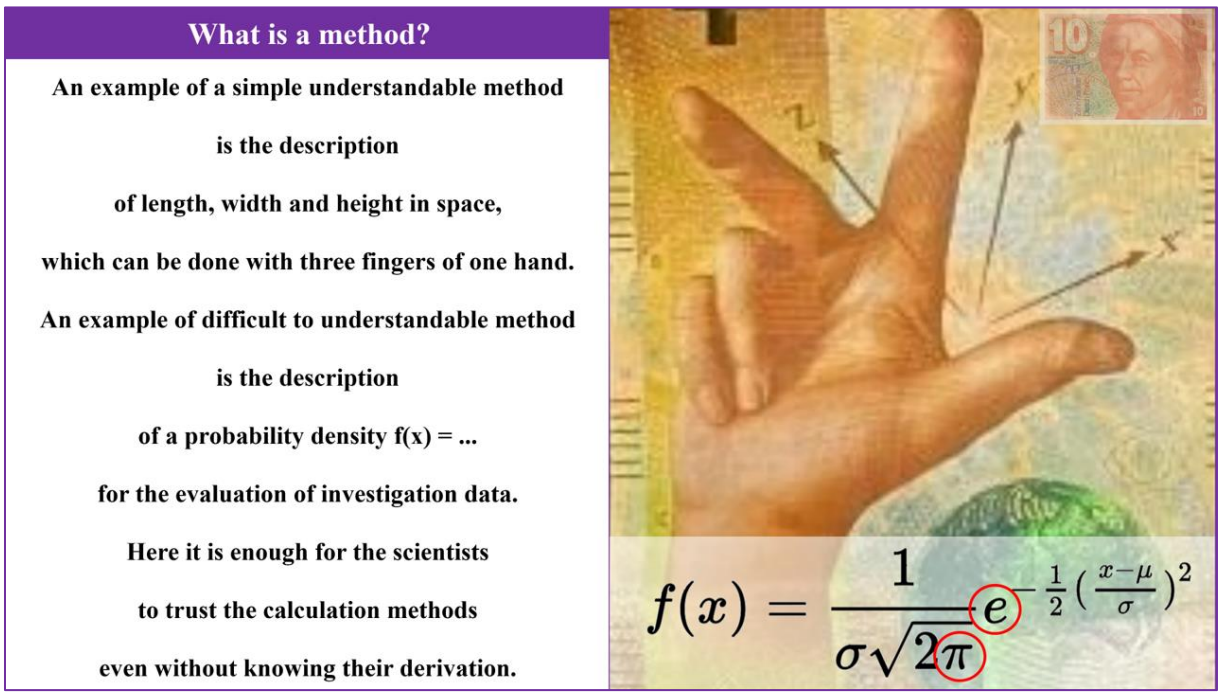
Slide 2.1: In 1899, E. H. Angle postulated that if the mesiobuccally cusp of the upper first molar is positioned over the buccal fissure of the lower first molar, then the occlusion is harmonious. He used the word harmonious 20 times without clearly differentiating it from “disharmonious”.

Slide 1.3



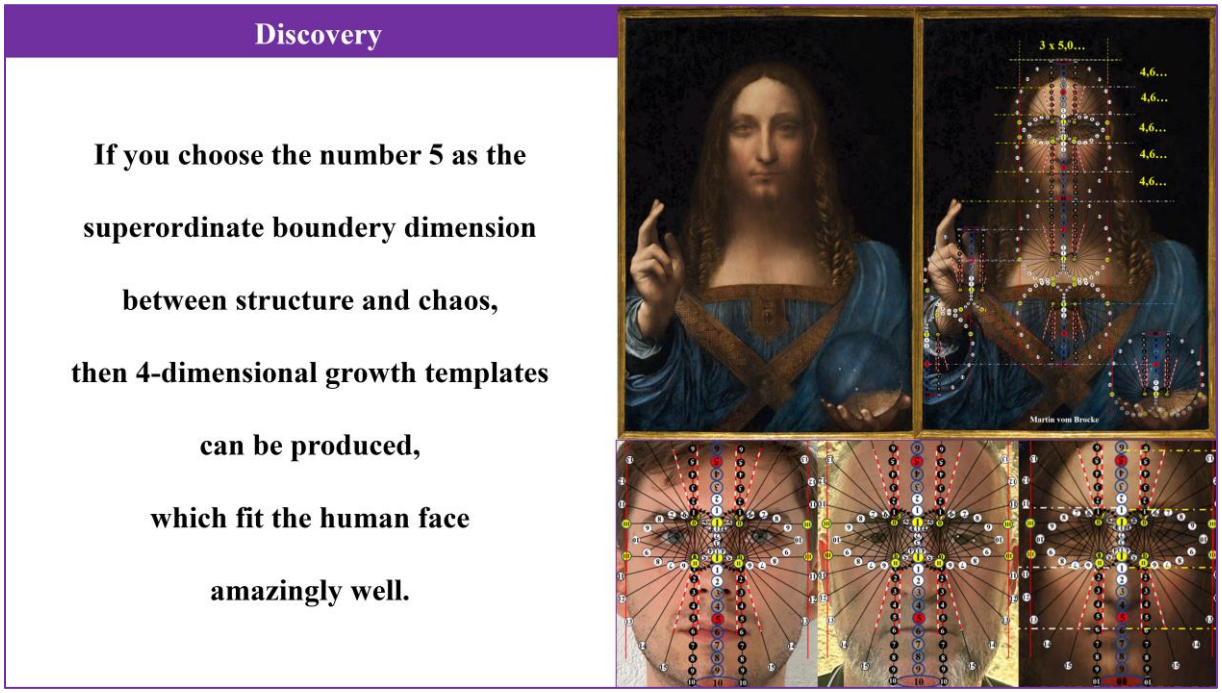
Slide 1.3: Leonardo da Vinci was one of the most famous polymaths of all time and scientific works prove that he had not only recognized harmonious human proportions, but that he had also already recognized the essence of acceleration in relation to gravity.[29]

Slide 1.4



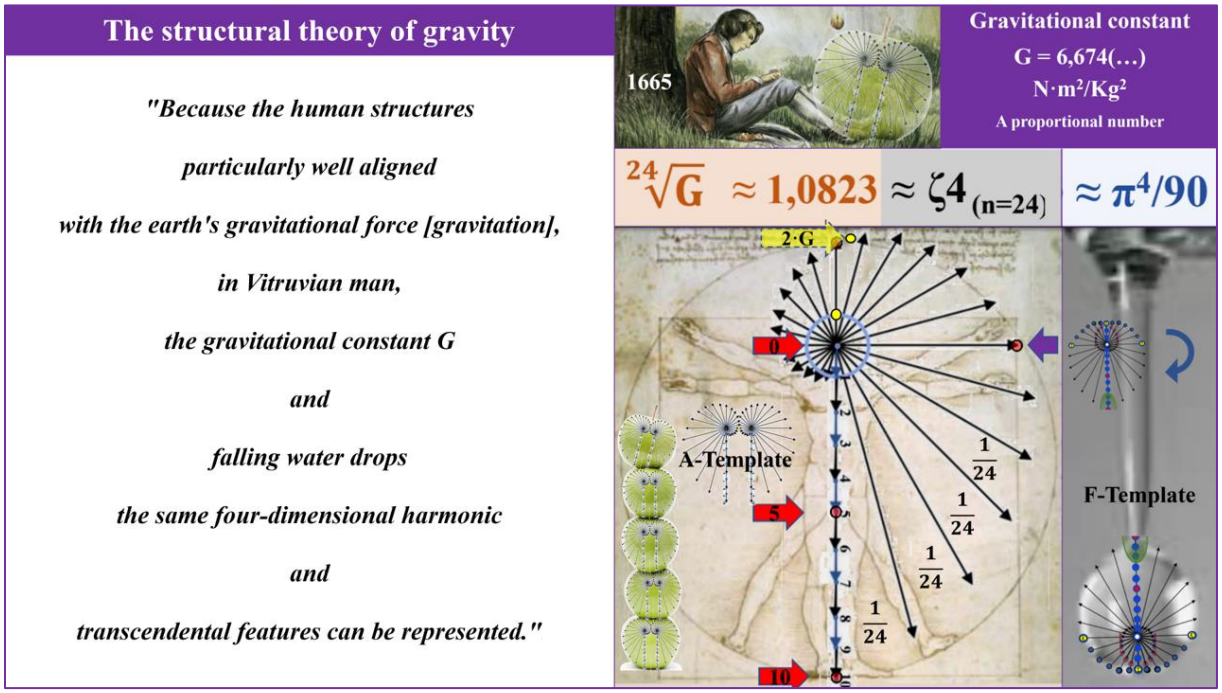
Slide 1.4: Methods are important because without them it would not be possible, for example, to print banknotes in such a way that they trigger one or more trains of thought about the origin of the banknote. For example, on an old 10 Fr. note featured the mathematician Leonhard Euler († 1783) from Basel (see in the top corner) and from 2015/2016, the globe and hands were depicted on all banknotes in Switzerland. This was because the Federal Council liked my basic idea of harmonic relativity and the connection with gravity.

Slide 1.5



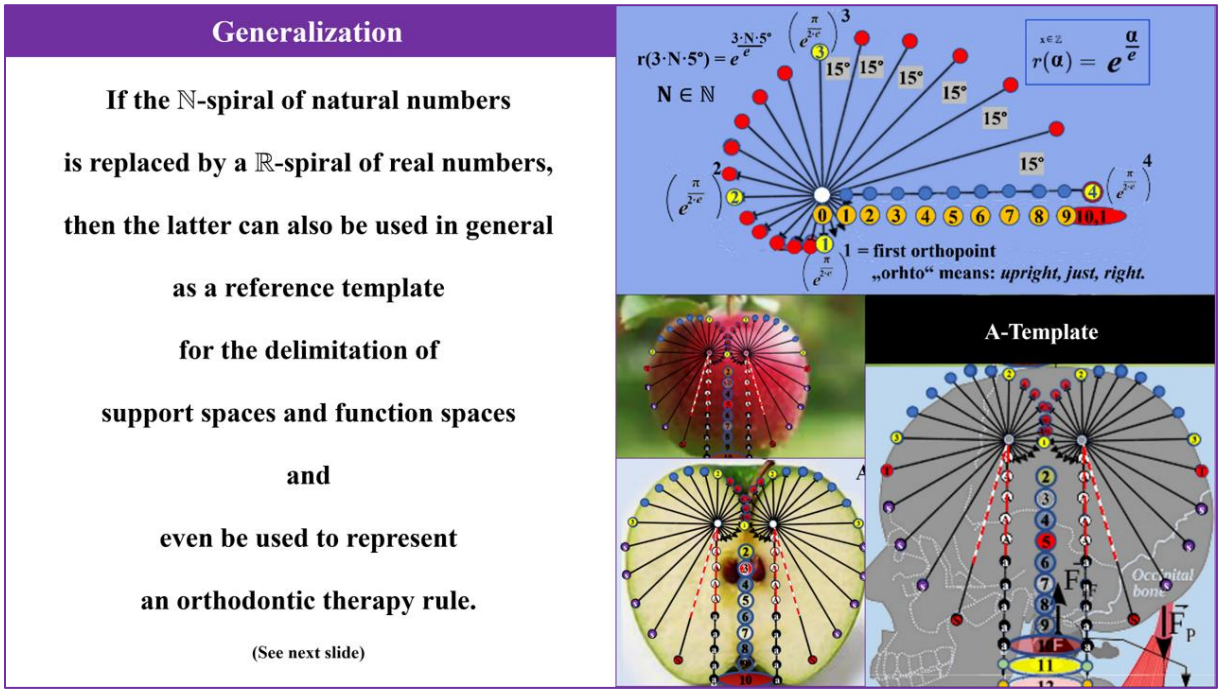
Slide 1.5: The image of *Salvator Mundi* proves that Catholics have believed in a three-part harmonious world for two thousand years and scientists have proof of the existence of a three-part world in relation to our "Creator" (the oxygen of our earth) in the form of the two nostrils and the mouth opening.

Slide 1.6



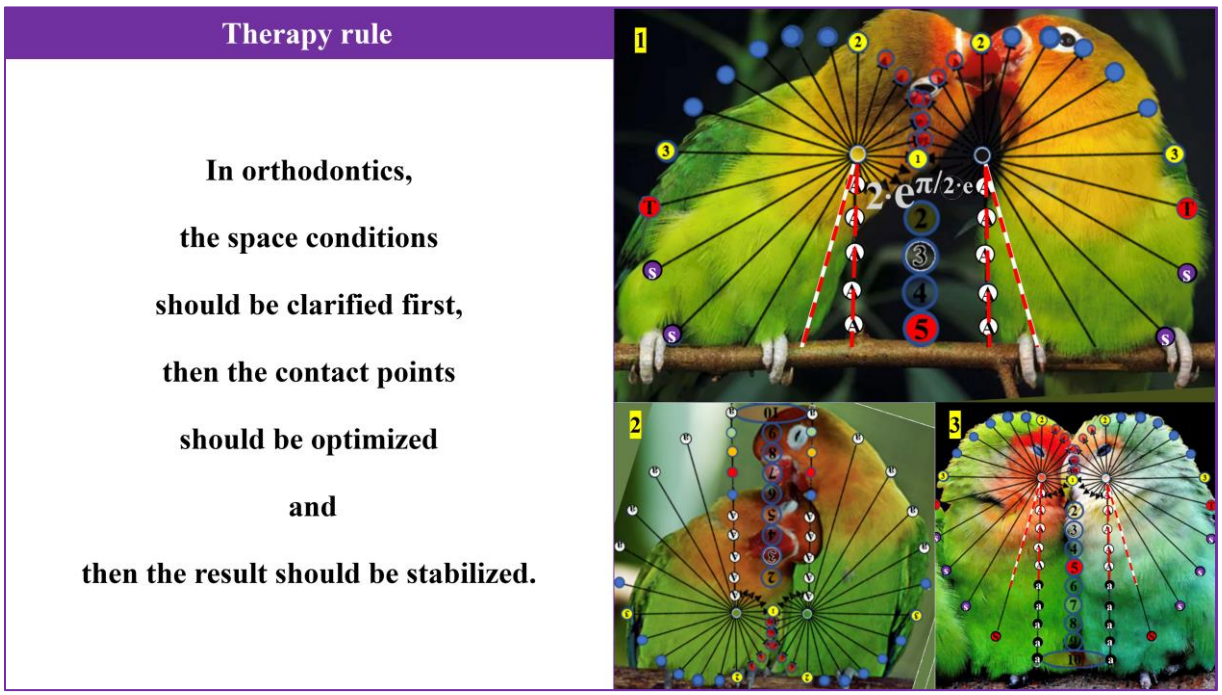
Slide 1.6: Although Leonardo da Vici had studied gravity 200 years before Isaac Newton, the discovery of the proportionality number G is attributed to Isaac Newton because he recognized that apples fall vertically to the ground and this did not disturb the inquisition of the church. However, it can also be seen that two mirrored ℕ-spirals, when pushed together on the axes, fit the contour of a drop of water as an F-template and the contour of an apple as an A-template at a contact point distance.

Slide 1.7



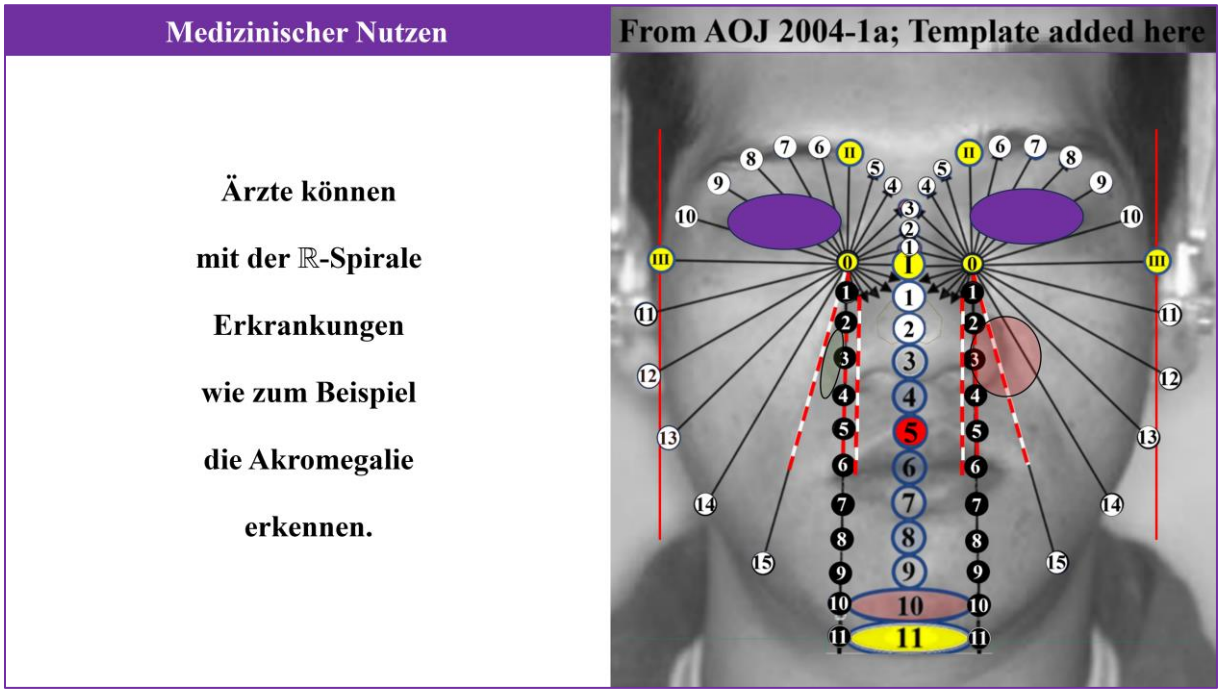
Slide 1.7: The ℝ-spiral can be used to formulate all possible analogous theories of gravity. For example: Just like the seeds of the apple, the human brain is characterized by the same structural pattern because they both grow balanced against gravity, with the apple suspended and the head supported.

Slide 1.8



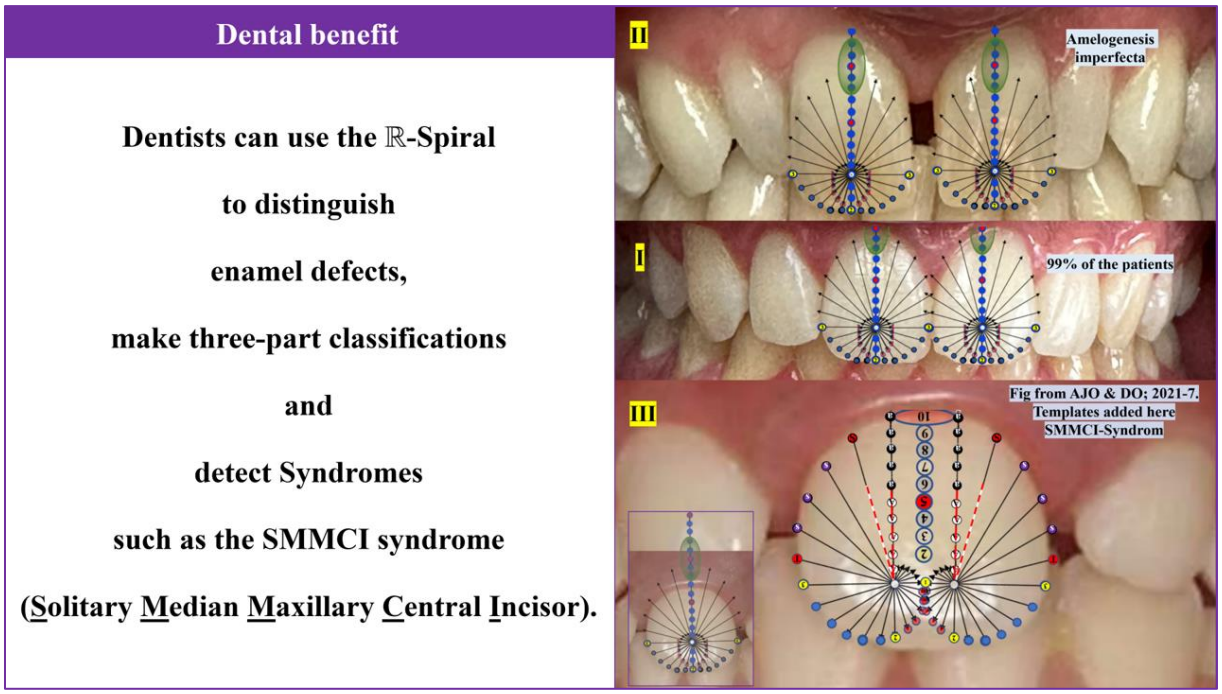
Slide 1.8: The classic five treatment phases can be reduced to a three-part treatment rule in the case of an appliance with straight-wire technology: 1 = tooth alignment (levelling, guidance and contraction phase) 2 = contact point optimization (adjustment phase) and 3 = stabilization (retention phase).

Slide 1.9



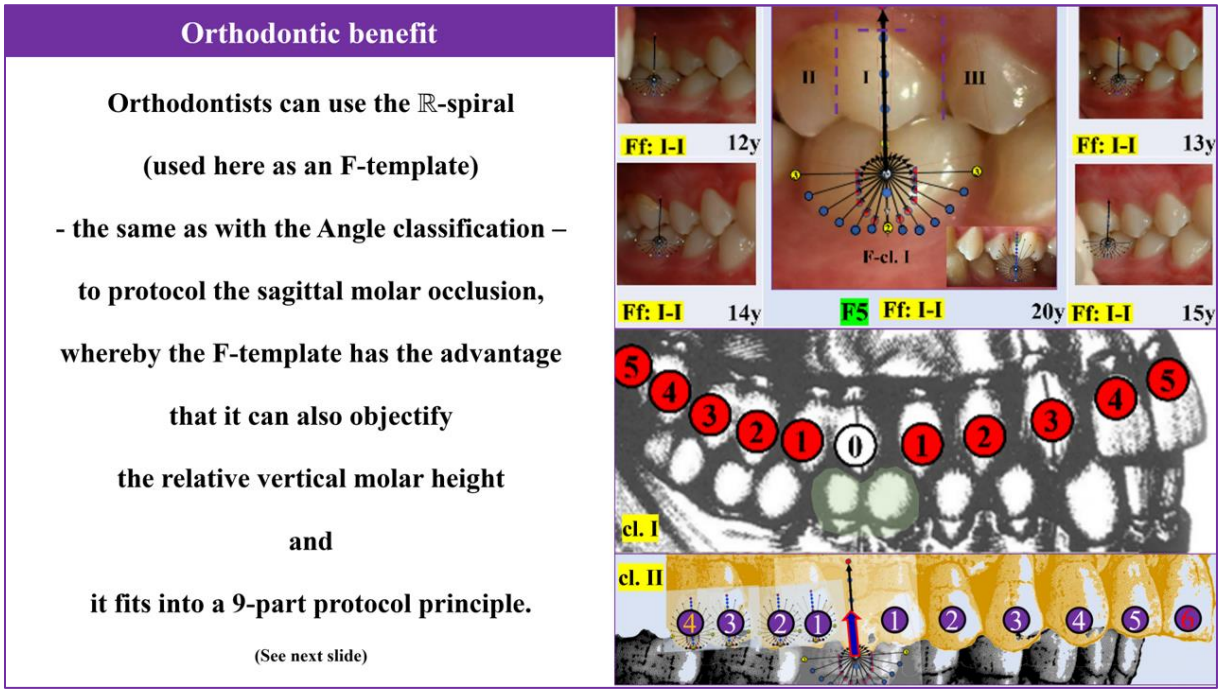
Slide 1.9: In acromegaly, excessive production of the growth hormone somatropin leads to an increased release of the messenger substance IGF-1, which results in more cartilage cells in the nose as well as an enlarged chin and lips. The result looks similar to the swollen face of a boxer after a fight.

Slide 1.10



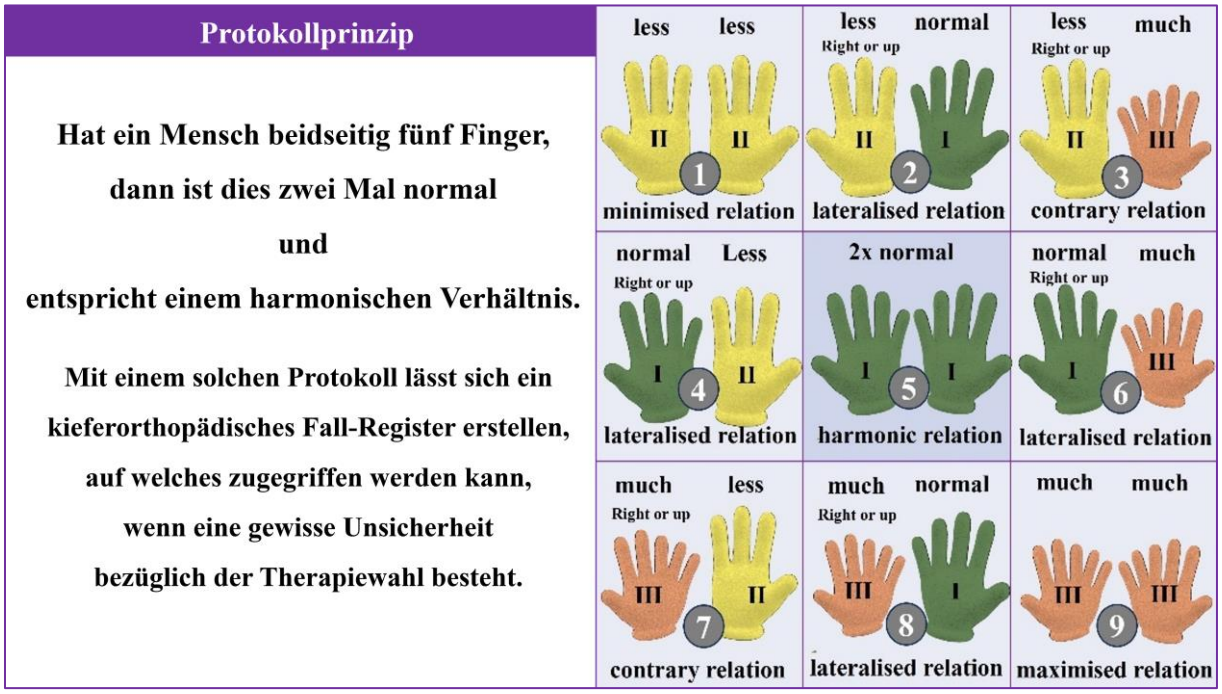
Slide 1.10: If the F-template is placed on the central incisors, a relative width can be classified. Fig. 1.10 shows the normal width, whereby a relative length of ± 2.5 represents the measurement error tolerance. If the central incisors are too narrow, this explains the tooth gap. Fused central incisors, as found in SMMCI syndrome, are too wide and have a common functional space.

Slide 1.11



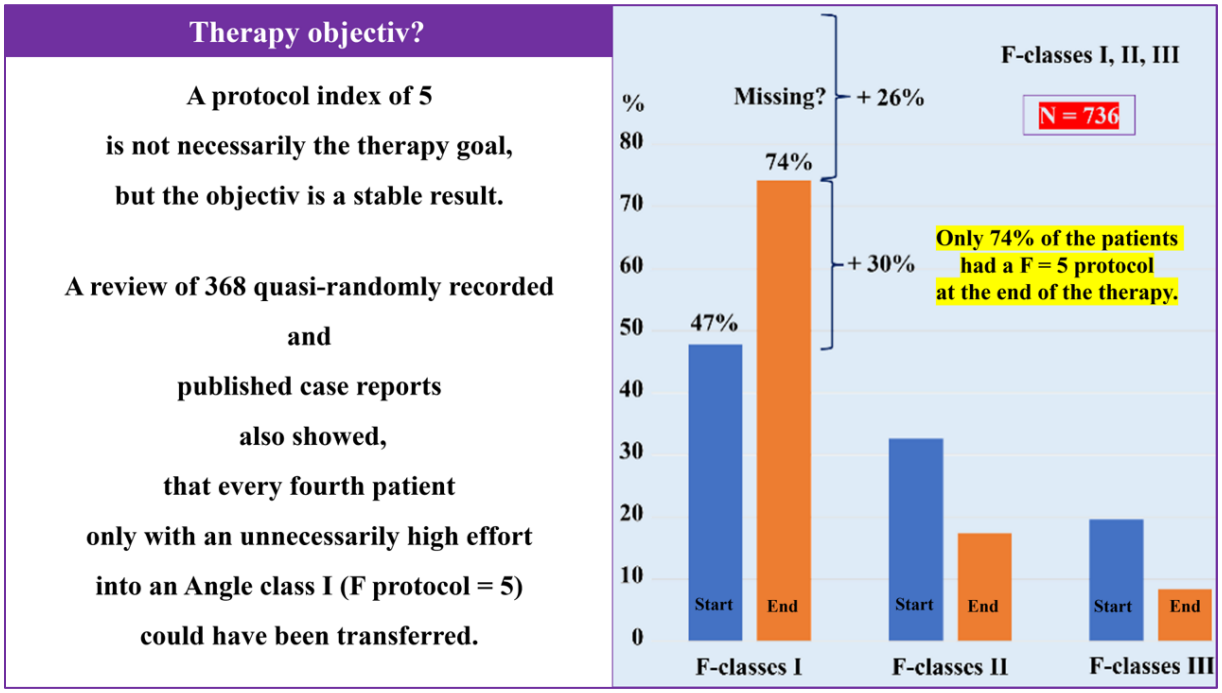
Slide 1.11: If the F-guide is placed on the lower first molars in such a way that the orthopoints 2 and 3 (yellow) frame the tooth at the gingival border, the axis runs over its fissure and normally also over the mesio-buccal cusp area of the upper first molar; or there are then 5 buccal upper cusps distal to the F-axis. In F-Class II there are only 4 buccal cusps and in F-Class III there are 6 buccal cusps.

Slide 1.12



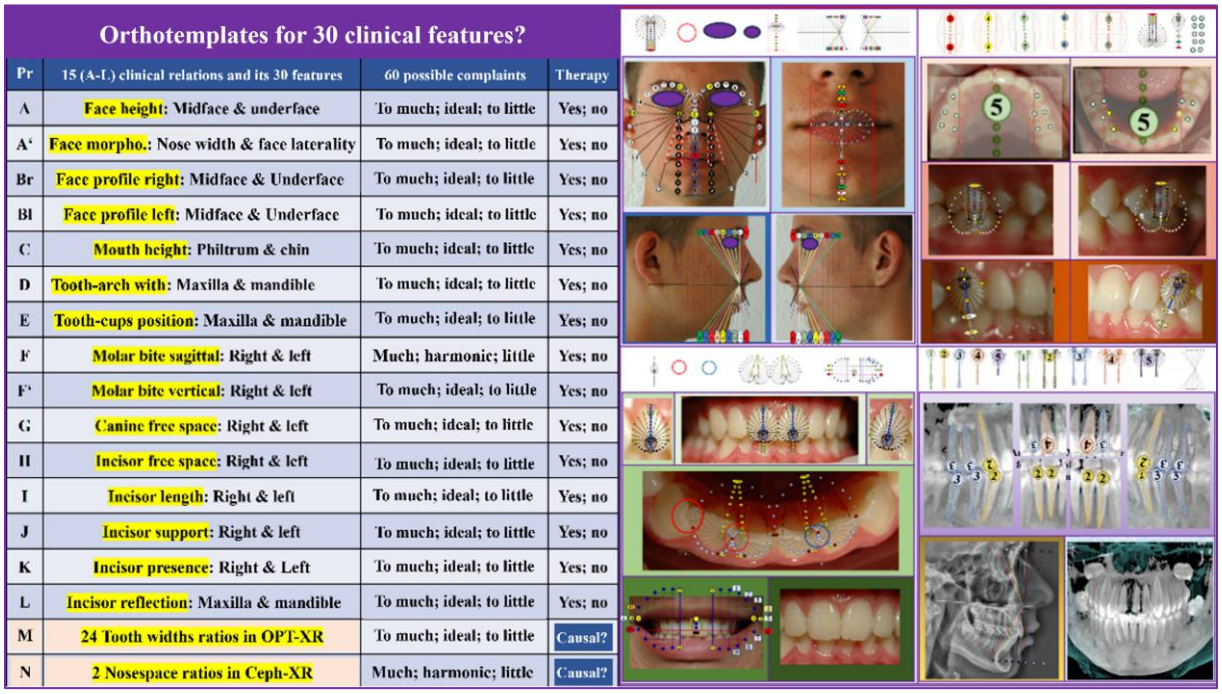
Slide 1.12: The protocol principle with the new combination options also specifies how the three classes of an individual finding characteristic are to be interpreted. In the case of a class II, too little of the characteristic is present (not harmonious enough) and in the case of a class III, too much of the characteristic is present (disharmonious).

Slide 1.13



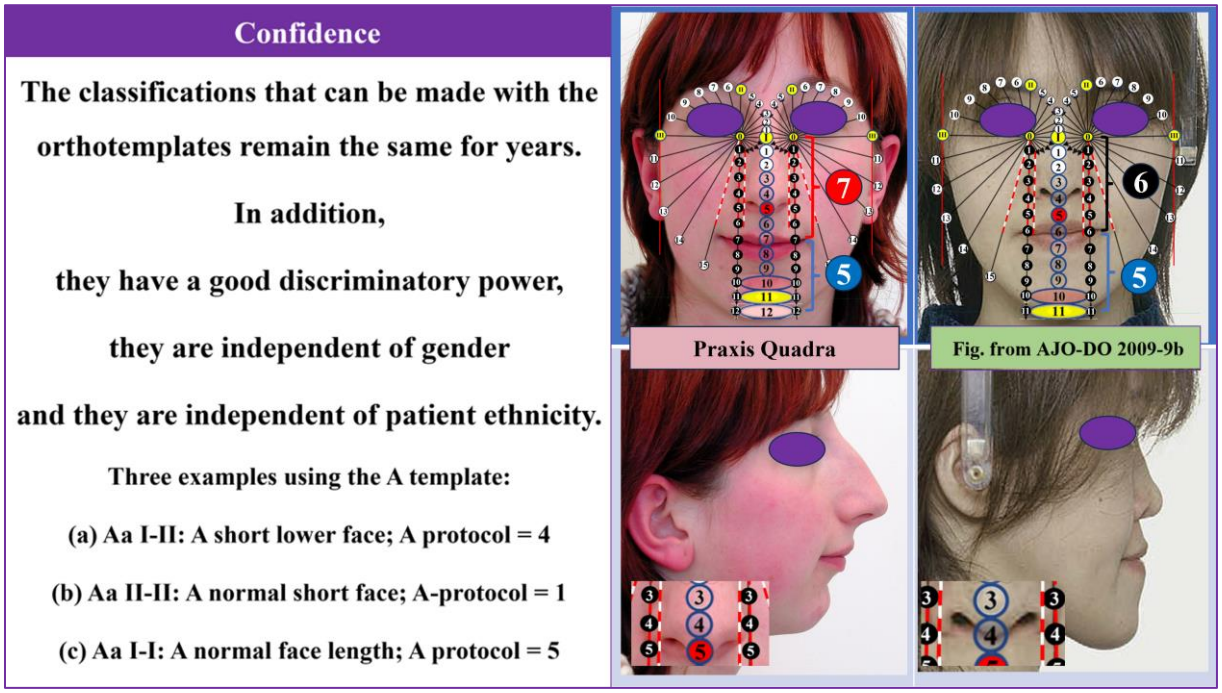
Slide 1.13: It is usually explained to the patient in the first diagnostic session that the main therapeutic goal is to achieve an Angle Class I - a harmonious molar relationship - with the addition that this is not possible in 25% of patients due to delayed evolutionary tooth width adaptation. Therefore, a meticulous analysis of the findings is required before a suitable treatment proposal can be made.

Slide 1.14



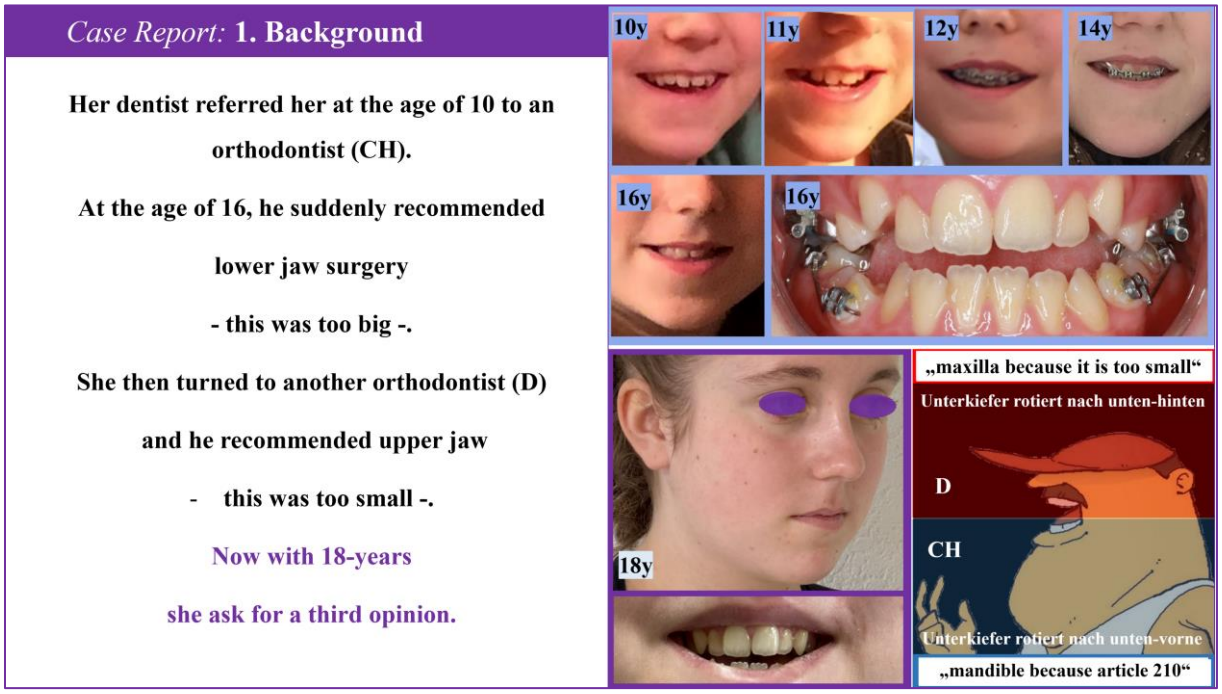
Slide 1.14: If the therapist uses one of the 30 dentofacial characteristics to analyse the findings by comparing it with a standard value of a certain ethnicity, this has the disadvantage that if the patient's parents are of different ethnic origin, this standard value will be incorrect. A morphological findings system that relates directly to the individual patient's circumstances is therefore more trustworthy.

Slide 1.15



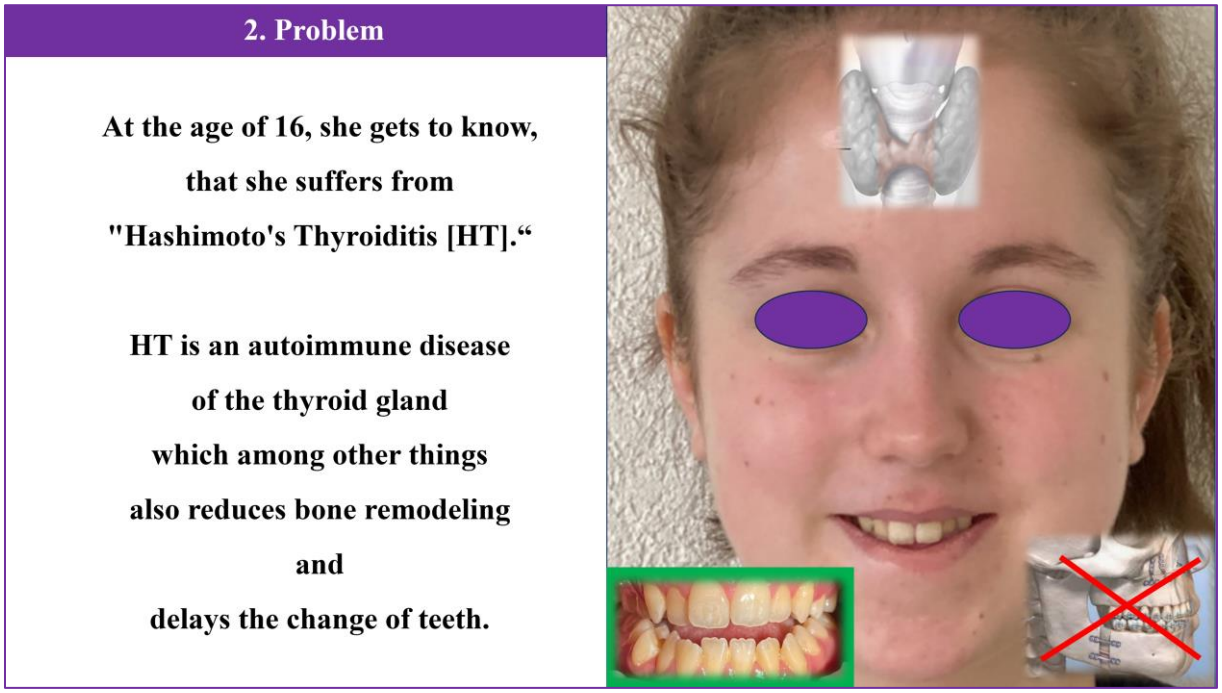
Slide 1.15: Even the neutral Swiss see their relatives as the most beautiful people in the world because they see with their hearts. From a numerical point of view, however, no human being is harmonious in all 30 characteristics. It is therefore decisive for a therapy whether a patient is bothered by a disharmonious characteristic, because only then may the therapist make the disharmony a diagnosis and suggest a treatment.

Slide 1.16



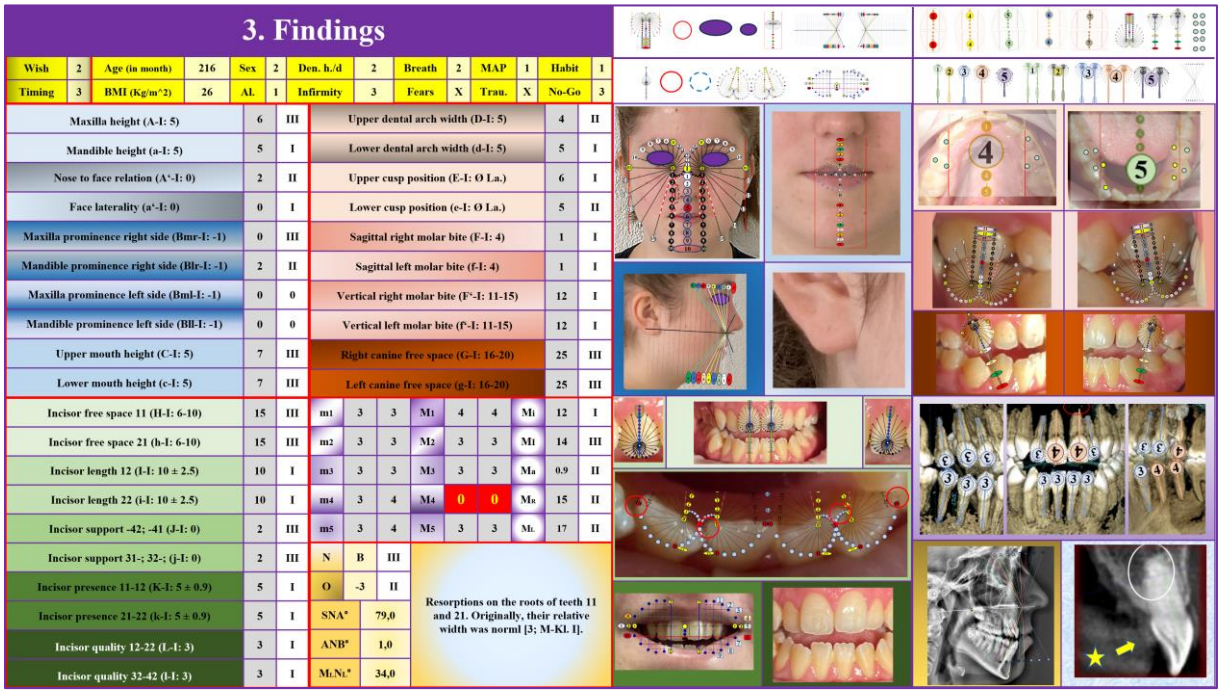
Slide 1.16: At the age of 16, her orthodontist (CH) recommends that the lower jaw be surgically repositioned because the cephalometric x-ray shows that the lower jaw has grown too far forwards. A specialist orthodontist (D) recognises in the same cephalometric X-ray that the upper jaw has grown too little forwards and therefore recommends surgical advancement of the upper jaw.

Slide 1.17



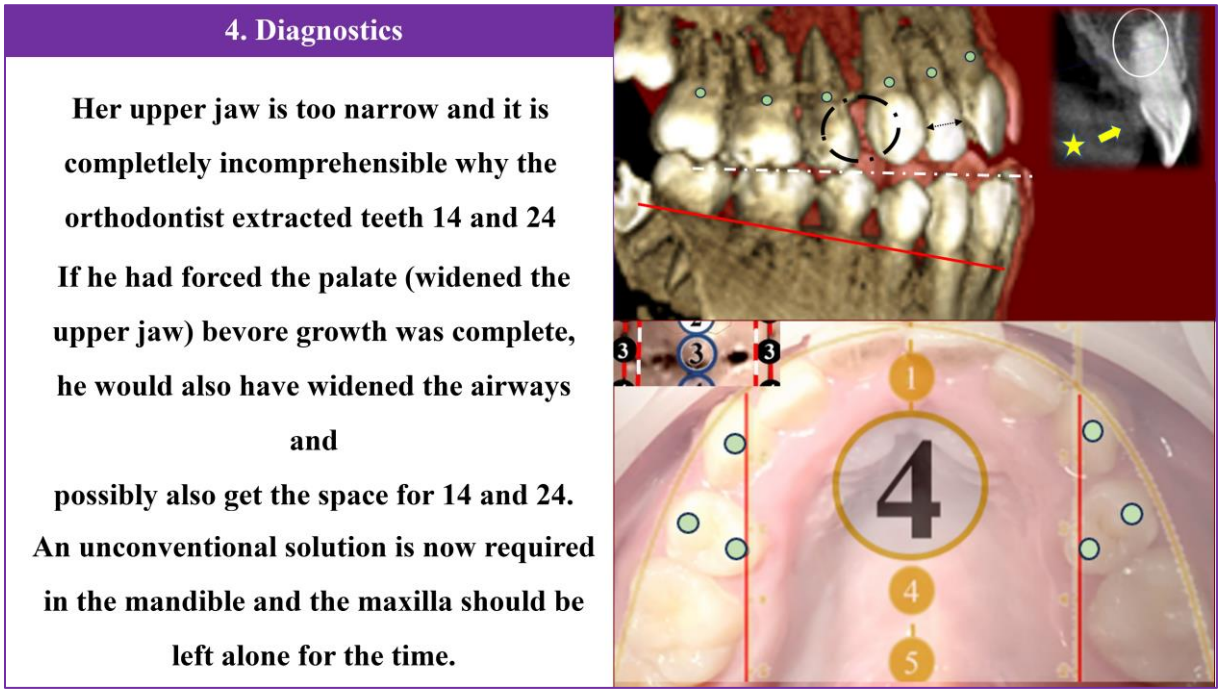
Slide 1.17: 18-year-old Anna wanted a normal incisor bite. However, she did not want oral surgery under any circumstances because she knows that the thyroid gland is responsible for bone remodelling processes and she fears that wound healing problems could occur after the operation. Question, is this feasible?

Slide 1.18



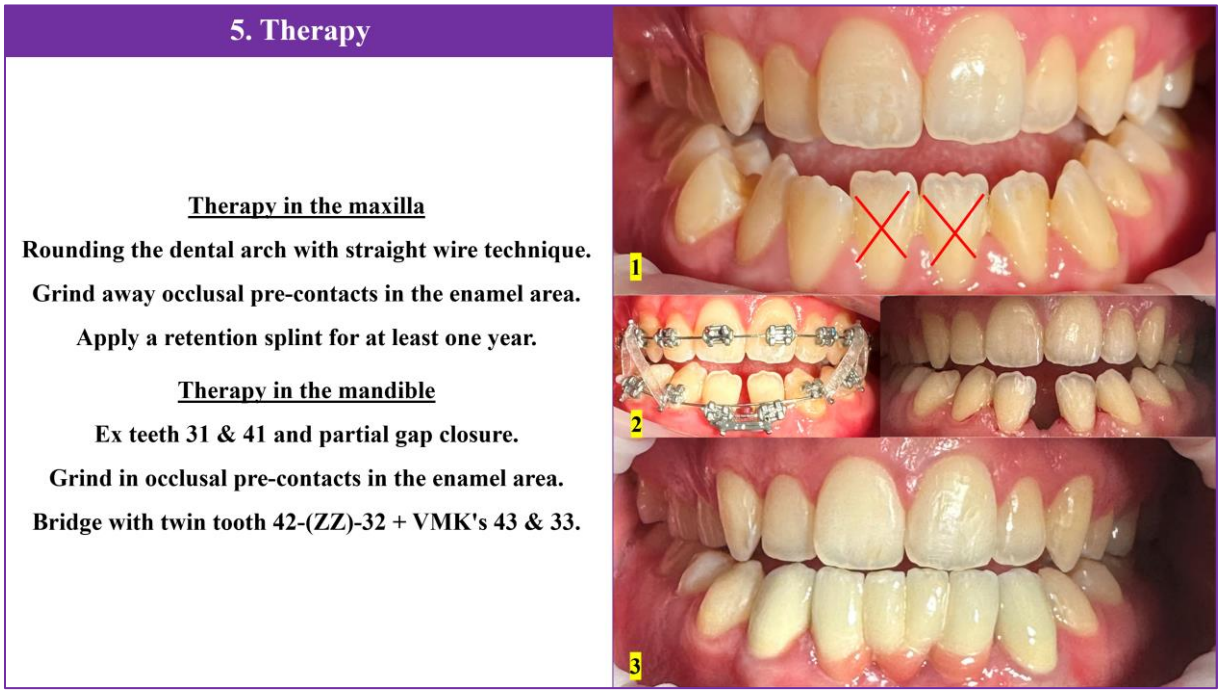
Slide 1.18: The diagram shows a summary of all patient statements and clinical findings that can be recorded. The purpose of extensive findings is to recognise the reason for malocclusion so that a causal therapy can be offered. With regard to the case history, it is noticeable that teeth 14 and 24 were extracted, which suggests that they had too little space in the upper jaw and which leads to the question: Why wasn't the maxilla extended to make room for 14 and 24

Slide 1.19



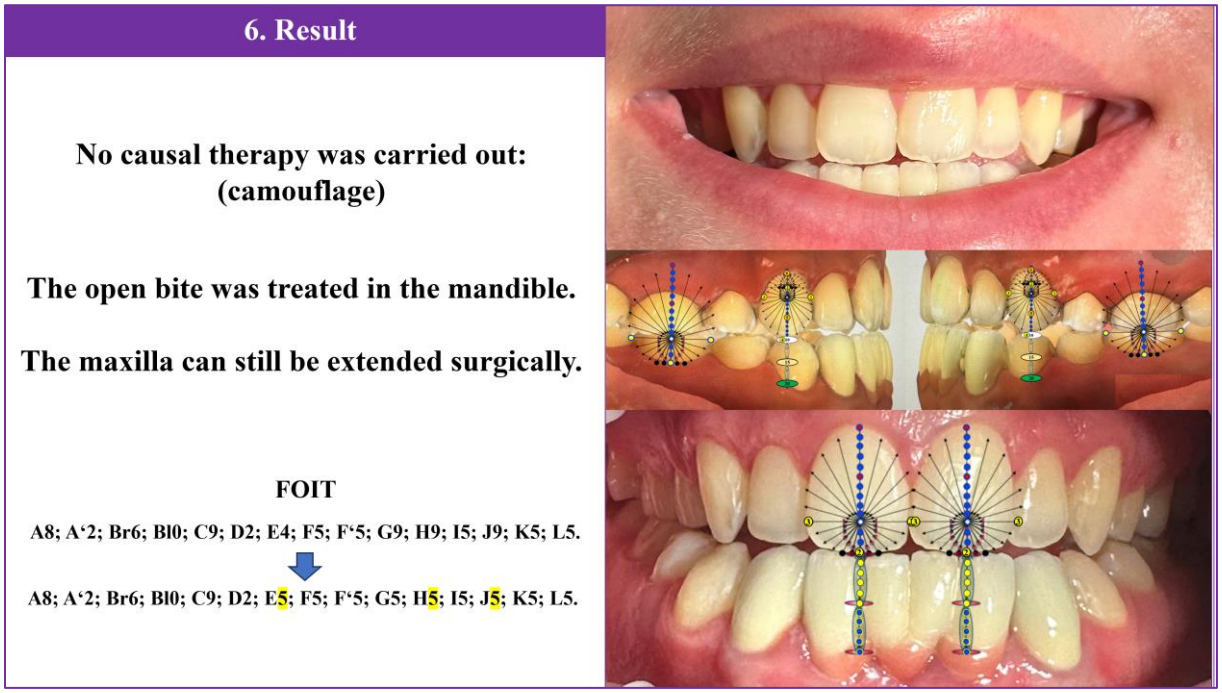
Slide 1.19: The alveolar findings with the DVT show, among other things, a straightened spee curve in the lower jaw and root resorption on the upper central incisors. Both extraorally and intraorally, it can be objectified that the maxilla is too narrow. Non-surgical forced elongation of the maxilla before puberty would have been the solution, but now interdisciplinary treatment is required due to the risk of resorption.

Slide 1.20



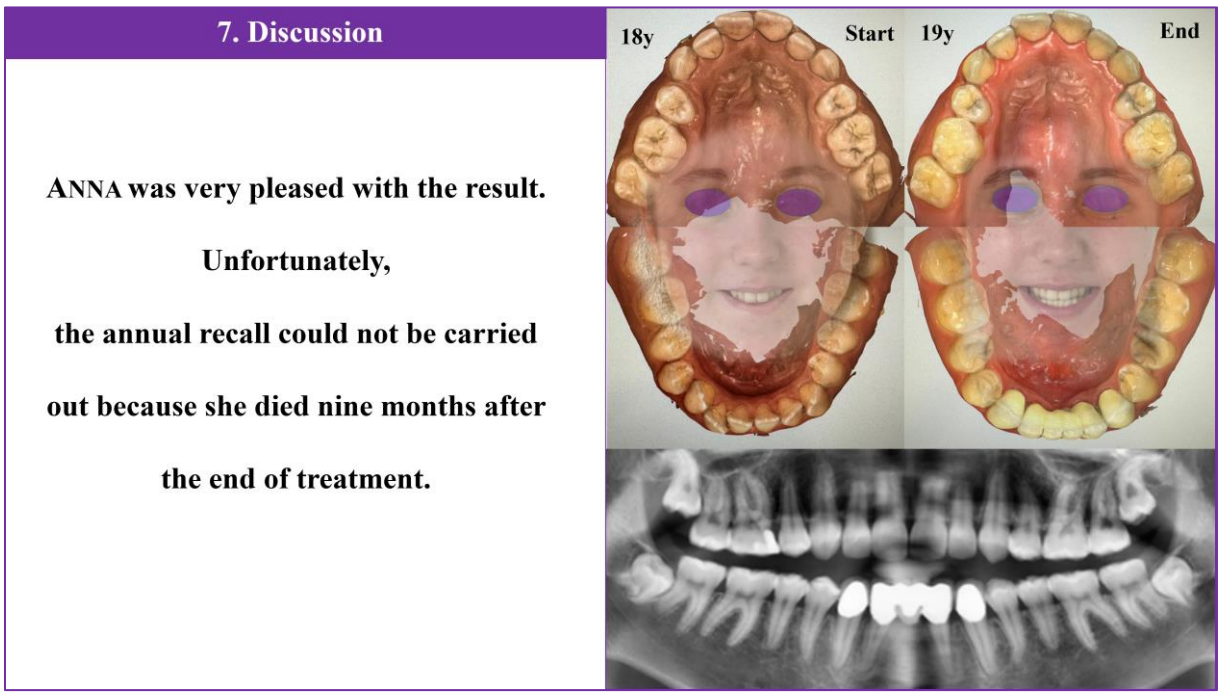
Slide 1.20: In principle, maxillofacial surgery in the upper and lower jaw would be the treatment of choice here. Unfortunately, this is not possible because HT is still not curable - only treatable. Wound healing disorders would be expected and the result would almost certainly be unstable. Initial treatment in the lower jaw without surgery can be successful, even if it is only a camouflage. Surgery in the upper jaw is then still an option.

Slide 1.21



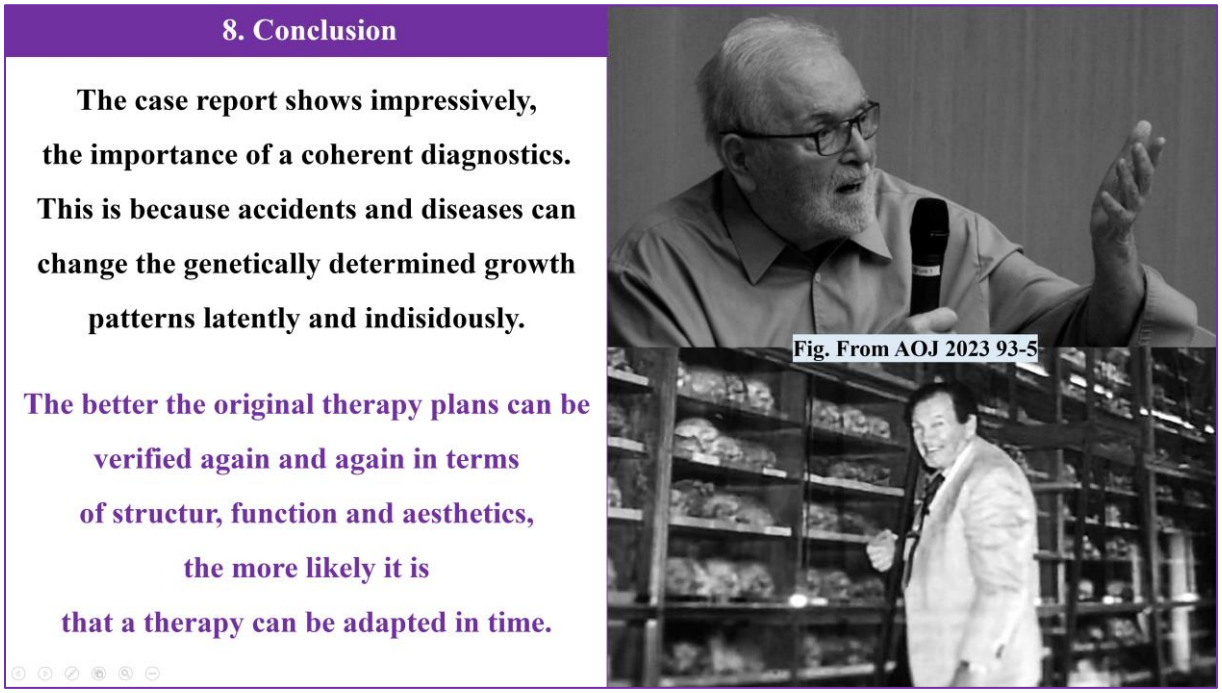
Slide 1.21: The unusual extraction of the lower central incisors can be well explained here. If the tooth width sums do not match - disharmoniously - they must be adapted to each other and the extraction of only two premolars with the simultaneous retention of a normal molar occlusion usually does not lead to a stable result.[30]

Slide 1.22



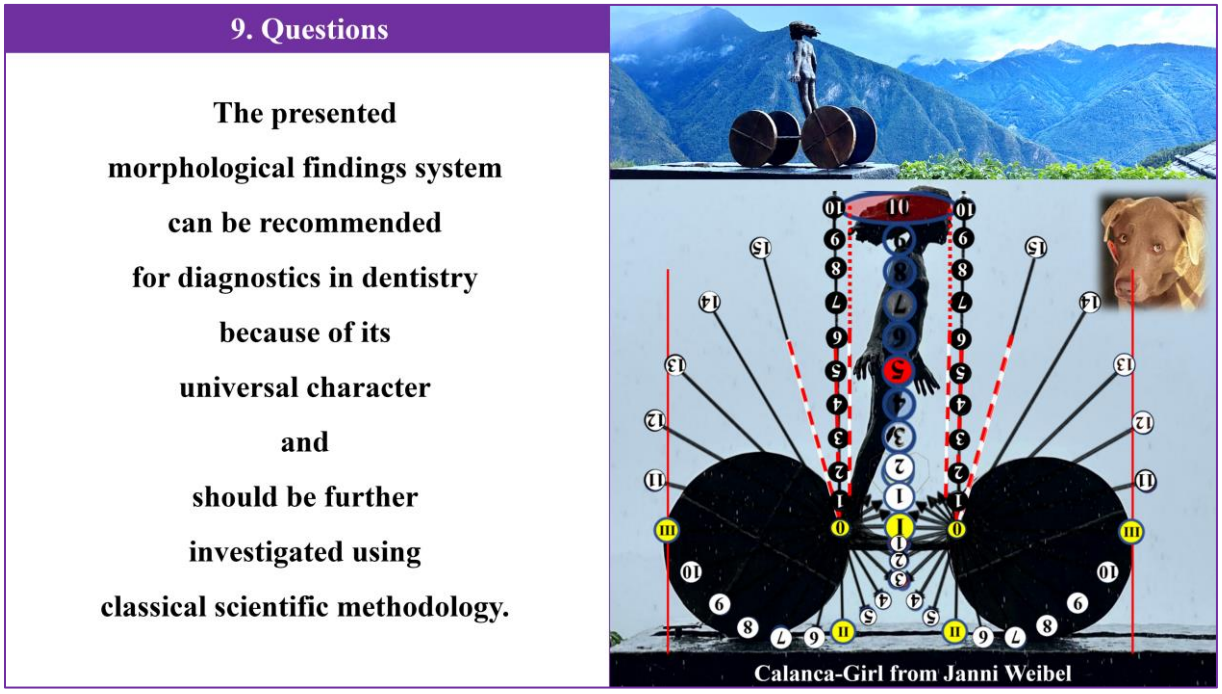
Slide 1.22: Long-term stability of the result, which the patient can maintain herself, should be the primary goal. Today, after orthodontic treatment, patients are usually fitted with an oral retention arch in the lower anterior region, which should remain there for life. However, the retention and cleaning options of these archwires are certainly worse than those of an anterior bridge.

Slide 1.23



Slide 1.23: Above all R. Ricketts (1920-2003) and R. Slavicek (1928-2022) and other authors repeatedly emphasised the importance of treating patients according to the rules of nature. Both attributed an essential key role to the diagnostic process in order to get structural, functional and aesthetic problems under control (AOJ; 2023; 93/5). And the mother of all rules is gravity.

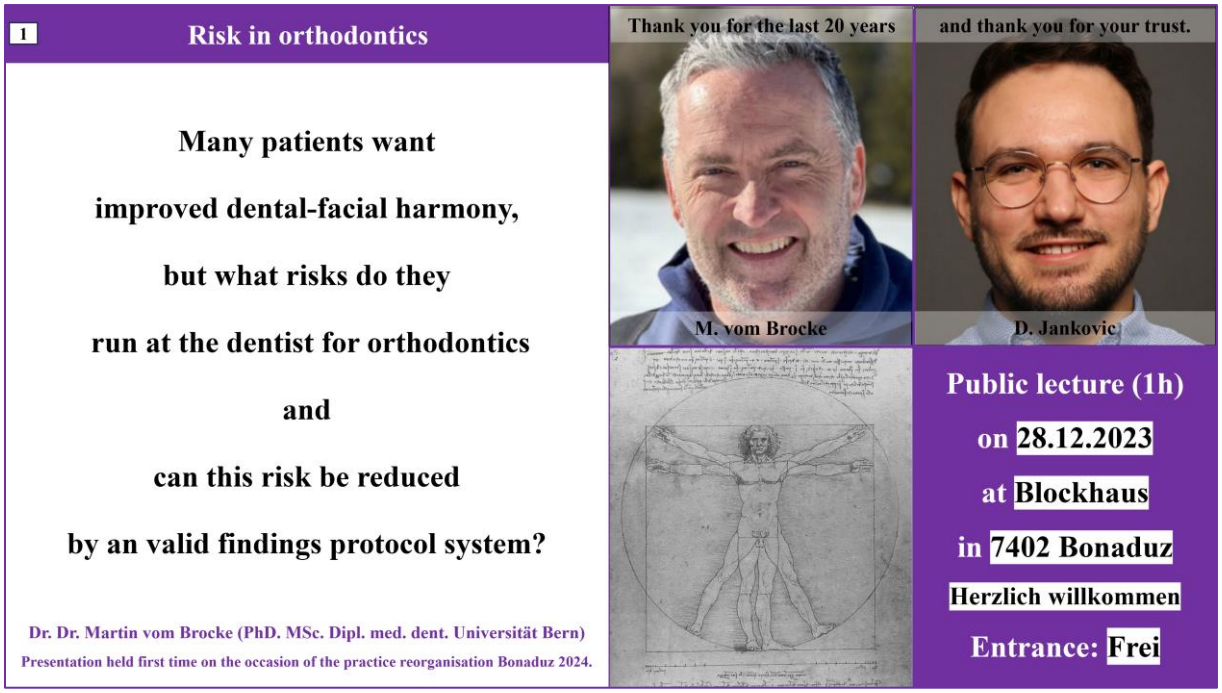
Slide 1.24



Slide 1.24: Tools with structures, function and aesthetics that can be recognised simultaneously may also be useful in other disciplines - art, veterinary medicine. '*If a form fits into its norm, then its dimensions are certainly clear, and if it grows in harmony, then its proportions are also true*.'

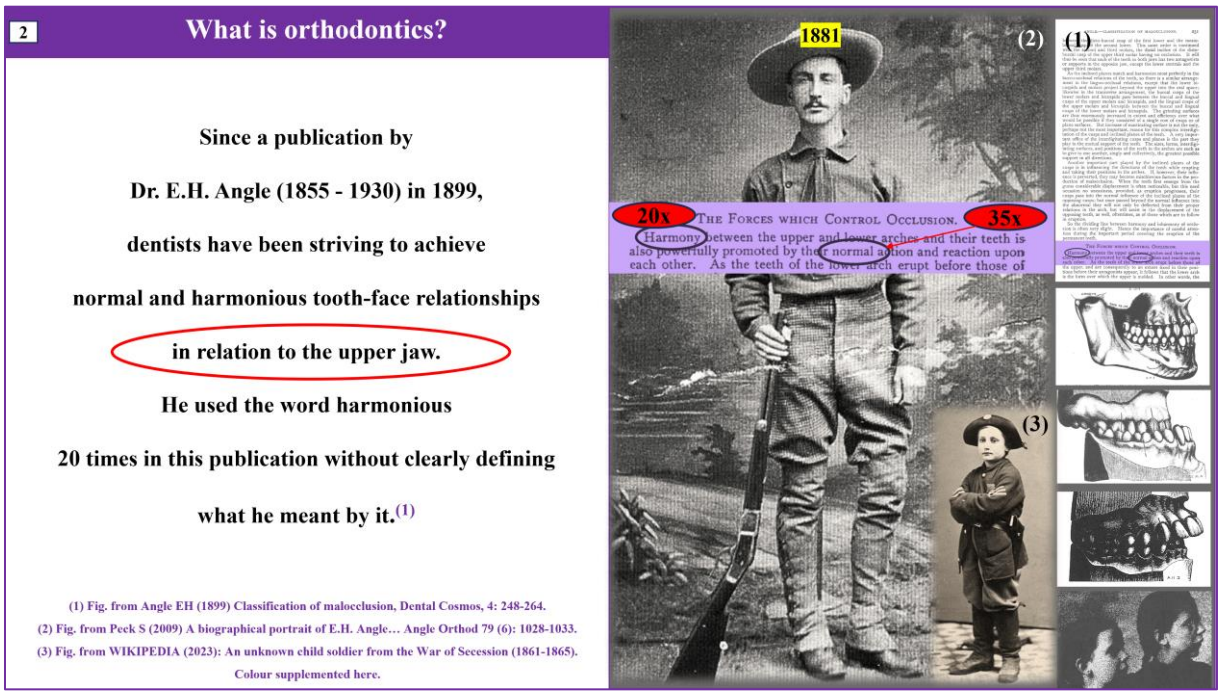
10. 2. Lecture: Risk and orthodontics

Slide 2.1



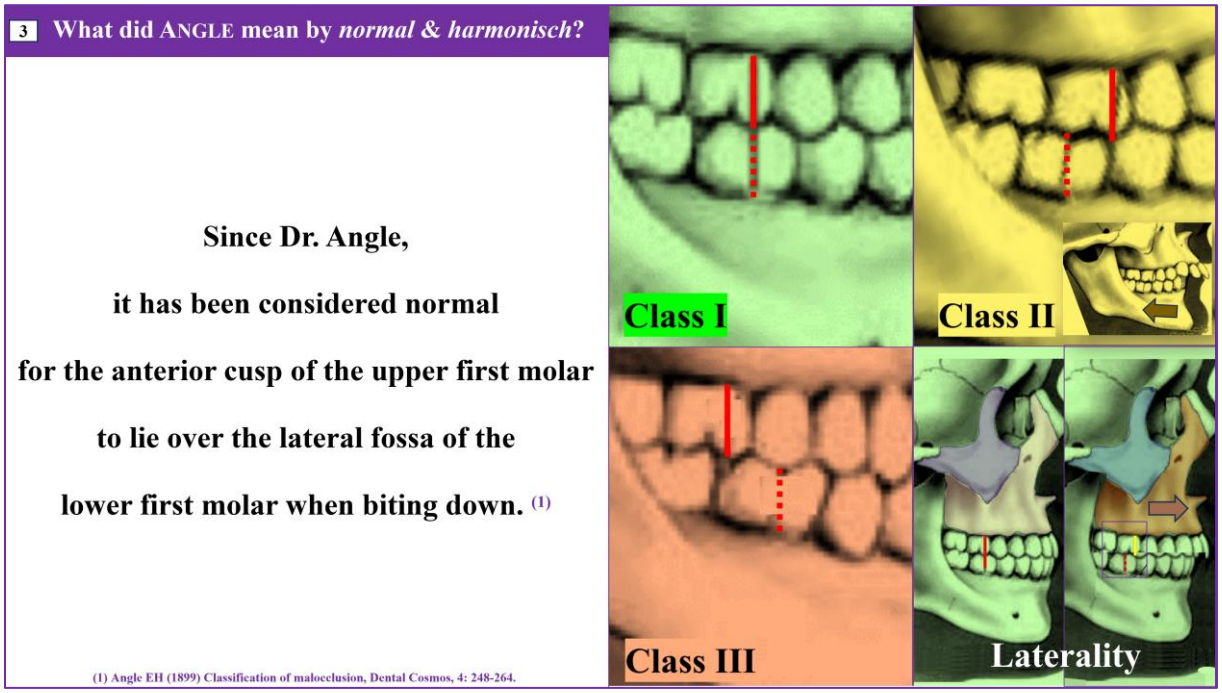
Slide 2.1: Many patients want an improved dental-facial harmony, but what risks do they run at the orthodontist and can this risk be reduced by an improved, universally valid diagnostic protocol system?

Slide 2.2



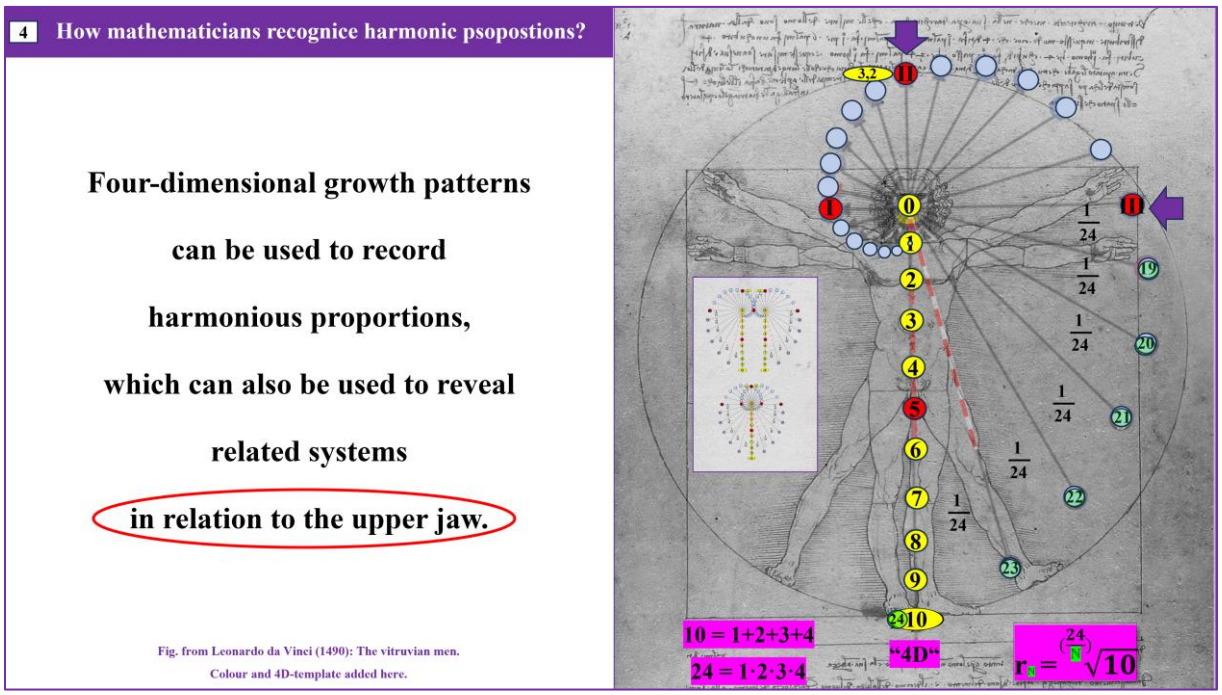
Slide 2.2: Since a publication by Dr E.H. Angle (1855 - 1930) in 1899, dentists have been striving to achieve normal and harmonious tooth-face relationships in relation to the upper jaw. He used the word harmonious 20 times in this publication without clearly defining what he meant by it.

Slide 2.3



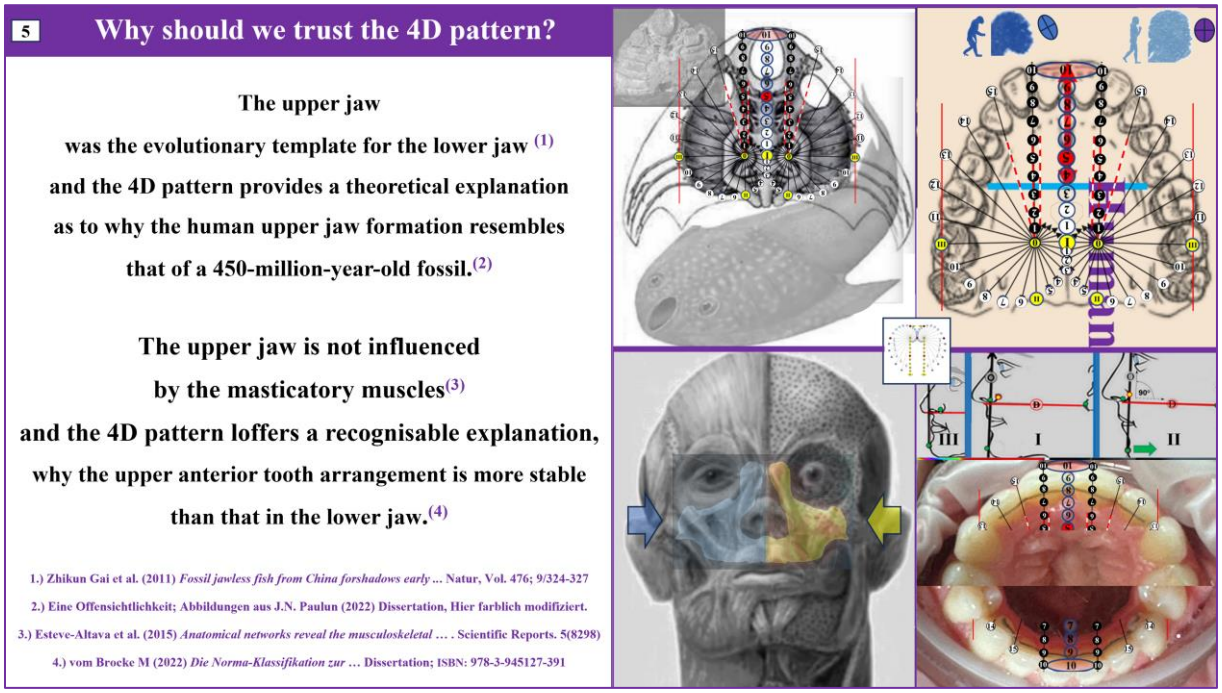
Slide 2.3: Since Dr Angle, it has been considered normal for the anterior cusp of the upper first molar to lie over the lateral fossa of the lower first molar when biting. E.H. Angle did not yet know how to classify harmonically or what the DNA for gene coding was, for example.

Slide 2.4



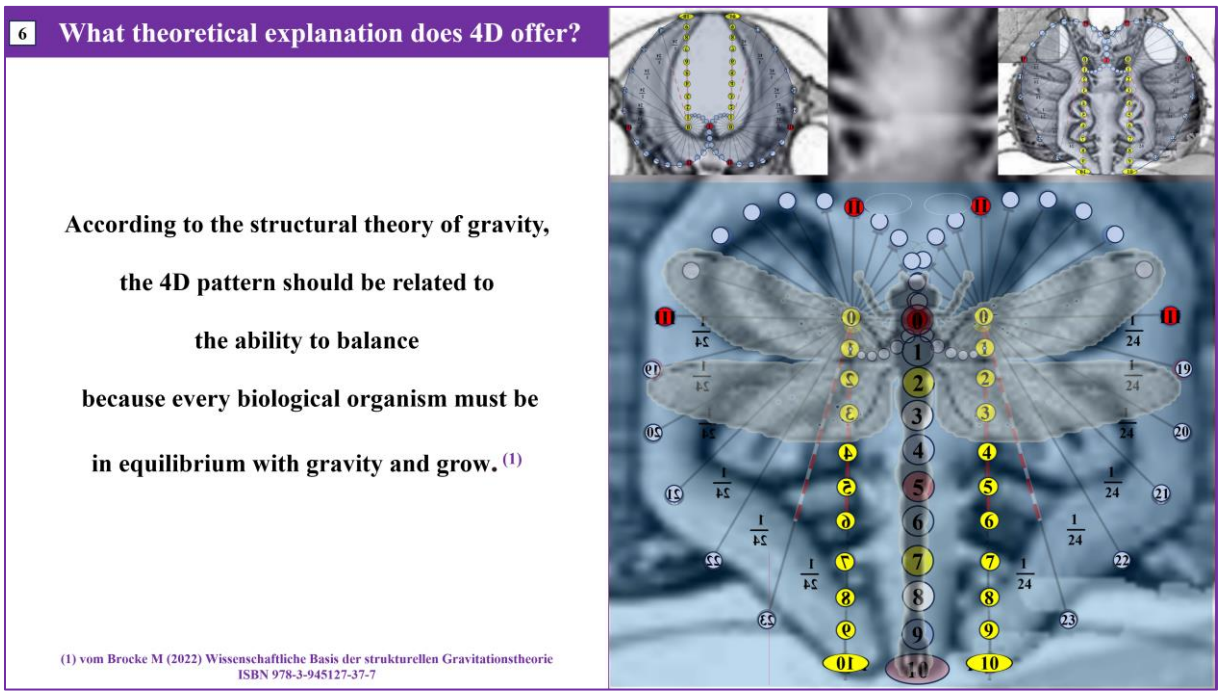
Slide 2.4: Four-dimensional growth patterns can be used to record harmonious proportions, which can also be used to reveal related systems in relation to the upper jaw. For example, the natural spiral with $r_N = \sqrt[(24/N)]{10}$ reveals that the arms start at height 1 and the legs at height 5 in relation to the upper jaw.

Slide 2.5



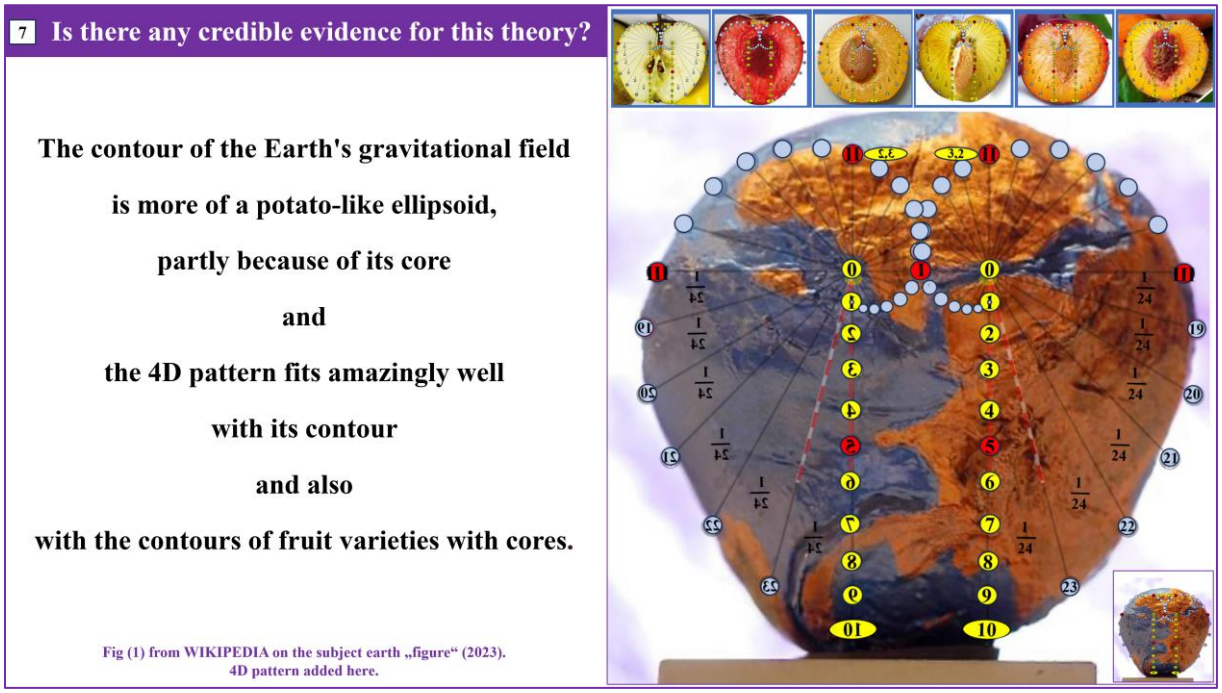
Slide 2.5: The upper jaw was the evolutionary template for the lower jaw and the 4D pattern offers a theoretical explanation as to why the human upper jaw formation resembles that of a 450 million year old fossil and a recognisable explanation as to why the upper anterior tooth arrangement is more stable than that in the lower jaw.

Slide 2.6



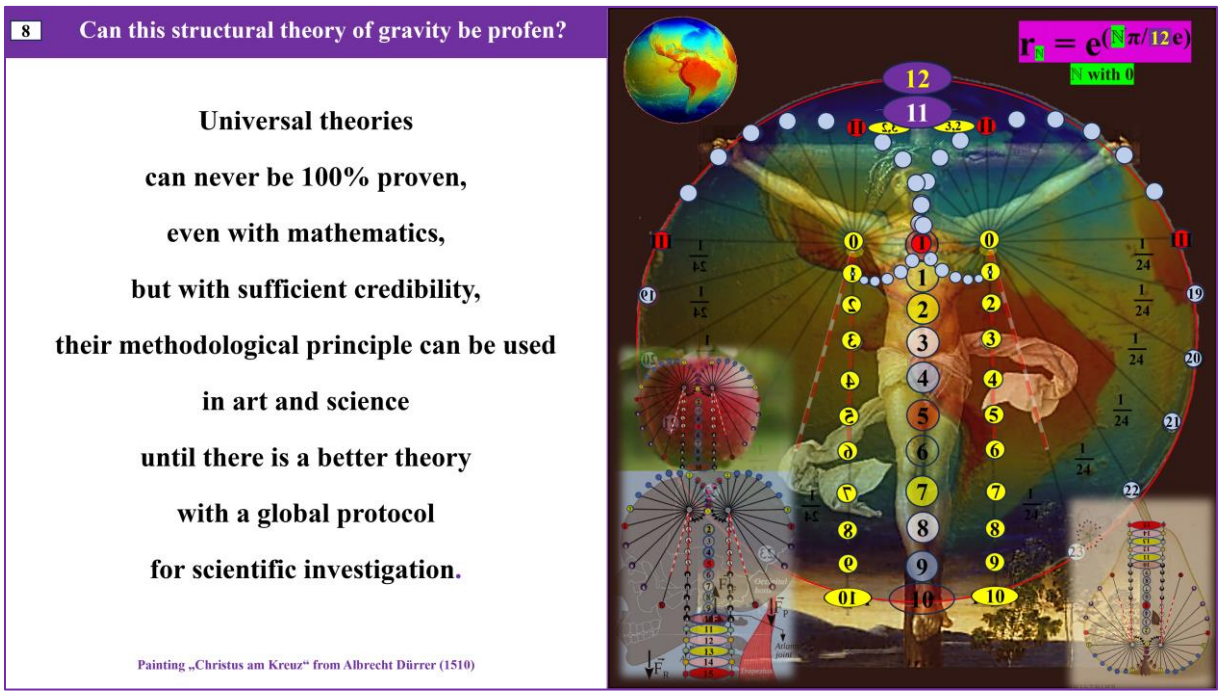
Slide 2.6: According to the structural theory of gravity, the 4D pattern should be related to the ability to balance, because every biological organism must be in equilibrium with gravity or grow. At the very least, a corresponding analogy can be drawn between the brain structure of a 450-million-year-old fish and the wing anatomy of flight artists such as dragonflies.

Slide 2.7



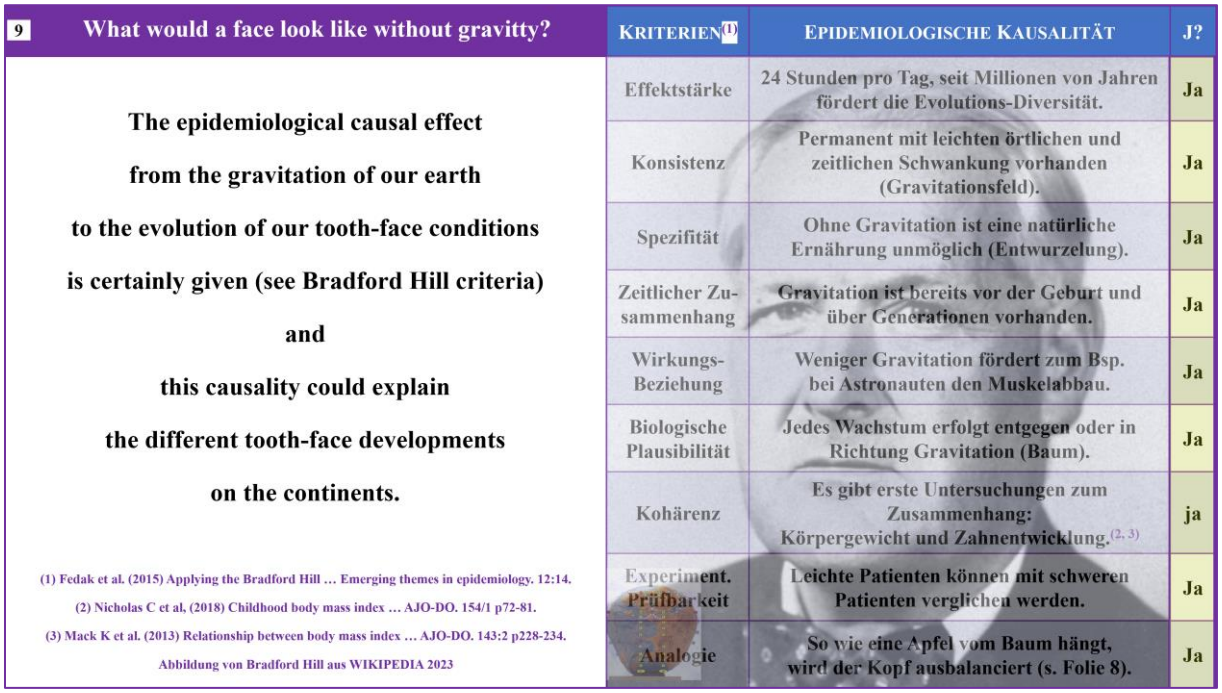
Slide 2.7: The contour of the Earth's gravitational field is more of a potato-like ellipsoid, partly because of its core, and the 4D pattern fits amazingly well with its contour and also with the contours of fruit varieties with cores. There are surprisingly many gravitational analogies and only a few scientific papers on the subject.

Slide 2.8



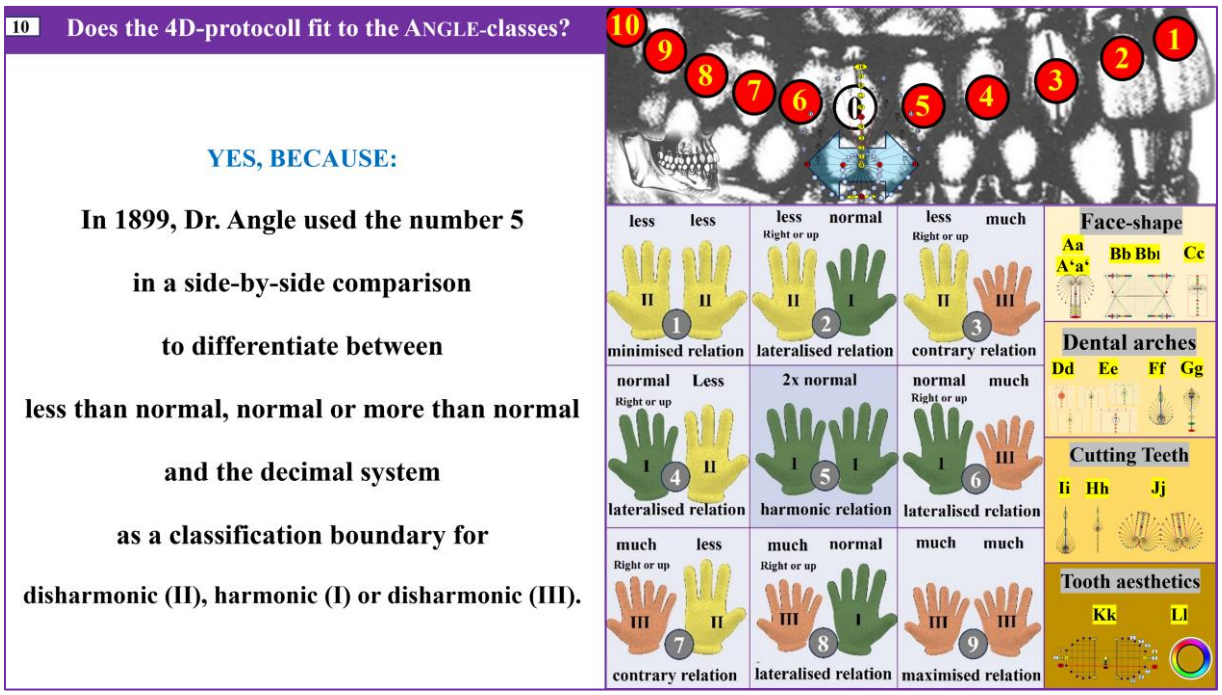
Slide 2.8: Universal theories can never be 100% proven even with maths, but with sufficient credibility, their methodological principle can be used in art and science until there is a better theory with a global protocol methodology for scientific investigation. For example, apple and pear varieties could possibly be catalogued using the 4dR.

Slide 2.9



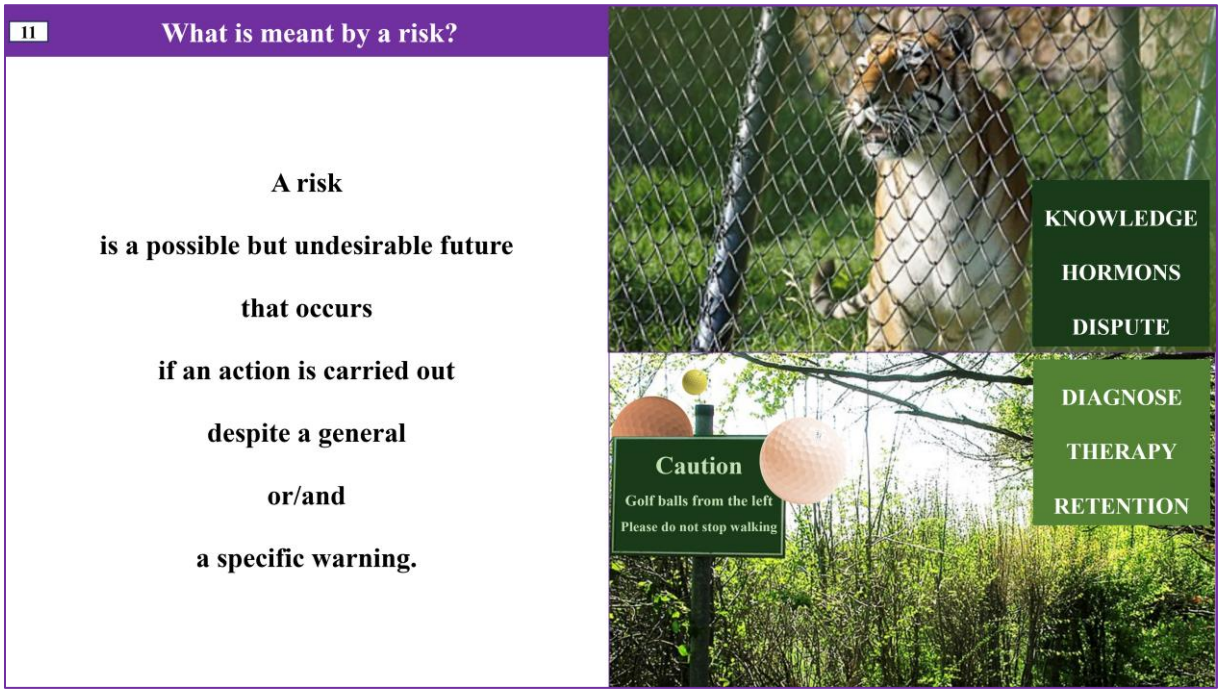
Slide 2.9: The epidemiological causal effect from the gravitation of our earth to the evolution of our tooth-face conditions is certainly given (see Bradford Hill criteria) and this causality could explain the different tooth-face developments on the continents.

Slide 2.10



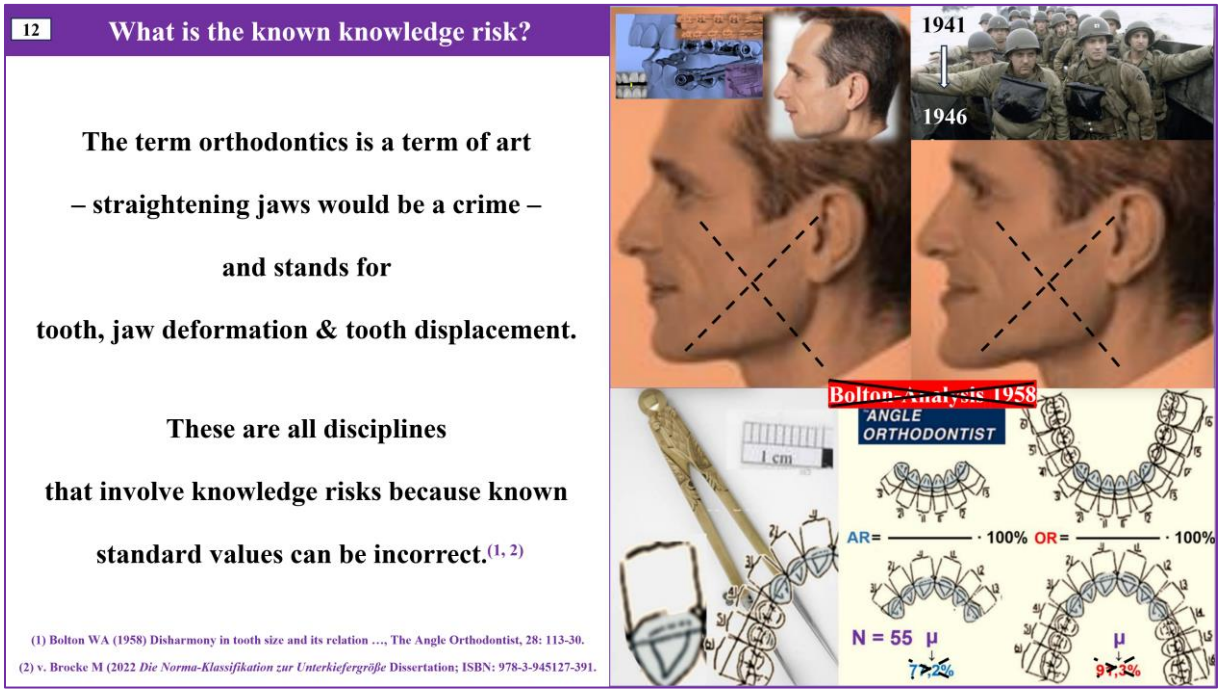
Slide 2.10: In 1899, Dr Angle - as is assumed here - used the number 5 in a side-by-side comparison to differentiate between less than normal, normal or more than normal and the decimal system as a classification limit for 'hypo'-harmonic (II), harmonic (I) or 'hyper'-harmonic (III). Ten corresponding templates - e.g. one for the molars - were provided so that the word harmonic can be used simultaneously with normal.

Slide 2.11



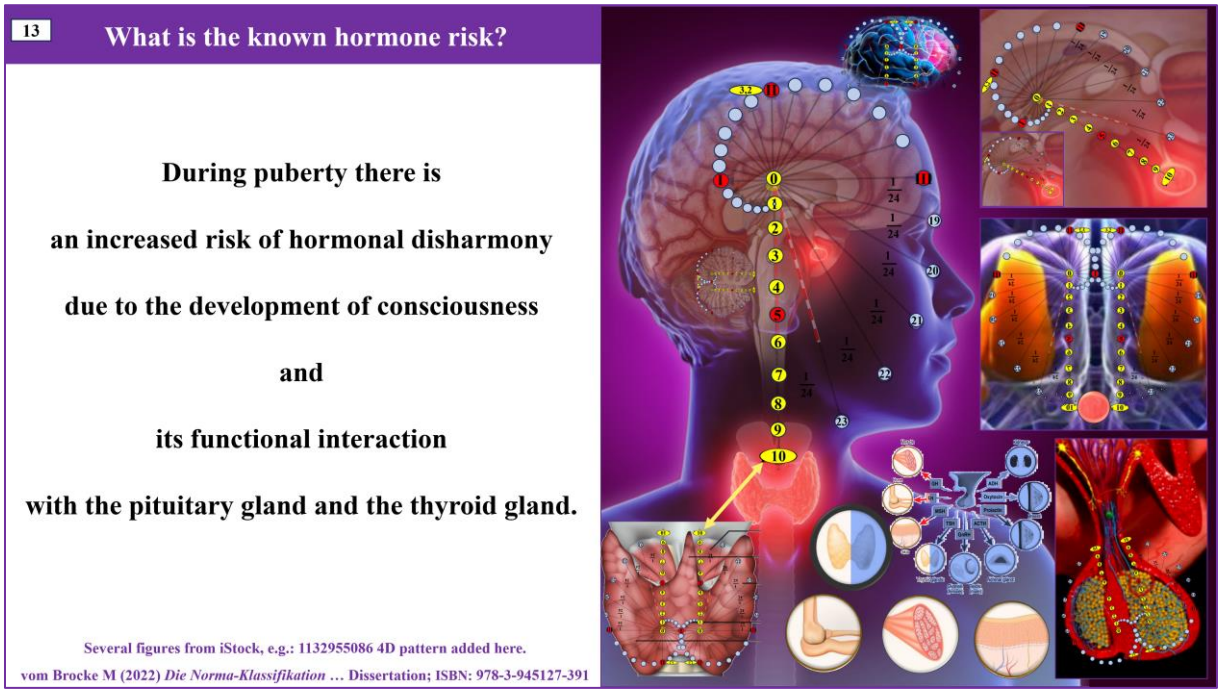
Slide 2.11: A risk is a possible but undesirable future that occurs if an action is carried out despite a general or/and a specific warning. In orthodontics, a distinction can be made between knowledge, hormone and conflict risks as well as diagnostic, therapeutic and retention risks.

Slide 2.12



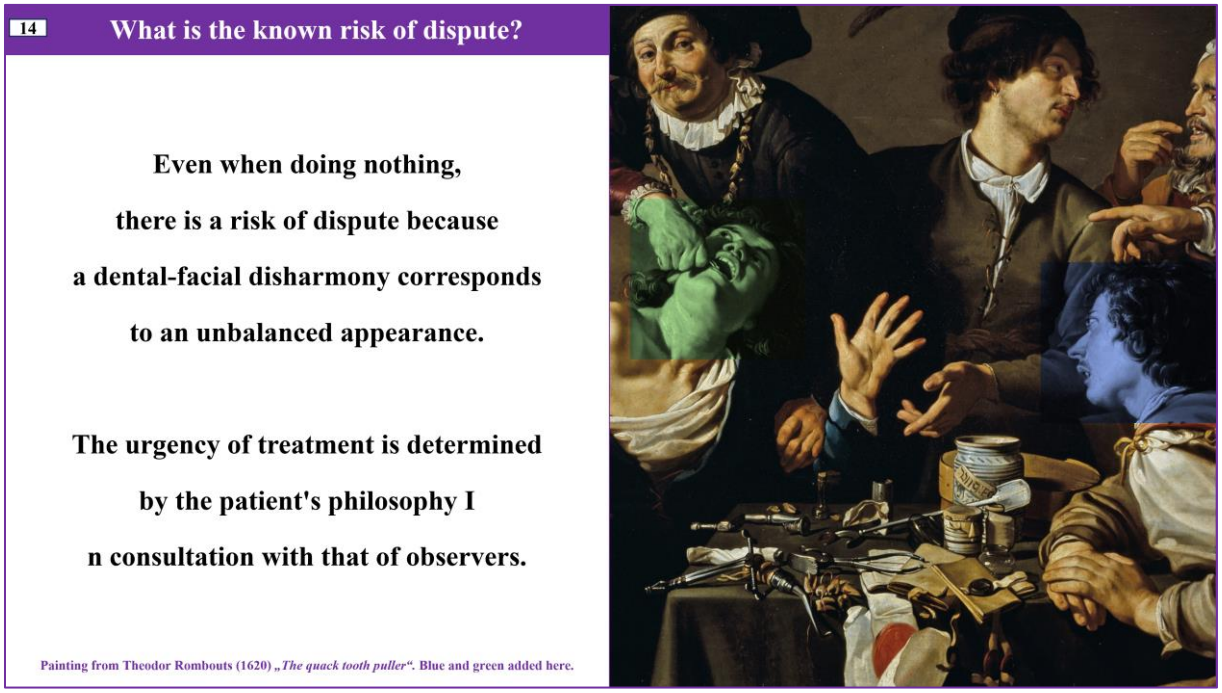
Slide 2.12: The term *orthodontics* is a term of art - straightening jaws would be a crime - and stands for tooth deformation, jaw deformation, tooth displacement and jaw displacement. These are all disciplines that involve knowledge risks because known standard values can be incorrect.

Slide 2.13



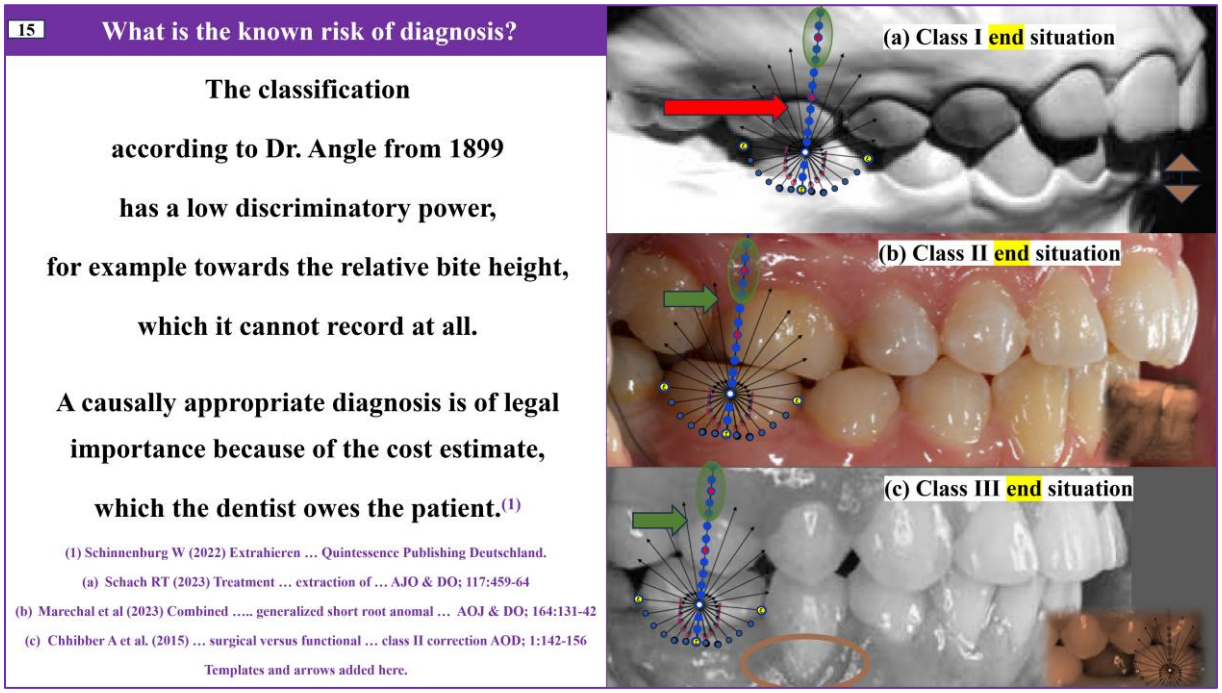
Slide 2.13: During puberty there is a hormonal risk of disharmony due to the development of consciousness and its functional interaction with the pituitary and thyroid glands. However, imbalance can also be caused by drugs or illnesses that affect consciousness (anterior brain region), the gateway to consciousness (the two thalamus nuclei) and/or the cerebellum.

Slide 2.14



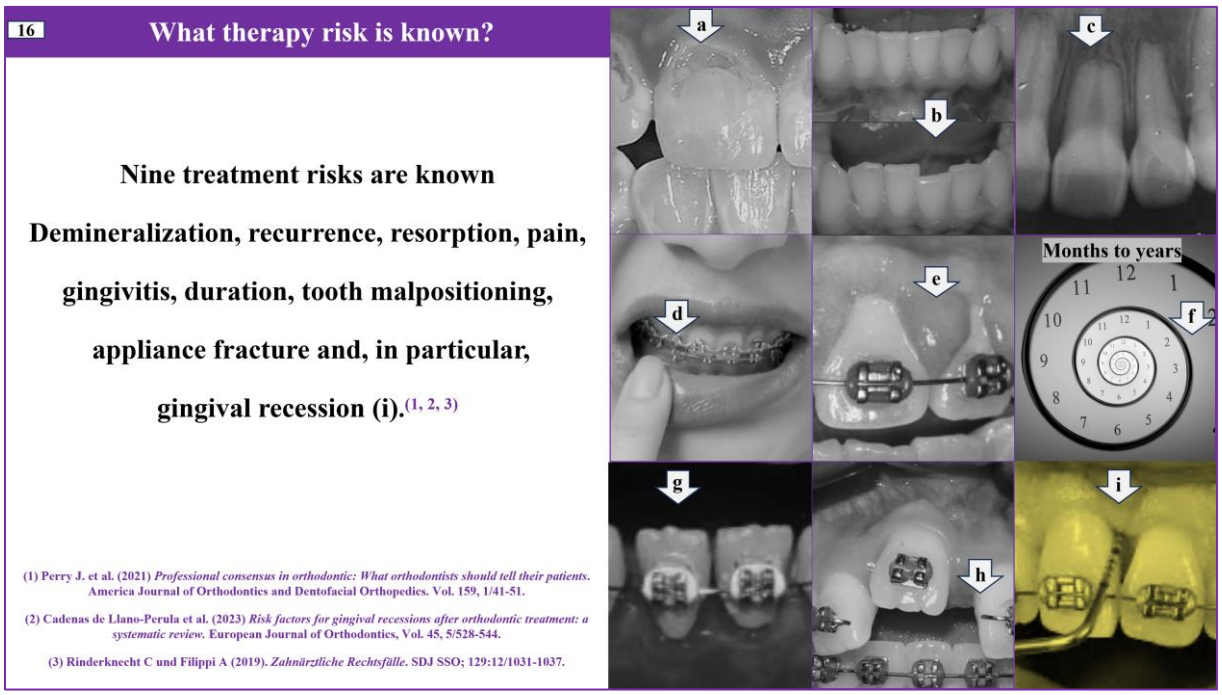
Slide 2.14: Even when doing nothing, there is a risk of conflict because a dental-facial disharmony corresponds to an unbalanced appearance. The urgency of treatment is determined by the patient's 'philosophy' in consultation with the self-perception of observers.

Slide 2.15



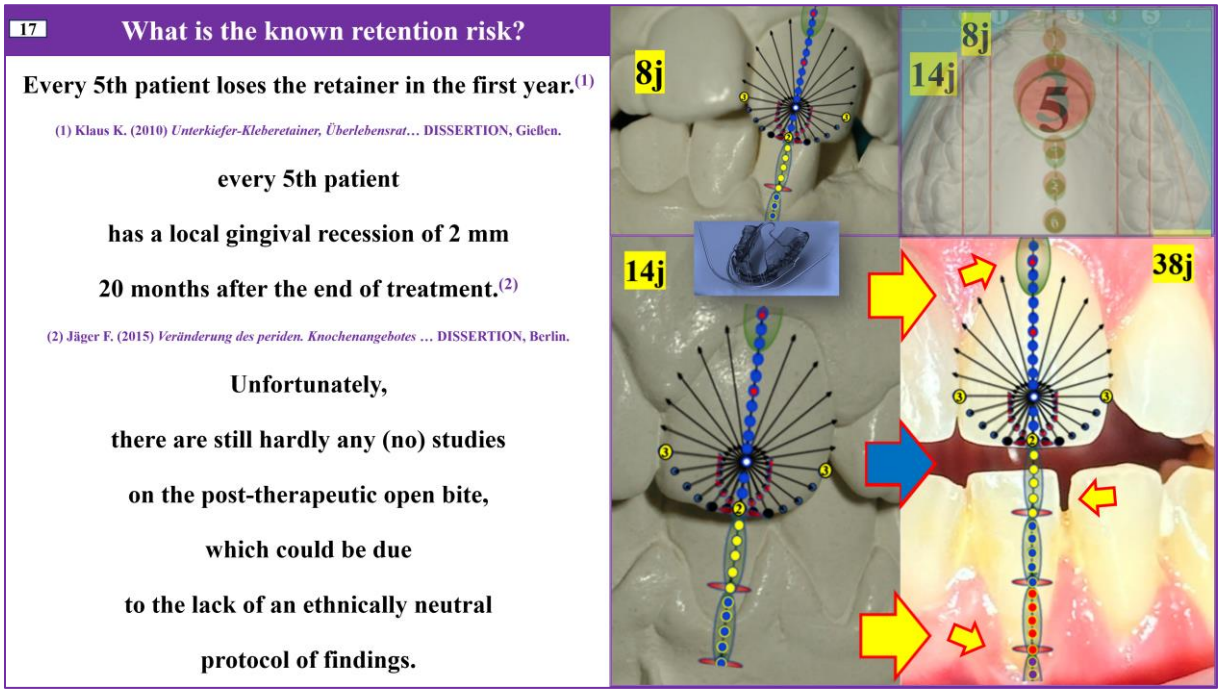
Slide 2.15: The classification according to Dr Angle from 1899 has a low degree of selectivity, for example with regard to the relative bite height, which it cannot record at all. A causally appropriate diagnosis is also of legal importance due to the cost estimate, as the dentist owes this to the patient.

Slide 2.16



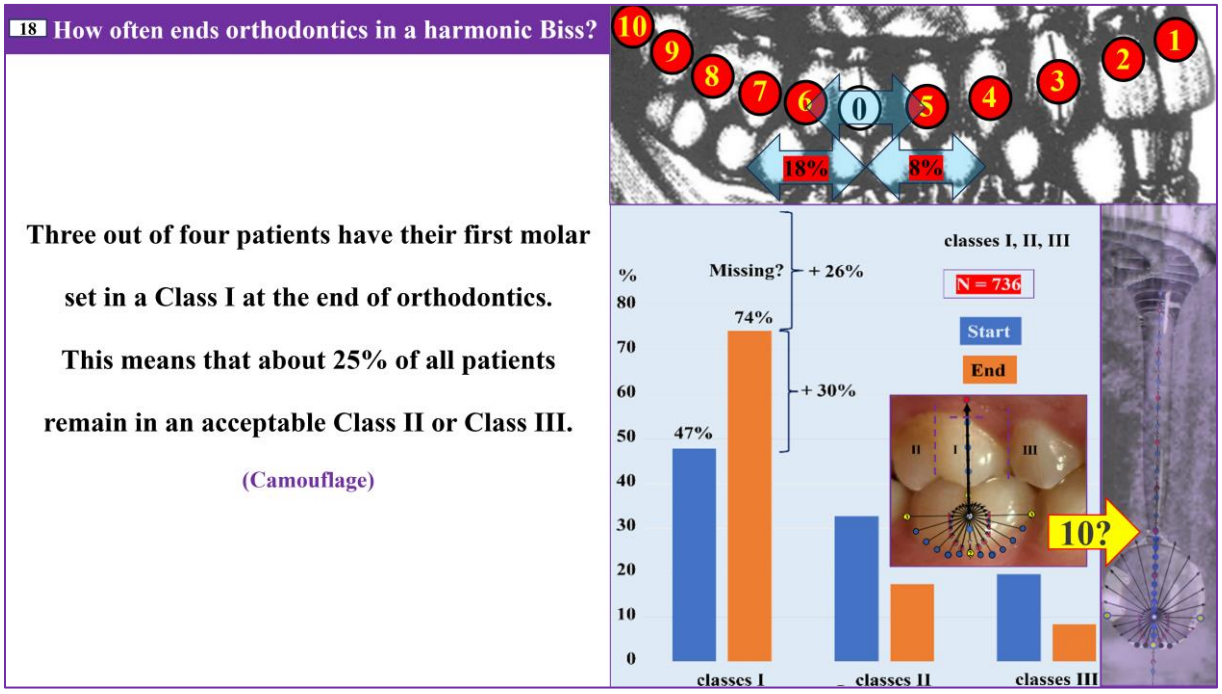
Slide 2.16: Nine treatment risks are known: Demineralisation, recurrences, resorptions, pain, gingivitis, duration, tooth malpositioning, appliance fracture and, in particular, gingival recession. The way in which the original periodontium is documented is not so important, but the need to record it is demanded by many different parties.

Slide 2.17



Slide 2.17: Every fifth patient loses the retainer in the first year and every fifth patient has a localised undesired gingival recession of 2 mm on average 20 months after the end of treatment. Unfortunately, there are still hardly any (practically no) studies on the post-therapeutic open bite, which could be due to the lack of an ethnically neutral recording of findings.

Slide 2.18

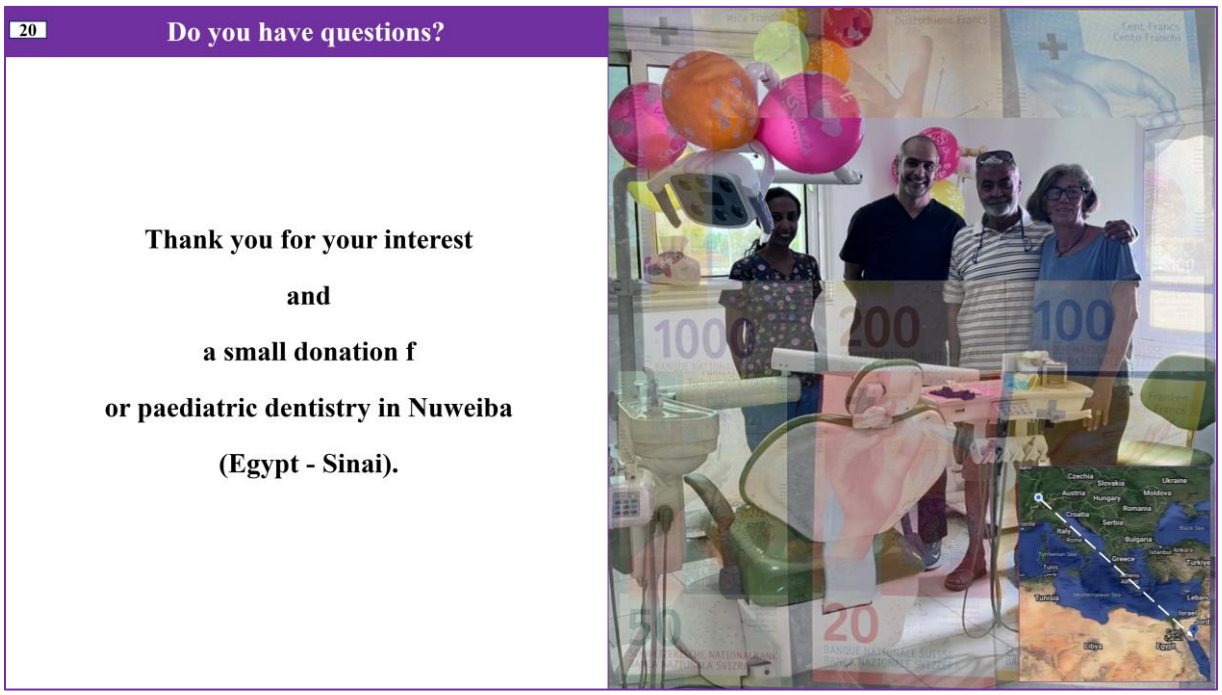


Slide 2.18: Three out of four patients have their first molar set in a Class I at the end of orthodontics. This means that around 25% of all patients remain in an acceptable Class II or Class III, which in turn does not bother anyone because it is not visible. This is also known as camouflage.

Slide 2.19

Slide 2.19: A dentist in the neighbourhood risks less than a dentist far away and if you are dissatisfied, you should talk to him first before paying. You should be aware of this: A second dentist may only treat in an emergency, there is usually no compensation for pain and the dentist does not owe anyone a treatment goal.

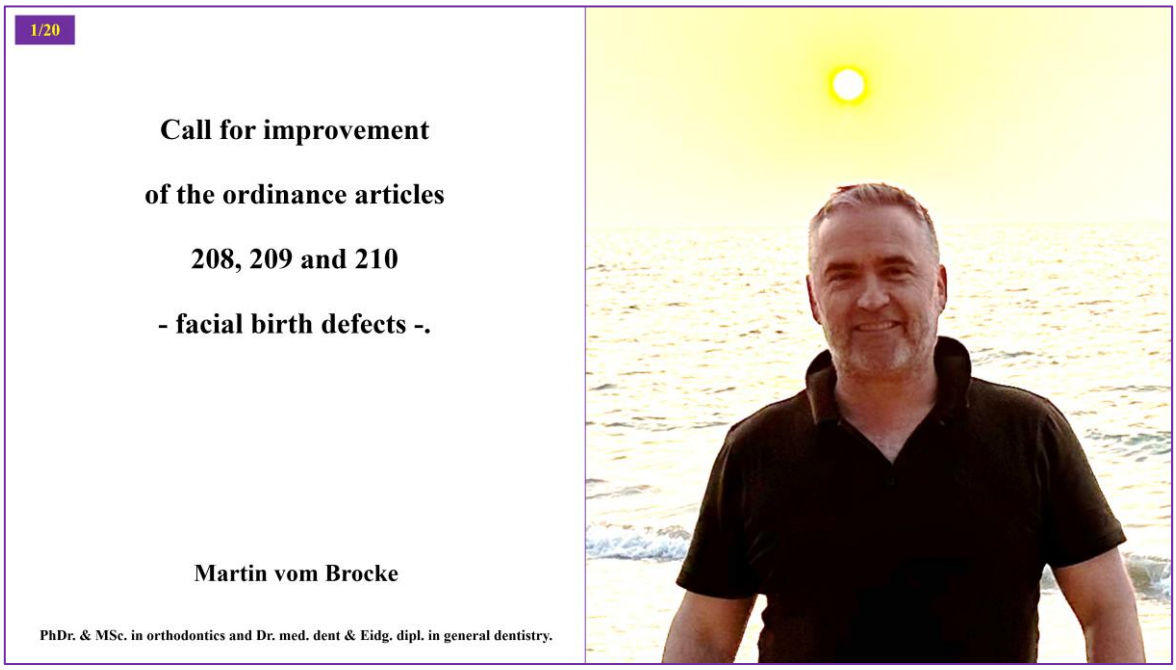
Slide 2.20



Slide 2.20: Thank you for your interest and a donation for paediatric dentistry in Nuweiba (Egypt - Sinai).

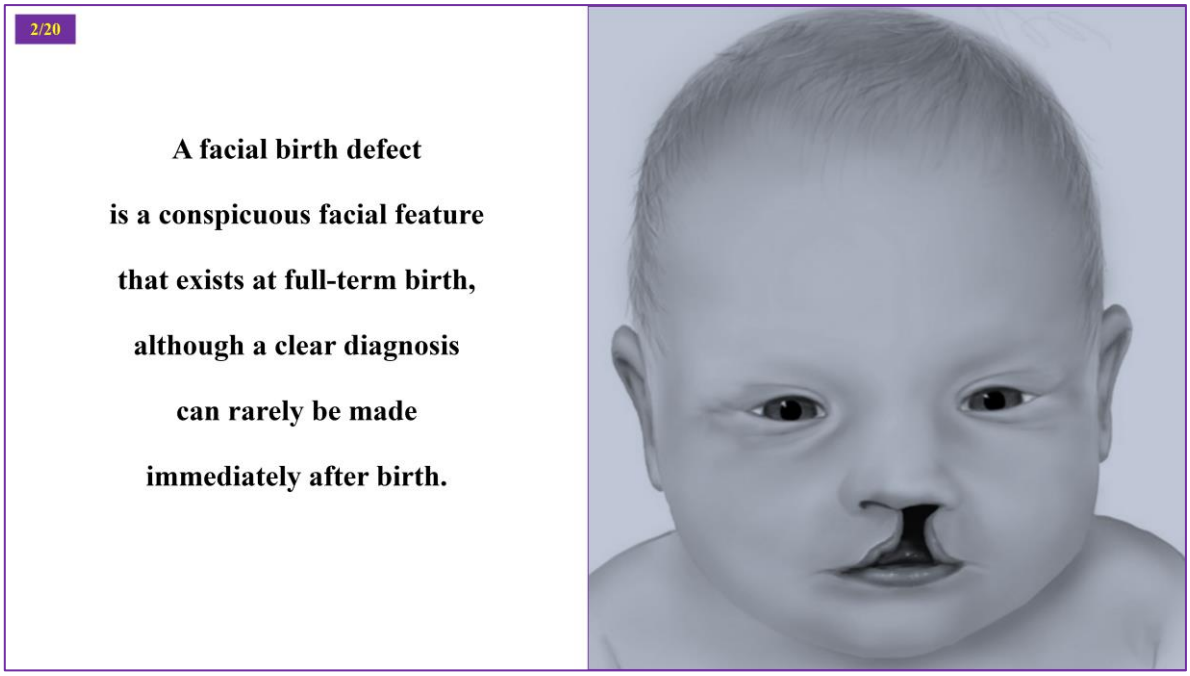
10. 3. Lecture: Politics and facial birth defects

Slide 3.1



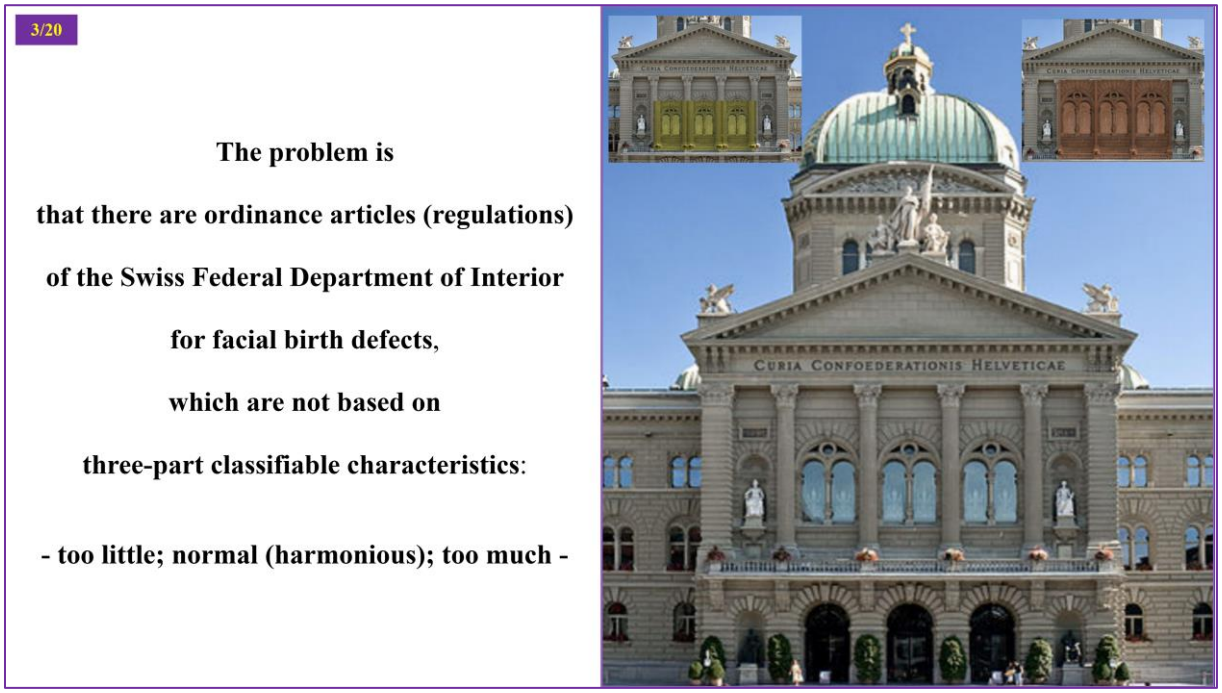
Slide 3.1: Call for improvement of care articles 208, 209 and 210 - Facial birth defects -. After 25 years as a dentist, I gave up my self-employment in 2024 because dentistry is at a shameful dead end. And because we orthodontic dentists bear a lot of the blame for the fact that our profession is increasingly losing face as an independent specialist, I am giving this lecture.

Slide 3.2



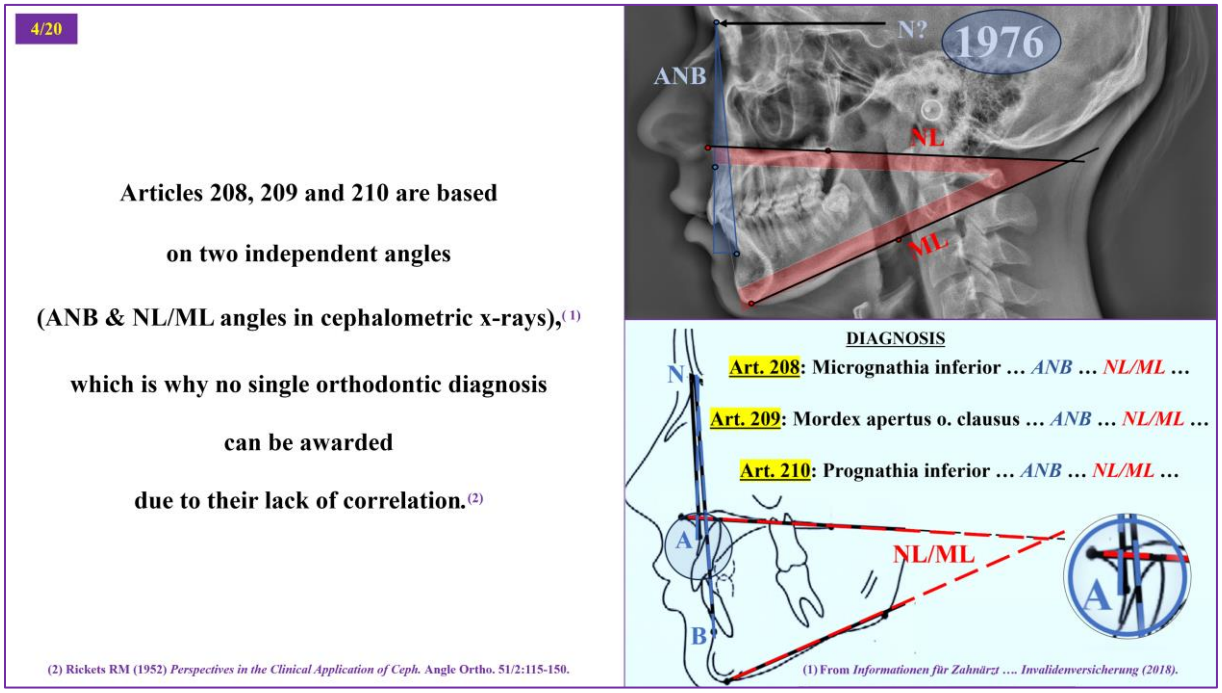
Slide 3.2: A facial birth defect is a conspicuous facial feature that exists at full-term birth, although a clear diagnosis can rarely be made immediately after birth. In Europe, for example, around one in 500 children is born with a cleft lip and palate.

Slide 3.3



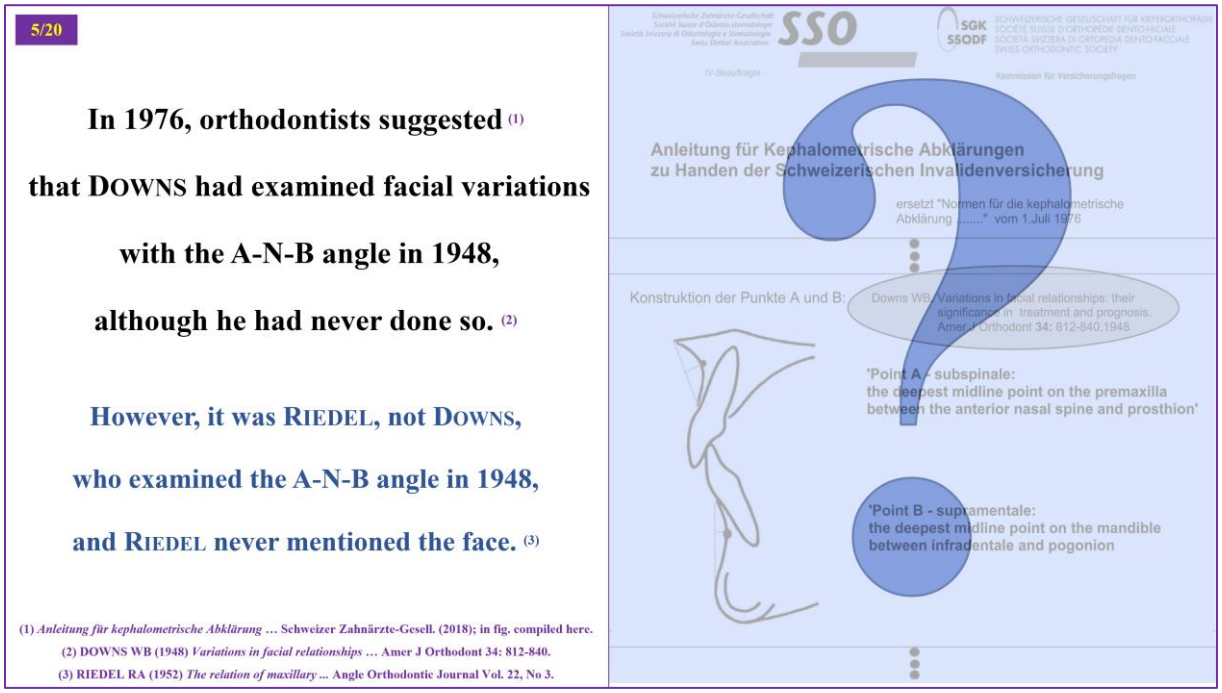
Slide 3.3: The problem is that there are ordinance articles (regulations) of the Federal Department of Home Affairs for facial birth defects, which are not based on three-part classifiable characteristics: - too little; normal (harmonious); too much -. It must be clear what is bothering the patient before a therapy is planned, otherwise the therapy goal is too vague and it is not possible to learn from therapy errors.

Slide 3.4



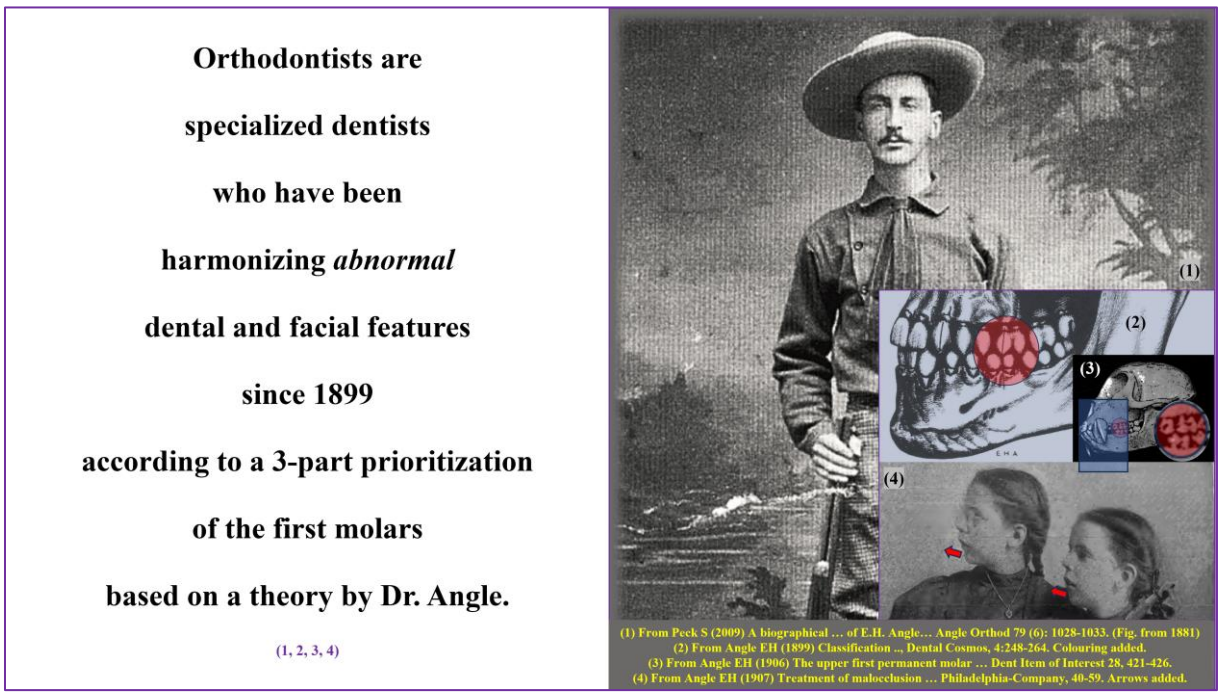
Slide 3.4: Articles 208, 209 and 210 are based on two independent angles (ANB and NL/ML angle in the cephalometric image), which is why no single diagnosis should be assigned due to the lack of correlation. This has been used since 1976, although the N-point is missing in every second person.

Slide 3.5



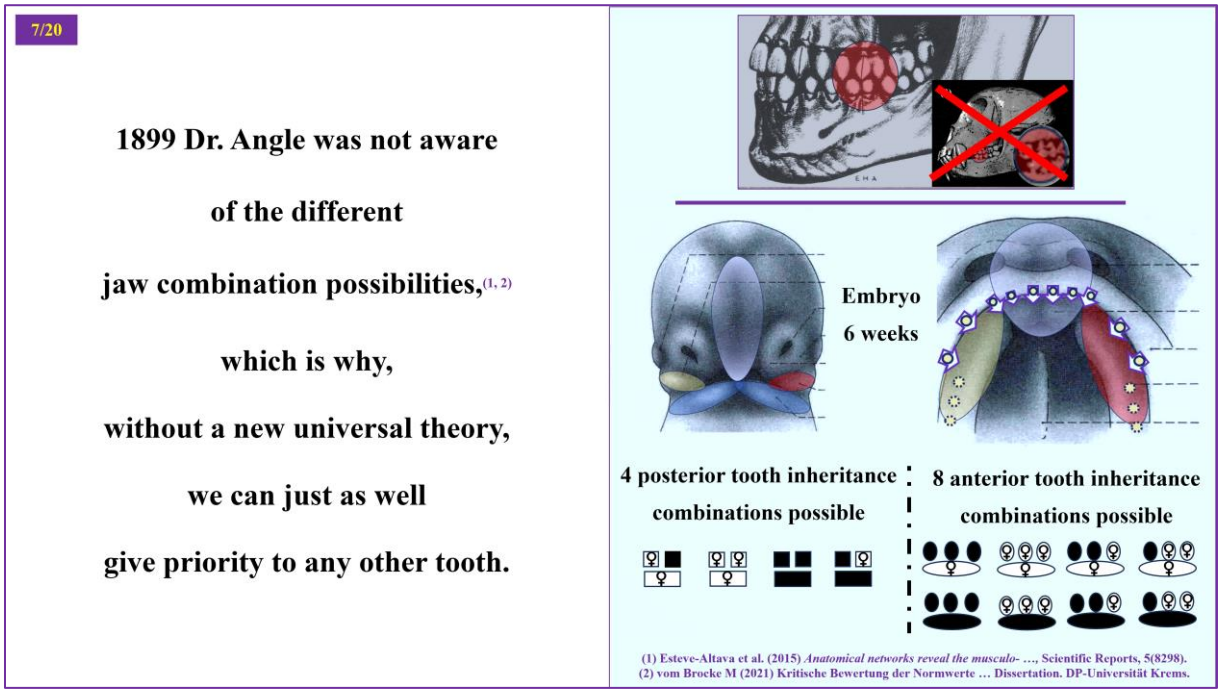
Slide 3.5: In 1976, orthodontists suggested that DOWNS had investigated facial variations with the A-N-B angle in 1948, although he had never done so. However, it was RIEDEL, not DOWNS, who examined the A-N-B angle in 1948, and RIEDEL never mentioned the face. How long is such a thing legal?

Slide 3.6



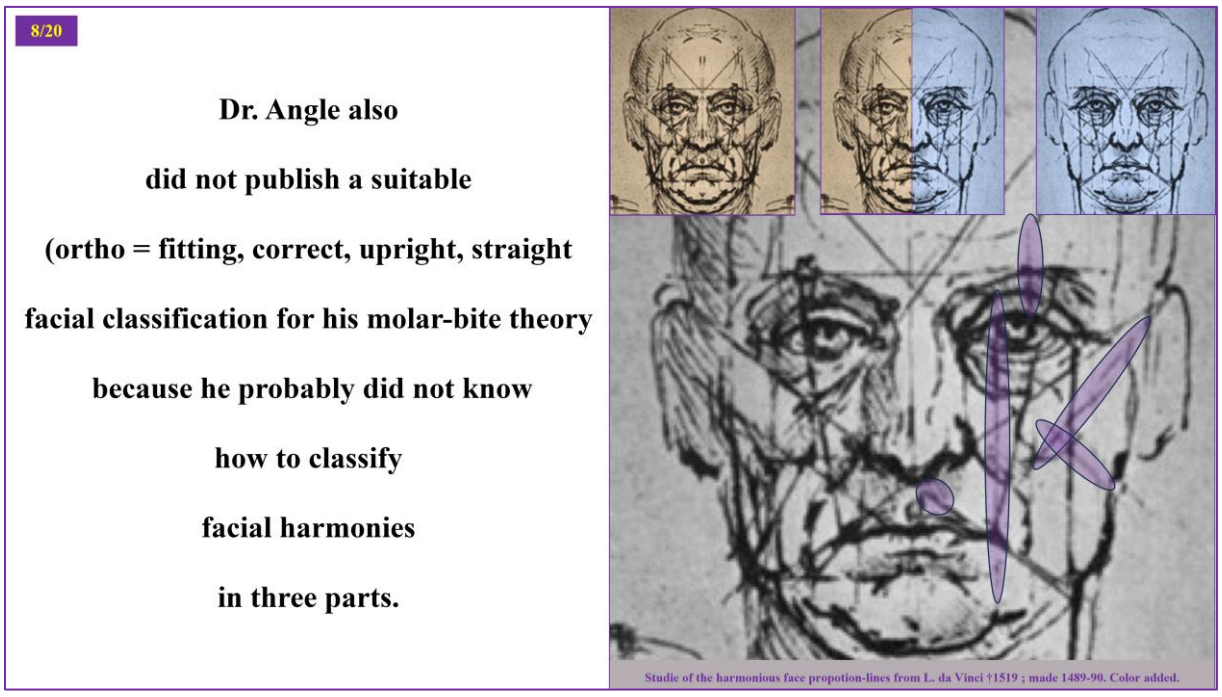
Slide 3.6: Orthodontists are specialised dentists who have been harmonising abnormal dental and facial features since 1899 according to a three-part prioritisation of the first molars based on a theory by Dr Angle. Angle had gone to school during the Civil War and was of the opinion that if the lower jaw was fixed in the 'correct' position long enough, a harmonious interlocking could be achieved.

Slide 3.7



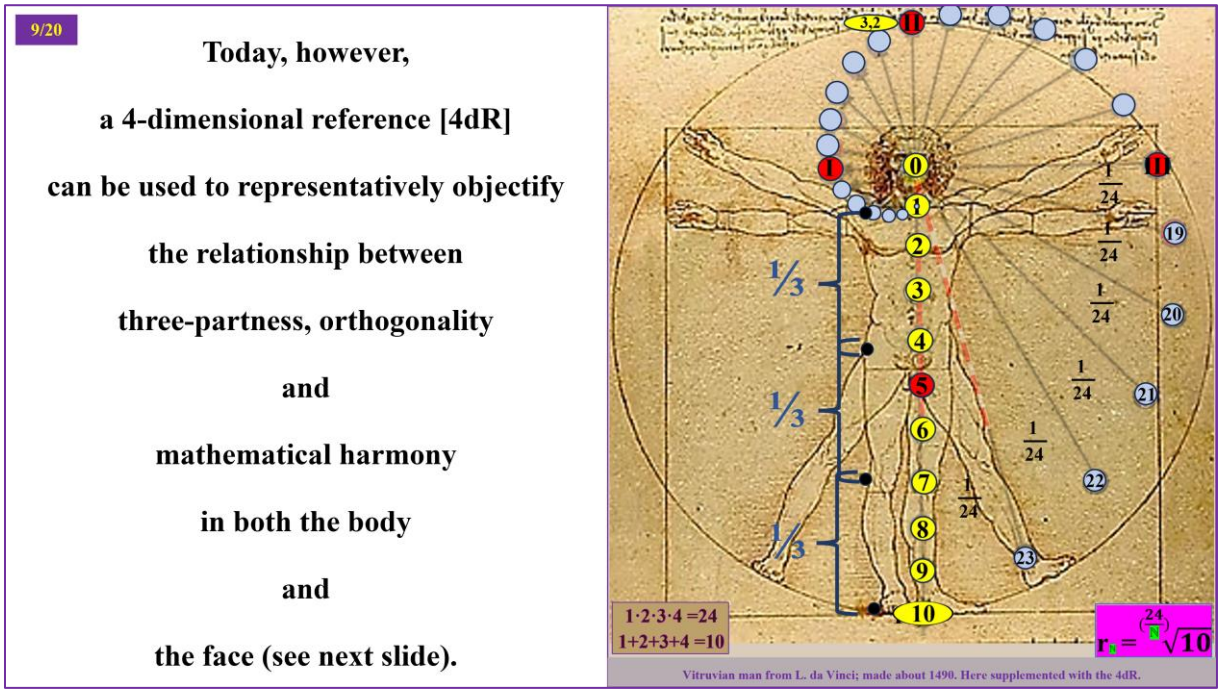
Slide 3.7: In 1899, Dr Angle did not yet know of any different jaw combination possibilities, which is why today, without a new universal theory, one may just as well assign priority to any other tooth. Tooth germ development correlates decisively with facial geometry, which is why his theory is wrong.

Slide 3.8



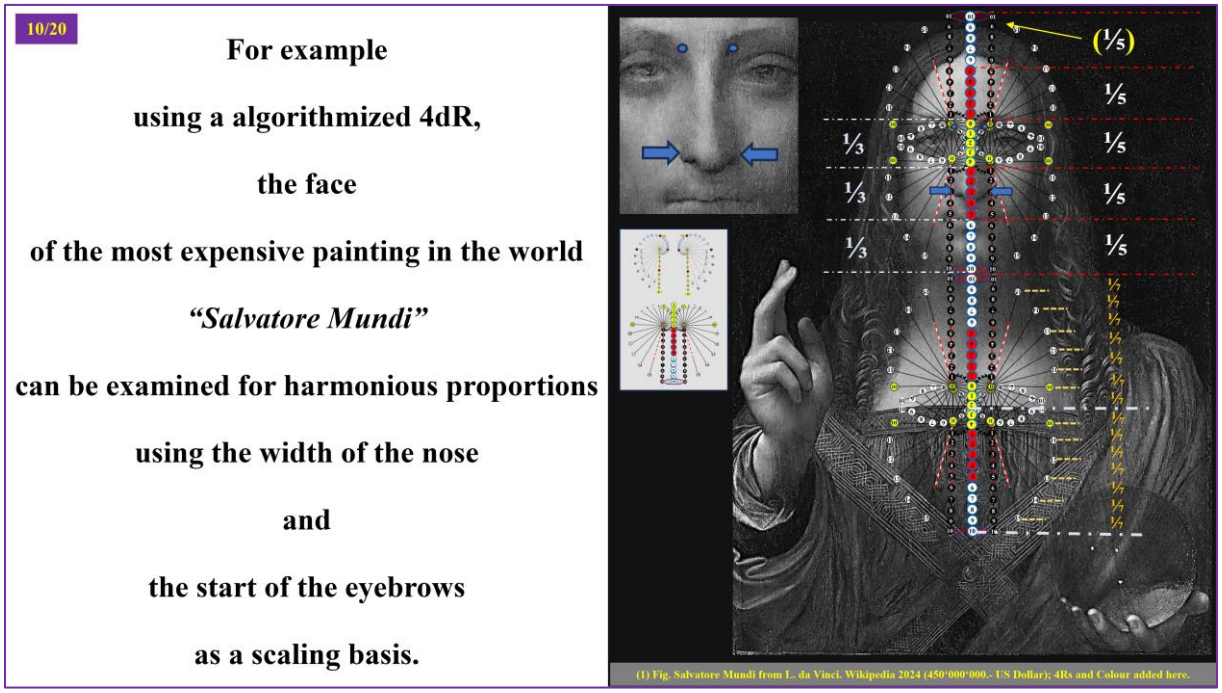
Slide 3.8: Dr Angle also did not publish a suitable (ortho = fitting, correct, upright, straight) facial classification for his molar-bite theory because he probably did not know how to classify facial harmonies in three parts. Was this because, like L. da Vinci, he had to conceal the fact that there are people with binary harmonious facial proportions? The analysis of a da Vinci painting at least allows this assumption to be made.

Slide 3.9



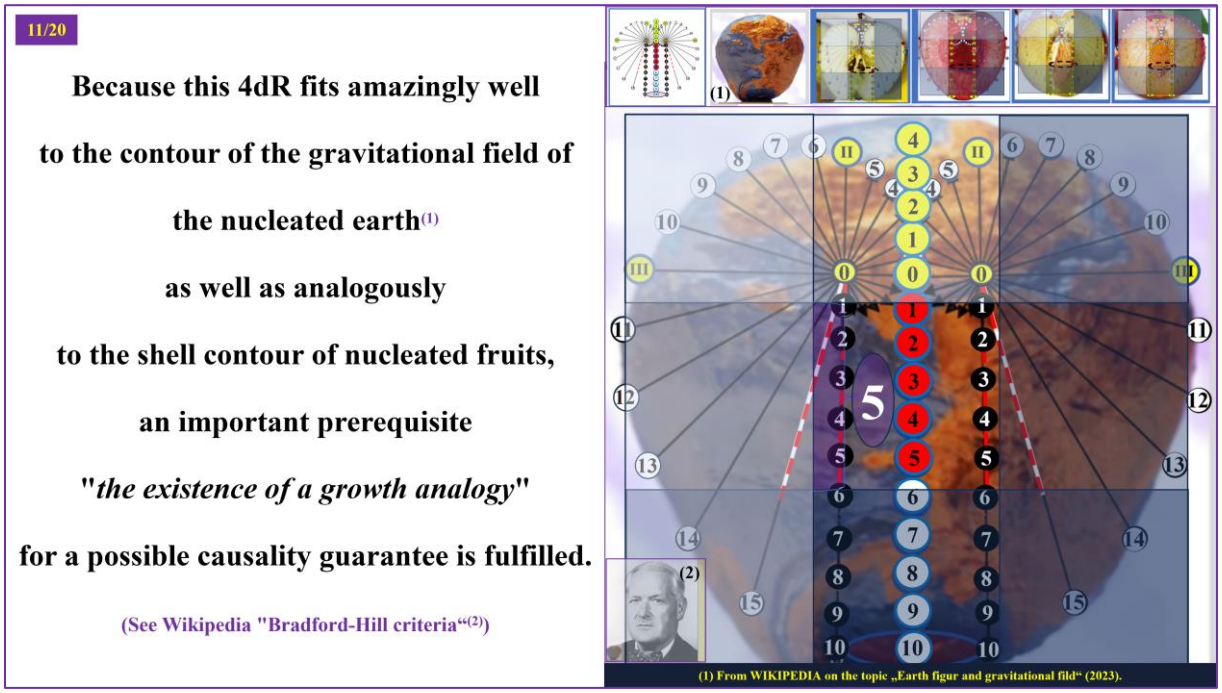
Slide 3.9: Today, however, a four-dimensional reference [4dR] can be used to objectively represent the relationship between three-partness, orthogonality and mathematical harmony in both the body and the face (see slide 3.10). 'Four-dimensional' because only the numbers 1 to 4 are needed to represent the harmonic spiral. Although da Vinci did not know this mathematics, he recognised the connection he was looking for.

Slide 3.10



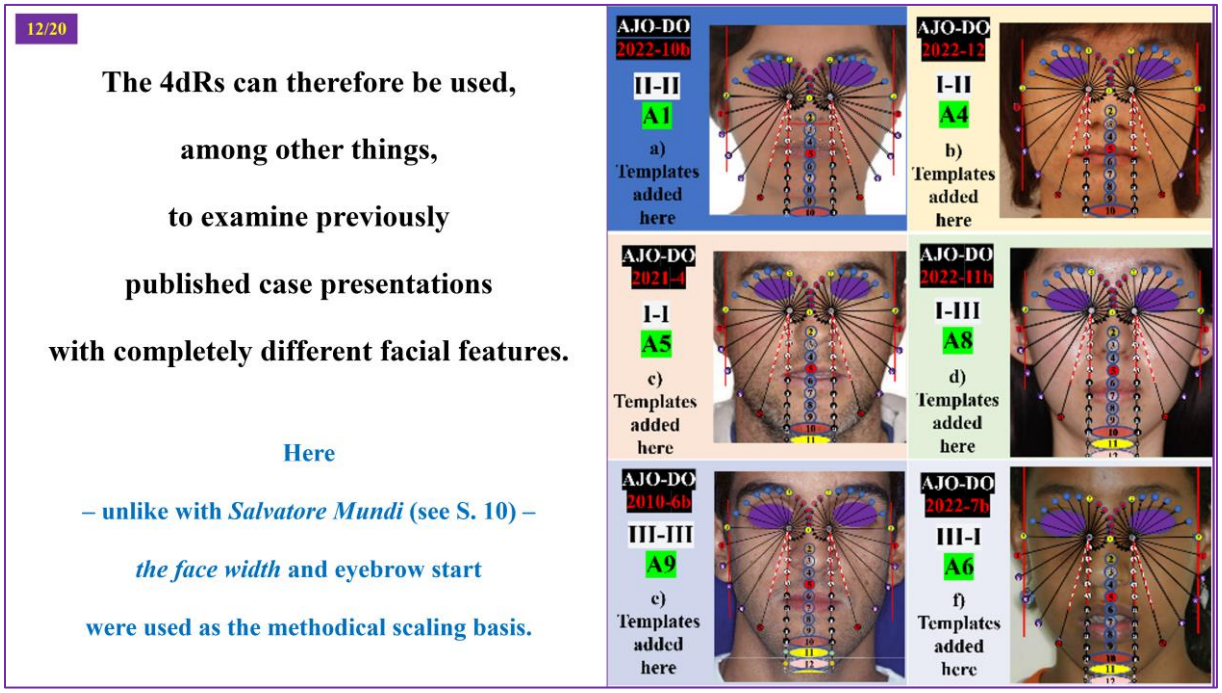
Slide 3.10: For example, the face of the world's most expensive painting '*Salvator Mundi*' can be analysed for harmonic proportions with an algorithmised 4dR using the width of the nose and the start of the eyebrows as a scaling basis. Da Vinci painted integer harmonic proportions in relation to the world.

Slide 3.11



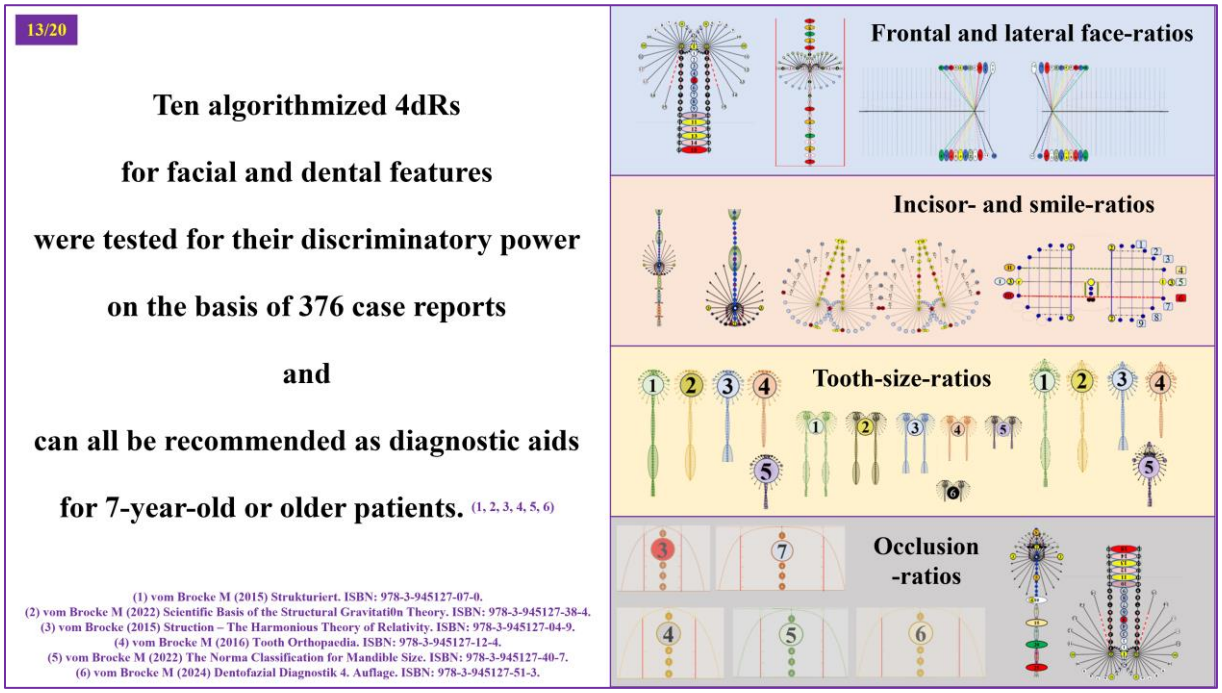
Slide 3.11: Because this 4dR also fits astonishingly well with the contour of the gravitational field of the nucleated earth as well as analogously with the shell contour of nucleated fruits, an important prerequisite, the existence of a growth analogy for a possible causality guarantee, is fulfilled. In addition to this causality guarantee, however, dimension 5 also stands out, which can be regarded as a rest reference (limit) with regard to changes.

Slide 3.12



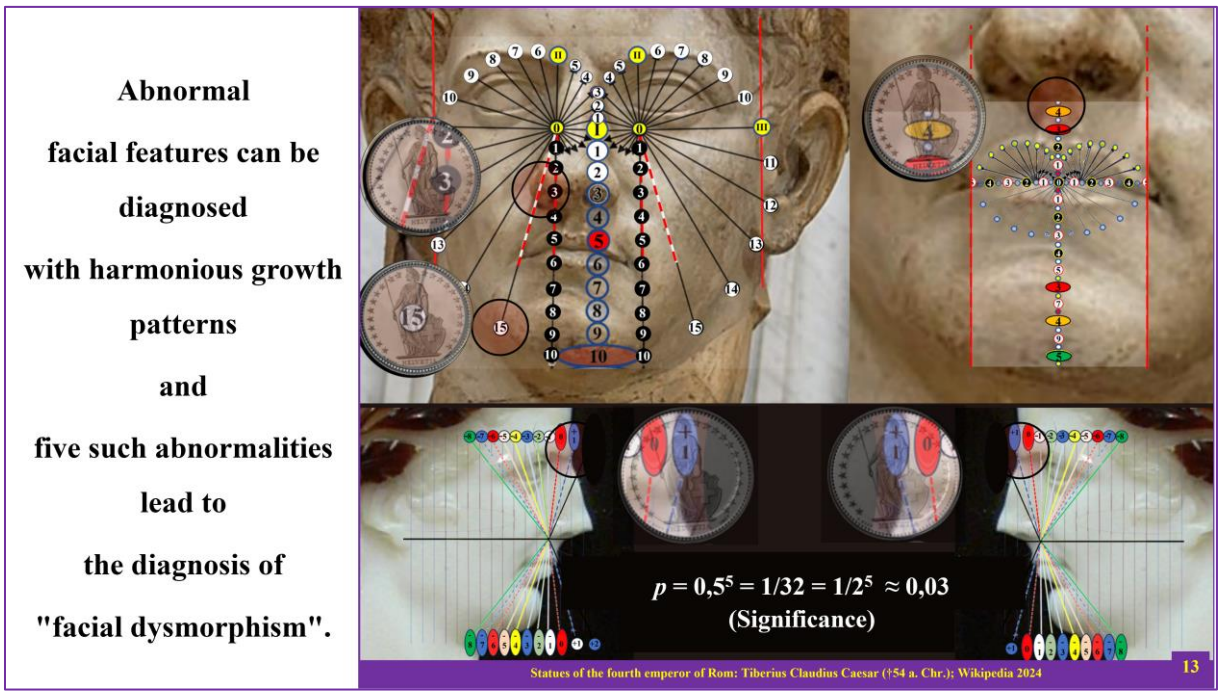
Slide 3.12: The 4dRs can therefore be used, among other things, to analyse previously published case presentations with completely different facial features. Unlike the Salvator Mundi (see slide 3.10), for example, the face width and eyebrow start were used as the basis for scaling.

Slide 3.13



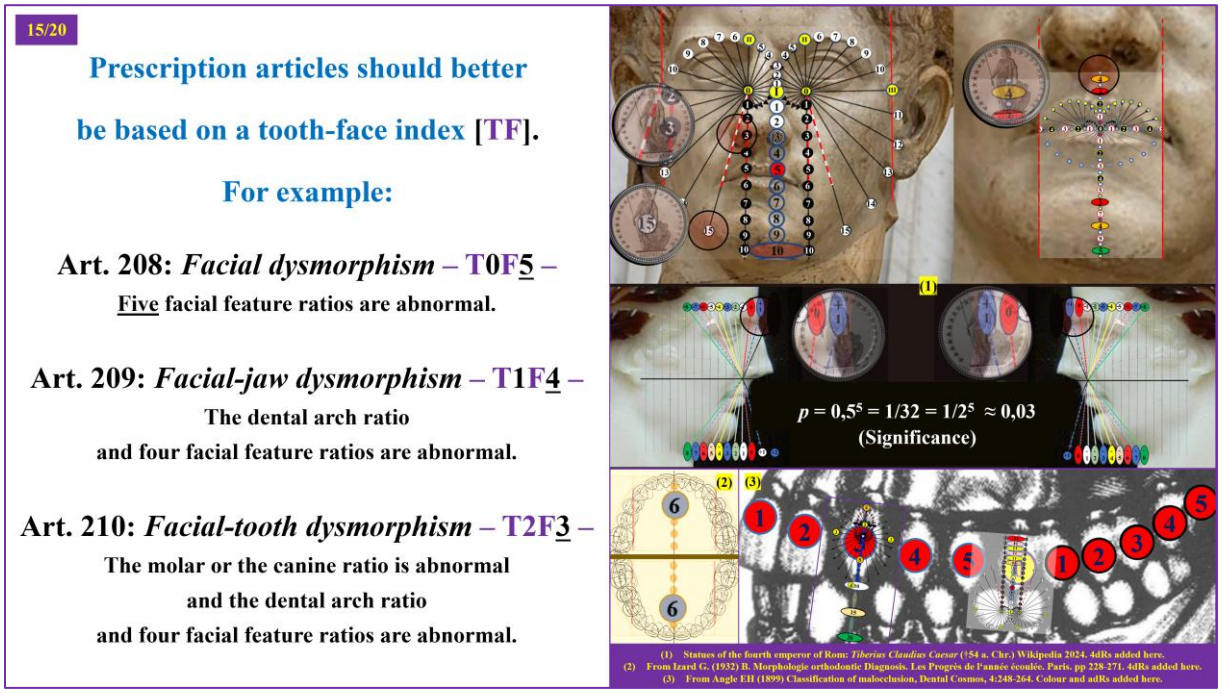
Slide 3.13: Ten algorithmised 4dRs for facial and dental features were tested for their discriminatory power on the basis of 376 case presentations. They can all be recommended as diagnostic aids for patients at least three years old - all deciduous teeth should be in situ.

Slide 3.14



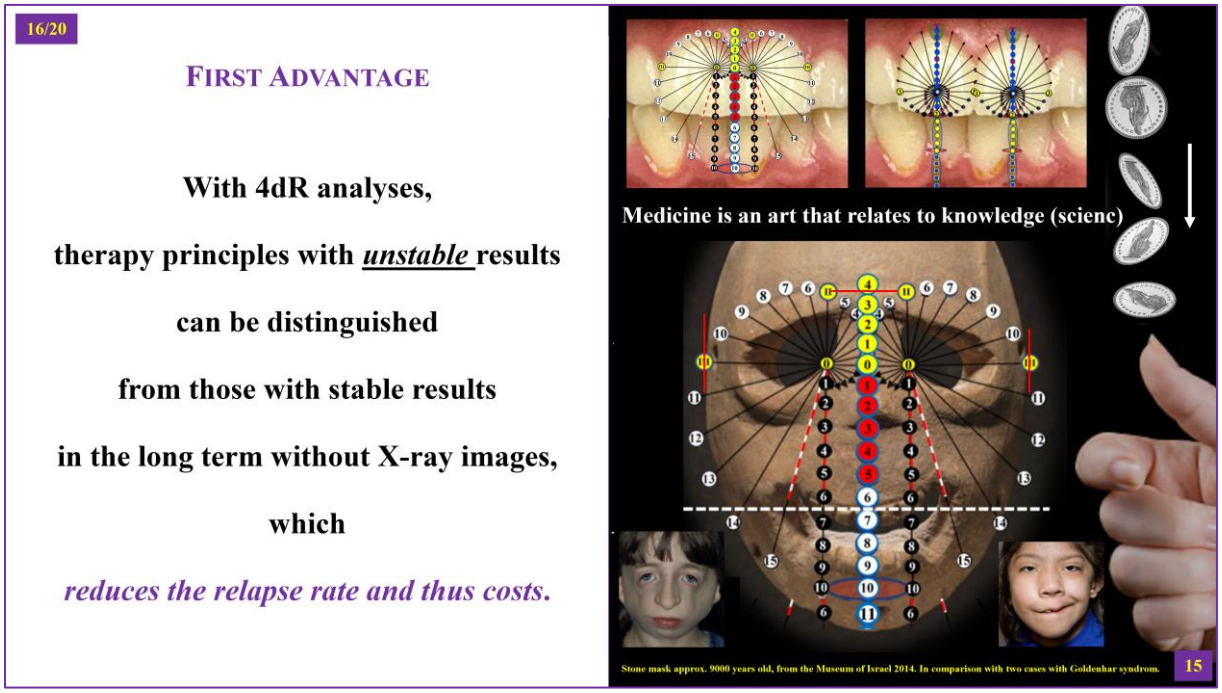
Slide 3.14: Abnormal facial features can be diagnosed with harmonious growth patterns and five such abnormalities allow the diagnosis of 'facial dysmorphia'. The marble statue of the fourth emperor of Rome (Claudius) - who had a congenital disease (see Wikipedia) - can be used to represent the principle of finding at least five abnormalities together (coin toss non-randomness).

Slide 3.15



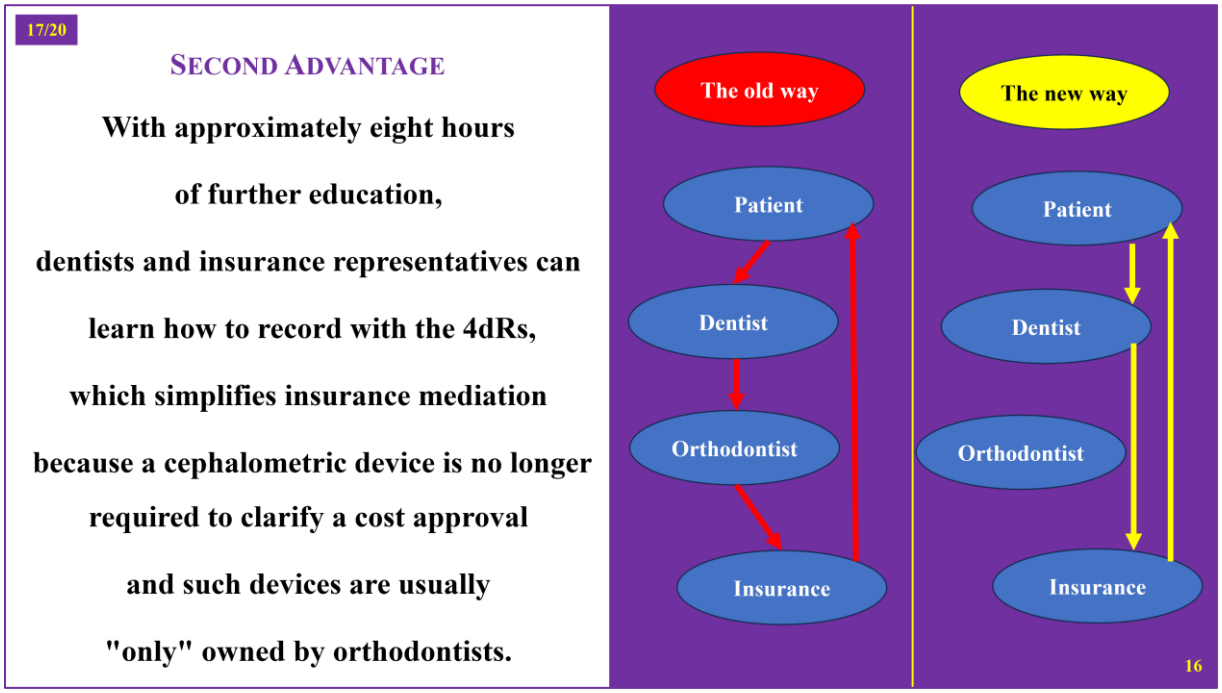
Slide 3.15: The new articles of the ordinance could read: Art 208: facial dysmorphism, Art 209: facial-alveolar dysmorphism and Art 210: facial-tooth dysmorphism. These diagnoses, which are based on a risk (effort) index [dental-facial index: TF index], largely exclude habit-based dental malocclusions. Patients with a TF < 5 are generally treated more quickly and the TF index facilitates triage.

Slide 3.16



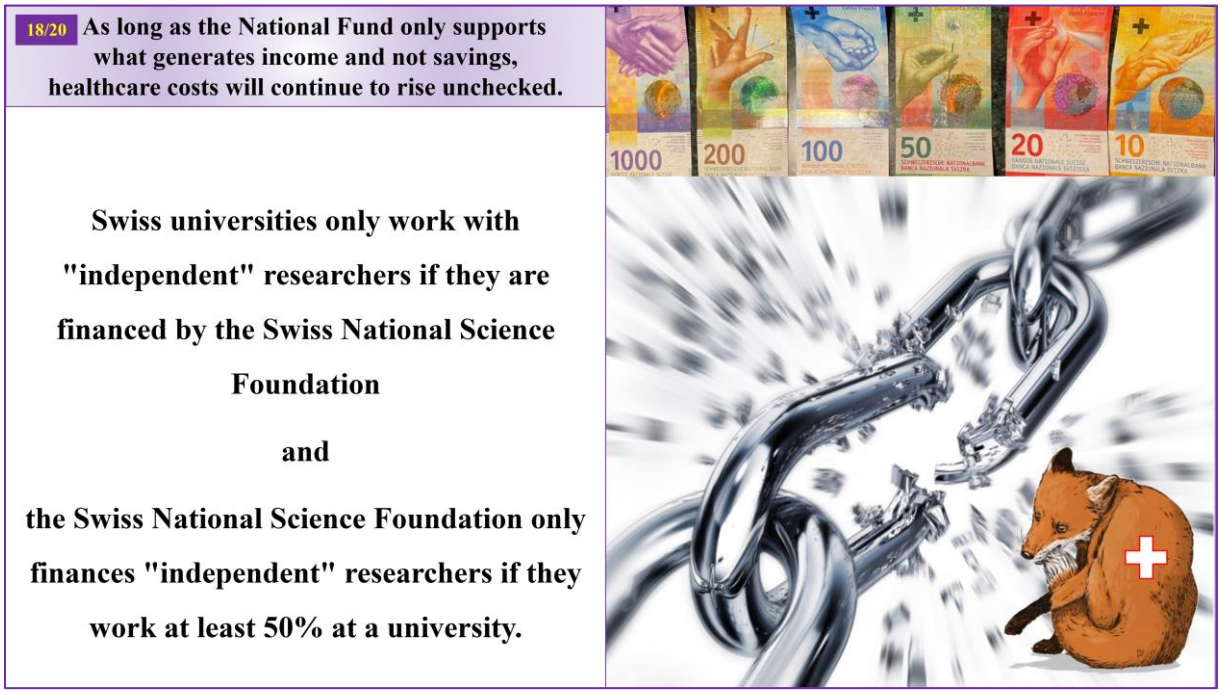
Slide 3.16: *First advantage:* 4dR analyses can be used to permanently differentiate treatment principles with unstable results from those with stable results without X-ray images, which reduces the relapse rate and therefore costs. 9000-year-old stone masks can prove that facial harmony has integrative significance.

Slide 3.17



Slide 3.17: *Second advantage:* With approximately eight hours of training, dentists and insurance representatives can learn how to record with the 4dRs, which simplifies insurance brokerage because a cephalometric device is no longer required. Whether this training is actually realised is subject to political will.

Slide 3.18

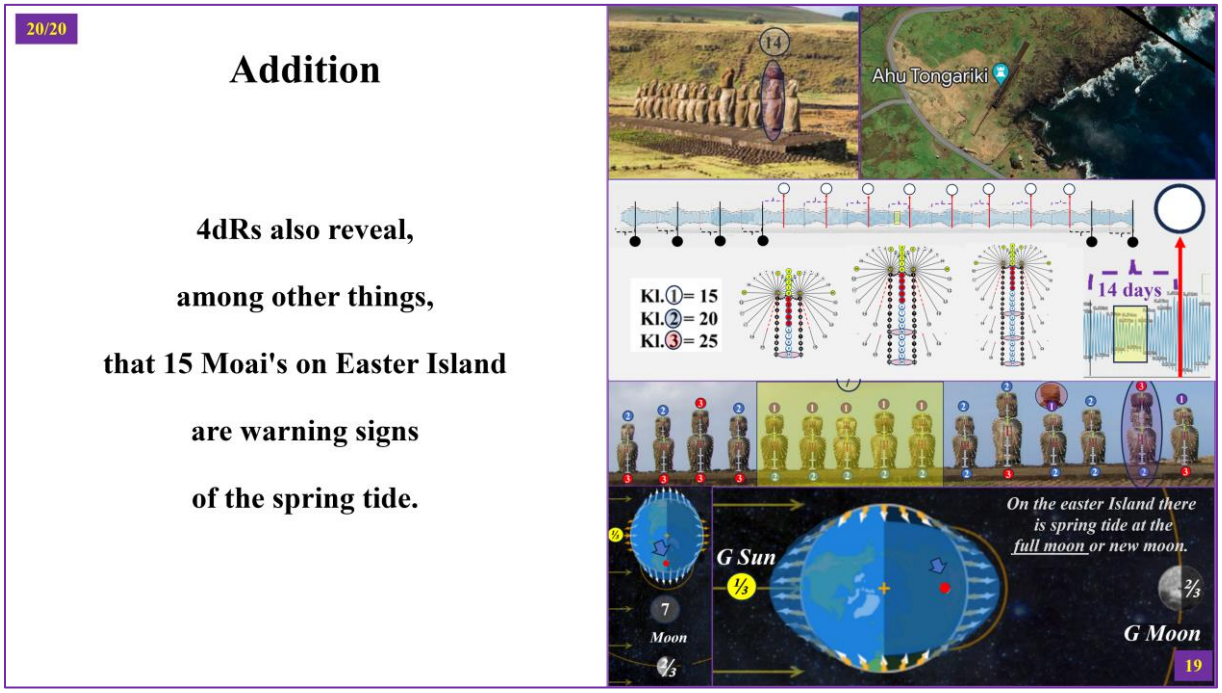


Slide 3.18: As long as the Swiss National Science Foundation only funds what generates revenue and not savings, healthcare costs will continue to rise unchecked. Swiss universities only work with independent researchers if the Swiss National Science Foundation funds them, and the latter only funds independent researchers if they work at least 50% at a university.

Slide 3.19

Slide 3.19: Do you have any questions? The structural theory of gravity can answer many of them.

Slide 3.20



Slide 3.20: The 4dRs also reveal that 15 Moai's on Easter Island are warning signs of the spring tide. The Moai are 1500 year old mysterious statues which are lined up in one place to form 15 mysterious features. The H_0 hypothesis here is: The hat moai does not represent day 14 spring tide. Method: Three RSn sizes measure the statues for the 2-group test. Result: *1,2,1,2,1,2,1,2,1,2,1,2* ↔ *2,3,2,3,3,3,2,3,2,2,2,2,3,1,2, 2,2,3,2,1,3*. The U-test forces an H_0-fault with $p < 0.009$, therefore the 15 Moai's coincide with the tides and were very likely warning features before day 14: new moon and full moon spring tide.

11. OVERVIEW SCHEME FOR THE FOIT PROTOCOL

The most important information on the patient data can be displayed in an overview scheme and summarised in a 20-digit code - the FOIT protocol (Fig. 11.1).

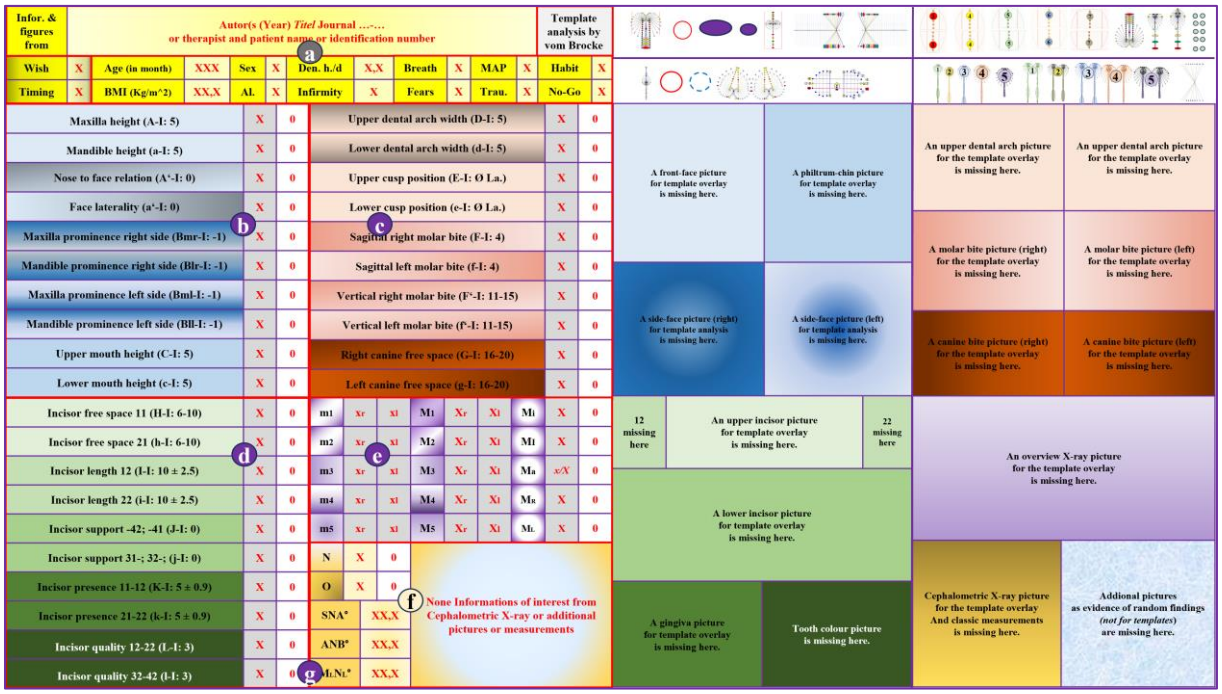


Abb. 11.1 | Overview scheme for the FOIT protocol: FOIT-0 (without analysis) = 00000 00000 00000 00000.

***Patient statements** (a):* Time of findings (1 = first findings; 2 = first results; 3 = second findings; 4 = second results; 5 = recall findings); origin of the images (journal where the case was published); gender (1 = non-binary;2 = f; 3 = m); oral hygiene (0 = MH < 0.5/day, 1 = 1/day, 2 = 2/day, 3 = 3/day), age (in months); allergy sufferers (0 = no, 1 = yes); infirmity (0 = healthy, 1 = syndrome; 2 = multifactorial infirmity - e.g. e.g. cleft lip and palate; 3 = autoimmune disease); BMI (value). Main desire (0 = no desires; 1 = freedom from pain; 2 = freedom from function; 3 = freedom from swelling; 4 = freedom from redness (colour); 5 = freedom from heat (sensation), myoarthropathy (0 = inconspicuous; 1 = bruxism at night; 2 = bruxism during the day; 3 = bruxism during the day). daytime; 3 = B. daytime and nighttime); habit (0 = no oral habit = 0; 1 = habit with influence on teeth; 2 = habit with influence on speech; 3 = habit with influence on teeth and speech), breathing (0 = v. breathing (0 = mainly nasal breathing; 1 = mainly oral breathing; 2 = oral & nasal breathing; 3 = snoring), trauma (0 = no trauma; 1 = teeth; 2 = face; 3 = teeth and face), no-go (0 = no rejections; 1 = material is rejected; 2 = appliance(s) is rejected; 3 = no oral surgery).

***Face harmonies** (b):* Frontal and lateral facial proportions.

***Occlusion harmonies** (c):* Occlusal and lateral cusp relationships.

***Incisor harmonies** (d):* Approximal and frontal incisor relationships.

***Tooth width harmonies** (e):* In block e, the tooth width ratios (root length to crown width see M classification) are recorded as a T protocol, which is methodically defined as follows: M_i = lower incisor sum [M_i-Kl. I = 12]; M_I = Upper incisor sum [M_I-Kl. I = 12]; M_A = Ratio of the sum of the lower incisors divided by the sum of the upper incisors – (M_A = 42+41+31+32) / (12+11+21+22) – [M_A-Kl. I if M_A = 1]; M_R = cusp sum right [M_R-Kl. I = 18]; M_L = cusp sum left [M_L-Kl. I = 18.

***Block f** (cephalometric image analyses):* The representative nasal cavity and oral cavity size is classified and the cephalometric angles ANB, SNA and ML/NL [M-N] are recorded. This is only because they are currently still important for insurance companies in Switzerland. Due to the latent laterality, it is not actually useful to record cephalometric images. The additional space is reserved for rare abnormalities that could be relevant for treatment.

***FOIT protocol**:* The FOIT protocol consists of 20 numbers and represents the face ratios – A, A', B_r, B_l, C –; the occlusion ratios – D, E, F, F', G –; the incisor ratios – H, I, J, K, L – and the tooth width ratios of the first 20 teeth – M_i, M_I, M_A, M_R, M_L. All analyses refer to the structural limit dimension '5'.

This is followed in Chapter 12 by the pilot patient as a practical example of five FOIT protocols.

Of course, a collection of FOIT protocols from all case reports published in orthodontic journals would be ideal as a compendium for finding successful orthodontic and orthodontic therapies. However, this is only possible in the form of a digital database due to the permanent addition of such a comparison option.

12. THE PILOT PATIENT AS AN EXAMPLE OF PRACTICE

– Gingivitis reduction through incisal slicing and placement and omission of a retainer –

When observing the patient visually, the dentist generally finds disharmonies intuitively without objectifying them, and in the case of the pilot patient, these findings were recorded and analysed using intra- and extra-oral photos in order to be able to reveal a therapy causality and to have an initial instruction example to hand.

Problem 1: A patient complains of difficulty brushing the oral surfaces of the lower anterior teeth.

First findings: The patient, who is eight years and three months old, brushes his teeth twice a day, is a nasal breather, has no chewing difficulties and no influential oral habits. He is of normal weight, has no allergies or ailments and suffers from no anxiety. His accident history is normal and he does not wish to have oral surgery. His lower facial height is slightly reduced, his face is symmetrical, he has an opposing facial prominence with a retrogenic lower jaw and his relative mouth heights are increased. He has all harmonious occlusal relationships. His lower incisors have reduced vertical freedom, the upper lateral incisors are still erupting and the lower incisors are increasingly supported. The smile shows harmonious incisor quantity and quality. X-ray findings and/or analyses were not performed (Fig. 12.1).

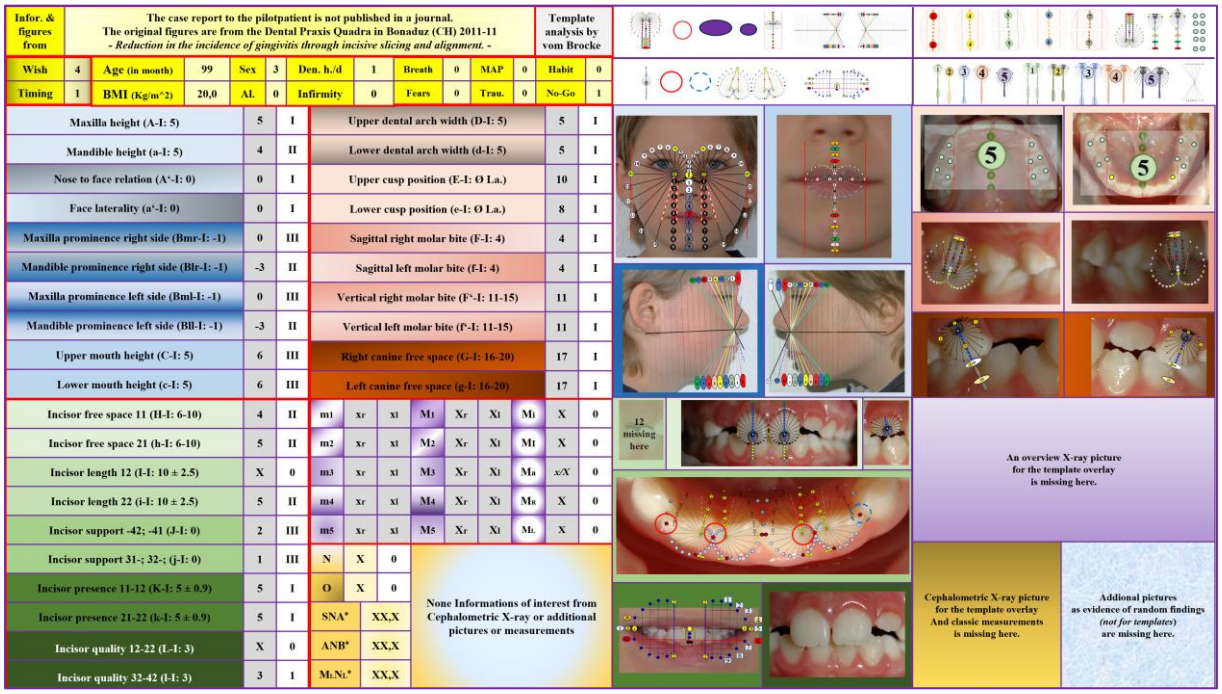


Abb. 12.1| First findings: FOIT-Protokoll 1 = 45779-55555-10950-00000.

Diagnostics 1: The healthy patient shows normal body growth, has no unusual habits and brushes his teeth once a day. The increased bleeding tendency probably only coincides with excessive incisor support (more difficult dental hygiene). The support is more pronounced on the right than on the left and because his lower jaw is slightly retrogenic, the incisors are possibly already narrowed, which means that only morphologically unfavourable contact points (contact surfaces that are too small) are present. An assessment of the relative tooth width is not possible due to the lack of OPT.

Therapy 1: If the proximal contact points of the lower incisors in the enamel area were narrowed and aligned, the bacterial plaque causing the inflammation could be removed more easily. The mother does not want braces for the time being, but wants to ask her son to brush his teeth more often.

First results: Dentofacial proportions and hygiene were unchanged two months later (Fig. 12.2).

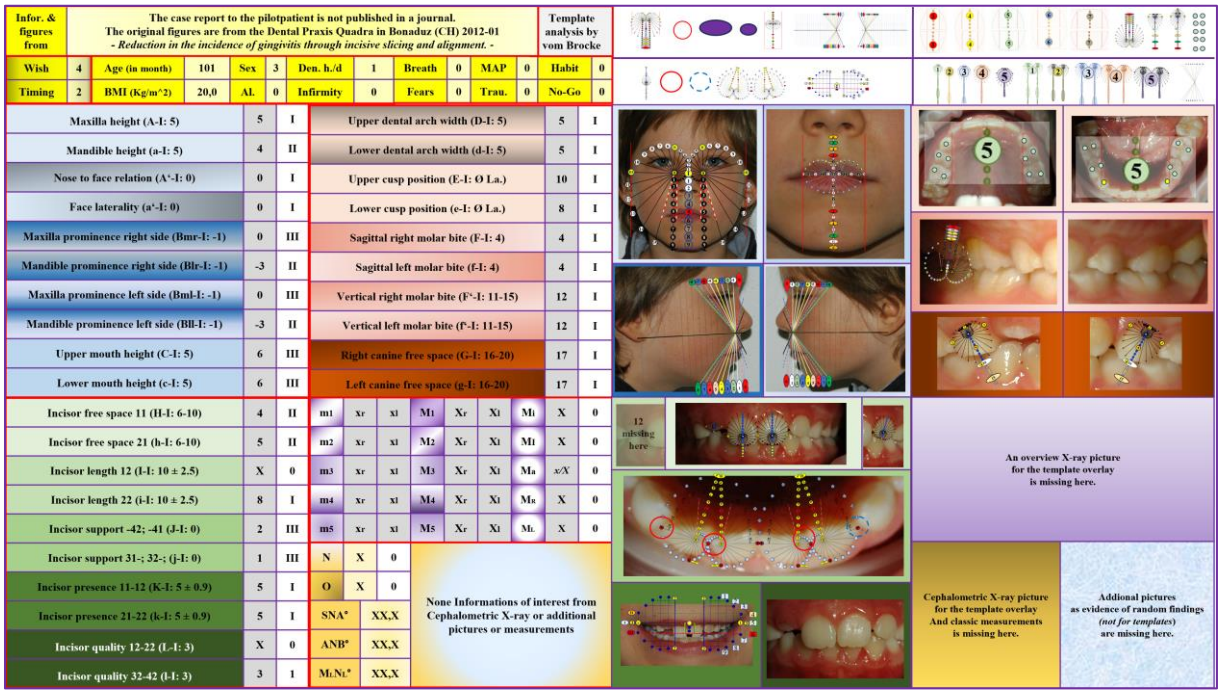


Abb. 12.2 | **First results 1:** FOIT-2 = 45779-55555-10955-00000.

Problem 2: The now 15-year-old patient still complains of cleaning difficulties in the region 32-42.

Second Findings: The FOIT-3 protocol now shows an asymmetrical cusp distribution in the mandible (Fig. 12.3).

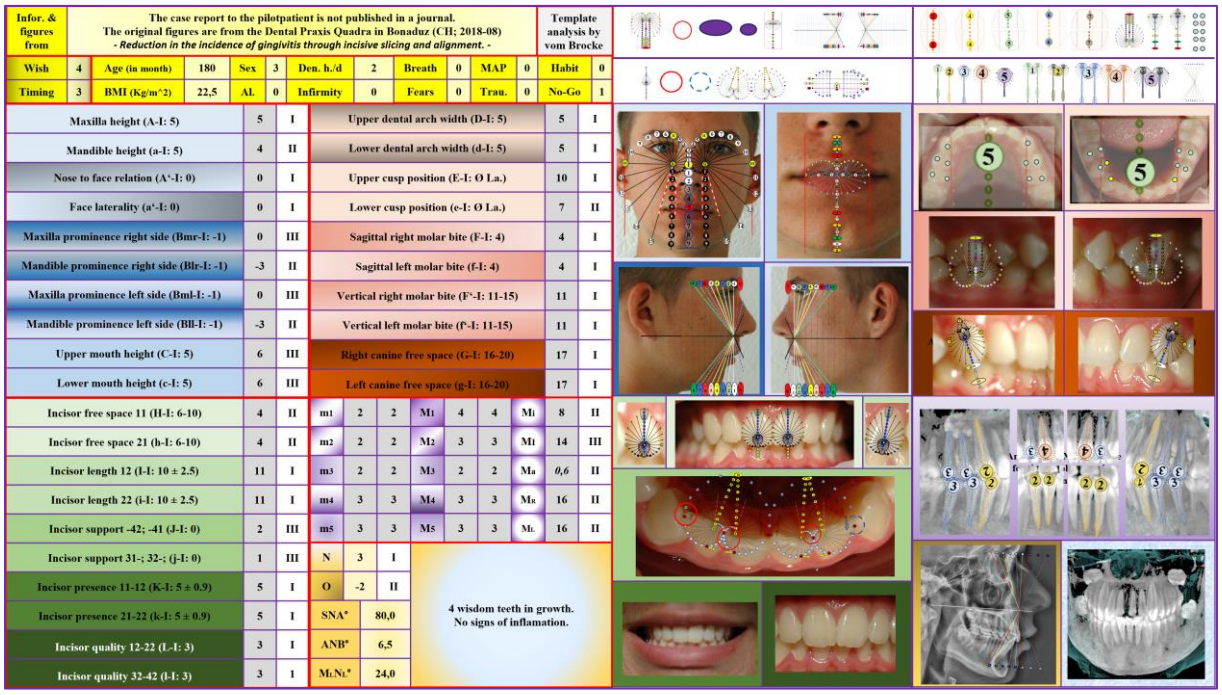


Abb. 12.3 | **Second findings 2:** FOIT-3 = 45779-54555-15955-23222.

Diagnostics 2: The excessive incisal support was probably caused by a too small contact surface of the relatively narrow incisors, which otherwise fit the rather small mandible quite well.

Therapy 2: Enamel reduction in the contact point area and a fixed partial arch from 33 to 43, which was removed after five months in order not to block the remaining growth.

Second results: One week after removal of the bracket, a relapse occurred in region 43/42 (Fig. 12.4).

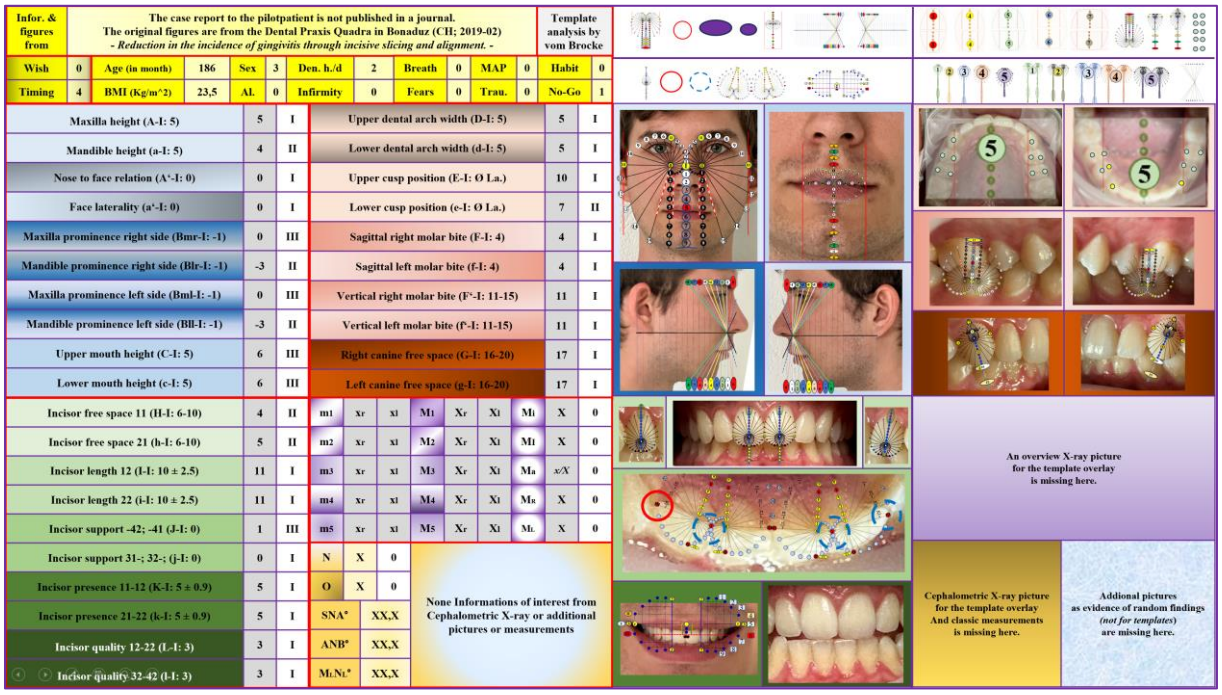


Abb. 12.4 | Second results: FOIT-4 = 45779-54555-15755-00000.

Recall findings: At the age of 21, only a slightly reduced incisor free space remained (Fig. 12.5).

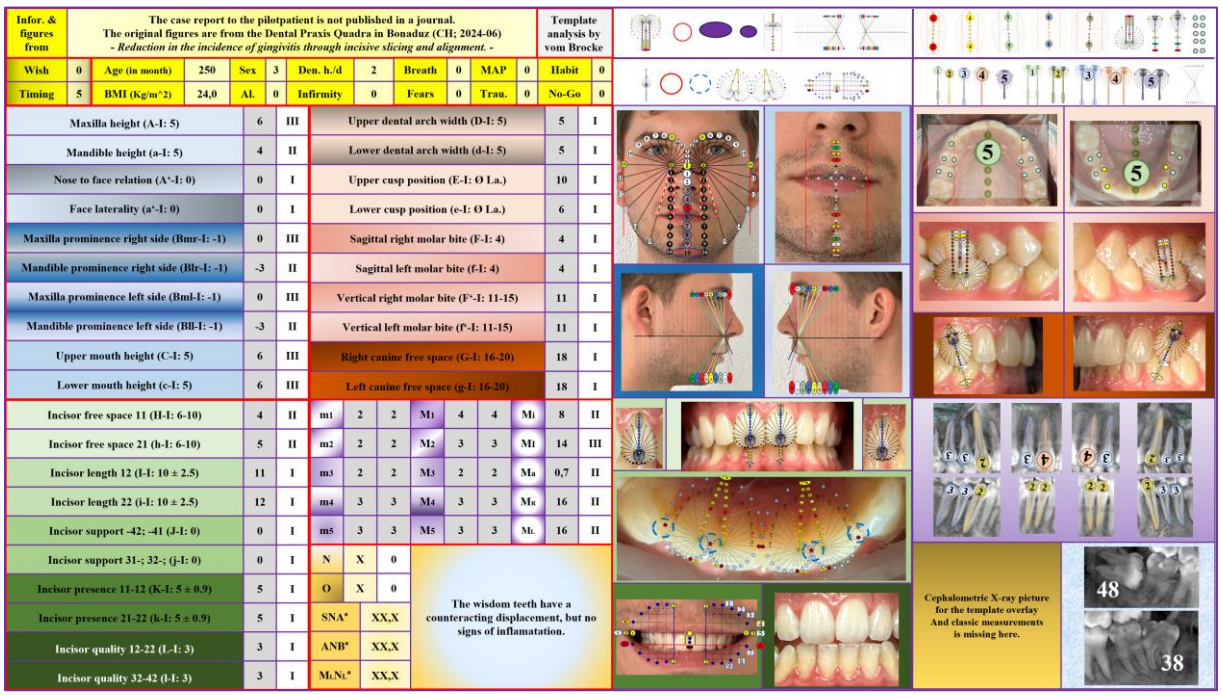


Abb. 12.5| Recall findings: FOIT-5 = 75779-55555-15555-23222.

Summary:

The facial height has normalised numerically due to midface growth (A (6) + a (4) = 10). The tooth width protocol remained the same despite slicing. The occlusion protocol had deteriorated slightly in the meantime and harmonised again with the growth. The incisor protocol was harmonised.

Origin	Face [F]					Occlusion [O]					Incisors [I]					Tooth widths [T]				
vom Brocke Joel	**A**	**A'**	**B_r**	**B_l**	**C**	**D**	**E**	**F**	**F'**	**G**	**H**	**I**	**J**	**K**	**L**	**M_i**	**M_I**	**M_a**	**M_r**	**M_l**
FOIT-1	45779					55555					159**5**5					00000				
FOIT-2	45779					55555					159**5**5					00000				
FOIT-3	45779					54555					159**5**5					23222				
FOIT-4	45779					54555					157**5**5					00000				
FOIT-5	**7**5779					55555					155**5**5					23222				

Discussion:

Even before 2011, toothbrushes and toothpastes were the most common form of daily tooth cleaning in industrialised nations.**[1]** However, a retrospective Swiss study on the oral hygiene habits of patients aged 15 to 74 also shows that the recommendation of more than one oral hygiene aid is implemented twice as often in patients with a higher level of education.**[2]** As the 8-year-old patient did not yet have any higher education, it is not particularly surprising that the oral hygiene motivation efforts were not successful in the long term. It doesn't help that rotating electric toothbrushes are significantly better at preventing gingivitis than manual toothbrushes.**[3]**

Enamel reduction in the contact point area is a form of therapy that has been recommended for many years .**[4]** The fixed partial arch from 33 to 43 was removed after five months because the probability of residual growth was still high **[5]** and this should not be blocked needlessly.

Why was the growth of the jaw in the lower incisive region not promoted by a growth activator appliance? An activator is a removable appliance for the upper and lower jaw made of plastic and some wire elements, whereby the development of modern activators can be traced back to a publication from 1880.[6] At that time, the concept of 'jumping the bite' was publicised because a dentist had observed, using a selected example, that a pre-rotation of the lower jaw could be achieved with a vulcanite palatal plate. In a review study on the subject of activators, the authors came to the conclusion in 1998 that, as a rule, a successful result cannot be achieved with activator therapy alone.[7] The patient never wanted to undergo maxillofacial surgery - with or without a change in facial profile - even if such treatment had delivered a successful result .[8] Auch weiss man heute, dass der Weisheitszahn-Durchbruch keinen Einfluss auf die Stellung der Inzisiven hat.[9] [10]

Conclusion: The daily oral hygiene motivation of children and schoolchildren is a task that should always be emphasised to parents. In the case presented, the retainer in the mandibular anterior region could be omitted after incisor reduction because the residual growth of the jaw and tongue in this region was also taken into account. Case presentations should be uniformly published worldwide with at least intra-oral and extra-oral photos, dental impressions (scans), OPTs or DVTs in order to determine whether there is a causal treatment approach in which the retainer is no longer required at all. If a cephalometric image was also taken, this is of course advantageous for comparative studies.

Note: For space reasons, the materials used have not been mentioned here - this is usually included.

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13. NEWSPAPER ARTICLE - IEP-SWITZERLAND

(Published on 18 November 2024 in the newspaper *büwo*; p. 12)

An **I**nstitute for the **E**volution of **P**rotocols for the Swiss healthcare system.

In 1848, a document was published that transformed the then confederation of states into the federal state of Switzerland. This federal constitution was the result of a civil war in which the balance between the influence of knowledge (liberal thinkers) and that of faith (Catholic Church) was readjusted and seven cantons each received a university which, financed by the Confederation, were given the freedom to have professors examine anything in medicine that interested their authorities.

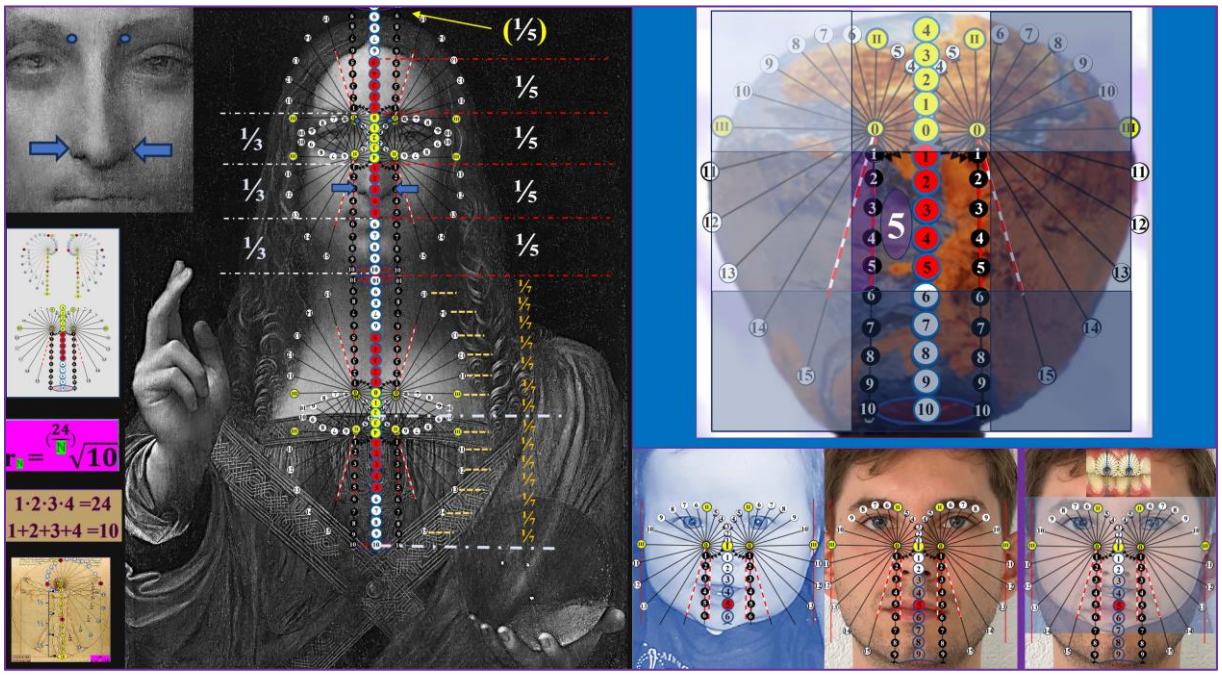
However, this gift of freedom is becoming more and more of a problem for the population, because people must have health insurance by law - they are not free - but no one retroactively verifies the theories and hypotheses of university professors regarding a subsequent therapy, which is then explained with a freely invented example - so as not to directly attack anyone - and the solution to the problem:

Example: A freely invented “zero” hypothesis to be tested by a medical doctor could be as follows: Men and women have eyebrows of the same length. If the lengths of the eyebrows of volunteers are measured, then from a certain number of people examined it can be determined that there is a statistically significant (non-random) difference in the hair length of the eyebrows and the null hypothesis must be rejected. In other words, the result of this study would then be published in a journal of psychology as follows: Women usually have shorter eyebrows than men because they trim them more often to look more harmonious. Now a doctor can sell all his female patients a prescription to have their eyebrows trimmed so that they are accepted by society in the same way as men, who are apparently less likely to have their eyebrows trimmed. The health insurance companies would now have to pay the costs for the prescription writing because the doctor received this explanation from his university professor of psychology, which in turn pleases the managers of the health insurance companies because they earn more money through the additional turnover generated, which they indirectly charge back to the patients. This wouldn't be so bad, but it leads to an explosion in healthcare costs because hairdressers are now also allowed to charge for professional eyebrow shaping. This is despite the fact that he doesn't even know whether the eyebrows of a Swiss woman and those of a Romanian woman should be cut to the same length, and what does he do with a “patient” whose father is Swiss and whose mother is Romanian? That's not a problem, because the hair that was cut too short will grow back and you can go back to the doctor to get a prescription.

Even if this grotesque example is fictitious, it reveals the problem that can be triggered by a simple “ zero ” hypothesis if the words normal and harmonic are not objectified.

Problem-solving: If you get to the bottom of the origin of the idea of idealizing normal and harmonious, you will eventually end up with Leonardo da Vinci (1452-1519). Interestingly, it was not his painting The Vitruvian Man with its harmonious proportions, but his Salvator Mundi - Redeemer of the World - that became the most expensive painting in the world. In 2005, the painting was worth just 1175 dollars before its renovation (an overpainting was removed) and was finally bought at auction by a Saudi Arabian for 450,300,000 dollars after its renovation in 2017. This astonishing increase in value can possibly be explained by the fact that something could be guessed after the renovation that can now be objectified using complex mathematics: For if the picture is superimposed with a 4-dimensional mathematical harmonic growth pattern [4d pattern] (see illustration), which matches the gravitational field of the earth - visualized by the “Potsdam Potato” - then integer anatomy ratios are revealed and

the transparent sphere of the “world saviour” could well symbolize a transparent force and thus represent the gravitation of the earth. Although da Vinci could not yet have known the mathematics of the 4d pattern (based on Euler's number; Leonhard Euler (1707-83); Swiss mathematician), this assumption is obvious because it is known that L. da Vinci had already dealt with the phenomenon of gravity 100 years before Isaac Newton (Gharib M et al. (2023) Leonardo da Vinci's Visualization of Gravity as a Form of Acceleration. Leonardo; Vol. 57, Issue 4).



Apparently, gravity has given us a tool in the form of the decimal system with which we can divide anatomical relationships into whole numbers and also explain growth phenomena such as the ingrowth of teeth and also record them retrospectively (see illustration). If, for example, we use the possibility of such growth templates that can be superimposed on images to create treatment protocols in relation to ratios and not to measured variables, then already published patient case presentations can also be evaluated retrospectively and late effects after treatment can be assessed. However, as long as there are no protocols in medicine that are based on a universal reference, healthcare costs will lead to the collapse of our society because we cannot learn from our mistakes - no unnecessary therapies can be explained. The federal government needs a Swiss Institute for the evolution of Protocol [IEP - Swiss] to review and manage the medical faculties of the universities, even if their effects will not be felt for another 20 years. Please, dear Federal Councilors, don't save money here, because if such a IEP were set up and run by Swiss people (like our army, for example), their salaries would come back to the federal government via taxes and places of residence and a natural cycle would close. In the last 12 years, health insurance costs have risen five times more per year than the nominal income (“salary region” of most citizens). Of course, not all citizens will be able to understand this document in the same way, but educated citizens should understand it, because if not, the explosion in healthcare costs will lead to a full-blown civil war - just like in 1848.

14. POSTSCRIPT

The structural theory of gravity can prove an act with mathematics - analogous to DNA:

The credible assumption that Leonardo da Vinci used an 'A4' grid or = √2 = 1.41 grid or ≈ 1.41 grid' to draw the Salvator Mundi can be modified thanks to a mathematical analysis with the structural theory of gravity as a basis so that it can be proven that the Salvator Mundi was really painted by L. da Vinci, because the height and width of the picture (65.6 cm / 45.4 cm ≈ 1.45) are know: The gravitational constant as a sorted ratio G ≈ 6.67430(15) - see Wikipedia - and the harmonic relativity $\boldsymbol{S} = e\cdot(\ln 2/\ln 3)^2$ ≈ 1,08231 [S: struction number] have in common after the necessary rounding that $^{(1\cdot2\cdot3\cdot4)}\sqrt{\boldsymbol{G}}$ also is equal to 1,08231. This means that gravity contains a fractal dimension with $\boldsymbol{S}$, with which fractal structures - such as the fingers of the hand (for counting) - can be associated. Viewed in isolation, the value for S is not significant for any structure formation as long as no demarcation from chaos is assigned to it. If one of two fig tree constants δ ≈ 4.6692 is assigned to it as a representative of a chaos boundary, the result is $\boldsymbol{S^{\delta}} \approx 1.45$ and thus a dimensional correlation to the picture frame. L. da Vinci knew neither the harmonic theory of relativity nor chaos research and had obviously intuitively used a mental 1.45 grid, which he was able to acquire in life. How is that possible? The 1.45 or 1.49 ratio ($\boldsymbol{S^{2\alpha}} \approx \boldsymbol{S^5} \approx$ **1,49**) may be due to the size of the brain cell division and, if there is sufficient space available, a suitable number of cell divisions occur, so that a talent for recognising harmonious proportions - or even a genius like da Vinci - develops (Fig. 14).

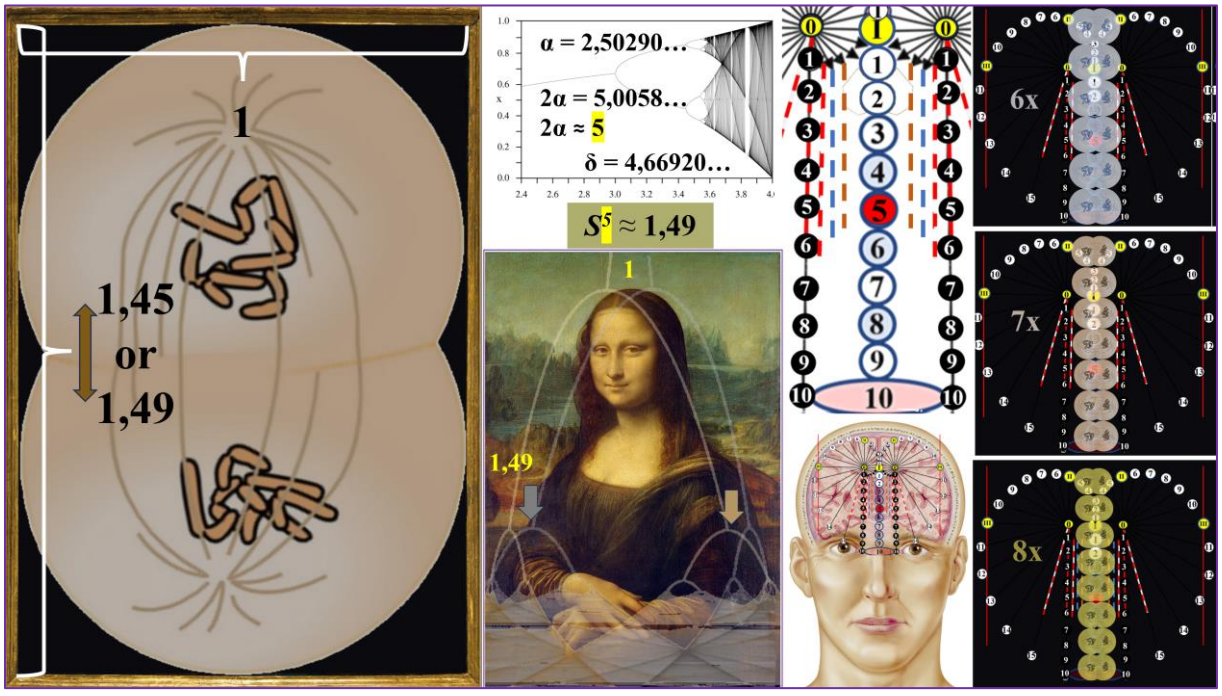


Fig. 14| Structural mass attraction (gravitation): The figure schematically shows a theoretical relationship between cell division and a clustered space in a harmonic functional space. It also shows the attraction of 23 of the chromosomes in the direction of one of the two pole particles (N = 2 x 24), which corresponds to structural mass attraction (gravitation). The second fig tree constant (α) is hidden in the picture frame ratio of the Mona Lisa: If this is doubled due to lateralisation, dimension 5 is revealed as the chaos limit. S. Mundi contains the same thought pattern as Mona Lisa; this is why it was also painted by da Vinci.

15. UNIVERSITIES SHIFT THEIR RESPONSIBILITY

Figure 15.1 from one of several newspaper articles that I published with Welcomedia AG on 13 July 2015 shows that even before the coronavirus pandemic, I pointed out that the existing theory in orthodontics and the retainer based on it were a problem, and Figure 15. 2 (from my book ***The Norma Classification for Mandible Size***) proves that I specifically asked the University of Zurich - the only university with the appropriate clinics - for help, which they refused to give due to lack of money, even though I did not want any salary for my cooperation.

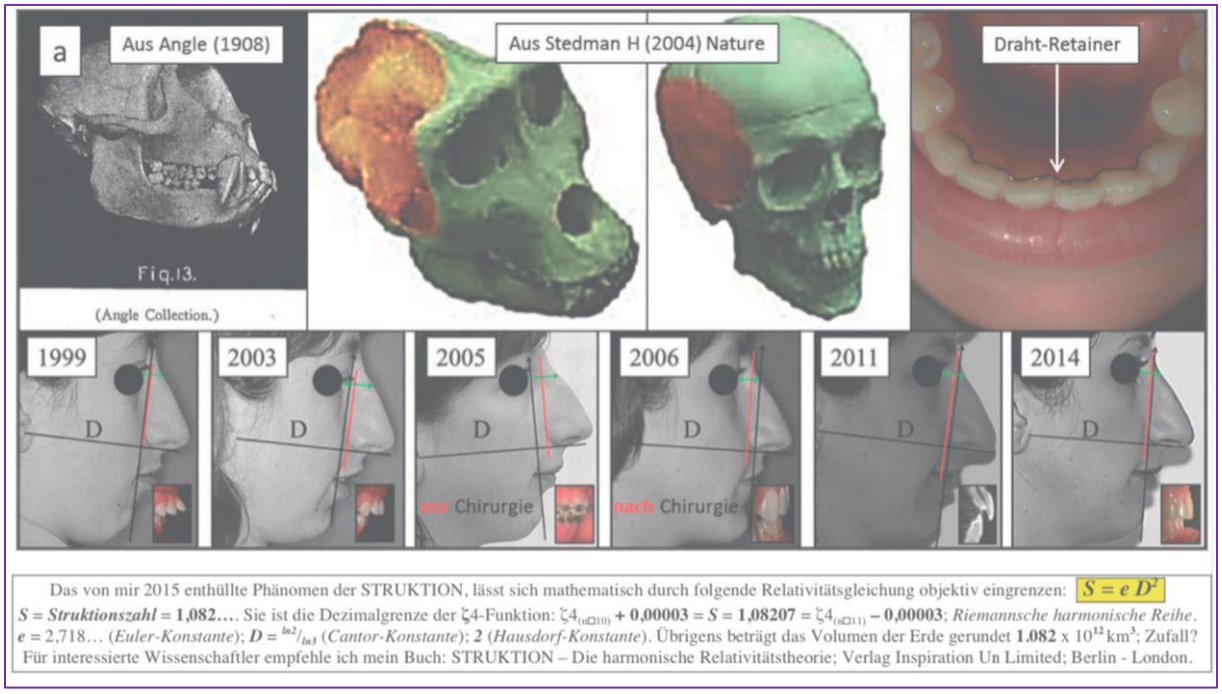


Abb. 15.1| First time (2015) the call: A new therapeutic approach is needed.

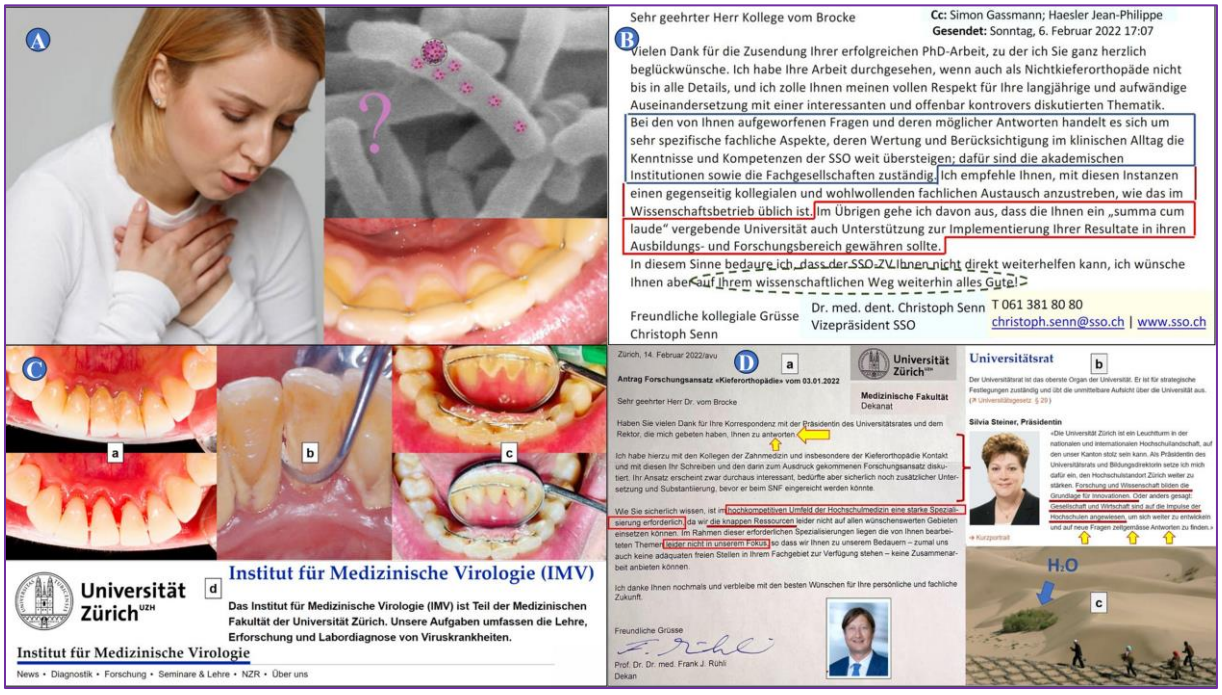
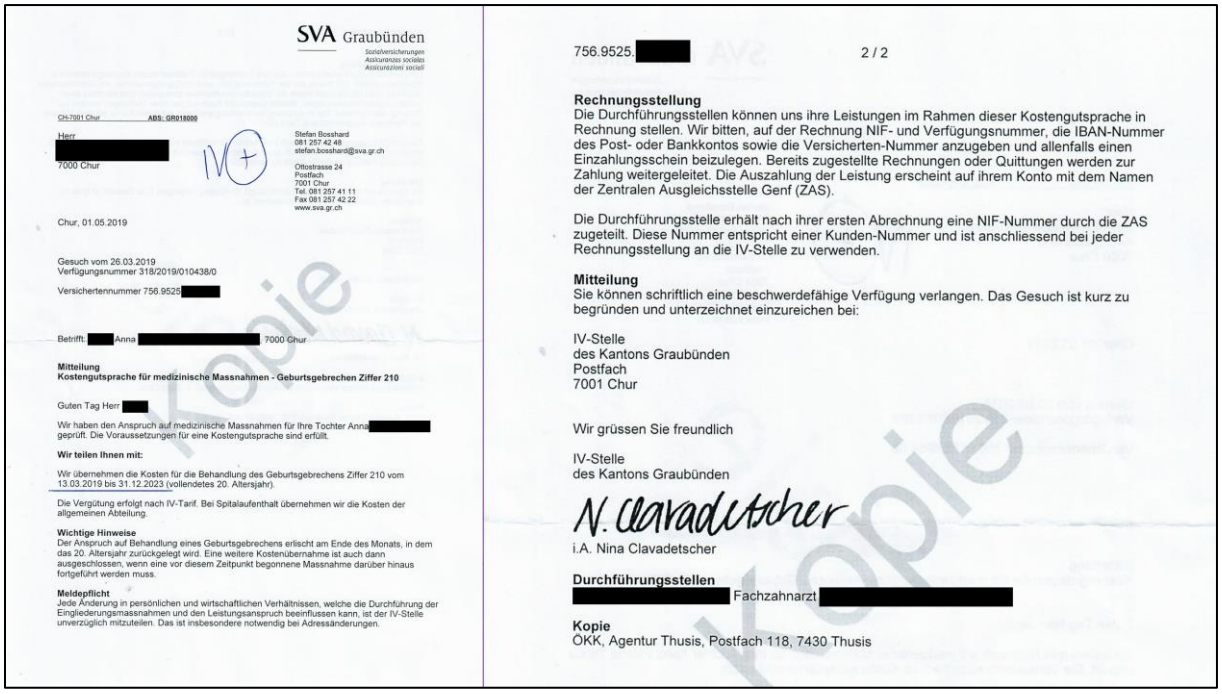


Abb. 15.2| Second time (2022) the call: A new therapeutic approach is needed.

Example 2: Here is an excerpt from the correspondence of the first specialist dentist for orthodontics from Switzerland (Fig. 15.1) on the ANNA case and the second opinion of the specialist dentist from Germany (Fig. 15.2), which show that the university management is not doing enough to standardise protocols worldwide.



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Chur, 01.05.2019

Gesuch vom 26.03.2019
Verfügungsnummer 318/2019/010438/0
Versichertennummer 756.9525[redacted]

Betrifft: [redacted] Anna [redacted] 7000 Chur

Mitteilung
Kostengutsprache für medizinische Massnahmen - Geburtsgebrechen Ziffer 210

Guten Tag Herr [redacted]

Wir haben den Anspruch auf medizinische Massnahmen für Ihre Tochter Anna [redacted] geprüft. Die Voraussetzungen für eine Kostengutsprache sind erfüllt.

Wir teilen Ihnen mit:

Wir übernehmen die Kosten für die Behandlung des Geburtsgebrechens Ziffer 210 vom 13.03.2019 bis 31.12.2023 (vollendetes 20. Altersjahr).

Die Vergütung erfolgt nach IV-Tarif. Bei Spitalaufenthalt übernehmen wir die Kosten der allgemeinen Abteilung.

Wichtige Hinweise
Der Anspruch auf Behandlung eines Geburtsgebrechens erlischt am Ende des Monats, in dem das 20. Altersjahr zurückgelegt wird. Eine weitere Kostenübernahme ist auch dann ausgeschlossen, wenn eine vor diesem Zeitpunkt begonnene Massnahme darüber hinaus fortgeführt werden muss.

Meldepflicht
Jede Änderung in persönlichen und wirtschaftlichen Verhältnissen, welche die Durchführung der Eingliederungsmassnahmen und den Leistungsanspruch beeinflussen kann, ist der IV-Stelle unverzüglich mitzuteilen. Das ist insbesondere notwendig bei Adressänderungen.

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Rechnungsstellung
Die Durchführungsstellen können uns ihre Leistungen im Rahmen dieser Kostengutsprache in Rechnung stellen. Wir bitten, auf der Rechnung NIF- und Verfügungsnummer, die IBAN-Nummer des Post- oder Bankkontos sowie die Versicherten-Nummer anzugeben und allenfalls einen Einzahlungsschein beizulegen. Bereits zugestellte Rechnungen oder Quittungen werden zur Zahlung weitergeleitet. Die Auszahlung der Leistung erscheint auf ihrem Konto mit dem Namen der Zentralen Ausgleichsstelle Genf (ZAS).

Die Durchführungsstelle erhält nach ihrer ersten Abrechnung eine NIF-Nummer durch die ZAS zugeteilt. Diese Nummer entspricht einer Kunden-Nummer und ist anschliessend bei jeder Rechnungsstellung an die IV-Stelle zu verwenden.

Mitteilung
Sie können schriftlich eine beschwerdefähige Verfügung verlangen. Das Gesuch ist kurz zu begründen und unterzeichnet einzureichen bei:

IV-Stelle
des Kantons Graubünden
Postfach
7001 Chur

Wir grüssen Sie freundlich

IV-Stelle
des Kantons Graubünden

N. Clavadetscher
i.A. Nina Clavadetscher

Durchführungsstellen
[redacted] Fachzahnarzt [redacted]

Kopie
ÖKK, Agentur Thusis, Postfach 118, 7430 Thusis

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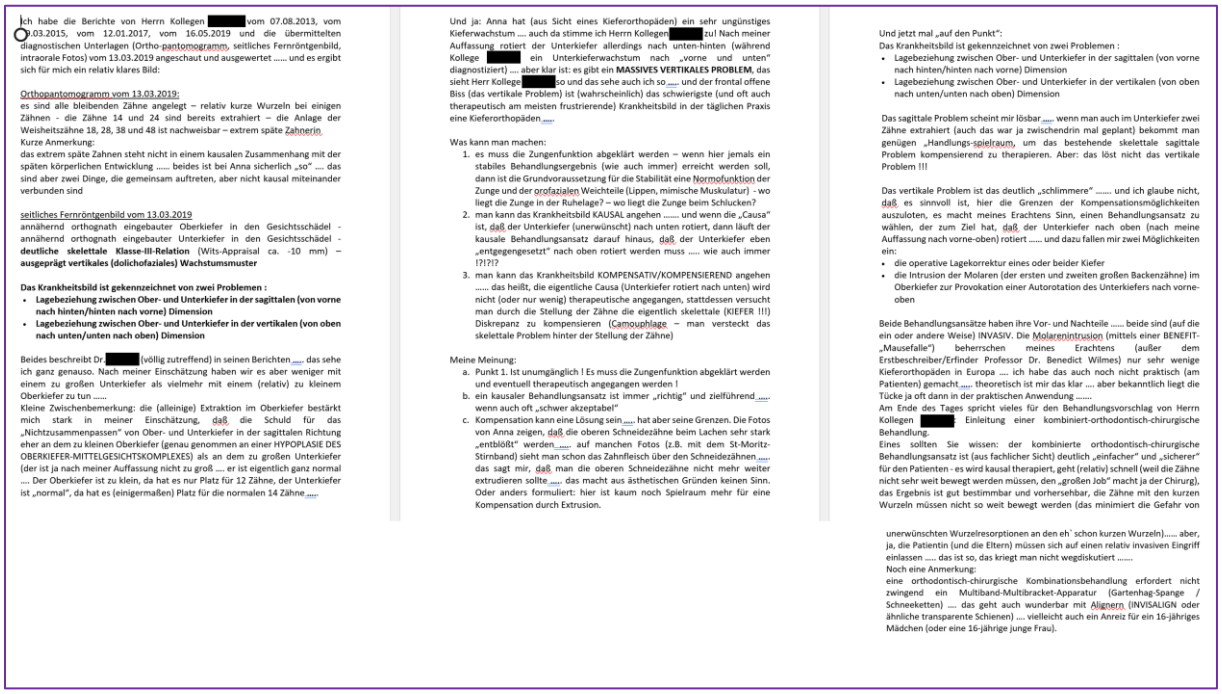
Fig. 15.1| View of the specialist dentist for orthodontics in Switzerland: The report to the disability insurance confirms that the specialist dentist considers a too large lower jaw to be the main cause of the malocclusion.



Ich habe die Berichte von Herrn Kollegen [redacted] vom 07.08.2013, vom 9.03.2015, vom 12.01.2017, vom 16.05.2019 und die übermittelten diagnostischen Unterlagen (Ortho-pantomogramm, seitliches Fernröntgenbild, intraorale Fotos) vom 13.03.2019 angeschaut und ausgewertet ..... und es ergibt sich für mich ein relativ klares Bild:

Orthopantomogramm vom 13.03.2019:
es sind alle bleibenden Zähne angelegt – relativ kurze Wurzeln bei einigen Zähnen - die Zähne 14 und 24 sind bereits extrahiert – die Anlage der Weisheitszähne 18, 28, 38 und 48 ist nachweisbar – extrem späte Zahnerin.
Kurze Anmerkung:
das extrem späte Zahnen steht nicht in einem kausalen Zusammenhang mit der späten körperlichen Entwicklung ..... beides ist bei Anna sicherlich „so" .... das sind aber zwei Dinge, die gemeinsam auftreten, aber nicht kausal miteinander verbunden sind

seitliches Fernröntgenbild vom 13.03.2019
annähernd orthognath eingebauter Oberkiefer in den Gesichtsschädel - annähernd orthognath eingebauter Unterkiefer in den Gesichtsschädel - **deutliche skelettale Klasse-III-Relation** (Wits-Appraisal ca. -10 mm) – **ausgeprägt vertikales (dolichofaziales) Wachstumsmuster**

Das Krankheitsbild ist gekennzeichnet von zwei Problemen :
- **Lagebeziehung zwischen Ober- und Unterkiefer in der sagittalen (von vorne nach hinten/hinten nach vorne) Dimension**
- **Lagebeziehung zwischen Ober- und Unterkiefer in der vertikalen (von oben nach unten/unten nach oben) Dimension**

Beides beschreibt Dr. [redacted] (völlig zutreffend) in seinen Berichten ..... das sehe ich ganz genauso. Nach meiner Einschätzung haben wir es aber weniger mit einem zu großen Unterkiefer als vielmehr mit einem (relativ) zu kleinem Oberkiefer zu tun .....
Kleine Zwischenbemerkung: die (alleinige) Extraktion im Oberkiefer bestärkt mich stark in meiner Einschätzung, daß die Schuld für das „Nichtzusammenpassen" von Ober- und Unterkiefer in der sagittalen Richtung eher an dem zu kleinen Oberkiefer (genau genommen an einer HYPOPLASIE DES OBERKIEFER-MITTELGESICHTSKOMPLEXES) als an dem zu großen Unterkiefer (der ist ja nach meiner Auffassung nicht zu groß .... er ist eigentlich ganz normal .... Der Oberkiefer ist zu klein, da hat es nur Platz für 12 Zähne, der Unterkiefer ist „normal", da hat es (einigermaßen) Platz für die normalen 14 Zähne .....

Und ja: Anna hat (aus Sicht eines Kieferorthopäden) ein sehr ungünstiges Kieferwachstum .... auch da stimme ich Herrn Kollegen [redacted] zu! Nach meiner Auffassung rotiert der Unterkiefer allerdings nach unten-hinten (während Kollege [redacted] ein Unterkieferwachstum nach „vorne und unten" diagnostiziert) .... aber klar ist: es gibt ein **MASSIVES VERTIKALES PROBLEM**, das sieht Herr Kollege [redacted] so und das sehe auch ich so ..... und der frontal offene Biss (das vertikale Problem) ist (wahrscheinlich) das schwierigste (und oft auch therapeutisch am meisten frustrierende) Krankheitsbild in der täglichen Praxis eine Kieferorthopäden .....

Was kann man machen:
1. es muss die Zungenfunktion abgeklärt werden – wenn hier jemals ein stabiles Behandlungsergebnis (wie auch immer) erreicht werden soll, dann ist die Grundvoraussetzung für die Stabilität eine Normofunktion der Zunge und der orofazialen Weichteile (Lippen, mimische Muskulatur) - wo liegt die Zunge in der Ruhelage? – wo liegt die Zunge beim Schlucken?
2. man kann das Krankheitsbild KAUSAL angehen ..... und wenn die „Causa" ist, daß der Unterkiefer (unerwünscht) nach unten rotiert, dann läuft der kausale Behandlungsansatz darauf hinaus, daß der Unterkiefer eben „entgegengesetzt" nach oben rotiert werden muss ..... wie auch immer !?!?!?
3. man kann das Krankheitsbild KOMPENSATIV/KOMPENSIEREND angehen ..... das heißt, die eigentliche Causa (Unterkiefer rotiert nach unten) wird nicht (oder nur wenig) therapeutische angegangen, stattdessen versucht man durch die Stellung der Zähne die eigentlich skelettale (KIEFER !!!) Diskrepanz zu kompensieren (Camouphlage – man versteckt das skelettale Problem hinter der Stellung der Zähne)

Meine Meinung:
a. Punkt 1. Ist unumgänglich ! Es muss die Zungenfunktion abgeklärt werden und eventuell therapeutisch angegangen werden !
b. ein kausaler Behandlungsansatz ist immer „richtig" und zielführend ..... wenn auch oft „schwer akzeptabel"
c. Kompensation kann eine Lösung sein ..... hat aber seine Grenzen. Die Fotos von Anna zeigen, daß die oberen Schneidezähne beim Lachen sehr stark „entblößt" werden ..... auf manchen Fotos (z.B. mit dem St-Moritz-Stirnband) sieht man schon das Zahnfleisch über den Schneidezähnen ..... das sagt mir, daß man die oberen Schneidezähne nicht mehr weiter extrudieren sollte ..... das macht aus ästhetischen Gründen keinen Sinn. Oder anders formuliert: hier ist kaum noch Spielraum mehr für eine Kompensation durch Extrusion.

Und jetzt mal „auf den Punkt":
Das Krankheitsbild ist gekennzeichnet von zwei Problemen :
- Lagebeziehung zwischen Ober- und Unterkiefer in der sagittalen (von vorne nach hinten/hinten nach vorne) Dimension
- Lagebeziehung zwischen Ober- und Unterkiefer in der vertikalen (von oben nach unten/unten nach oben) Dimension

Das sagittale Problem scheint mir lösbar ..... wenn man auch im Unterkiefer zwei Zähne extrahiert (auch das war ja zwischendrin mal geplant) bekommt man genügen „Handlungs-spielraum, um das bestehende skelettale sagittale Problem kompensierend zu therapieren. Aber: das löst nicht das vertikale Problem !!!

Das vertikale Problem ist das deutlich „schlimmere" ..... und ich glaube nicht, daß es sinnvoll ist, hier die Grenzen der Kompensationsmöglichkeiten auszuloten, es macht meines Erachtens Sinn, einen Behandlungsansatz zu wählen, der zum Ziel hat, daß der Unterkiefer nach oben (nach meine Auffassung nach vorne-oben) rotiert ..... und dazu fallen mir zwei Möglichkeiten ein:
- die operative Lagekorrektur eines oder beider Kiefer
- die Intrusion der Molaren (der ersten und zweiten großen Backenzähne) im Oberkiefer zur Provokation einer Autorotation des Unterkiefers nach vorne-oben

Beide Behandlungsansätze haben ihre Vor- und Nachteile ..... beide sind (auf die ein oder andere Weise) INVASIV. Die Molarenintrusion (mittels einer BENEFIT-„Mausefalle") beherrschen meines Erachtens (außer dem Erstbeschreiber/Erfinder Professor Dr. Benedict Wilmes) nur sehr wenige Kieferorthopäden in Europa .... ich habe das auch noch nicht praktisch (am Patienten) gemacht ..... theoretisch ist mir das klar .... aber bekanntlich liegt die Tücke ja oft dann in der praktischen Anwendung .....
Am Ende des Tages spricht vieles für den Behandlungsvorschlag von Herrn Kollegen [redacted] Einleitung einer kombiniert-orthodontisch-chirurgische Behandlung.
Eines sollten Sie wissen: der kombinierte orthodontisch-chirurgische Behandlungsansatz ist (aus fachlicher Sicht) deutlich „einfacher" und „sicherer" für den Patienten - es wird kausal therapiert, geht (relativ) schnell (weil die Zähne nicht sehr weit bewegt werden müssen, den „großen Job" macht ja der Chirurg), das Ergebnis ist gut bestimmbar und vorhersehbar, die Zähne mit den kurzen Wurzeln müssen nicht so weit bewegt werden (das minimiert die Gefahr von

unerwünschten Wurzelresorptionen an den eh` schon kurzen Wurzeln)..... aber, ja, die Patientin (und die Eltern) müssen sich auf einen relativ invasiven Eingriff einlassen ..... das ist so, das kriegt man nicht wegdiskutiert .....
Noch eine Anmerkung:
eine orthodontisch-chirurgische Kombinationsbehandlung erfordert nicht zwingend ein Multiband-Multibracket-Apparatur (Gartenhag-Spange / Schneeketten) .... das geht auch wunderbar mit Alignern (INVISALIGN oder ähnliche transparente Schienen) .... vielleicht auch ein Anreiz für ein 16-jähriges Mädchen (oder eine 16-jährige junge Frau).

Fig. 15.2| View of the specialist dentist for orthodontics in Germany: The second opinion of the German specialist dentist shows that he considers hypoplasia of the maxillofacial complex to be the reason for the malocclusion.

Those who are no longer allowed to critically scrutinise and constructively improve are blameless for the death of humanity and are characterised by it if they give in after 10 years of warning.

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