Schriften der Sudetendeutschen Akademie
der Wissenschaften und Künste
Band 37
Forschungsbeiträge der Naturwissenschaftlichen Klasse

GERHARD DORDA

The Man and his Immortal Soul

Well-founded experimental findings disclose
that man possesses an immortal soul.

Introduction

In this treatise it is shown that based on physical findings each man has an immortal soul. To make evidence of this daring postulate, we have to refer, without exception, to *effects independent of masses*. Such specific processes have already been observed many centuries before. For instance, the discovery in the 17th century, attributed to *Galileo Galilei* (1564 – 1652), shows that the process of free fall within an atmosphere-free region happens independently of the magnitude and weight of the falling material, i.e. the description of path-time connection at the free fall does not depend on the atomic mass. This observation made it possible to determine "time" by the motion of a pendulum independent of its mass.

Apart from this, the spectacular observation of *Amedeo Avogadro* (1776 – 1856) and *Johann J. Loschmidt* (1821 – 1895) in the 19th century has shown that a collection of atoms or/and molecules of ideal gases on the surface of the earth is by no means dependent on their atomic or molecular mass, but (in addition to the local temperature and gas pressure) only on their number. So far, this discovery also remained a physically unresolved phenomenon. Thus, in our century this effect should be considered to be a macroscopic quantum effect, see below (chapter "*The physically oriented discussion on the question about the difference between man and animal*") and [1].

Evidently these two findings are not sufficient to give evidence about the entity of man. Such a specific statement permits further mass-independent discoveries, observed in the 20th century. It is especially the discovery of a further macroscopic quantification, which occurred in the area of electricity. This disclosure is named quantum-*Hall*-effect (QHE) or *Klitzing*-effect. This discovery was made on the one hand by *Klaus von Klitzing* in 1980 at the Si-metal-oxide-semiconductor (MOS)-transistor, published by *K. von Klitzing, G. Dorda and M. Pepper* [2], and on the other hand by *D.C. Tsui, H.L. Störmer and A.C. Gossard* in 1983 at the GaAs-$Al_xGa_{1-x}As$ Heterostructures (see [1], page 11). Thereupon the QHE was also ob-

served with other crystalline semiconductors, what signifies that the QHE has to be classified with the category of atomic-mass-independent effects. For this *entirely unforeseen physical discovery* of fundamental nature the *Nobel*-Prize was awarded in 1985 to *K. von Klitzing*, and in 1998 to *D.C. Tsui, H.L. Störmer and R. Laughlin.*
In connection with the discovery of QHE it should be taken into account that a restriction of the electric current is imposed to the two-dimensional space at the MOS-transistor-effect, a process, which makes a full, i.e. undisturbed use of *causality* possible, a situation, which is usually not given for electrical phenomena in three-dimensional space. The consequence of the extraordinary causality-relation of this technologically specific MOS-structure is the fact that **50 % of the whole world economy** is based upon the utilization of the MOS-transistor effect! This fact can be considered to be a convincing indication of the validity of the *differentiated space model*, observed by the QHE and realized by the MOS-transistor [1].
Apart from this significant QHE, a further material-independent detection has to be mentioned, in fact that of the *radiation-related displacement law of Wien*. This fundamental law was experimentally discovered and formulated by *Wilhelm Wien* (1864 – 1928) during the investigation of hot radiation effects, described by the *Rayleigh-Jeans*- and *Wien*-radiation law. The displacement-law of *Wien* describes the direct connection between temperature and wave-length of photons, applying to the whole cosmos. For this fundamental discovery, *W. Wien* was awarded the *Nobel*-Prize in Physics in 1911.
All atomic mass-independent phenomena, considered together, suggest that an important, substantial state of being which refers even to the fundamental basis of physics has up to now not been observed. Therefore, it is not surprising that an exact, comprehensive investigation and analysis of these experimentally discovered atomic mass-independent effects lead to an unexpected new interpretation and description of the three-dimensional space and also to a better knowledge of the nature of the category "time" and heat, see [1] and the schematic representation in Fig. 1.
The reasoning deduced from the experimental data, comprehensively presented in [1], shows that (seen in contrast to *René Descartes* mathematically formulated space model) *the physically considered three-dimensional space has to be inspected to be in a differentiated form.* Due to the dualism of the electron, given both in form of the electron mass m_e and of the electron charge e, the three-dimensional space consists of two realities [1]:

1) of a one-dimensionality, recognizable in form of the category "length" or "distance", it is effective as "gravity", and that in ***localized form***.
2) of a two-dimensionality, recognizable in form of the category "frequency", it is effective as "electromagnetism", and that in its being of a ***wave***.

The connection of the one-dimensionality of space with the two-dimensionality is perceived as *heat* [1].
This space-time-model, discussed and physically substantiated on the basis of *the Klitzing*-, *Wien*-, *Avogadro-Loschmidt*- and pendulum-effects, is presented in [1]. It results in novel discoveries related not only to statements of cosmos, celestial bod-

ies, atmosphere and weather, but also – and this should be especially emphasized – to organic structures and thus also to men.

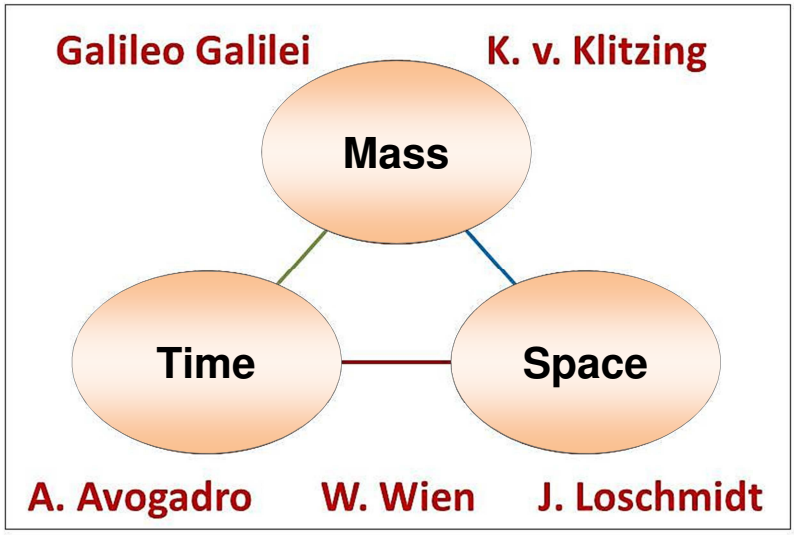

Figure 1: Schematic description of the localized electron-mass – space – time connection, given in the nature in separated form. It is based on the material-, i.e. atomic mass independent experimental results of K. von Klitzing, G. Galilei, W. Wien, A. Avogadro and J. Loschmidt [1]

The description of organic structure from a physical point of view

Based on the novel physical presentation of space and time which was deduced from the massless effects, in the following chapters, we proceed to a physically oriented description of organic structures (**OS**), i.e. of **plants, animals and men**.
As it has been pointed out in [1], three-dimensional space usually is a connection, or rather an interweaved state of localizations with wave states. Seen in this connection, it should be noticed that *the basis of the wave-related states*, i.e. of the electromagnetism, should be considered to be *both a place-independent and above all a time-independent* "*reality*". The validity of this statement is as part of the QHE definitely recognizable at the quantum state. Reflecting its spectacular data, the *quantized state* was observed to be a ***resistivity-free state***, described within the abstract of [2] by the following words: The QHE "… is insensitive to the geometry of the device". Referring to many experimental experiences, this finding, shown in Fig. 2 of [2], can formally be recorded by the resistance equation "$R_{pp} = 0$" or "$\rho_{xx} = 0$" and is also independent of current, i.e. of frequency *f*, limited by the *Compton* frequency f_C, see [1], part I, pages 26-31. The "$\rho_{xx} = 0$"- effect, as well as its frequency-independence, both given at the QHE, considered in connection with the pendulum-effect of *G. Galilei*, the displacement constant of *Wien* and the *Avogadro-Loschmidt*-effect, are of fundamental importance as these permit an extraordinary,

in physics generally warrantable interpretation. This assertion will be explained and verified in the next chapters by several circumstances of OS.

Describing the dynamics of the OS, the pendulum-effect turns out to be the most promising finding. The pendulum-effect reflects the "time" reference of OS in an advantageous manner, as it doesn't show *frequency*-related effects (i.e. wave-effects), but within the scope of observations solely *time*-related effects. As it has been demonstrated by the analysis of the pendulum-effect in [1], part II, "time" is experienced in connection with the locality state, i.e. with atomic mass, which signifies that the category "time" can only be perceptible within three-dimensional space. Moreover, it should be emphasized that the given ***time-limits*** of all dynamic processes are also very well reflected by the pendulum-effect. In addition it should also be noted that the pendulum-effect-process is therefore suitable to describe the time-effects of OS, as these effects substantially differ from the time-related description of motion of celestial bodies. *Kepler*'s third law really shows that the difference to OS is mainly identifiable by their variability of velocity, i.e. by the specific freedom of motion of the OS, which is completely contradictory to the process of time-determination by means of the third *Kepler*'s law and also to the process of atomic clocks.
Considering the analysis of pendulum-related time given in [1], in particular in part II, pages 45-47, the important difference between the dynamic and static state is given by the difference between electromagnetism and gravity, in other words by the fundamental difference between the wave- and localization-state. Thus we can postulate that the energetic state of OS differ from that of a celestial body, i.e. in our case of the earth, by ***the additionally increased value of electromagnetic energy***, in this connection being localized. This shows that – seen in comparison to earth – this additionally increased electromagnetic energy of OS appears in a dynamic, i.e. time-related form. The increase of electromagnetic energy concerning OS occurs by the absorption of photon energy, emitted by the sun and sensed as an addition of heat, but also by the intake and processing of food in form of plants and animal structures, i.e. in form of organic and not inorganic substances.
The additionally increased electromagnetic energy of OS is recognizable not only by their dynamics, but also by the ability of plants to grow ***against*** *the direction of the gravity of Earth*, as well as by the ***upright walk*** of animals and men, vertically-oriented to the surface of the Earth.
The relation of electromagnetic energy to dynamic processes is given by time, thus it is limited. That means time as an observable category is not wave-, i.e. frequency-related, but localized, i.e. it is bound to the existence of atoms, but without the possibility of a cyclical repetition, which is characteristic for frequency. This fact can be seen as a certain analogy to the pendulum-effect, where *variability* is given in the course of speed, i.e. in the course of time. This variability is an expression of the previously mentioned *freedom*, being an inherent feature of time.
Summarizing it can be stated that the organic structures (OS) show time processes, and this in analogous manner to the pendulum-effect, characterized by the "rest – dynamic – rest" course, observable as "gravity – electromagnetism – gravity"

course. Moreover, the OS exhibit the typical variability of time lapse, representing "time-freedom", as well as the well observable limitation due to rest, which is reflected neither by the time-representation of celestial bodies, nor by that of atomic clocks.

The existence, i.e. the life of OS, is limited, and that 1) on the one side by the beginning of life, i.e. given by pollination of plants and by the process of procreation concerning animals and men, and 2) on the other side by the end of life, i.e. by death. The beginning of the existence of OS is realized by *the fusion of the localized ovum with the semen*, which requires *motion* of the semen. This shows, physically expressed, that *life is a result of the unification of locality with dynamics*.
On the other hand the *end of life* is a result of the termination of the dynamic course, recognizable by so-called rest. Hence the variable course of dynamics of OS can be considered to be an analogy to the observable motion of the pendulum.
The discussed analogy to the pendulum-effect is moreover recognizable by the absolute necessity of an effective junction of OS to the surface of the earth. It has been shown in [1], part II, that the junction of the pendulum axis with the mass of the earth **is that** decisive and fundamental boundary condition for the process of the spatial differentiation, which is the background for the possibility of time-determination. Evidently, this imperative requirement is also valid for OS, in fact for plants by their connection with a fixed place on earth to achieve growth, and for animals and men to obtain the spatial junction with the surface of the earth through feet (this requirement is also valid for animals and men during space flight). It is obvious that this requirement reflects the possibility of the differentiation of the three-dimensional space, shown in [1], part I. In fact, it was disclosed that the *liberation of* "*time*" can take place solely in the differentiated state. This again shows that solely on the basis of the pendulum-effect-related time-description, it is possible to realize the time lapse of men in a physical manner, beginning from the start of life over its dynamics up to death. Seen in this connection it should be considered that the possibility of observation of the pendulum motion requires an *impulse* "from the outside". This also certifies the analogy between the time-relation of men and the pendulum-effect, see the analysis shown in the following chapter.
Death, i.e. the end of the observable dynamics, evidently is a result of the time limited intake of food, i.e. of the so-called additionally increased electromagnetic energy. The organic structures fall to the earth at the end of life, a gravitationally involved "*fusion*" occurs between the mass of the plant, the animal, or man and the mass of the earth. Physically considered, the *person-related* localized *additional* wave-energy (i.e. the *additional* two-dimensional electromagnetic energy) separates from the one-dimensional gravitational energy in this fusion of masses, i.e. in the course of death. During this process, *a* ***change of state*** *happens simultaneously, i.e. the localized electromagnetic energy changes into its wave-state*. But this particular process implies the following important circumstance: As the gravity-related part of the body of plants, of animals and of men cannot be considered as lost at any time, i.e. neither at the state of death, similarly can the additional electromagnetic part, despite of its no more localized, i.e. no more observable wave character be consid-

ered as lost. Consequently this particular wave-part has to be seen as the personal "**soul**". Moreover, *considered from a physical point of view*, the unforeseen possibility exists – due to its independence of frequency (i.e. of time) – to ascribe a kind of *immortality* to the non-localized wave-part of plants, animals and men, i.e. a specific characteristic, which is hitherto reserved solely to the so-called *soul.*

The question which now arises and which provokes an answer is: Can this change-of-state-process, happening at death, be identical for men, plants and animals, a model which is postulated by the biologismus? Or does a fundamental indisputable difference between men on the one side and plants and animals on the other side exist?

An answer to this important question of being of mankind is usually expected from philosophy and theology. But in the course of these, in the following chapter, it will be shown that it is necessary to also take findings of fundamental physics related to this subject into consideration. A proper basis suggests the description and the analysis of the laws of heat radiation, being valid for the whole cosmos. These laws are independent of the atomic mass and became known within the scope of the description of the light of the sun, of the candle and of the glow bulb, i.e. of the phenomena of light in general (see [1], part III).

The physically oriented discussion on the question about the difference between man and animal

Usually it is allowed to classify explorations as *scientific* only in connection with causal processes. A-causal conditions, first described at micro-processes by means of the quantum mechanics, can be considered as "probability-referred" processes. As it has been shown in [1], part III, all electromagnetic interactions are realized by photons. Thus it is to be expected that the probability-processes are also related to the radiation effects. According to the equation (5) on page 55 and equation (11) on pages 64-65 of [1], in fact the radiation law of *Wien* is extraordinarily utilizable to fascinatingly achieve an answer to the question about the difference between man and animal, formulated in the previous chapter.
This finding is identifiable by the significance of the exponential function, given by the radiation law of *Wien*. This exponential function reflects the probability effects, i.e. the a-causality in a mathematical manner. The radiation law of *Wien* shows that the exponential function refers to the fine-structure constant α, which is a fundamental, i.e. natural constant of physics. **Richard P. Feynman** (1918 – 1988, *Nobel*-Prize 1965) writes about this α in his world-famous book "QED – The Strange Theory of Light and Matter" within the 4th chapter [3]:

The fine-structure constant α $(137.035999874\ldots)^{-1}$ *is* *… " a magic number that comes to us with no understanding by man. You might say the hand of God wrote that number, and we don´t know, how He pushed his pencil*".

Expressed in other words: This dimensionless number in form of the fine-structure constant α and accordingly in form of the exponential function is that physical starting point, at which transcendental, i.e. metaphysical considerations can be built up. This in turn means that the question about the possible difference between man and animal appears to be a question of the existence of transcendence, i.e. of the existence of God. Though physics possesses only extremely limited possibilities to provide an answer to our discussed question, nevertheless an effort will be made to supply a useful contribution.
As it has been pointed out the findings of the atomic mass-independent phenomena, especially those of the QHE, lead to quite a new conception of the character of space and time [1]. Really, this model delivers a new starting point for fundamental physics to surmount the nowadays worldwide known *crisis of physics, which can be traced to the unsatisfactory interpretation of the category "time"* [4]. Moreover, experimental findings, presented at [1], show novel statements to solve the problems of electromagnetic waves, locality, heat, the structure of space, the boundary condition of the causality and a-causality and surprisingly even yield an attempt to describe the background of the fine-structure constant α, i.e. of the greatest mystery of cosmic being (see *R. Feynman*, [3]). Seen in connection with the interpretation of the *Avogadro – Loschmidt* number and with the formulation of modern thermodynamics, reflecting the heat-radiation laws, it arises to be evident that in particular the description of the three-dimensional space supplies the **key** for solving many fundamental physical problems, see [1], part III, page 69, and chapter 6. In this way it was shown that the *number*-related ideal gas state, being a causal state, is reflected by the *Rayleigh-Jeans* radiation law, whereas the uncertainty of any solid state (i.e. also of the man) should be related to the radiation law of *Wien*, i.e. to its probability function. In other words, *in three-dimensional space, all free dynamic processes related to a solid-state body are connected with the probability function: I.e. the fine-structure constant α is omnipresent and effective at all times*. This again shows that, physically considered, the a-causality or the uncertainty, i.e. the temporal indefiniteness is effective at ***any*** atomic mass-related solid-state body. Evidently this a-causality, i.e. this type of freedom, can therefore also be classified as ***chaos***. It follows that *the decided dominance of order, i.e. of causality, recognizable in plants, animals and men by the causally given structure of their bodies, is physically not permissible due to the general validity and efficiency of the radiation laws*, especially of the radiation laws of *Wien*, presented in [1], part III, by the equation (5) and (8) on pages 55 and 56. Thus, ***as a solution of this paradoxical situation there is only one warrantable assumption to follow which is transcendence, i.e. God, indispensable as origin of the required order related to these OS***, see also [5], page 161. This again means that the transcendence, seen as a continuously effective *creator*, must be continuously effective and present in time and place.

Apart from this specific argumentation of the *evidence of God*, man is in addition given – in contrast to animals – *a conscious, free ability to decide*, which is not determined by instincts. This man-specific feature, referring to the transcendence, results in his unique possibility, to opt freely between the **good** and **evil** behavior.

This freedom of mankind is recognizable by his possibility of *moral* evaluation of all human behavior. Especially today it clearly comes to light with the free use of "social networks" (see e.g. "**Fake News**").

It is interesting that already at the end of the 18th century in his book "*Criticism of the practical reasoning*", the philosopher ***Immanuel Kant*** (1724 – 1804) pointed out that man has the conscious ability to distinguish between good and evil. By philosophical considerations, he succeeded to not only show the existence of an absolute freedom, but also to prove the existence of moral and accordingly the existence of God through reasoned arguments. A clearly arranged summary of *Kant´*s and analogously well-considered philosophical models has recently been published by the psychotherapist, physician and theologian *Manfred Lütz* in his book "God" [6], where the statements of *Kant* are shortly represented on pages 165-175.

To conclude the presented discussion it can be stated: *Based on the within the whole cosmos existing general validity of the radiation laws of Wien and of the existence of the fine-structure constant α, the ultimate impossibility to substantiate the existence of any form of causality related organic structure was physically deduced. To solve this paradox, the evidence of transcendence, named God, was postulated. This transcendence also has to be considered the creator of the difference between man and animal, resulting in the solely man related ability to distinguish freely between good and evil.*

Concluding summary

The fundamental observations of *G. Galilei, A. Avogadro, J. Loschmidt, W. Wien* and *K. von Klitzing* on material-, i.e. atomic mass-independent phenomena, result in new statements about the structure of space and time [1]. These findings allow the representation of specific, physics related structural conditions of plants, animals and men. In particular the description of the time-relation of all phenomena observable by human senses and man-owned cognitive faculty appears to be a new basic approach.
It has been shown that the problem of the category "time" can be solved by the newly disclosed possibility of differentiation of the three-dimensional space, deduced from the QHE [1]. This model of space-differentiation reveals a relation between gravity and electromagnetism, given within the whole cosmos. This relation reflects the ratio between "localization" on the one side and "wave" on the other, whereby the *localization* is given by matter and the *wave* in form of the resistivity-free state "$\rho_{xx} = 0$", as well as of the frequency independence. The locality-wave relation is usually found as interweaved, realized by heat.
On the basis of this wave-locality-model it was possible to analyze and describe the temporal course of life, as well as to observe the reason for the absolute requirement of the upright gait of men. Moreover it was shown that the process of time lapse of life can be described analogously to the time-relation of the pendulum-effect.

According to the statements of the generally valid radiation law of *Wien*, i.e. of the physically deduced law of being, any existence of organic structures (OS) should be *absolutely impossible* due to causal processes, connected with the being of OS. To solve this paradox, the existence of *transcendence* was postulated. In addition, this transcendence was disclosed to also be the origin of the man given ability of free evaluation between good and evil, thus also being the creator of the difference between man and animal.
The possibility of the *free decision of men between good and evil is physically not measurable and valuable*. Thus, *this specific feature of men* cannot be related to mass, place and time, i.e. *to localization*. *Evidently*, seen from a physical point of view, *this characteristic of men has to be connected with the substance of the wave-state*. Based on this approach it was suggested that *at the process of human death* a *transformation* of the human being takes place. Seen in a certain analogy to the QHE, this transformation is given by the change from the normally interweaved state into their differentiated state, resulting in a *separation of the wave-state from the mass-related part of the body,* whereat *the wave-state, the evaluation embracing, has to be interpreted as the human soul.* Therefore it can finally be postulated:

All presented disclosed findings, which were deduced from atomic mass-independent phenomena, in particular from the QHE, and from the man-related free faculty of making decisions between good and evil, result in two, for mankind important conclusions:

1) The localized part, i.e. the mass-related body of man, is in his lifetime *interweaved* with his wave-part. The wave-part is place- and time-independent and therefore named *soul*.
2) At death of man his localized, i.e. body part separates from his wave-part. This wave part is designated to be the personal, *immortal* soul.

Acknowledgements

The author would like to thank *Prof. Dr. W. Hansch* for his intense interest on this scientific subject and many valuable comments. Many thanks also go to *Dr. T. Sulima* and the Institute of Physics, University of Federal Armed Forces, Muenchen, for continuous technical support. The author would express his sincere appreciation to *Klara Kirschner* for help in preparation the English version and *Karin Bächle* for providing the figure. The author is indebted to the *Sudetendeutschen Akademie der Wissenschaften und Künste*, Munich, Germany, for publishing this fundamental, man related treatise.

References

[1] Dorda G. Die Struktur von Raum und Zeit, und die Interpretation der Wärme. Cuvillier Verlag, Göttingen, 2016. ISBN 978-3-7369-9388-4

[2] von Klitzing K, Dorda G, Pepper M. New Method for High-Accuracy Determination of the Fine-Structure-Constant Based on Quantized Hall Resistance. *Phys Rev Lett* 1980;45:494-497

[3] Feynman RP. QED – The Strange Theory of Light and Matter. Princeton 1985, 4th chapter, p. 129. Princeton University Press.

[4] Smolin L. The Trouble with Physics. Mifflin Company, Boston/New York. 2006, chapter 15, Fig. 17

[5] Dorda G. The Unification of Electromagnetism with Gravity, the Interpretation of Three-dimensional Space and Time, and the Philosophical Consequences. Sudetendeutsche Akademie der Wissenschaften und Künste, Band 34, Forschungsbeiträge der Naturwissenschaftlichen Klasse, 2014, Seite 141-162

[6] Lütz M. Gott. Pattloch Verlag, München, 2007. ISBN 978-3-629-02158-8