POETRY, NATURE AND SCIENCE:
ROMANTIC NATURE PHILOSOPHY IN THE WORKS OF
NOVALIS AND E. T. A. HOFFMANN

DISSERTATION

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E.T.A. HOFFMANN:

FNS  - Fantasie und Nachtstücke. München: Winkler 1985
SB   - Die Serapionsbrüder. München: Winkler 1985
SW   - Späte Werke. München: Winkler 1985

NOVALIS:


NS I  Das dichterische Werk, 1980
NS II Das philosophische Werk, I, 1965
NS III Das philosophische Werk, II, 1968
NS IV Tagebücher, Briefwechsel, Zeitgenössische Zeugnisse


SCHELLING:


SW I Jugendschriften 1793-1798.
SW II (1799-1801)

SCHUBERT:

ANN Ansichten von der Nachtseite der Naturwissenschaften. Dresden: 1808
S Symbolik des Traumes. Bamberg: Kunz 1814
INTRODUCTION

Poetry and science appear to be diametrical opposites in our modern culture, and it is difficult to find any common ground where these two areas of human activity could meet. Poets and scientists have found this common ground in nature, although their approach to nature is entirely different. Science deals with the translation of natural phenomena in mathematical terms, and literature transforms individual perceptions in poetic language. During the romantic period in German literature poets, philosophers, and scientists attempted to find a synthesis of science and philosophy in a new philosophy of nature and to elevate humanity and the world by aesthetic experience.

Early romanticism represents a unique combination of ideas in German literature. Philosophical influences during this period include Kant's critical philosophy, Fichte's transcendental philosophy and its extreme subjectivity, and Schelling's nature philosophy, where nature is endowed with a soul that is the fundamental organizing principle in the world. During the Enlightenment natural sciences were dominated by Newton's discoveries in physics. These discoveries defined mechanics and optics until the
beginning of the 20th century. Many changes and new discoveries took place as scientists learned to observe nature and conduct experiments. The probing, analytical spirit of the Enlightenment was the driving force behind these discoveries. Empirical data were collected in astronomy, geology, biology, and other natural sciences. These data were organized and classified to bring a certain order in the observed natural phenomena. Chemistry was changing from a mixture of alchemy and practical procedures in the new industries to a new and systematic branch of the physical sciences. Truly revolutionary was the discovery of galvanism at the end of the 18th century that led to exploration of electricity and magnetism and to the connection between these invisible forces.

At this time philosophy still tried to provide a framework based on philosophical concepts that would organize empirical data that were collected in different areas of natural sciences and to combine them with past knowledge and experience. The nature philosophy, which was mainly developed by Schelling, was initiated not only by the stimulus of Kant’s writings on the sciences, but also as an answer to the extreme subjectivity of Fichte’s Wissenschaftslehre. Schelling and many others of the romantic period were not satisfied with Fichte’s definition of nature as a limiting force and field of activity for the
self. Schelling postulated a world soul as the universal driving force everywhere in nature. This soul is itself part of the realm of metaphysics and, therefore, cannot be defined by philosophical concepts. The presence of this world soul means that certain manifestations of the infinite are present everywhere in nature.

Romantics enthusiastically accepted the concept of a world soul, and sought contact with this soul and with the reflection of spiritual elements in nature. In *System des transzendentalen Idealismus* Schelling proclaimed poetry and the arts as the organon of philosophy; only the creations of the poetic genius are able to suggest the presence of the infinite in finite that allows us to intuit the absolute spirit. Poetry became the magic medium that connects the diverse aspects of existence because the same creative power works in nature and in the soul of the poet.

In preparation for this exalted role romantics followed the guidelines of Fichte’s philosophy of moral action. It was the duty of each individual to develop his subjective ego and to expand the horizons of knowledge in many dimensions. Novalis’ idea of compiling an encyclopedia, *Das allgemeine Brouillon*, illustrated this trend. The division between *Naturwissenschaften* and *Geisteswissenschaften* was not as sharp as it became in the 19th century. Schelling acquired a good knowledge of medi-
cine and the physical sciences during his years in Leipzig. Novalis studied geology and mineralogy along with other sciences at the mining academy in Freiberg, and, according to the book lists from his personal library, was well acquainted with the latest developments in physics, chemistry, and mathematics. J.W. Ritter, the only true research scientist among the romantics, was personally acquainted with most of the poets and philosophers in Jena and later in Munich.

The early years of the romantic movement were characterized by an intense concentration of intellectual energy. The romantics wanted to eliminate the dual aspects of human existence and to establish a harmonious unity of nature and spirit, of subject and object, and of the real and the ideal. They saw the history of civilization as a triadic process. Once there was a "golden age" when man lived in harmony with nature. Consciousness brought a separation between subject and object, and now we live in a period of conflicts and fragmentation. In romantic view it is the duty of human race to work towards a new "golden age" when the dichotomy of life will be transformed into a new realm of eternity. Novalis proposes an excitation of nature and human soul by the poetic principle as the preparation for the future in Klingsohrs Märchen. Only the combined effort on all levels of existence, including the sciences, can
bring the future "golden age," which at present can only be suggested in a fairy tale. The romantic fairy tale becomes a form of literary expression where the magic of poetry can represent the hidden forces of nature in images that are close to human experience. The language of the sciences is too abstract, and cannot represent the wonders of nature as they once appeared in ancient fairy tales and myths. Both poets and philosophers called for a new mythology that would poetically transform nature. This is an essentially positive view of the future that exalts the role of poetry and love as the great unifying forces in the world, but it also acknowledges the importance of natural sciences in working towards this goal.

The great spiritual intoxication of the early romantic movement did not last long. More and more the dark side of human existence appeared in the works of romantic writers. They suffered from the inability to bridge the gap between the world of ideals and everyday existence that appeared to negate all their hopes. These later romantic writers no longer saw scientific advances as a positive process. Their interests in the sciences shifted to medicine, psychology and the so called sciences of the night side that investigated hypnosis and para-psychological phenomena. This tendency to consider the problems of the subconscious had its beginnings in Schelling’s philosophy and became popular
through the writings of G. H. Schubert, who heard Schelling's lectures at the university of Jena. Schubert saw in "cosmic moments," e.g. somnambulism and hypnosis possible contacts with higher levels of existence. Although it was believed at the time that these phenomena were associated with magnetism, they represented a deviation from the exact sciences in favor of subjective experiences.

E.T.A. Hoffmann saw the dangerous side of hypnotism and hypnotic suggestion. He explored this loss of soul in several tales, e.g. Der Magnetiseur. The hypnotist with his powers over the subconscious of other people may be either a healer or a demon. Horror became a part of romantic literature, and nature became a home for evil and malevolent as well as friendly spirits.

Although the close relationship of nature philosophy and romantic literature is generally assumed, the influence of the physical sciences on literary expression is rarely investigated. The purpose of this research is to follow the relationships between poetry, nature, and science during the romantic period by a comparison of texts from nature philosophy with literary works of Novalis and E.T.A. Hoffmann. Schelling's nature philosophy and scientific discoveries of Ritter provide influences for the early years of the romantic period. Novalis is a unique figure in romanticism since he combines scientific expertise with
philosophical insight and poetic imagination. His philosophical and scientific fragments are studied together with literary work to demonstrate those facets of his work and personality that so far have not been widely explored.

Schubert's nature philosophy, which was a popularized version of Schelling's ideas, exerted considerable influence on the writers of the late romantic period. Schubert explained para-psychological phenomena as connections to a higher and more spiritual level of existence. Hoffmann borrowed many themes from Schubert's writings, and his fairy tales present many nature spirits and magicians. The interference of these figures in the lives of Hoffmann's characters frequently guide them towards self-discovery. Hoffmann is also fascinated by optical instruments that alter the range of visual perception. This extended range of vision does not bring a better understanding of the external world if the person using these devices does not have the right attitude to nature and to life. The image of the scientist becomes entirely negative. At best they have no insight in the totality of nature and deal in isolated platitudes. Otherwise these scientists unleash destructive forces without any regard for the consequences to living organisms or other human beings.
CHAPTER I

PHYSICS AND NATURE PHILOSOPHY

The Nature philosophy of F.W.J. Schelling

Romantic nature philosophy has always been associated with the name of Friedrich Wilhelm Joseph Schelling, who worked out a nature philosophy that was intended to interpret nature in terms of the transcendent world of spirit. In Schelling’s time the natural sciences were rapidly changing human perceptions of nature. Both scientists and philosophers searched for a systematic interpretation of natural phenomena in both inorganic and organic realms of chemistry and physics. Newton’s achievements in physics and mathematics dominated the physical sciences in the 18th century, and his view of the universe as a complex mechanism became a model for Enlightenment cosmology. In this mechanical universe it was possible to construct physical laws in terms of mathematical equations. The French mathematician Laplace even stated that if an observer could determine the position and momentum of every atom and solve the equations coupling these quantities then he would have a key to the laws of the universe and could
predict the future. This was a statement of radical
determinism that saw the world as a machine that follows
the same prescribed path.

As the Enlightenment came to an end, many people were
dissatisfied with the rational but overly mechanical view
of the world that was generated by the age of reason. They
searched for a way to account for the transformation of
matter in chemical reactions and for the presence of
invisible forces in matter under certain experimental con-
ditions. Inevitably this trend against the thought patterns
of the Enlightenment became associated with the romantic
period.

Until recently the interest in Schelling’s philosophy
was limited to his role as an early associate of Hegel, to
his philosophy of history and to his view of poetry and the
fine arts as the medium that connects the real world with
the ideal. His natural philosophy was neglected for a long
time because it was quickly discredited by the rapid pro-
gress in the natural sciences during the 19th century. This
positivist era, which dominated 19th century science, con-
centrated on rigorous experimental proof of scientific
theories and regarded speculative philosophy as an
abomination. A very recent comment by Hans Reichenbach represents similar opinions comparing the philosophies of Fichte, Schelling and Hegel to later developments in scientific philosophy.

The philosophical systems of the nineteenth century were constructed at a time when a better philosophy was in the making; they are the work of men who did not see the philosophical discoveries imminent in the science of their time and who developed, under the name of philosophy, systems of naive generalizations and analogies. Sometimes it was the persuasive language of their presentations, sometimes the pseudo-scientific dryness of their style, which impressed their readers and contributed to their fame. (Reichenbach, 122))

This negative reception was partly caused by the failure of Schelling's deductions from essentially metaphysical principles to agree with new experimental observations and partly by insufficient differentiation between Schelling's philosophy and the writings of his romantic followers. Schelling himself had intensively studied the natural sciences before 1800. The result of these studies were his first writings on nature philosophy that constitute the first independent stage in Schelling's development as a philosopher after an elaboration of

---

several problems from Fichte's transcendental philosophy. The most important works that formulate Schelling's philosophy of nature are:

Ideen zu einer Philosophie der Natur als Einleitung in das Studium dieser Wissenschaft. (1797).

Von der Weltseele, eine Hypothese der höheren Physik zur Erklärung des allgemeinen Organismus. (1798).

Erster Entwurf eines Systems der Naturphilosophie. (1799).

Einleitung zu dem Entwurf eines Systems der Naturphilosophie. (1799).

All of these works were written before 1801, when Schelling turned away from the principle of fundamental duality and began to develop his identity philosophy. While his earlier writings, Ideen and Weltseele, frequently quote current scientific research, Schelling's later nature philosophy diverges from empirical data and becomes more speculative. At this time the concept of a living organism begins to dominate Schelling's thinking as the true expression of the dynamic equilibrium in nature.

Problems of Nature Philosophy

Schelling's Ideen begins with an inquiry about the problems facing nature philosophy. He begins with the idea
of an original harmony between man and nature, which was
the leading concept of the distant past in Greek civiliza-
tion and became important in the romantic view of history.

Wie eine Welt außer uns, wie eine Natur und mit ihr
Erfahrung möglicherweise, diese Frage verdanken wir der
Philosophie, oder vielmehr mit dieser Frage entstand
Philosophie. Vorher hatten die Menschen im
(philosophischen) Naturstande gelebt. Damals war der
Mensch noch einig mit sich selbst und der ihn
umgebenden Welt. In dunklen Rückerinnerungen schwebt
dieser Zustand auch dem verirrtesten Denker noch vor.
Viele verließen ihn niemals und waren glücklich in
sich selbst, wenn sie nicht das leidige Beispiel
verführte; denn freiwillig entläßt die Natur keinen
aus ihrer Vormundschaft, und es gibt keine geborenen
Söhne der Freiheit. (SW I, 682)

Separation from this idyllic state occurs because
human spirit always strives for freedom as its true ele-
ment. This separation from the all-embracing nature is also
the beginning of philosophy, since only a thinking being
can reflect on itself and on its surroundings. Yet this
separation cannot be an end in itself for man realizes him-
self in constant activity. We have to ask questions about
the external world to demonstrate its connection to our
spirit and understanding.

Die Frage ist nicht, ob und wie jener Zusammenhang der
Erscheinungen und die Reihe von Ursachen und
Wirkungen, die wir Naturlauf nennen, außer uns,
sondern wie sie für uns wirklich geworden, wie jenes
System und jener Zusammenhang der Erscheinungen den
Weg zu unserem Geiste gefunden, und wie sie in unserer
Vorstellung die Notwendigkeit erlangt haben, mit wel-
cher sie zu denken wir schlichthin genötigt sind?
Denn als unleugbare wird vorausgesetzt, daß die Vor-
stellung einer Succession von Ursachen und Wirkungen außer uns unsern Geiste so nothwendig ist, als ob sie zu seinem Seyn und Wesen selbst gehörte. (SW I, 879-80)

This question wants to establish the relationship between our rationally constructed representations of the outside world and their objective validity. This new nature philosophy should be a system of insights that represents the sum of different acts of cognition. Nature is a totality that must be organized according to rational principles. This relationship concludes the introductory chapter to Ideen.

Denn wir wollen, nicht daß die Natur mit den Gesetzen unsern Geistes zufällig (etwa durch Vermittlung eines Dritten) zusammentreffe, sondern daß sie selbst nothwendig und ursprünglich die Gesetze unsern Geistes nicht nur ausdrücke, sondern selbst realisire, und daß sie nur insofern Natur sey und Nature heiße, als sie dieß thut.

Die Natur soll der sichtbare Geist, der Geist die unsichtbare Natur seyn. Hier also, in der absoluten Identität des Geistes in uns und der Natur außer uns, muß sich das Problem, wie eine Natur außer uns möglich sey, auflösen. (SW I, 705-6)

This famous statement deeply influenced the poets of the romantic period. For them these words implied the existence of a spiritual bond with nature. They did not identify spirit with an abstract concept of philosophy but with the presence of a soul. Through this sense of unity human emotions could find response in nature, and in return the emergence of this soul could be translated in images of the arts and in poetic language.
Ideen outlines basic problems that should be investigated by a philosophy of nature and considers various philosophical questions associated with the physical sciences. In his second book on nature philosophy, Von der Weltseele, Schelling continues to investigate these problems and produces an organized system of the inorganic realm of nature together with an inquiry in the equilibrium of polar forces in a living organism. This work establishes the dialectic method as the means to derive the fundamental principles acting in nature. It also postulates a metaphysical concept of the world soul that is the central core of Schelling's representation of nature.

Die Betrachtung der allgemeinen Naturveränderungen sowohl als des Fortgangs und Bestands der organischen Welt führt zwar den Naturforscher auf ein gemeinschaftliches Princip, das zwischen anorgischer und organischer Natur fluktuierend die erste Ursache aller Veränderungen in jener und den letzten Grund aller Thätigkeit in sich enthält, das, weil es überall gegenwärtig ist, nirgends ist, und weil es Alles ist, nichts Bestimmtes oder Besonderes seyn kann, für welches die Sprache eben deßwegen keine eigentliche Bezeichnung hat, und dessen Idee die älteste Philosophie (zu welcher, nachdem sie ihren Kreislauf vollendet hat, die unsrige allmählich zurückkehrt), nur in dichterischen Vorstellungen uns überliefert hat. (SW I, 415)

The book begins with a discussion of the principles of the real and the ideal in nature that represent the duality of existence. Since Schelling assumes that basic phenomena in nature can be derived by the dialectic method, this dis-
cussion leads to a deduction of a concept of matter from the principles of gravity and light. In Schelling's view principles that lead to the formation of matter are inherent in the human mind and confirm the unity of infinite and finite.

Schon der erste Blick in die Natur lehrt uns, was uns der letzte lehrt; denn auch die Materie drückt kein anderes, noch geringeres Band aus, als jenes, das in der Vernunft ist, die ewige Einheit des Unendlichen mit dem Endlichen. (SW I,428)

This eternal unity then leads to the necessity of formulating a connection or **copula** between the infinite and the finite.

Wir nennen diese Notwendigkeit, so lange bis wir etwa einen anderen Ausdruck derselben finden, das absolute Band, oder die Copula. (SW I,428)

At first Schelling defines gravity as the finite part of this bond that unites all objects, and time as the eternal element, "das an sich das Ewige ist" (SW I, 432). The connection provided by this bond makes possible the presence of a soul in any individual object.

Indem nach einer unvermeidlichen Notwendigkeit das Band des Ganzen auch das Wesen des einzelnen Ver- bundenen ist, beseelt es dieses unmittelbar; Beseelung ist Einbildung des Ganzen in ein Einzelnes. Als Beseelung wird es betrachtet, daß der Magnetstein das
Eisen, das Elektron\textsuperscript{2} leichte Körper an sich zieht; aber es ist nicht unmittelbare Beseelung, daß jeder Körper, ohne sichtbare Ursache, gleichsam magischer Weise, zum Centrum bewegt wird? (SW I, 432)

This soul represents an intimate connection to a higher level of existence, which manifests itself in common empirically perceived objects as a presence of an invisible force.

Gravity represents space and the bound state of things. A principle that opposes gravity and is connected to the ancient concept of world soul is light, the shining air or aether of the ancient Greeks.

Das Dunkel der Schwere und der Glanz des Lichtwesens bringen erst zusammen den schönen Schein des Lebens hervor, und vollenden das Ding zu dem eigentlich Realen, das wir so nennen. (SW I, 437)

Der beiden Principien ewiger Gegensatz und ewige Einheit erzeugt erst als Drittes und als vollständigen Abdruck des ganzen Wesens jenes sinnliche und sichtbare Kind der Natur, die Materie. (SW I, 439)

In general Schelling deduces these principles of nature philosophy according to the philosophical method of dialectics. In this case the negative principle of gravity opposes the positive principle embodied in the essence of light, Lichtwesen; the reciprocal interaction of both pro-

\textsuperscript{2} When Schelling mentions "Elektron" he is considering the electrostatic properties of amber. Electron is the Greek word for amber.
duces matter that is finite and real. Synthesis of the two opposing principles does not neutralize them but produces a product that is different from these original principles. In Schelling’s view the dialectic method is similar to a chemical reaction where two interacting substances produce a third. Schelling sets up many similar dialectic relationships in his construction of nature philosophy. In each case the positive principle comes to the earth from the outside, often it is the light. The negative principle is usually associated with the earth or with the properties of matter.

The three states of matter are defined by the interaction of the original principles and the copula with matter. The force of gravity expresses itself in solid state, light and matter produce the atmosphere, but the copula itself appears in the realm of gravity as water. This differentiation of natural phenomena in the physical world also follows Schelling’s doctrine of three levels or potencies. Among the forces active in the inorganic realm the first level or potency is magnetism, the second is electricity, and the third is represented by chemical reactions.

In the organic world the three potencies of the unfolding of the copula are plant, animal and man.

Das dunkle Band der Schwere ist in den Verzweigungen des Pflanzenreichs gelöst und dem Licht aufgeschlossen.
Die Knospe des Lichtwesens bricht in dem Thierreich auf.
(SW I,443)

The triad of the potencies is also repeated many times and constitutes an important unit in Schelling's construction of nature philosophy.

When Schelling investigates different levels or potencies in the inorganic world in the main text of Von der Weltseele he must clarify his concept of light. The properties and the true nature of light are of considerable importance in Schelling's nature philosophy since he establishes light as one of the original positive forces in nature. This light, however, comes from outside the earth. In this empirical world light is commonly produced in processes of combustion, i.e. by a chemical combination of the burning substance with oxygen. Schelling assumes that the so called vital air, or Lebensluft, is a compound of oxygen as the negative matter and light as the positive component. Therefore oxygen must be intimately mixed with that form of energy, which appears to us as light. This peculiar argument leads to the conclusion:

Was wir Licht nennen, ist nun selbst das Phänomen einer höhern Materie, die noch vielfacher anderer Ver-
bindungen fähig ist, und mit jeder neuen Verbindung auch eine andere Wirkungsart annimmt. In Licht, obgleich es das einfachste Element zu seyn scheint, muß nichtdestoweniger eine ursprüngliche Duplicität angenommen werden; wenigstens scheint das Licht der Sonne die einzige Ursache zu seyn, die alle Duplicität auf Erden anfacht und unterhält. (SW I,457-8).

This statement justifies the use of light as the positive principle in repeated dialectic derivations of basic forces found in nature and reinforces the concept of a general dualism in nature.

Opposing forces generally have a tendency to come to an equilibrium, and this tendency would eventually lead to a complete inertia in the entire world. To avoid this conclusion Schelling proposes a certain heterogeneous distribution of forces in any system of phenomena; there must be at least one body in each system that constantly renews the positive force. For example in our planetary system light is continuously generated by the sun. Schelling is not sure whether light is generated by the mass of the sun itself or by the sun’s atmosphere. He speculates, however, that there may exist atmospheres enveloping different systems in the universe.

Also steht die Atmosphäre jeder Sonne wieder mit der Atmosphäre eines höhern Systems in Berührung, und das ganze Licht, das durch die Welt sich verbreitet, ist das gemeinschaftliche Licht einer allgemeinen Welt-atmosphäre. (SW I,462)
Although Schelling also considers the possibility that only suns are able to collect the light from the entire universe and radiate it towards the planets, he assigns a special significance to atmosphere in his philosophy of nature. Atmosphere is the fluid medium that makes possible the flow of positive forces from the realm of the sun and the stars toward the earth. Only these positive forces can activate the negative forces associated with the earth. Schelling believes that this antithesis represents the general organization of the world.


This light that comes to us from the sun and the stars is an emanation of the absolute spirit, or, in a religious context, an emanation from God. This selection of the positive principle as coming to the world from the outside implies connections to mythological and religious symbolism. According to the bible, light is created first before the generation of the world. The spirit then is always an illumination from the outside.

When Schelling considers the interaction of light with the surfaces of different substances, he treats light
itself as a special kind of substance and not as a form of energy. It is interesting, that Schelling, who does not accept phlogiston as an imponderable or weightless liquid, nevertheless uses the concept of phlogiston as the negative of oxygen to illustrate duality in nature\(^3\).

Electrostatic phenomena had been known for a long time. Even in antiquity people noted that amber, when rubbed, has the power of attracting light objects. This property of amber gave name to the phenomenon itself and to its smallest modern component, the electron. Initially only small charges could be produced and electricity did not attract much attention until the 17th and 18th centuries, when devices were developed to generate and store larger amounts of electrical charge. Many experiments were performed, some of them as public performances. These experiments showed that there were two kinds of electricity. Objects charged with one kind of electricity repel each other, while two objects charged with different kinds of

\(^3\) The concept of phlogiston was developed in the 18th century to explain the changes occurring during combustion. At this time any characteristic of a substance, heat, color, etc., was attributed to a carrier, a special imponderable fluid. Substances rich in phlogiston burned easily and gave off phlogiston during combustion. This theory dominated 18th century chemistry until Lavoisier connected oxygen with combustion reactions and proved that burning substances take on oxygen. Phlogiston was still part of the chemical vocabulary, and some scientists identified hydrogen or "burning air" as phlogiston (Küppers, 121-125; see also Bernal II, 819-24).
charge tend to attract. Schelling starts with the premise that one kind of electricity cannot exist without the other, electric matter is a compound fluid, and it is a product of light matter and another still unknown form of matter. (SW I,503). With these assumptions he rejects Benjamin Franklin's hypothesis that positive charge indicates a surplus of electrical fluid, while a negative charge indicates a shortage of this substance\footnote{Franklin's assumption was essentially correct. Now modern physics associates negative charge with a surplus of electrons. Electron as one of the basic particles of matter carries the smallest unit of electric charge.}.

Since electrical experiments at this time dealt with static electricity, Schelling's speculations refer to charges of static electricity produced by friction. Schelling could not accept Franklin's hypothesis, because Franklin's explanation did not fit the dialectic pattern that Schelling imposed on nature. Following this general premise it is not surprising that Schelling found analogies between chemical and electrical phenomena.

Das Verbrennen ist eine totale Zerlegung in zwei absolut verschiedene Materien, zwischen welchen daher keine reale Entgegensetzung möglich ist. Das Elektrisiren ist eine partielle Zerlegung der Lebensluft, wobei die beiden elektrischen Materien als gemeinschaftlichen Bestandtheil das Licht erhalten. (SW I,508)
This special relationship between electricity and light allows Schelling to postulate that transparent substances are associated with positive charge and opaque substances with negative charge, a generalization that is at best spurious. Finally Schelling must admit that empirical data yield only an incomplete representation of the electrical forces in nature. He believes though that the positive principle associated with light, heat and electricity is one and the same. Moreover:

Versuche haben über den elektrischen Dualismus noch nichts Entscheidendes gelehrt. Ich glaube aber a priori zu wissen, daß in den elektrischen Erscheinungen ein Konflikt zweier Materien sich offenbart, deren Verhältnis ein höheres ist, als das zwischen Oxygene und phlogistischer Materie stattfindet, oder deutlicher, daß das Elektrisieren etwas ganz anderes ist als ein Verbrennen. (SW I, 519)

So far Schelling does not include the phenomena of galvanism in his discussion of basic principles that are revealed through electrical forces. Von der Weltseele was published in 1798 when galvanism was a very recent discovery. Galvani first observed this phenomenon in 1787 and Volta published his first results in 1795. In Germany galvanism was intensively investigated by J.W. Ritter who gave his first lectures and published the results of his experi-
ments in 1798\(^5\). In Jena Schelling became acquainted with Ritter and followed his experiments with great interest\(^6\).

In these discussions Schelling treats galvanism as a basically chemical phenomenon, and much of the observed activity is again attributed to oxygen. Later discussion of the basic principles governing living organisms also includes first references to galvanism in Schelling's work (SW I, 508). Schelling sides with Galvani and Humboldt in the controversy about the actual nature of galvanism and assumes that convulsions of the animal tissue in galvanic experiments are due to some inherent characteristic of this tissue. Volta believed that galvanism was caused by the different nature of metals used in these experiments\(^7\).

Schelling states that galvanic contractions are entirely due to a chemical changes in animal tissue. He declares that metal probes only activate forces that are latent in these organs and that they also stimulate opposing principles in muscles and nerves. In *System des transzendentalen Idealismus* Schelling indicates that galvanism, which

\(^5\)Ritter believed that galvanism was a universal force that existed everywhere in living organisms. Later he found that galvanic chains could be constructed without any living tissue and galvanism was found everywhere in nature.

\(^6\)Some of Ritter's discoveries concerning electricity are discussed in *Erster Entwurf*, (SW II, 161-67) and *Einleitung*, (SW II, 321).

\(^7\)Volta was right in this controversy, and Ritter's experiments later confirmed his conclusions.
according to Ritter's investigations, requires three heterogeneous elements before the circuit is activated, should be the bridge that connects inorganic and organic parts of nature. (SW II, 440).

Schelling and his contemporaries viewed magnetism as the one of the most elemental forces in nature. This force could exert its attraction through many material barriers, e.g. water, wood or paper. This elementary view was reinforced by the magnetic properties of the earth itself due to the high proportion of iron in earth's composition. Magnetic forces were known for a long time, and Gilbert wrote his treatise De Magnete in 1600. Magnetic forces represent another good example for the duality in nature, since a magnet shows a definite force field at each pole. Schelling assumes that magnetic polarity is established in the same way as electric polarity, i.e. an outside positive principle interacts with the magnet and excites its latent magnetism.

Wir werden also bei der magnetischer Erregung erstens ein negatives Princip im Magnet annehmen, vermöge dessen er mit der positiven Ursache des Magnetismus in dynamischer Gemeinschaft steht. Wo jenes negative Princip fehlt, wird sich gar kein Magnetismus offenbar. (SW I, 548)

Schelling admits that only a few substances in nature exhibit magnetic forces. These are iron, magnetic iron ore or magnetite, and cobalt and nickel. Very few experiments
have been performed that deal with these forces. Nevertheless magnetic force must be fundamental since it penetrates matter and appears to be stronger and more permanent than the electrical force. Schelling believes that earth's magnetism is excited by the light from the sun, and as such must obey the universal laws of polarity. In this deduction of the principles operating in magnetic substances he again postulates that an ideal or spiritual component must be a part of duality. As before, he assumes that this ideal component is light, and light constitutes the ideal principle in magnetic phenomena.

Schelling discusses tourmaline in connection with electricity in (SW I, 546-547), and in connection with magnetism in (SW I, 554-55)5. Tourmaline is an interesting mineral that exhibits unusual electric and magnetic properties. It can acquire these properties by uneven heating or pressure exerted across the crystal. Many experiments were
performed with tourmaline crystals without actually coming to a satisfactory explanation. Its properties were later found to be due to the crystal structure and complex chemical composition of this mineral. Novalis used the properties of tourmaline to collect the ashes of Mother in _Klingsohrs Märchen_. Using analogy Schelling proposes further experimental examination of gemstones and their electric and magnetic properties. For romantics the association of crystals and gems with primary forces in nature provided a symbolic image of deep significance, e.g. "Karfunkelstein" in the tales of both Novalis and Hoffmann.

Organic Nature

The last part of _Von der Weltseele_ is devoted to organic nature and to the organizational principles of a living organism. Schelling begins this discussion by setting up a chemical basis for the eternal cycle of life. He divides all natural chemical processes into two groups. Plant life is a continuous reduction process, and animal life is a continuous oxidation. In Schelling’s hierarchy of nature plants belong to a lower level of development and thus are assigned to a negative process of life. When Schelling deduces the opposing principles that govern animal life he follows the same dialectic pattern that he
used in the inorganic realm. The positive principle permeates the entire creation. It is not associated with any individual being, but belongs to the immeasurable or the absolute. The negative principle brings individuation to all living organisms, and this individuation is proportional to the level of receptivity in each organism. The negative principle defines the conditions for the life process but not its cause.

Die ganze Mannichfaltigkeit des Lebens in der ganzen Schöpfung liegt in jener Einheit des positiven Prin-
cips in allen Wesen und der Verschiedenheit des negativen Princips in einzelnen ... (SW I,571)

Schelling uses analogy to define atmosphere as a model for life processes in animals and water as a model for plant life. This choice is based on the presence of nitrogen both in the atmosphere and in animal tissues. Chemical processes involving hydrogen, oxygen and nitrogen define the equilibrium of oxidation and reduction reactions in nature. This explanation presents a highly simplified concept of chemical reactions in living organisms. In Schelling's time the science of organic chemistry did not exist, because neither philosophers nor scientists believed that organic substances could be synthesized in a laboratory. The composition of even simple chemical com-
 pounds was not clearly determined, and little was known about the complex structure of organic compounds and their
reactions. At least Schelling recognizes that a chemical equilibrium in the atmosphere is a necessary condition for life.

Chemical reactions alone are not sufficient to define the origin of organized systems or living organisms. To arrive at a concept of the life force Schelling considers a formative drive, Bildungstrieb, that acts only in organic matter. He asserts that this drive can be derived from nature's principles using the method of dialectics.

Anstatt also zu sagen, daß die Natur in ihren Bildungen zugleich gesetzmäßig und frei handle, können wir sagen, in der organisch Materie wirke ein ursprünglicher Bildungstrieb, kraft dessen sie eine bestimmte Gestalt annehme, erhalte und immerfort wiederherstelle. (SW I,585)

Since this drive determines the form that organic matter assumes, this formative instinct makes each organism an individual. The highest degree of individuality in a living organism is achieved at sexual maturity when the organism is ready to reproduce its species. For example, the highest individuation of a plant is expressed in its flower.

Nature cannot permanently sustain life in any individual organism. Once the organism loses its receptivity to the positive principle, which always comes from the realm of the spirit, life disappears and only dead matter is left.
Circulation of fluids is the positive sign of life, and the body depends on this circulation so that the necessary chemical reactions are maintained. The chemical composition of blood changes in each organ according to the stimuli characteristic of this organ. To explain the physiological differences between the organs through which the blood circulates Schelling again postulates a positive principle outside the body that sustains the capacity of different organs for the negative principle of life. This principle should not act uniformly on all organs, but it should give each organ a specific excitability.

So far Schelling has deduced various principles that govern life processes but he has not established the object of this investigation; the principle that determines the origin of life. To circumvent this dilemma he states that life is not a linear process, but a circular one; a sequence that continuously returns to itself so that it is impossible to decide, which of the processes actually initiates the entire sequence.

Jede Organization ist ein in sich geschlossenes Ganzes, in welchem alles zugleich ist, und wo die mechanische Erklärungsart uns ganz verläßt, weil es in einem solchen Ganzen kein Vor und Nach gibt. (SW I,817)

Schelling finally comes to the conclusion that it is the basic duality of all life processes that maintains the
equilibrium necessary for the existence of life. The investigation of the essence of life leads to the result that this essence cannot be found in any single force of life but in the free play of many forces. The original cause for the existence of this equilibrium is unknowable.

Da dieses Princip, als Ursache des Lebens, jedem Auge sich entzieht, und so in sein eigen Werk sich verhüllt, so kann es nur in den einzelnen Erscheinungen, in welchen es hervortritt, erkannt werden, und so steht die Betrachtung der anorgischen so gut wie der organischen Natur vor jenem Unbekannten still, in welchem die älteste Philosophie schon die erste Kraft der Natur vennuthet hat. (SW I,838)

This metaphysical principle is the world soul that Schelling postulated at the beginning of Von der Weltseele. Nature is an objectivation of the absolute spirit, but it is not created by the human ego. There are parallels in the unfolding of the organizing principle in nature and in the emergence of consciousness that ends in the attainment of self-consciousness. Then transcendental idealism becomes a philosophical system that is complementary to the philosophy of nature.

Poetry: The Bridge between the Infinite and the Finite.

Schelling's System des transzendentalen Idealismus examines the history of consciousness in three main epochs
or stages. In the first epoch the productive intuition again deduces matter. As the first step of the ego towards intelligence productive intuition constructs the physical world. In the second epoch the ego constructs space, time, causality and the organism as it proceeds from the productive intuition to reflection. The third epoch allows the ego to see itself as an object and to recognize itself as an intelligence.

For the romantic movement the most significant part of Schelling's idealist philosophy is its transition to aesthetic intuition and art as the perfect organon of philosophy. The basis of this development is the task that Schelling sets for his philosophy: to explain how the ego could become conscious of the original harmony between the subjective and objective (SW II, 805). For this task Schelling postulates an intuition of art, or Kunstan-schauung.

Die postulirte Anschauung soll zusammenfassen, was in der Erscheinung der Freiheit und was in der Anschauung des Naturprodukts getrennt existirt, nämlich Identität des Bewußten und Bewußtlosen im Ich und Bewußtseyn dieser Identität. (SW II, 812)

In the end only art as a product of genius is able to restore this lost harmony and reflect the identity of conscious and unconscious activities. This conception of aesthetics as the bridge between the infinite and the
finite clearly places poetry and the fine arts above the sciences and even above philosophy in Schelling's system of idealism. The purpose of the work of art is neither to please the senses nor to produce something useful. Morality and science both have a purpose so neither of them can produce works of art. In Schelling's opinion the sciences and the arts operate in opposite directions.

Denn obgleich die Wissenschaft in ihrer höchsten Funktion mit der Kunst eine und dieselbe Aufgabe hat, so ist doch diese Aufgabe, wegen der Art sie zu lösen, für die Wissenschaft eine unendliche, so, daß man sagen kann, die Kunst sey das Vorbild der Wissenschaft, und wo die Kunst sey, soll die Wissenschaft erst hinkommen. (SW II, 623)

Science can never achieve the same level as poetry or the arts since scientific discoveries can never fuse conscious and unconscious activities of the mind, and they can never be the work of a genius, which is the only true definition of a work of art.

When the roles of philosophy and poetry are examined further, the romantic element in Schelling's philosophy emerges clearly; nature reveals itself in aesthetic contemplation. Art is able to present the underlying unity of all existence that philosophy is not able to do, the

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8Schelling later changed his opinion about the relative value of poetry and philosophy. His *Phylosophie der Kunst* subordinates the arts to philosophy.
activity of the unconscious and its archetypal identity with the conscious.

Was wir Natur nennen ist nur ein Gedicht, das in geheimer wunderbarer Schrift verschlossen liegt. Doch könnte das Rätsel sich enthüllen, würden wir die Odyssey des Geistes darin erkennen, der wunderbar getäuscht, sich selber suchend, sich selber flieht; denn durch die Sinnenwelt blickt nur wie durch Worte der Sinn, nur wie durch halbdurchsichtigen Nebel das Land der Phantasie, nach dem wir trachten. Jedes herrliche Gemälde entsteht dadurch gleichsam, daß die unsichtbare Scheidewand aufgehoben wird, welche die wirkliche und ideale Welt trennt, und ist nur die Öffnung, durch welche jene Gestalten und Gegenden der Phantasiewelt, welche durch die wirkliche nur unvollkommen durchschimmert, völlig hervortreten. Die Natur ist dem Künstler nicht mehr, als sie dem Philosophen ist, nämlich nur die unter beständigen Einschränkungen erscheinende ideale Welt, oder nur der unvollkommene Widerschein einer Welt, die nicht außer ihm, sondern in ihm existirt. (SW II, 628)

In a discussion of Schelling's philosophy Julian Roberts thinks that this poetic passage does attempt to bring the physical world in the field of aesthetic interpretation, but in the end cannot transcend the limits of romantic contemplation of nature (Roberts, 144). It is true that Schelling following his own aesthetic philosophy uses poetic language to express what philosophy cannot define. Poetry here becomes the magic medium that connects the ideal world with the ideal. That is also one of the leading aesthetic ideas of romanticism.

Characteristic for the romantic mind is the return to the origins of philosophy and the sciences. At one time philosophy and with it the sciences separated from the
poetry and were nurtured by it in their infancy. Once these activities reach their perfection they should return again to this source as streams return to ocean. The model for this synthesis can be found in mythology.


It is interesting to note that this demand for a new mythology was already stated in "Das älteste Systemprogramm des deutschen Idealismus" This collaboration of Schelling, Hölderlin, and Hegel dates from 1795⁸. This program expresses the same view of aesthetics as one of the highest achievements of humanity.

Ich bin nun überzeugt, daß der höchste Akt der Vernunft, der, indem sie alle Ideen umfaßt, einästhetischer Akt ist, und daß Wahrheit und Güte, nur in der Schönheit verschwister sind. Der Philosoph muß eben so viel ästhetische Kraft besitzen als der Dichter.
Die Poesie bekommt dadurch eine höhere Würde, sie wird am Ende wieder, was sie am Anfang war - Lehrerin der

⁸It is not known which of the three friends is the author of this outline. Possibly all three participated in formulating the problems of Idealist philosophy. Ref. given here is to: Friedrich Hölderlin. **Werke. Briehe. Dokumente.** München: Winkler, 1877.
Menschheit; denn es gibt keine Philosophie, keine Geschichte mehr, Die Dichtkunst allein wird alle übrigen Wissenschaften und Künste überleben. (Hölderlin, 556-8)

In his philosophy of nature Schelling constructs a system that relies on metaphysical postulates to derive the dialectical pattern of principles that activate all dynamic processes in nature. This general concept is important in the romantic view of the world. Equally important are the concepts of a soul everywhere in nature. There is no evidence, however, that the intricate scientific details of these patterns found an expression in romantic literature. Although the image of nature that emerges from Schelling's philosophy is dynamic and constantly changing, it is also constricted by the rigid pattern of dialectics that reduces any phenomenon to an interaction of two opposing activities. The only important figure among romantics who has enough expertise to follow Schelling's arguments is Novalis, who does not see the same rigid patterns in nature. Novalis' principal fields of study were geology and mineralogy where clear examples of duality are hard to find. Nature's diversity in mineralogy is explored in sequences, a procedure characteristic of A.G. Werner's methods of classification. These methods of research significantly influenced Novalis' view of nature. In contrast electricity, magnetism and simple acid/base reactions are
good examples of duality although even here Schelling's interpretations are overly simplified.

Light for Schelling is an extremely important principle of the spiritual and ideal in nature, but there is no way of separating light as a basic principle in nature philosophy from light as an image from religion or mythology. Schelling says surprisingly little about galvanism, that was one of the truly significant discoveries of the age. The relationship between chemistry and electricity that was established by the early experiments of galvanism prepared the way for modern electrical technology and for new discoveries in chemistry and physics.

Schelling exerted great influence on the romantic movement through his conception of poetry and the arts as the bridge between the opposing principles of existence. The sciences are placed lower in Schelling's hierarchy of human activities because he does not believe that genius could be fully expressed in scientific discovery. The true field of activity for genius is art and poetry.
Johann Wilhelm Ritter and Romantic Physics.

No discussion of romantic nature philosophy would be complete without mentioning the work of Johann Wilhelm Ritter, the romantic physicist, and the only true experimental scientist among the early romantics. Ritter’s name is now practically unknown outside the circles of German science and literature in spite of the important contributions he made to the sciences of physics, chemistry and physiology. He was frequently pointed out as the sad example of a promising scientist led astray by the unrealistic speculations of the romantic "Naturphilosophen" in the 19th century, when positivism became the only acceptable philosophy of science. Only towards the end of 19th century Wilhelm Ostwald acknowledged Ritter's contributions to early research on electric currents and chemical activity. At present Ritter's scientific work is at least acknowledged among German historians of science, but there is also considerable interest in Ritter's contributions to the concepts of science in the romantic period. He was acquainted with most of the important literary figures in Jena and
Weimar, and his experiments attracted the attention of Goethe, Herder, Schelling and many others.  

Johann Wilhelm Ritter was born in 1776 in the small village of Samitz in Silesia. He was trained as an apothecary, and acquired a good practical training in chemistry and medicine from this apprenticeship. His position as an apothecary would have provided Ritter with a secure bourgeois existence, but from an early age he showed an extraordinary interest for the natural sciences, in particular for the current researches in chemistry and physics. Although practically without any financial support Ritter entered the university of Jena in 1796. In a very short time Ritter completed several important studies in chemistry that demonstrated his capability as an experimental and analytical scientist. In 1797 Ritter also carried out many experiments on galvanism and acquired a wide knowledge in this field. Luigi Galvani was a professor of anatomy in Bologna whose experiments were mainly anatomical and physiological. He had discovered in 1786 that specimens of the frog leg muscle exhibited convulsions

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10 Walter Wetzels has studied extensively Ritter's work and its place in romantic nature philosophy in Johann Wilhelm Ritter: Physik im Wirkungsfeld der deutschen Romantik. Some of the information given here refers to his work.
when touched by two different metal objects at the same time. Galvani believed that he had discovered evidence for a different kind of “animal electricity.” The only type of electricity known at this time was static electricity produced by friction. Elaborate friction machines had been developed in the 17th and early 18th century to produce electrical charges for experiments. Alessandro Volta, who was also conducting experiments with electricity at this time, believed that galvanism was simply a contact phenomenon between two different electrical conductors. Ritter wanted to explore the conditions under which galvanism existed and to demonstrate that galvanism is a central phenomenon in nature. In his first book *Beweis, daß ein beständiger Galvanismus den Lebensprozeß in der Natur begleite* Ritter considered three questions:

1) are galvanic phenomena possible in purely organic systems?

2) is galvanic activity always present?

3) is galvanic activity a phenomenon of life?

Most of the galvanic experiments used a galvanic chain of two metals (usually zinc and silver) and an organic specimen. Ritter postulated that there must be three elements to constitute a galvanic chain and at least one of them must be a fluid. He thought that these conditions were best represented inside a living organism, and that all
living organisms were systems of many galvanic chains. In his own words:

Aber wo sind diese Bedingungen bestimmter, häufiger und mannigfaltiger erfüllt als — in dem lebenden tierischen Körper?
Überall daselbst finden sich die geforderten drei Heterogenitäten. Wo ist eine Muskelfaser ohne Nerven und Flüssigkeiten mancherlei Art, wo irgend ein Teil im Körper, der nicht zu-, nicht abführende Gefäße, gefüllt mit verschiedenen Feuchtigkeiten, enthieelt? In welcher Verbindung stehen denn Muskeln, Nerven, Gefäße, Zellgewebe, Blut u.s.w. miteinander? Sind sie nicht lauter beständig geschlossenen Ketten? ... Ein jeder Teil des Körpers, so einfach er auch sei, ist demnach anzusehen als ein System unendlich vieler unendlich kleiner galvanischer Ketten, denn man kann teilen bis ins unendliche, und immer noch werden Teile ähnlich (in dieser Rücksicht) dem Ganzen erscheinen. Solche Systeme aber treten nun wieder als Glieder in höhere Ketten, diese sind Glieder noch höherer und sofort bis zur größten, die die übrigen all umfaßt .... Was steht demnach fester, was ist stärker begründet, als der Beweis, daß ein beständig der Galvanismus den Lebensproceß in dem Tierreich begleite. (Beweis, 157-9)11

Ritter even speculated that dead organisms could be brought back to life through galvanic action (Wetzels, 23).
These were ideas that particularly interested Novalis and found an expression in the "galvanic" miracles of Klingsor's Fairy Tale.

Ritter was also considering galvanic systems in inorganic nature. If he could prove that the same principles were valid in organic and inorganic nature then all of nature could be considered as a unified system obeying the

11 This work is quoted from excerpts published as Entdeckungen zur Elektrochemie, Bioelektrochemie und Photochemie.
same natural laws. This was the same concept as Schelling's philosophical deduction of nature as an organized totality. From the romantic point of view one could say that there existed a form of life in inorganic substances, and galvanism as the underlying life force could be viewed as an expression of an organizing principle in nature. Ritter was able to prepare galvanic chains that consisted entirely of inorganic elements, but in these cases the electrical activity occurred simultaneously with chemical reaction. He had to conclude that galvanic sequences in inorganic systems resulted in chemical changes instead of muscle contractions, which characterized systems that included test specimens of organic tissue. He summarizes his observations as follows:

Und so hätten wir wirklich, was wir anfangs suchten, nämlich Bestätigung des Satzes, daß auch in der anorganischer Natur bei dem Übergang einer Reihe miteinander in Verbindung gesetzter leitender Individuen gewisser Qualität zur Kette - beim Übergang der Linie in die Figur - eine Wirkung eintrete, die fortdauert, so lange jene Bedingung fortdauert, und mit Aufhebung derselben ebenfalls aufhört; daß diese Wirkung dieselben Gesetze befolgt wie die, welche wir bisher Galvanismus nannten, und also an dieselben Bedingungen gebunden, denselben Gesetzen folgend, wohl in beiden Fällen ein und dasselbe sei, kurz, daß der Galvanismus, was wir unter ihm verstanden haben, kein ausschließliches Eigentum der organischer Natur, daß er auch in der anorganischer Natur gegenwärtig sei; und die Folge wird lehren, welche Menge chemischer Erscheinungen allein ihm ihre Existenz verdanken... (Entwicklungen, 53) .
As a result one of Ritter's most important contributions to physics and chemistry was the experimental demonstration that galvanic electricity was produced by chemical reaction. In particular Ritter observed and measured the galvanic action of different metals and arranged them in a series of increasing activity. He found that this series could be related to another sequence where these same metals were arranged according to their ease of oxidation\textsuperscript{12}. In this respect Ritter can be considered as the father of electrochemistry (Entwicklungen, 48). It was well known by this time that oxygen supported life processes in the animal world and was also known as "Lebensluft" by chemists and nature philosophers. Schelling, in particular attributed a significant role to oxygen in both chemical and electrical processes. It was an important result for romantic nature philosophy that oxidation, i.e. a chemical combination with this life-giving substance was related to galvanism, and both chemistry and physics in the inorganic world could be related to life processes in the organic world.

Obviously Ritter's ideas about electricity and magnetism brought him to the attention of the Jena

\textsuperscript{12} For example, zinc would readily burn in the air and produce an oxide while gold would resist oxidation under practically all experimental conditions known at that time.
romantics, who saw in Ritter's work the empirical foundation for their philosophy of nature. Here was the invisible force, which could approximate Schelling's idea of the world-soul, Weltschöpfung, the fundamental principle of the whole universe. Schelling later used some of Ritter's research to support his own hypotheses although Ritter did not always agree with Schelling's interpretations and many times complained about Schelling's speculations, which in Ritter's opinion, went far beyond the observed facts (Entdeckungen, 14-15). In Novalis, however, he found the understanding and support he sought, and Novalis left a lasting impression on the young scientist. In turn Ritter's experiments provided the empirical background for Novalis' concepts of electricity and magnetism and were the inspiration for the magic transformations carried out by Fabel in Klingsohr's Fairy Tale. Novalis' death in 1801 affected Ritter deeply. By this time the other Jena romantics were also scattered in different directions. During his last years in Jena Ritter became close to J. G. Herder and his family and came under Herder's influence in philosophical questions. Ritter was also well acquainted with Goethe, and many times showed him his experiments. Goethe admired Ritter's extensive knowledge in physics but had some reservations about him as a person. (Entdeckungen, 8-9).

In his Jena years Ritter also formed close friendships with Gotthilf Heinrich Schubert and with the Danish
physicist Hans Christian Oersted, who, ten years after Ritter's death, succeeded in demonstrating the relationship between electricity and magnetism that Ritter had not been able to establish. The years in Jena were the most successful and happiest for Ritter. He was publishing extensively in the scientific journals at home and abroad. His knowledge in physics was widely admired in Jena and Weimar. He followed attentively the work of Volta, and constructed his own version of Volta's galvanic battery, which consisted of a series of copper and zinc plates separated by leather or cardboard soaked in a conducting salt solution. With this battery Ritter traveled widely and conducted lectures and demonstrations of his latest discoveries. During the 18th century electricity and magnetism provided popular entertainment at the court and in the salons of the emerging educated middle class. Many educated people were intrigued with the experiments, which exhibited these mysterious invisible forces. In addition the age of reason stimulated scientific research, and new discoveries were frequently reported in scientific journals. The most notable developments in science and mathematics took place in France. Ritter's friend Oersted attempted to acquaint the scientific world, especially the scientific community in France, with Ritter's accomplishments. As a result, in 1803 Ritter was invited to compete for the Galvani Prize,
which had just been established by Napoleon. Unfortunately the experiments Ritter devised for this competition failed. One of his hypotheses, which he had to prove experimentally, postulated magnetism as a phenomenon that stands in a reciprocal relationship to electricity, a general relationship proposed by Schelling in his *Von der Weltseele* and *Entwurf*\(^\text{13}\). The other proposition considered the electric polarity of the entire earth. Starting with this hypothesis, Ritter wanted to demonstrate that there exists a phenomenon analogous to the earth's magnetism, and that the earth has well-defined positive and negative electric poles. Ritter's experiments were supposed to indicate the location, or at least the general direction, of these poles.

Scientific exploration of the principles of romantic nature philosophy were not always unsuccessful. The principle of duality proposed by Schelling in his *Von der Weltseele* influenced Ritter's discovery of ultra-violet radiation. When Herschel found the infra-red region next to the visible red light, Ritter demonstrated the existence of another active region on the other side of the violet region. He showed that there was a chemically active com-

\(^{13}\text{This relationship is discussed in *Von der Weltseele* (SW I, 548).}\)
ponent of light by exposing a strip of paper saturated with silver chloride to a beam of light passing through a prism. (Entdeckungen, 117-27) As in a modern photographic film, silver produced by light’s action on the silver salt darkened the paper. Ritter observed that this darkening was most intense in the blue-violet end of the spectrum and extended several inches beyond the violet, where no light was visible to the human eye. Goethe, who never accepted Newton’s theory of light, dismissed Herschel’s and Ritter’s discoveries (Wetzels, 32-34)

Although Ritter did not receive the Galvani prize Ritter’s name became well-known in Germany, and many students, among them G.H. Schubert, came to Jena to meet Ritter and to hear Schelling’s lectures on philosophy. Yet in spite of all his accomplishments Ritter had only the official standing of a student in Jena. Ritter’s personality probably contributed to his many problems. He was an autodidact and a loner who avoided lectures and spent all his time conducting experiments. He refused to comply with university regulations and to take his examinations. He probably was acutely conscious of his lack of knowledge in language, literature and philosophy, which formed the basis of university education. At the same time he tried to get permission to hold lectures on galvanism without completing his degree. Finally he was allowed to hold several lec-
tures, but did not receive an appointment to a secure an academic position. There exist several reports about Ritter's irregular way of life (Wetzels, 29-31). As soon as he obtained any money it was spent for experimental materials, or, in his high living periods, for drink. Thus Ritter's way of life oscillated between the extremes: days and weeks of continuous experimentation followed by a few days of dissipation. He owed money everywhere in Jena, and had no hope of repaying his debts. Many times he escaped complete disaster only because of the financial help of his friends.

In 1804 several scientists attempted to find a position for Ritter. Finally, due to considerable efforts by the nature philosopher Franz von Baader, Ritter was invited to accept a position in Munich. Schelling also arrived in Munich a short time later. Baader had been inclined to mysticism for some time, and Schelling had turned away from experimental science to speculative nature philosophy and to mysteries of the unconscious. These three men then became involved in experiments that bordered on the occult and therefore were ridiculed by the new generation of scientists. Wetzels mentions that the collaboration of Schelling, Ritter, and Baader was ironically referred to as the "transcendental triumvirat." (Wetzels, 44)

In 1806 Ritter published a collection of his scientific articles as Physisch-Chemische Abhandlungen in
chronologischer Folge. At the same time he attempted to write about his conception of the arts and the physical sciences, about his interpretation of the history of human progress and about the position of man in nature.

Ritter's nature philosophy follows the outline already sketched out by Schelling, Novalis and Herder with a few differences. Ritter uses the inductive method in contrast to Schelling, and points out the dangers of scientific speculation.

Wenn es denn also nichts hilft, Hypothesen auf Hypothesen zu häufen, wenn echte Wißbegierde durch kein Etwa, kein Vielleicht, kein Es-wäre-möglich, Es-könnte-sein, befriedigt werden kann, so werden wir uns bloß an die Erfahrung halten dürfen, um jenes Ziel zu erreichen. Bloß an ihrer Hand werden wir glücklich gehen; verlassen wir sie aber, überlassen uns den Flügeln unserer Einbildungskraft, so mögen wir zwar angenehm träumen, aber desto unangenehmer erwachen. (From Beweis, Entdeckungen, 14)

Ritter considers science and especially physics as the highest of the arts. The slumbering consciousness in nature is awakened by scientific investigations, e.g. by experiments on electricity and magnetism. This coming to consciousness in nature occurs simultaneously with the gradual unfolding of the human potential towards its spiritual goal. In Ritter's view scientists are leading humanity to a new community with nature.

He uses the metaphor of fire to describe the most important processes in nature: the processes of burning,
which produce fire and heat, other oxidation processes or the hidden "dark fire," and finally electricity, which produces heat and bright sparks. The scientist is the new Prometheus, who brings this fire and all its benefits to humanity. In contrast to Novalis, who wanted to imbue the sciences with poetry, and to Schelling, who saw in the arts the closest approach to the infinite, Ritter saw in physics the culmination of all human activities. For him physics points to the future and combines in a unique way the transformation of nature and man. Wetzel's (p.48) is surprised that Ritter's discussion of the arts (Künste) does not include poetry. Considering his close association with Novalis, the Schlegel brothers and other romantics this omission is indeed surprising.

In his Munich period Ritter became interested in phenomena, where science could not be clearly separated from the occult, the dark or night side of the sciences popularized by Ritter's friend G.H. Schubert. Ritter conducted experiments with a dowsing rod together with the Italian Campetti, who presumably could locate not only water but also metals and minerals deep inside the earth. In terms of romantic nature philosophy these powers constituted another form of nature's language and another way to many new discoveries. The Munich triumvirat together with Campetti also conducted experiments with a pendulum,
which was suspended above various objects or body parts. Again it was assumed that some individuals had a particular sensitivity to the forces of nature. When they held the pendulum, it responded by moving and describing circles or ellipses. It is known that Goethe also heard of these experiments and possibly tried them out himself. In his *Wahlverwandtschaften* such pendulum experiments demonstrate Ottilie’s closeness to the forces of nature (Wetzel, 49). Eventually these pendulum experiments became a very popular form of parlour entertainment similar to the present day Quija board. Many people, including Ritter, believed that the motion of the pendulum could give answers to all kinds of questions, even predict the future. According to Wetzel, Ritter believed that the motion of the pendulum was an expression of Novalis’ magic idealism. Of course, Ritter’s aim in these experiments was not to contact the spirits of the dead. He sincerely believed that both earth and man are analogous electrical systems, and that swings of the pendulum were caused by electrical forces as an indication that these two systems influence each other. At this time Ritter also founded a new journal, *Der Siderismus*, which was dedicated to the latest experiments in galvanism. The title of the journal is typical of the latter-day romantic nature philosophy; it indicates a connection between the galvanic phenomena on the earth and
those of the stars and planets. Der Siderismus only had one issue, partly because Ritter's views were now attacked by other scientists and partly for financial reasons. This criticism could not convince Ritter that he had strayed from the proper path of a scientist, but lack of financial support led him back to galvanism.

In Munich Ritter continued to conduct experiments on the electro-physiological effects in frogs and also in plants, e.g. minosa pudica. His observations were considered valid over 100 years later. Here Ritter followed the romantic hypothesis that plant and animal life form parallel series in nature that complement each other. So far many experiments had been conducted with animal tissue, especially frog muscle, but it had been difficult to demonstrate any response to outside stimuli among plants. That such a response should be observed in galvanic experiments was for Ritter another justification for the thesis that all systems in nature are represented by galvanic

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(i.e. electrical) phenomena and thus express the true lan-
guage of nature.

In 1809 Ritter published his *Fragmente aus dem
Nachlasse eines jungen Physikers. Ein Taschenbuch für
Freunde der Natur*. This book was mainly autobiographical,
and, in the best romantic literary tradition, included
fragments on various topics mainly on the natural sciences.
Naturally, Novalis' collection of fragments comes to mind,
and undoubtedly Ritter wanted to emulate his friend. More-
over, Ritter was supposed to have some of Novalis' manu-
scripts, which were later lost. There are even speculations
that some of Ritter's fragments really belong to Novalis,
but these are probably unjustified, since Ritter's style
frequently bordered on the confusing and obscure. Ritter
dedicated the Jena period of his autobiography to Novalis,
Herder and his wife. By the time Ritter wrote this life
story of a fictitious dead friend, he must have often felt
close to death. He was ill, completely destitute, and
alone. His usual financial irresponsibility combined with
increasing family obligations (by then Ritter had four
children) and the uncertainties of the Napoleonic wars had
led Ritter to the utmost need and misery. He was forced to
sell most of his books and to send away his family in the
care of G. H. Schubert and some distant relatives. The use
of alcohol and opium had also contributed to the destruct-
tion of his health. When some attempts were finally made by the Academy in Munich to help Ritter, it was already too late. Ritter died on January 23, 1810 at the age of 34.
CHAPTER II

NOVALIS; POET, SCIENTIST AND THINKER

Novalis is one of those writers of the romantic period whose works express the ideas of romanticism in an unusually complex way. Long adored by readers who found echoes to their longings in Novalis’ *Hymnen an die Nacht* and to their religious feelings in his spiritual songs, Novalis now is acknowledged as a man of independent philosophical thought and as an able scientist who followed the latest scientific publications far beyond the requirements of his employment with the Bureau of Mines in the state of Saxony.

Novalis’ philosophical ideas on science and nature that illuminate his conception of the world were neglected for a long time. The collection of fragments that constitute the major part of his philosophical and scientific work was not published in its entirety until the historical-critical edition edited by Paul Kluckhohn and Richard Samuel\(^1\). This was partly due to partly to the

\(^1\) Vol. 1 appeared in 1960, vols. 2 and 3 with the theoretical material in 1965 and 1968 respectively.
reception history of Novalis work. For a long time Novalis was known as the epitome of the romantic poet, a visionary mystic, and dreamer with only a tenuous connection to the real world. This picture of Novalis was due partly to the so-called "Tieck Legend" (Uerlings, 1) and Heine’s comments on Novalis in his Die romantische Schule.

Two early collections of fragments were published while Novalis was still living: Blüthenstaub in Athenäum in 1798, and Glauben und Liebe in Jahrbücher der Preußischer Monarchie also in 1798. Since Prussian king reacted unfavorably to the ideas of monarchy expressed in Glauben und Liebe these fragments remained buried in the pages of Prussian Yearbooks. Other literary works by Novalis: poems, fairy tales and the novel fragments Die Lehrlinge zu Sais were edited by Novalis' friends Friedrich Schlegel and Ludwig Tieck and published shortly after the death of the poet as Schriften in two volumes, Berlin 1802. Heinrich von Ofterdingen was published separately in 1802.

The first significant study of Novalis was that of Dilthey, who investigated the aspects of Geisteswissenschaften in Novalis' writing and dismissed the fragments regarding the natural sciences as insignificant.

Several incomplete collections of the fragments were published in the early 20th century, but at that time most

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critics were interested in the mystical side of Novalis. K.J. Obenauer carried out a detailed study of Novalis and, especially, *Klingspor's Märchen* connecting many of the events and figures in this tale to the influence of Jakob Böhme and other mystics. One important early study considering sciences was Käte Hamburger's *Novalis und die Mathematik*. Studies of Novalis' fragments and notebooks increased significantly after the publication of the historical-critical edition of *Novalis: Schriften*, edited by Paul Kluckhohn and Richard Samuel, which was published 1980-753.

Most of the recent studies of Novalis deal with the fragments either as the main topic or as a supplement to literary work. Because Novalis' interests were so varied, these collections of fragments provide a rich source for research. Still the majority of critical studies deal with Novalis' relationship to various topics connected either to idealist philosophy, to Novalis' concept of poetry and language, and to other dominant themes of German romanticism. Hans-Joachim Mähl investigates the topos of the "golden age" that is prominent in Novalis' work as a return to the original harmony. Novalis' Fichte studies and the ethical problems in fragments and literary works are studied by

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3A fifth volume, *Materialien und Register* was added in 1988.
Géza von Molnár⁴, the magic idealism by Volkmann-Schluck. On his ideas about language and poetry there are important books and articles by Paul Kluckhohn, Jurij Striedter, and Axel Goodbody; on his interests in the natural sciences and medicine we have studies by John Neubauer, Peter Kapitza, Ulrich Gaier, Johannes Hegener, and Dennis Mahoney. These investigations deal mainly with well-defined special topics. Neubauer considers mainly Novalis' views of medicine and illness. He claims that Novalis was never successful in his attempts to synthesize the different aspects of philosophy, science and poetry in his work (Uerlings, 170-1). Striedter's detailed structural analysis of the first fragment of Lehrlinge zu Sais indicates that this fragment is an intricately structured unit that describes the path of the apprentice. Gaier concentrates on a detailed interpretation of Lehrlinge zu Sais in terms of a seven part structure, which, according to Gaier, is connected to basic numerical structures of Western mysticism. Kapitza investigates various aspects of chemistry at the end of the 18th century and the meaning of these aspects for the romantics. The most general study, Hegener's Poetisierung der Wissenschaften, deals with the development, Entwicklung, of world and humanity as represented by a poetic transformation of

⁴Molnár's Romantic Vision. Ethical Context follows Novalis' development as a poet, his ethical perspectives, and connections to Western Mysticism.
the sciences. Only two interpretations of Klingsohr's Märchen by Wetzel and by Esselborn deal entirely with the scientific elements of this tale. Another interpretation, by Johannes Mahr, sees this tale as "Übergang zum Endlichen," a poetic representation of the transcendental.

Several articles and introductory chapters in Novalis: Schriften by Gerhard Schulz follow Novalis' studies in the natural sciences and discuss his career in the service of the Bureau of the Mines for the state of Saxony. Useful introductory articles on Novalis' work and information on nature philosophy and the sciences is presented by Hans-Jürgen Balmes in the third volume of the Hanser edition\(^5\).

Novalis research up to the present is summarized by Herbert Uerlings\(^6\). This extensive and thorough study includes a critical survey of the Novalis reception 1800-1945, a survey of the theoretical work and its critical evaluation including the philosophy of nature, a survey of research on Novalis' literary work and Novalis philosophy of history and his political thoughts. Uerlings also includes an extensive bibliography that is very helpful for any students of Novalis\(^7\).


\(^7\)Uerlings, 629-98.
Although Novalis research has been active in the years since the publication of the critical edition not much work has been done in the physical sciences (Verlings, 164). Since my own expertise lies in the field of chemistry and physics, I intend to follow in detail physical phenomena that have a special significance for Novalis. Novalis' fragments provide interesting information on his thoughts concerning these phenomena from both scientific and philosophical point of view. His ideas on the role of experiment and the role of the scientist are quite in agreement with accepted scientific practices. These fragments add to the interpretation of images and metaphors in Novalis' writing, e.g. in the evaluation of galvanism and oxidation and their role in the Poetisierung der Wissenschaften. The elements of science and nature philosophy in Lehrlinge zu Saiss and Klingsohrs Märchen are interpreted by comparison with the fragments dealing with these topics.
Nature Philosophy in the Fragments of Novalis

Novalis' interest in natural sciences and nature philosophy was stimulated by his studies at the mining academy in Freiberg in preparation for a position with the Saxon salt mines, where his father was also employed. In his notebooks and fragments written before this time nature is still an abstract concept, somewhat along the lines of Fichte's philosophy. Differences of opinion, however, appear quickly, as Novalis attempts to find a relationship between the natural sciences and Fichte's Wissenschaftslehre:

... und alle unsere Wissenschaften sind VerhältnißWissenschaften. Alle Wissenschaften ruhen auf der einfachen Wissenschaft - dem einfachen - synthesirenden Satze - Ich. (NS III, 56)

From the very beginning Novalis could not accept a simple one-dimensional relationship between the individual and the world implied by the positing of Ich and Nicht-Ich, which constitute the foundations of Fichte's Wissenschaftslehre.

Die Wissenschaft fängt nicht mit einem Antinom - Binom - sondern mit einem Infinitom an. (NS III, 432)

In this aspect Novalis' image of the universe was much closer to that of Goethe, who saw nature as a complex
organism instead of a philosophical abstraction defining opposite fields of interaction. This model of a connected multi-dimensional nature remained an important part in Novalis' nature philosophy until the end. As he learned more about natural phenomena his view of nature became more complex but also more systematic. Human consciousness and ability to reason in Novalis' opinion determine any interpretation of nature:

Der Mensch ist diejenige Substanz - die die ganze Natur unendlichfach bricht - i.e. polarisiert. Des Menschen Welt ist so mannichfach, als er mannichfach ist. Die Welt der Thiere ist schon viel ärmer - und so herunter. (NS III, 92)

The complexity of each individual being determines its model of nature and the world. If a human being has a relatively complex view of the world, then a superior being on a higher level of existence would have a view that is even more complex and so on approaching infinity. Mathematics follows this principle as higher members of a series tend towards infinity; the same can be said about philosophical reflection that can be continued exponentially until it approaches its limit in the Absolute. One could argue that in this case the entire reflection sequence is subsumed in the transcendental Ego, which is the synthesis of all operations. Novalis obviously thought that little insight could be gained by this argument. For the individual self a model of nature as a complex system of many sequences,
which could be integrated by the activities of human consciousness to form a totality, is a more advantageous starting point for either the philosopher or the scientist. Novalis' fragments and notebooks provide interesting information on his thoughts concerning these phenomena from a philosophical or scientific point of view. In this way the fragments add to the interpretation of images and metaphors in Novalis' writing, e.g. in evaluating the significance of galvanism and oxidation. In addition I have investigated certain general topics that have a special significance in Novalis' view of nature, such as nature's language, contact or Berührung, his concept of the role of the series in nature, of accidental events, or the dynamic relationships of poetry, science and philosophy.

Only the first collections of Novalis' fragments; Blüthenstaub and Glauben und Liebe, were organized for publication by the author. These collections show only a limited interaction with the problems of science and nature philosophy. They belong to the period when Novalis was primarily trying to come to terms with idealist philosophy as indicated by his Fichte studies and the studies of Kant and Hemsterhuis. Topics of these early collections of fragments are important for the formulation of the romantic movement and its representation in literature. Glauben und Liebe is a highly idealized view of the monar-
chy, where the ruling couple has the obligation to serve as the model of moral behavior for their subjects.

The romantic movement in its early years, as represented by Friedrich Schlegel and Novalis, was primarily concerned with the relationships of man, nature and art in terms of idealist philosophy, and with the connection of an individual in the real world to the Absolute. When Novalis states in the first fragment of Blüthenstaub: "Wir suchen überall das Unbedingte, und finden immer nur Dinge." (NS II, 412), then he is stating the difficulty of approaching the absolute from the world of objects, or to find the connection of singular object or fragment to the totality. Art and poetry are the mediating links in this quest for the ideal because they can suggest the ideal and the infinite through images and sounds that interact with our limited physical senses. These senses communicate between the inner world of the soul and the real world of objects. Novalis explores the significance of these two worlds for the individual self. Sometimes it appears that the inner subjective realm dominates Novalis' thoughts and feelings. In Blüthenstaub we also find the much quoted sentences:

Nach innen geht der geheimnisvolle Weg. In uns oder nirgends ist die Ewigkeit mit ihren Welten – die Vergangenheit und Zukunft. Die Außenwelt ist die Schattenwelt – Sie wirft ihren Schatten in das Lichtreich. (NS II, 419)
This statement is supposed to demonstrate Novalis' turn inwards towards a narcissistic subjectivity. Yet only a few lines later this trend to subjectivity is modified as it undergoes a reflection:

Der Sitz der Seele ist da, wo sich Innenwelt und Außenwelt berühren. Wo sie sich durchdringen - ist er in jedem Punkte der Durchdringung. (NS II, 419)

The importance of a harmonious equilibrium between the two spheres of experience is clearly stated a few pages later:

Selbstentäußerung ist die Quelle aller Erniedrigung, so wie im Gegenteil der Grund aller ächten Erhebung. Der erste Schritt wird Blick nach Innen, absondernde Beschauung unsers Selbst. Wer hier stehn bleibt, geräth nur halb. Der zweyte Schritt muß wirksamer Blick nach Außen, selbstthätige, gehaltne Beobachtung der Außenwelt seyn. (NS II, 423)

This view of the external world as a field of activity is quite consistent with the transcendental philosophy. Activity in nature also includes scientific observation, correlation of these observations, and formulation of a model that represents this external world. This representation is very important both for the understanding of nature and of the self:

Deutlich wird etwas nur durch Repräsentation. Man versteht eine Sache am leichtesten wenn man sie repräsentiert sieht. So versteht man das Ich nur insofern es vom Nicht-Ich repräsentiert wird. Das
This mutual interaction of the self and the external world, acquires new dimensions when Novalis begins his scientific studies at Freiberg in December of 1787. Most of the material directly connected to this period is compiled in Freiberger Naturwissenschaftliche Studien 1798/99. These studies combine lecture notes and excerpts from contemporary scientific books and journals with Novalis’ own opinions about the philosophical implications of some of these theories and experiments. The Freiberg faculty at that time included several noted scientists, e.g. A. G. Werner in mineralogy and W. A. Lampadius in chemistry. They provided a good introduction to both practical studies of mineralogy and mining and to the latest developments in European science of the late 18th century. This was a very active period both in experimental and theoretical sciences, fostered by the ideas of the Enlightenment and the increasing prosperity of the middle class. Newton’s laws of mechanics revolutionized physics, and the formulation of differential and integral calculus by Newton and Leibnitz led to the differential equations of Laplace and other mathematicians. Chemistry was developing from a collection of old recipes for preparation and purification of different materials into a science based on measurement
and systematic experiment. The topics of galvanism, oxidation, and the theory of physiological stimuli were hotly debated in the universities and intellectual gatherings everywhere in Europe. These topics also became an important part of the romantic nature philosophy. Attempts were made to find an underlying principle of unity in the diverse phenomena of nature. In magnetism, galvanism, and many chemical reactions these phenomena could be interpreted as an interaction of opposite forces. This principle of polarity then became one of the fundamental concepts of Schelling’s nature philosophy. Novalis’ Freiberg fragments deal with some of these topics, but mainly they are study notes that were never intended for publication. These notes are significant in so far as they indicate which natural phenomena stimulated Novalis to further reflection and provided material for an interpretation of nature in terms of romantic philosophy. It is apparent that Novalis’ study of the natural sciences extended far beyond the requirements of his career. He had a genuine interest in the scientific accomplishments of the period, and he also wanted to integrate these with the knowledge of the past. This great synthesis of knowledge for Novalis represents the entire history of nature.

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Gerhard Schulz, in his introduction to Freiberger Fragmente, (NS III, 3-33), gives a detailed description of the available manuscripts from the Freiberg period and their dating.
During this time Novalis also worked on two different groups of fragments now listed in *Schriften* II as *Vorarbeiten zu verschiedenen Fragmentsammlungen*, 1798, and *Das Allgemeine Brouillon*, 1798/99. *Das allgemeine Brouillon* is the most important source for Novalis' views on science and nature. Inspiration for this work came from Novalis' contact with A. G. Werner at the Freiberg academy and from Werner's work on an encyclopedia devoted to mineralogy. Novalis interests were much wider. He did not want merely to collect and classify miscellaneous data from various sciences, but to find the basic connections that demonstrate the underlying unity of all sciences and all natural phenomena. Studies of mineralogy and the external characteristics of minerals (*Oryktognosie*) stimulating Novalis to a new examination of the relationships between external and internal properties in the physical world.

Novalis also considered the meaning of experiment and the correct procedures of observation. At the same time these fragments include comments on language and poetry in nature. Poetic principle for Novalis is the connecting medium that brings to life the world of objects and reveals

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\# One of the subjects taught by A. G. Werner at the Freiberg Academy was *Oryktognosie*, a study of the various external characteristics of minerals. Before reliable chemical methods were developed for the analysis of rock and mineral samples a good knowledge of these characteristics was indispensable to a practicing mineralogist during field surveys. Novalis' first significant assignment was to carry out and report the results of such a survey.
its relationship to spirit (Geist). The natural sciences are simply another field of knowledge that must be poeticized and romanticized, i.e. brought in contact with other fields of experience. In addition to this poetical transformation Novalis also combines 18th century discoveries with themes from the nature philosophy of earlier times. In particular he plays with images of nature from alchemy, astrology, and cabbalistic magic in an attempt to form a romantic philosophy of nature through an integration of accumulated knowledge from the past to the present. His sources for these examples from the ancient sciences and the occult have been well documented.

Novalis is opposed to the rapid fragmentation of the sciences occurring at the end of the 18th century due to vast increase of experimental data. Consequently each branch of science formed numerous new theories for interpretation of these data. Sciences for Novalis are never isolated from each other and from other forms of knowledge. Every experiment in the physical world is a free activity, which also enriches the inner subjective world:

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Novalis was familiar with several books on alchemy (book lists in NS I, 593). His main source for the ideas of Plotinus, Paracelsus and the early nature philosophers was Tiedemann’s Geist der spekulativen Philosophie. According to H-J. Mähl (Novalis, 229) another important source for Das allgemeine Bronillon was Kurt Sprengel’s Versuch einer pragmatischer Geschichte der Arzneikunde, which provided many examples from the medicine of the ancient world.
Ein gutes physicalisches Experiment kann zum Muster eines innern Experiments dienen, und ist selbst ein gutes innres subjektives Experiment mit. (vid. Ritters Experimente) (NS III, 386)

The last group of fragments (1799-1800) appear to be a continuation of the encyclopedia project without any central organization. These fragments represent Novalis' varied interests during the time when he was associated with the salt mines of Saxony, and also had more frequent contact with the group of Jena romantics. He was also involved with literary projects, especially the novel Heinrich von Ofterdingen. Personal contact with J. W. Ritter revived Novalis' interest in galvanism as the dominant force in nature. Novalis also speculated about the role of mathematics in a precise formulation of the world and its significance in encyclopedic projects. Topics from religion and history were also important to him during this period. Stronger emphasis was placed on analogy as the "magic wand" that would help to interpret natural phenomena. These last collections of fragments also contain outlines and general ideas for Heinrich von Ofterdingen, including the original outline for Klingerohrs Märchen. (NS III, 671-9) The moral element that was always an important part of Novalis' thought, even more dominant.

\[\text{\textsuperscript{11}}\text{Géza von Molnár's book Romantic Vision. Ethical Context points out that Novalis always links language and literature to moral action. In Heinrich von Ofterdingen the concept of moral freedom is indicated as the foundation for poet's further development.}\]
in his illness; because an illness is an exception from the normal life process, it leads to a formation of personality. The moral transformation of nature becomes an idea, which is represented by the events of *Klinsohrs Märchen*.

**General Principles: Experiment**

The encyclopedia project, *Das allgemeine Brouillon*, was never supposed to be a mere collection of miscellaneous scientific data resembling the exhibits of mineral collections and other specimens in the display cases at Freiberg. Naturally, Werner's example stimulated Novalis to begin this project, but like the apprentice in *Lehrlinge zu Sais* Novalis was more interested in finding a method of organization that would reveal the true essence of the collected objects and to relate their properties to their position in the natural series. In *Das allgemeine Brouillon* he explains:

The purpose of *Das allgemeine Brouillon* is not to provide complete sets of data from different fields of the sciences and humanities, but to arrive at a critical metaphysical evaluation of the available information and to examine the methods used to obtain this information. If we consider only the scientific aspects of this project, then it is clear that Novalis proposes to bring together empirical data and methods of observation and experimentation, because the method determines the final result. Data and operations are to be classified and organized in a system that is able to construct a metaphysical representation of nature. The basic problem in science then and now is to devise an experiment that is able to give answers to the questions formulated by the scientist. In this aspect the scientist is a creative artist, and he must have a special aptitude for his task, i.e. he must have a romantic feeling for nature, an intuitive *dunkles Gefühl*\(^\text{12}\).

Wie wenig Menschen haben Genie zum Experimentieren. Der ächte Experimentator muß ein dunkles Gefühl der Natur in sich haben, das ihn, je vollkommener seine Anlagen sind, um so sicherer auf seinem Gange leitet und mit desto größerer Genauigkeit das versteckte entscheidene Phänomenon finden und bestimmen läßt. Die Natur inspirirt gleichsam den ächten Liebhaber und offenbart sich um so vollkommener durch ihn. Der ächte Naturliebhaber zeichnet sich durch seine Fertigkeit die Experimente zu vervielfältigen, zu vereinfachen, zu kombinieren und zu analysieren, zu romantisiren und popularisiren, durch seinen Erfindungsgeist neuer Experimente, ... aus. (NS III, 256)

\(^{12}\)In contrast to Schelling (SW II, 823) Novalis sees the creative element in scientific discovery.
The last part of this quote could just as well describe the scientist as an adept of "magic idealism" or an expert in the art of combinations, *Kombinatorik*. An important part of any experiment is observation. An experiment has an educational value because it trains individual senses and mind operations.

Durch Experimentieren lernen wir beobachten - Im Experimentieren beobachten wir uns selbst etc. und lernen dadurch von den fremden Phänomenen auf die Einheit sichre Schlüsse ziehn - oder richtig beobachten. In einer richtigen Beobachtung liegt schon die Erklärung. (NS III, 417)

Der Beobachtungsprozeß ist ein zugleich subjektiver und objektiver Prozeß - ein ideales und reales Experiment zugleich. Satz und Produkt müssen - zugleich fertig werden, wenn er recht vollkommen ist. Ist der beobachtete Gegenstand ein Satz schon und der Prozeß ist durchaus in Gedanken - so wird das Resultat des Beweises derselbe Satz nur in höheren Grade seyn. .... Die physische und chemische Synthese ist nichts als ein realer Beweis einer realen Auflösung. (NS III, 357)

This rather lengthy quote indicates that Novalis concept of an experiment is not "romantically vague", but scientifically valid on its basic level. It is the next step or the thought experiment that brings an experiment either to the sphere of theoretical physics or to that of romantic philosophy. In both cases the thought experiment proposed by Novalis is equivalent to reflection. The only difference is in the field of reflection. The result of this operation elevates the original statement to a higher
level. Experiment becomes an exponential operation or Potenzierung, which is then a philosophical transformation of the empirical results.\textsuperscript{13}

In Novalis' view any good experiment has a dual nature; it can give answers about the nature of phenomena in the real world and at the same time increase the perceptive range of the inner self. Philosophical speculation and experimental activity constantly interact for the benefit of both.


Not only is the individual involved in this combination of real and ideal operations, but also nature itself is transformed and brought to a higher level through the right kind of experiment. In this respect scientific experiment is similar to the poet's striving to express the

\textsuperscript{13}In his Kunstkritik Walter Benjamin comments on the same fragment by Novalis as follows: "Mit dieser letzten Bemerkung geht Novalis über die Theorie der Naturbeobachtung zur Theorie der Beobachtung geistiger Gebilde über. Der 'Satz' in seinem Sinn kann ein Kunstwerk sein." (55-6) The definition of Satz again determines the field of the thought experiment.
language of nature in a new system of words and images. Both operations are creative and both are processes of translation. The scientific operation transforms natural phenomena into rational systems of physical laws or into mathematical equations representing these laws; the poetic one relates sense perceptions to the images embedded in the human soul, Gemüt, and relates to psychological phenomena. If in Blüthenstaub Novalis claimed that the human soul was the region where the external world meets the internal world of the spirit, then now this region is extended over the entire range of the components that constitute the individual self. It is a simple transition from this connection or Berührung to the loving relationship with nature that characterizes romantic nature philosophy.


Nature is a system, and every organism, every object, or every phenomenon is connected to another member in a gigantic series or a system of series. This conception of
nature is typical of Novalis. H. Steffens as a defender of Schelling's theory of duality in nature, found this view of infinite variety superficial, even careless. (Verlings, 157-8). Present day sciences, in particular the life sciences, confirm Novalis' hypothesis. In his opinion experimental procedures should be devised according to this relationship between members in a series. A true scientist can never obtain meaningful results by isolating a single object or phenomenon.


Nature's Language

The concept of nature and its phenomena as a hieroglyphic language has existed for a long time. Already in Genesis the story of the garden of Eden relates how Adam was able to give animals and all things their proper names because he knew God's language. Similar ideas were transferred to Western mysticism and early natural sciences, e.g. alchemy. Paracelsus had developed the doctrine of
nature's "signatures," and Jacob Böhme introduced it in his philosophy of nature.

In 18th century Germany the idea of nature's language as a coded script or hieroglyph appears in the writings of Hamann and Herder. Novalis is familiar with these formulations of nature's language. Together with the emanation theory of Neo-Platonism, these ideas contribute to Novalis' concept of nature's language as a system of many languages. All natural phenomena speak in a distinct language.

Der Mensch spricht nicht allein - auch das Universum spricht - alles spricht - unendliche Sprachen. (NS III, 287-8)

Systems of visual signs, suggested by early examples of human writing, then become symbols of the mystery of nature. Novalis always tries to find a representation for a highly abstract concept in something visually significant that can be interpreted on several levels. Goodbody claims

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14Axel Goodbody has investigated the history of nature's language and outlined those concepts that have influenced romantic poetry.

Schon Paracelsus hatte die adamische Sprache in seine Signaturenlehre einbezogen. Böhme übernimmt von ihm die Vorstellung, daß die äußere Form, die Signatur oder "Gestalt" das Wesen und die Essenz der Dinge optisch spiegeln, etwa so, wie das Wort der adamischen Sprache diese akustisch wiedergeben. (Goodbody, 28)

Paracelsus hatte mit der Umdeutung des Logos als Mikrokosmos begonnen, hier (Böhme) werden Weltkenntnis und Gott-erkennen mit der Selbstkenntnis gleichgesetzt. (Goodbody, 29).
that this representation characteristic for the romantic movement is based on two suppositions:

...der erste..., daß es hinter den Erscheinungen der Natur eine verborgene Ordnung gibt und ein tieferes verstecktes Sein, das sich in der sichtbaren Welt der Phänomene zu erkennen gibt. Der zweite ..., daß das verborgene Sein, sei es Gott oder ein abstrakter Prinzip, im selben Verhältnis zur Naturerscheinung stehe wie die Bedeutung zum Weltkörper. (Goodbody, 21)

Egyptian hieroglyphs were known to the educated people of the 18th century, but they had not yet been deciphered. Therefore these hieroglyphs could represent both the lost ancient wisdom and the language of nature itself. The concept that the outside characteristics of an object or organism are an expression of its inner quality was also common at the time. Novalis' studies with A. G. Werner concerning the identification and classification of minerals represented the scientific or practical side of this concept. Practically every discussion of aesthetics dealt with beauty as an expression of truth, goodness, and morality. Another relationship which had left traces in Novalis' thinking was that between the written word of God and the whole creation. The biblical act of creation begins with the word, and this concept of the special powers of the word was later transferred to Western mysticism: Adam could give the proper names to all the beasts because he understood the true language of God. This Adamic language is now lost, and all the different lan-
guages in the world are only fragmentary approximations. *Lehrlinge zu Sais* deals with these questions and with the most common trends in nature philosophy at the end of the 18th century. Nature in Novalis' interpretation is not just the sum total of all the observations in the present; rather Nature has a history which must be integrated with respect to the passage of time from the very beginning of time up to the present:


For this reason Novalis employs both the ideas of the old mystics and nature philosophers and figures of speech from the old books of alchemy in the poetic process of visualizing chemical and physical forces\(^\text{15}\).

Alchemy has a special attraction for Novalis as it incorporates a philosophical and even mystical approach to nature, combined with practical operations of purifying different materials. Most of alchemical operations were

\[^{15}\text{Goodbody makes a useful observation when he discusses the romantic notion of the hieroglyph and its significance: "Für die Romantiker verkörperten die Hieroglyphen geheimnisvolle wesenhafte Beziehungen zwischen Natur, Sprache und Kunst. Die Hieroglyphe wird für sie zum Begriff einer hermetischen Bilderschrift, die über die ratio kaum zu deuten ist, sondern intuitive Erkenntnis über das Wesen der Dinge vermittelt und der Kunst zum Vorbild dient. (Goodbody, 37-8).}"}

directed towards purification of metals, especially the noble metals gold and silver. Since these operations were long and complicated and the slightest mistake could ruin the whole experiment, the alchemist and his assistants had to prepare for their work by undergoing strict physical and spiritual discipline. Alchemists thought that separation and purification of chemical substances could not be successful without the purification of the alchemist himself. It will be discussed later how Novalis incorporates scientific hypotheses and images from the past in the literary figures of Klingsohrs Märchen to represent the forces of nature which aid in the destruction of polarity and in the great synthesis of nature and spirit. To achieve this synthesis the empirical ego has to undergo a continuous process of diversification and development on all accessible levels. Its counterpart, nature as it exists at present, must also be transformed, not simply to serve humanity, but also to achieve a consciousness and morality of its own and become a part of the spirit:

(NS III, 801)
Novalis loves paradox. He does not think that the so-called laws of nature truly represent all aspects of nature. Laws of nature are the results of correlating a large number of observations of natural phenomena and uncovering certain regularities. These laws represent the rational qualities of the human mind, which tend to leave everything irregular outside the natural law. The rational mind of the enlightenment does not include the miraculous or elements of wonder in its model of the universe. This model is a machine, a giant clock. The romantic view of nature supplies the missing elements through art and poetry. Schelling saw in nature a state before consciousness or a consciousness, which was latent. Novalis agrees with this view only to some extent; eventually he sees in nature a limited kind of consciousness, which is awakened by the human mind and spirit and enters with it in a relationship of Ich und Du. Feelings and the human soul, Gemüt, in its various aspects make this relationship possible.

Wunder und Naturwelt sollen Eins werden. (W III, 409)

Das Unbekannte, Geheimnisvolle ist das Resultat, und der Anfang von Allem. (Wir kennen nur eigentlich was sich selbst kennt.) Was sich nicht begreifen läßt ist im unvollkommen (Natur) Zustande. Es soll allmählich begreiflich gemacht werden. ... Die Natur ist unbegreiflich per se. Ruhe und gebildete Unbegreiflichkeit. ... (NS III, 302)

Only by connecting the phenomena of nature to the creative processes of poetic imagination can this division
be overcome. Novalis attempts to understand nature through a combination of sensate images and abstract concepts, which constitutes poetic transformation of philosophy and science. Decoding the hieroglyphs of nature is just one of these images, which prefigures the coming "golden age."


Fantasy and Imagination

From the beginning fantasy and imagination, Phantasie and Einbildungskraft, assumed an important role in the romantic movement. The romantics accused the disciples of the Enlightenment of attempts to eliminate fantasy and imagination from the lives of the people in favor of reason. Once Fichte's philosophy had posited Ich as the beginning of consciousness and philosophy, it was natural for the romantics to celebrate the power of imagination as one of the forces that surpass the limits of reason. Only the creative imagination soars over the chasm between real and ideal and dares to approach the infinite.

\[18\]Some of these representatives of narrow-minded Enlightenment are treated satirically in E.T.A. Hoffmann's fairy tales, e.g. Klein Zachos and Meister Floh.
In Fichte’s philosophy the imagination, *Einbildungs-
kraft*, is an activity of the Absolute Ego that mediates
between the finite ego and the finite non-ego. According to
this definition imagination has little to do with the
multi-dimensional activity of the human soul that con-
tributes so much to the poetic vision of the world. In his
*Fichte Studien* Novalis attempts to establish the relation-
ships between imagination, emotion and reason, (both *Ver-
stand* and *Vernunft*), and to find connections between the
abstract doctrine of knowledge proposed by Fichte and his
own interpretation of these terms.

Das Gefühl, der Verstand und die Vernunft sind gewis-
serweise passiv – welches gleich ihre Namen bezeichnen –
hingegen ist die Einbildungskraft allein *Kraft* –
allein das Thätige – das bewegende. (NS II, 98)

Es gibt nur Einbildungskraft – Gefühl und Verstand.
Anschauung und Vorstellung sind nur die Namen, die
man dem Gefühl und der Einbildungskraft und dem
Begriff und der Einbildungskraft zusammen giebt.
(ibid.)

Anschauung und Vorstellung ist Eins. Jene Beziehung
der Einbildungskraft auf die Sinnlichkeit – diese
Beziehung der Einbildungskraft auf den Verstand.
(NS II, 168)

Einbildungskraft besteht aus Sinnlichkeit und Verstand –
beyde müssen vereinigt schaffende und bildende Kraft
seyn. (NS II, 168).

Even in this early part of Fichte studies Novalis sees
imagination as a combination of sensate perception and
reason. In another definition of "creative imagination"
from the Freiberg period, Novalis refers back both to Fichte and Kant and relates this form of imagination to other capabilities of human mind.


In this way the creative imagination relates to Kant's philosophy of pure and practical reason and to his critical view of aesthetic judgement. Imagination is defined as the original creative force in the moral and also in the aesthetic sphere of activity.

Imagination is an activity of the self in agreement with idealist philosophy, but for Novalis and the other romantics it also becomes an activity that is part fantasy and part thought. Fichte is concerned with the logical exploration of the real and ideal, Novalis connects imagination to sense perceptions of the real finite ego.

Die Einbildungskraft ist das würckende Princip. Sie heißt Fantasie indem sie auf das Gedächtnis wirkt - und Denkkraft indem sie auf den Verstand wirkt... (NS III, 298)

Die Einbildungskraft ist der wunderbare Sinn, der uns alle Sinne ersetzen kann - und der so sehr schon in unserer Willkür steht. Wenn die äußern Sinne ganz unter mechanischen Gesetzen zu stehen schein - so ist die Einbildungskraft offenbar nicht an die Gegenwart und Berührung äußerer Reitze gebunden. (NS II, 850)
Fantasy is only a part of the imagination; it is variable and unpredictable. Therefore Novalis usually considers the pair of fantasy and reason. This pair constitutes the active forces of the human mind and soul that interact with the world.

Verstand, Fantasie – Vernunft, das sind die dürftigen Fachwercke des Universums in uns. (NS III, 574)

Klarer Verstand mit warmer Fantasie verschwistert ist die ächte Gesundheitbringende Seelenkost. Der Verstand thut lauter vorhergesehen, bestimmte Schritte. (NS III, 580-1)

Apparently Novalis does not abandon reason in his view of the world. Fantasy may be the mother to poetry, as the allegorical figures of Ginnistan and Fabel in Klingsöhrs Märchen indicate, but Novalis remains sceptical about the role of unbridled fantasy in the development of self and movement towards a spiritual existence.

Ich bin überzeugt, daß man durch kalten, technischen Verstand, und ruhigen, moralischen Sinn eher zu wahren Offenbarungen gelangt, als durch Fantasie, die uns bloß ins Gespensterreich, diesen Antipoden des wahren Himmels, zu leiten scheint. (NS III, 578)


Der ächt idealistische Weg des Physikers ist nicht aus dem Einfachen, Zersplitterten das Zusammengesetzte, Verbundene, sondern umgekehrt zu erklären. (NS III, 601)
Both quotes come from *Fragments und Studien 1789/1800*, the last group of fragments that Novalis left behind, and emphasize the cool, rational side of Novalis' personality. At this time he had outlined several leading trends in nature philosophy and attempted to bring them to a synthetic totality in *Lehrlinge zu Sais*. There Novalis indicates a preference for the poet's intuitive approach to nature, which provides an immediate contact between the poet's inner world and nature's phenomena. *Lehrlinge zu Sais* could be easily regarded as an expression of romantic nature philosophy. At this time Novalis was also reading Jakob Böhme and studying the teachings of alchemists, neoplatonic philosophers, and mystics in Tiedemann's book, all containing ideas that favor the elements of fantasy and emotion\(^\text{17}\). Yet the strong moralistic inclination in Novalis' thinking, which has been emphasized by von Molnár (*Romantic Vision. Ethical Context*), and his desire for harmony in real life shows his ability to be a poet and a scientist, or a philosopher and a dreamer and to unite these aspects of his personality. These quotes are consistent with the portrayal of Ginnistan in *Klingsohrs Märchen*; she seduces Eros so that he loses his way to Arctur's palace and Freya, and indirectly causes the take-

\(^{17}\text{Dietrich Tiedemann. *Geist der spekulativen Philosophie* Marburg 1791-1797.}
over of the human home by Schreiber. Ginnistan must change and acquire wisdom before she can awaken her true partner. An ethical sense rather than fantasy lead to true revelations. In this sense Novalis sees freedom through moral action as a necessary step in approaching the Absolute.

Der vollendete Mensch muß gleichsam zugleich an mehreren Orten und in mehreren Menschen leben — ihm müssen beständig ein weiter Kreis und mannichfache Begebenheiten gegenwärtig seyn. Hier bildet sich dann die wahre, großartige Gegenwart des Geistes — die den Menschen zum eigentlichen Weltbürger macht und ihn im jeden Augenblicke seines Lebens durch die wohltätigsten Associationen reizt, stärkt und in die helle Stimmung einer besonderen Thätigkeit versetzt. (NS III, 580)

Galvanism

Neubauer states that Novalis really did not say anything significant about galvanism since he did not perform any experiments in this area and based his knowledge on the work of others (Neubauer, Bifocal 114). This may well be true, but we must remember that Novalis' most important achievements were not in the physical sciences, where he was an able and hard working mining engineer, but in the literary interpretation of some of the significant scientific ideas of his day and their implications for the philosophy of nature. Galvanism and associated electrical phenomena were among the most important developments in the natural sciences in the last decade of the 18th century.
There existed a lively interchange of ideas on the possible interpretation of these discoveries and on the effect that these discoveries would have for the existing model of the universe. Once Novalis had begun the study of the natural sciences, he followed the latest developments in many areas of physics, chemistry and also in medicine. He found in these studies a more diverse system of phenomena constituting nature than the abstract concept of Nicht-Ich, which was derived from Fichte's philosophy. Although these scientific studies opened new paths towards a better understanding of nature, Novalis remained concerned with the problems of the self and its relationships to the external world. At all times the formation of the individual self is closely connected to the belief in the necessity of mastering all possible external phenomena. This is the leading concept throughout his life and is reflected in many different forms in his major works: Die Lehrlinge zu Sais and Heinrich von Ofterdingen. Novalis met Schelling in 1797, had read Schelling's Ideen and Weltseele, was acquainted with Ritter's publications, and had a general knowledge of the experiments of Galvani and Volta. In Lehrlinge Novalis is still quite skeptical about the significance of Galvani's discovery (NS I, 84), but after meeting Ritter in 1799 he formulated several fragments about galvanism and, as a singular example of Poetisierung der Wissenschaften, introduced galvanic forces as elements
of magic and wonder in *Klingsohrs Märchen*. It is very likely that Novalis witnessed some of Ritter's galvanic demonstrations and possibly even participated in these experiments. It is obvious from the descriptions of the "galvanic" awakening processes in *Klingsohrs Märchen* that Novalis was quite familiar with the basic principles of galvanism and of experimental arrangements. In *Klingsohrs Märchen* these experimental details enveloped in the fairy tale imagery serve as a metaphor for the union of the polarities in nature and for a transition to a higher level of existence. Various chemical reactions take place as electricity flows through the disparate elements of the circuit, once contact is made. Here Novalis uses one of the basic physical processes to illustrate the activation of the hidden forces in nature and, by analogy, the activation and the complex unfolding of the human soul. These poetic images are consistent with the speculations about galvanism and other activating forces in the fragments. Certainly Novalis was not a pioneering experimental scientist dealing with galvanism or any other problems of chemistry and physics in the laboratory. New was his perception of these electrical and magnetic processes as a

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18An example would be his choice of gold and zinc to produce the maximum galvanic effect, i.e. the greatest potential difference between two metals, the necessity of a fluid component in the circuit, and the effects of closing and opening this circuit. See also Wetzel's "Klingsohrs Märchen as Science Fiction."
manifestation of a great organizing principle. Therefore, Novalis’ fragments and notebooks provide us with a unique opportunity to follow his attempts to incorporate scientific knowledge in a philosophical view of nature. Ritter was the experimental genius of “romantic” physics, and he clearly viewed galvanism as the unifying force in nature, but he had neither the grasp of idealist philosophy nor the poetic imagination of Novalis. Novalis was stimulated to explore galvanism and its role in the philosophy of nature by Ritter’s experiments. We can assume that Ritter’s interpretation of these experiments provided the starting point for Novalis’ thoughts about galvanism. Most of Ritter’s efforts were directed towards an experimental proof that galvanism is present everywhere in nature and is the driving force in all nature, both inorganic and organic, and that all natural phenomena can be subdivided into an infinite number of galvanic sequences. This idea of chains or sequences in nature agrees with earlier observations of Novalis about the classification of minerals and about mathematical series.

Zentralbewegung und Zentralerscheinungen beym Galvanism - ihre Ursache. Der Galvanism scheint die allgemeine Thätigkeit's Ursache in der Natur. Keine Kraft, kein Phaenomen wird sich einzeln in der Natur erklären lassen.... Alle Kräfte sind, was

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19 As its title, Beweis, daß ein beständiger Galvanismus den Lebensprozeß in dem Thierreich begleite indicates, Ritter’s first publication was devoted entirely to the investigation of galvanism in living organisms.
Eine Kette can be a chain or a sequence or an electrical circuit, depending on the design of the experiment. Novalis' concept of nature as a construct of great complexity and hidden order is also discussed in *Lehrlinge*, where the finding of the central connecting member for many individual sequences serves as the most significant stage of finding a unified model of nature and a unified image of the self. Novalis criticizes the narrow specialization of the individual sciences and the idea of a simple duality in nature. Polarity for Novalis is not the all-important law of nature that it is for Schelling, but an indication of a departure from the ideal. In his view all natural phenomena are interconnected, and influence each other in different ways. Sometimes this connection is indicated by chemical phenomena.

Galvanism, Elektrizität, Wärme, Magnetism etc. scheinen fast nur Verstärkungsmittel, Methoden Thätigkeit zu erregen, zu mindern, zu vertheilen, zu erhöhen, zu verbinden - Armature zu seyn - Sie äußern sich alle durch gleiche chemische Symptome.
(NS III, 684)

This multiple interaction and possible equivalence of natural phenomena is consistent with the romantic model of all nature as an organism. It is necessary, according to Novalis, for the natural scientist to have a special rap-
port with nature in order to select the most revealing experiments among the multitude of data. The sciences should interact among themselves just as all the natural phenomena interact.


Novalis again follows his concept of a multi-dimensional approach to the natural sciences and yet indicates the basic similarity of all natural objects and processes. Many natural objects differ only slightly from each other. Ritter's experimental proof, that inorganic substances, e.g. metals, can be arranged in series according to their galvanic action and chemical activity, and the discovery that these two series parallel each other, imply that there might be other parallel series, and that all these series together constitute a true series of natural history. Novalis had already learned the importance of series through his studies of mineralogy with A.G. Werner. Werner arranged minerals according to their outer physical characteristics, such as color, hardness, crystal shape,
odor etc., and postulated the existence of possible missing links in these sequences\textsuperscript{20}.

In galvanism again sequences are used to organize physical phenomena and to arrive at the intrinsic order of nature. But in Novalis' model of the universe the discovery of nature's laws is also another way to find new connections between the self and the external world. If galvanism magnifies all functions of ordinary substances, then it represents some forces in nature which are analogous to the spiritual forces (possibly religious ones) that guide the development of the individual ego towards a higher level of consciousness. This force is exactly the kind of a universal organizing principle the romantic nature philosophers were looking for. Every time these connections were uncovered among diverse natural phenomena, not only had there been scientific advances, but the self had also mastered another representation of the infinite in the finite world of objects. The horizon of consciousness is extended further. The inner and outer worlds come in contact, \textit{Berührung}, and an interaction or communication between them is possible. The position of each member in these sequences is also important; each member communicates

\textsuperscript{20}Later these sequences were helpful in the arrangement of the periodic system of elements; for example, the salts of the alkali metals have similar crystal structures and chemical properties.
with its neighbor and the message is passed on as far as our imagination allows.


Novalis also considers galvanism and its connection to light. Certainly electrical phenomena frequently involve glow or sparks of discharge, but Novalis had no experimental basis for his speculations when he wrote:

Das Licht ist unstreitig galvanisches Produkt. Bey ihm ist offenbar Actio in distans. Die Luft ist Leiter dieser Action. (NS III, 471)

This is prophetic thinking, although it took a long time to determine the nature of light and to produce light by electricity. Nevertheless, modern quantum theory explains light as a paradox: it can be both a wave and a particle, and the scientist must choose the appropriate representation for his experiment. If we deal with the smallest unit of light as a particle, then physics classifies visible light as a minute sector of the immense spectrum of electro-magnetic particles that permeate the entire universe. Light particles or photons belong to the most basic forms of energy (or matter) found in the universe, and enter into practically all physical, chemical
or biological phenomena. Atmospheric air, however, is not necessary to conduct light; it travels most easily through empty space. The visible spectrum, which was explored by Newton in his experiments with prisms, was extended in both directions right around 1800. First Herschel discovered the infra-red spectrum next to the visible red light, then Novalis' friend Ritter demonstrated the existence of an active region in the sun's spectrum by exposing a strip of paper saturated with silver chloride to a beam of light passing through a prism\(^1\). Since Ritter's discoveries almost coincided with the time of Novalis' illness and death, it must be assumed that he never heard of this discovery.

The most interesting connections in Novalis' notes are those between galvanic phenomena and the thinking process.

Unser Denken ist schlechterdings nur eine Galvanisation - eine Berührung des irdischen Geistes - durch einen himmlischen, außerirdischen Geist. Alles Denken etc. ist also an sich schon eine Sympyraxis im höheren Sinn. (NS III,263)

Galvanic forces are viewed here as analogous to a contact between the infinite, eternal and the finite, temporal forms of existence. In line with the concepts of transcendental philosophy the Absolute is represented in human

\(^1\) This experiment is described in *Physisch-chemische Abhandlungen in chronologischer Folge*, Band II, Leipzig 1808, pp. 81-107. The same material was reported in a lecture in Jena in the spring of 1801.
thoughts, in self-consciousness and cognition. Again the concept of Berührung is the dominant one. According to Novalis, there must be an original contact which originates life and all activity\textsuperscript{22}. The archetypal image for this kind of initial contact is e.g. Michelangelo's God extending his hand towards Adam, and the life-giving spark which emanates from the hand of God. The electricity permeating all of nature, and man as part of nature, is just one manifestation of the infinite power, which for Novalis is frequently equated to God.

An analogy of this process in the physics of the early 20th century would be the quantum jump, where light or some other kind of electro-magnetic impulse can move an atom or a molecule to a higher energy state. Again Novalis speculated: "Naturlehre. Die Natur verändert sich sprungweise. Folgerungen daraus. " (NS III, 273). This statement contradicts an earlier comment about the continuity of natural phenomena. Observation of galvanic phenomena probably changed Novalis' mind about this view of nature. The continuity of all natural phenomena was the accepted view of late 18th century physics that remained in force for another hundred years until advances in atomic and

\textsuperscript{22}The idea is very close to that of Ursprung in Walter Benjamin's Urspurung des deutschen Trauerspiels. There "origin" seems to be a transition from one level of existence to another, although Benjamin tries to avoid a metaphysical explanation or definition.
molecular physics led to the formulation of quantum physics, which views all the basic natural phenomena dealing with fundamental particles as discontinuous. Novalis was not predicting future developments in physics but redefining his view of the natural world and his perception of it. Electrical spark is definitely an example of a discontinuous process, the contact in an electrical circuit changes all elements in the sequence discontinuously. The same occurs in thought when a new idea springs into consciousness. These discontinuous processes are expressions of the accidental or even the magical element in the world. **Klingsohrs Märchen** begins with a discontinuous act when the old knight Eisen is activated by Freya’s touch.

Yet another discontinuous process that follows from the discussion of natural phenomena is death. Again Novalis finds a parallel to electrical processes:

Wir springen wie ein elektrisches Funken, in die Andre Welt hinüber etc. Zunahme der Capacitaet. Tod ist Verwandlung - Verdrängung des Individualprincips - das nun in eine neue haltbarere, fähigere Verbindung eingeht. (NS III, 259)

Since Novalis always considers reciprocity of all activities, it is not surprising that he sees in death a reciprocal jump to that of origin or birth. Both are part of the finite and limited existence on the earth, an indication of incompleteness.
The existence of series in nature has other parallels in thought. Thinking and consciousness are linked to language, which in itself is a series of signs. Only by their position in the series and by the interaction with their neighbors can these signs lead to the completion of a thought or its communication to another being. The fragments show Novalis' preoccupation with the problem of language and with communication. Berührung is simply a general process, which includes many different forms of communication. All the fine arts are forms of touching other human beings by providing a stimulus to their senses through music, painting or poetry. Galvanism is simply one of the dynamic forms of making contact.

Berührung or Contact.

The term Berührung is characteristic for Novalis' approach to nature; it suggests human relationships of friendly feeling, of a loving caress and of spiritual communication. If nature is seen as an entity which has a certain element of consciousness, then we are justified in approaching nature or various components of it, be they animate or inanimate, as analogous to individual human beings. Whenever Novalis speaks of Berührung the term encompasses all the dictionary meanings of the word. We can translate it as touching or as contact or as affect: the
word describes many phenomena in nature and in human society. The possibility of contact leads to a possibility of communication, of stimulus, of an awakening of the latent forces in nature or in human soul.\

In the physical sciences Berührung describes contact, or actions, which are clearly defined in terms of space and time. The contact between solid objects, or motion transmitted from one solid object to another, forms the basis of mechanical laws. In chemistry, intimate contact or preparation of mixtures is necessary to initiate a chemical reaction. Many chemical reactions, at least those common in the chemical laboratories of Novalis' time, take place in solutions. In a solution two substances are suspended in a fluid medium so that they are intimately mixed, and the contact extends to the smallest particles of the solution. Likewise, in a mixture of gases, e.g. in flames, the ingredients blend together and slowly dissipate or produce entirely new substances. This ability to form intimate contacts is one of the reasons why fluid substances were so important for Novalis. Compared to solids, almost any physical activity is enhanced in the fluid medium. Most gases and liquids transmit light and propagate sound waves. Even thinking processes such as reflection are usually compared to the propagation of waves in still water. The old

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Mahoney also mentions Berührung as a term that has a special significance for Novalis, pp. 33-4)
elemental substances - earth, water, fire and air - were still important even in scientific discussions. It is difficult to reconstruct many chemical experiments of this period, largely because every scientist used his own terminology in describing chemical substances and the reactions between them. Various fluids were proposed to explain heat, electricity, magnetism, and even gravity. Novalis’ preoccupation with water as the basic element of life is, therefore, quite in agreement with the beliefs of his time and with his view of natural philosophy as the synthesis of all knowledge past and present.

The invisible forces of electricity and magnetism (also galvanism as an electro-chemical phenomenon) are somewhat different. Magnets exert a force on certain substances without actually touching them physically. Static electricity can also act from a distance. These natural phenomena suggest to Novalis an interaction with forces from a higher level of existence, some kind of a spiritual contact, which tends to activate inert substances. Galvanism, i.e. electric current, which is present both in animate and inanimate nature, and which requires making contacts between different types of substances, is then a

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One should not forget that at the end of the 18th century chemistry was still a mixture of conflicting theories and practices starting with alchemy and the search for "philosophers' stone" and ending with the discovery of new chemical elements and a systematic investigation of chemical reactions.
special kind of revelation of the creative powers in nature.

In his application of analogy, Novalis starts with a common gesture expressing friendship between two human beings and extends it to the different phenomena in nature. He sees in touch a universal sign for the beginning of communication, for understanding and for the first intimation of love. This kind of touching is the beginning of any magical transformation.

Alle geistige Berührung gleicht der Berührung eines Zauberstabs. Alles kann zum Zauberwerkzeug werden. Wem aber die Wirckungen einer solcher Berührung so fabelhaft, wem die Wirckungen eines Zauberspruchs so wunderbar vorkommen – der erinnere sich doch nur an die erste Berührung der Hand seiner Geliebten... (NS II, 585)

Touch is the magic initial moment which brings about spiritual change, inspiration, or an introduction to love. These gestures are very important to Novalis. In all of his works there are mentioned friendly greetings, embraces, kisses, and the sexual act as metaphors for a spiritual contact, which provides an exponential enhancement of inner resources in the development of the individual self, and facilitates achievement of a higher level of consciousness. Therefore Novalis can proceed from the original friendly gesture and elevate it to transcendentatal significance.

... Alle Berührung ist ein Anlaß zur Erregung der Einenden, systematisirenden Kraft - i.e. der Weltsaele
Here Novalis clearly states that any contact between individual objects and individual human beings is a manifestation of the organizing force in nature or Weltseele. This organizing principle is basically the same as that of Schelling, but Novalis does not see the organization of nature in the same terms as Schelling. He considers different types of activation as appropriate for different classes of natural objects; the simple inanimate objects require only a simple stimulus, e.g. a mechanical force to make contact, while the complex human soul at the other end of nature's spectrum can realize its potential only through many different stimuli and different modes of communication with the external world. These gradations of contact or touch are clearly shown in Klingsohrs Märchen. Fabel uses galvanic forces to re-awaken the old Atlas, the inanimate earth, using one galvanic stimulus; the reactivation of Father, the physical senses of human beings, is already more complex, while Freya is awakened by Bros using galvanism and electric discharge as the excitation processes in nature and the kiss as the symbol of human emotions, the
magical touch of love. Nature requires many forms of physical or spiritual contact before it can rise to a higher level of consciousness, and the same is true of the individual human self. All interactions between the inner and outer world are potentially activating forms of contact.

Unwirksame Berührungen sind keine Berührungen im strengeren Sinne - es sind nur scheinbare Berührungen.... Achte Berührungen sind wechselseitige Erregungen. (NS III, 341)

Obviously contact or touch means an excitation or activation process which is essential to life.

Wer bey der Erklärung des Organism keine Rücksicht auf die Seele nimmt und das geheimnißvolle Band zwischen ihr und dem Körper, der wird nicht weit kommen. Leben ist vielleicht nichts anders, als das Resultat dieser Vereinigung - die Action dieser Berührung. Wie das Licht bey dem Reiben des Stahls an den Stein, der Ton bey der Berührung des Bogens und der Sayte, die Zuckung bey Schließung und Öffnung der galvani- schen Kette erfolgt, so vielleicht das Leben bey Erweckung (Penetration) des organischen Stolls. (NS II, 643),

by the extension of this thought to the sexual act:

Seele und Körper berühren sich im Act - chemisch - oder electrisch - oder feurig - ... (NS III, 284)

The sexual act as the origin of life is closely related to the union of body and soul that makes conscious life possible; the body without the soul is just an aggregate of matter; the soul without the body is outside the limitations of time and space, which define existence in the real universe. As the most intimate kind of touch,
the sexual act thus becomes a figure of speech which portrays Potenzierung in the realm of human abilities and interactions. If a child results of this allegorical embrace, then he or she already belongs to a higher level of existence, e.g. Fabel is the child of Ginnistan, who is fantasy, and Father or the senses. Eros is the child of the same father, but his mother is the universal mother-Heart. Although it is interesting to explore the psychological implications of the incestuous relationships among the characters in Klingsohrs Märchen, much of Novalis' intent and magic of this mystical conception of the human soul is lost.  

Every human being has experienced the initial contact of the body and the soul, every human being is constantly exposed to outside stimuli which we receive through our senses and classify and organize through the activities of reason. The human self is at first like a seed, which has to receive manifold influences from the outside world before it can grow and develop. A genius is the fortunate man or woman, who has been formed by numerous beneficial contacts with the world:

Ein Genie muß durch genialishe Berührungen der mannichfältigsten Art versucht und erregt und gebildet werden - ... (NS III, 332)

This process of genial stimulation is the main theme in *Lehrlinge zu Sais* and in *Heinrich von Ofterdingen*. Both the discoverer of nature's secrets and the ideal poet must be exposed to the maximum of beneficial contacts, with nature, with people, with history and politics and, most important of all, with their true self. All of Novalis' idealized figures share this desire for internalizing as much of the outside world as possible within the limitations of a human life. This quest for education and self-realization becomes much more than a desire for the development of a complete and harmonious human being. There is an attempt to transcend the limitations of this physical world and to become a part of the Absolute Spirit. This desire is not just religious in character, although religion was a very important part of Novalis spiritual life. Poetry and art for Novalis and for the other romantics is the only possible way to reflect the ideals of the good, the true and the beautiful.

**Flame:** Oxidation and Purification

The science of chemistry in Novalis' lifetime was in the early developmental stages. Instead of "chemical reac-
tions" chemists studied different mixtures and their properties. Except for the metals and some of the most common chemical compounds, the names for different substances were haphazard and confusing. Substances were named after some of their physical properties, after the chemist who first prepared them or sometimes by the location where they were mined. In some cases the old names of alchemy were still in popular use, e.g. flowers of sulphur, aqua regia, and sugar of lead. Although the processes of burning had been an integral part of chemistry since the earliest history, these processes were not properly understood for a long time. During the 18th century the most popular way to explain burning and oxidation was the so-called "phlogiston" theory. According to this theory most materials represent an intimate mixture of two substances: one is the part which remains after the burning process is complete, the other is a weightless or "imponderable" substance called phlogiston that is liberated by the flame. This invisible and mysterious fluid was supposed to account for the properties of flames such as heat and light and to explain miscellaneous chemical reactions. In a very short time, however, the new science of chemistry improved its experimental methods and accuracy of measurements. These

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28When Scheele and Priestley discovered oxygen (1772 and 1774), Scheele named the new substance dephlogisticated air, i.e. air from which all phlogiston has been removed.
experiments indicated that most substances gained weight by burning in air or in pure oxygen and that the resulting substances were identical. Metals burned in oxygen produced substances, which had previously been known as calcinated metals, or *Metallkalk*. The French chemist Lavoisier, who was the founder and chief proponent of the "antiphlogistic" chemistry, explained burning as an oxidation process. In his treatises on nature philosophy Schelling also became a defender of this new chemistry and attributed to oxygen the role of the life sustaining substance or *Lebensluft*. The older theory of various fluids that determined the chemical properties of substances found more response among the romantics because a universe activated by dynamic, all-permeating fluids provided a sharper contrast to the mechanistic universe of the enlightenment. It is typical of Novalis that he accepts the interpretation of burning as a chemical reaction or combination with oxygen, the life-sustaining component of the air, but at the same time speculates about the analogies of this chemical reaction to other transformations and about the spiritual significance of these transformations. If the following statement considers mainly the existing scientific evidence, most of the

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27 In his chemical training Novalis had been exposed to both theories. His first chemistry teacher C.F. Wiegleb was an adherent of the "phlogiston" theory, but in Freiberg he learned chemistry from W. A. Lampadius, who belonged to the new "antiphlogistic" school.
notebook entries concerning oxidation deal with the meaning of this process for life and philosophy.

Oxydation findet im weitem Sinn bey jeder Wärme und Lichtentwicklung statt. Daher ist die Oxydation mit Schwererwerdung jedesmal verbunden und der eigentliche Erdproceß. (NS III, 858)

As in the discussion of galvanism Novalis again sees scientific observations as a prefiguration of a contact with a higher level of existence. Oxidation symbolized by a flame becomes a sign of life.

Der Geist ist das Oxigene des Körpers. ... Leben ist ein Feuerproceß. Je reiner der Geist ist, desto heller und feuriger das Leben, ... (NS III, 318)

or

Sollte die Flamme, der Funken etc. in ein neues Reich gehören, das von Pflanzen, Thier und Menschenreich verschieden wäre. Lebendige Processe. (NS III, 84)

Flames destroy existing matter and transform it into something else. In the human sphere the flame becomes a metaphor for the transformation of the human soul, which acts in opposition to the general petrification of the spirit.

Licht, Luft und Wärme sind gewissermaßen Übergänge des Körpers zur Seele. Der organische Stoff ist eine Synthesis der Körper und Seelen - die dadurch beyde mehr werden, höhere Grade annehmen - als vorher. (NS III, 354)

Wenn unser körperliches Leben ein Verbrennen ist, so ist wohl auch unser Geistiges Leben eine Combustion (oder ist dies gerade umgekehrt?) (NS III, 559)
Oxidation is still discussed in some of the later fragments from 1799/1800. Novalis enumerates different physical processes that can be considered as different aspects of oxidation (NS III, 658). Then he continues with a general discussion of the implications that the chemical reaction of oxidation has for natural phenomena.


In der Materie selbst liegt der Grund des Lebens - das Spiel des Trieb's der Oxydation und der Desoxydation. Spiel des Aethers, des Weltraums und der schweren Körper. (NS III, 659)

Some of these comments are not logical, e.g. if phlogiston is defined as an imponderable fluid it cannot be dead matter at the same time, and gravity has nothing to do with oxidation. In the next paragraph Novalis makes statements about oxidation that seem to contradict the positive nature previously attributed to oxygen and oxidation.

Oxydation Verminderung der Personalitaet.
Phlogiston = Geist.
Dem Geiste ist Ruhe eigenthümlich.
Das Schwere rührt vom Geiste her. ...
Die Oxydation kommt von Teufel. Leben ist eine Krankheit des Geistes - ein leidenschaftliches Thun.
Luftvernichtung ist Herstellung des Reichs Gottes.
(NS III, 659)
This can only be interpreted as a dialectical argument comparing life in the real world, where oxygen is the element of life, to a spiritual world, which is higher than life. The spirit in the absolute sense is eternal and unchanging. Therefore Novalis can consider life as a disease of the spirit. What is normal and desirable in the physical world is abnormal in the spiritual world. Oxidation is a force of the devil only if life itself is a disease of the spirit. Finally devil is also a part of the polarity that constitutes human existence.

Sollte der Teufel, als Vater der Lüge, selbst nur ein nothwendiges Gespenst seyn? Trug und Illusion steht allein der Wahrheit, Tugend und Religion entgegen. ... Für Gott giebts gar keinen Teufel - aber für uns ist er ein leider sehr würtzamtes Hirngespinst.(NS III, 687).

This devil is as necessary for a dialectical argument as Mephistopheles is necessary to Goethe's Faust. He is the spirit of negation, the polar opposite of the positive truth, but necessary to maintain the dynamic tension of life.

Novalis does not oppose reasoning activities of the mind. He admits that in many cases quiet reason and contemplation provide more insight than the flights of fantasy, but he strongly opposes the kind of stultifying reason that builds a prison for the soul. Petrification of life and feeling is for Novalis the worst danger in life.
In Klingsor's Märchen Schreiber is the only negative figure who lives at home with the other human faculties. The mother becomes a living flame through her martyrdom, and in this form she transcends the narrow, mechanical limits of rationalism.


Dies rührt von der Berührung einer 2ten Welt - eines 2ten Lebens her - wo alles entgegengesetzt ist. (N II, 492), (NS III, 258)

As usual Novalis attempts to integrate the observations of the modern science with the old mythological concepts of the phenomena in nature. Fire has been regarded as one of the basic four elements since the ancient times. Sacrificial fires have purified both gifts from the harvest and human or animal sacrifices so that they would be acceptable to the gods. The flame becomes a magic expression of the utmost contact with the universe, as Mother is burned at the stake in Klingsor's Märchen. Here the heart, the moral organ of the human race, combines with the element of life - oxygen, and the resulting flame destroys the old physical world, the old system of time and space as symbolized by the destruction of the sun, and unites the regions of the heavens and the earth.
Die Flamme verbindet das Getrennte und trennt das Verbundene.
Sie komponirt & decomponirt Wasser.
Sie oxydirt und deoxygeniert. ... (NS III, 35)

Obviously these brief sentences suggest that the flame is not merely a metaphor for a chemical process, but a symbol for transformation. The spirit of Mother becomes the illumination for the new world, the sublimation of the life force and the truly all-enveloping maternal love.

Zufall or Chance.

Zufall or the accidental, which for Novalis has magical properties, is not a meaningless clustering of miscellaneous events in time. The accidental might be unexpected and unpredictable, and yet, once perceived, it has a great effect on the patterns of natural phenomena or the patterns of human lives. The accidental can never be viewed as "mere" chance, for in retrospect these accidental elements fill in the seemingly empty spaces in the natural sequences; they are in truth part of the great script of nature. Chance is a special case of Berührung or contact.

Aller Zufall ist wunderbar - Berührung eines höheren Wesens - ein Problem Datum des thätig religiösen Sinns.
Verwandlung in Zufall. (NS III, 441)
Only chance opens the opportunities for some of nature's sequences to come together and to interact with other events. Obviously for Novalis chance is a contact with a higher level of existence, a sudden flash of illumination which sets in motion many new sequences. That a splinter from the sword of Eisen ends up in the human home is such an "accident," which activates the awakening of the entire universe. In his notes Novalis repeatedly related the figure of Arctur in *Klingsohrs Märchen* to the accidental and to the spirit of life (N III, 172; Kommentar). This indicates that he has assigned a high value to the accidental in his nature philosophy and that accidental phenomena have a great significance in life.

Erhebung des Zufälligen zum Wesentlichen - des Willkürlichen zum Fato, z.B. in der Astrologie - die Folgerungen aus den willkürlichen Namen der Planeten und Sternbilder. (NS III, 398)

Auch der Zufall ist nicht unergründlich - er hat seine Regelmäßigkeit. (NS III, 414)

Novalis sees in the accidental a connection to astrology and to the allegorical significance of planets and signs of the zodiac in life. The dance of the cosmos, which is determined by the play of cards in *Klingsohrs Märchen*, has certain "accidental" influences on the earth and its creatures, because long chains of activity connect the movements of the stars to the rest of the universe. Kristin Pfefferkorn has discussed the significance of
Zufall in Novalis' work and related it to the significant time or "kairos". From a scientific point of view, Novalis' concept of Zufall has many levels of meaning which also include the mathematical or statistical element in the "play" with the forces of the universe. There is sufficient evidence in Das allgemeine Brouillon that Novalis was acquainted with probability theory from the writings of Condorcet. (NS III, 425-6). Therefore his conception of Zufall must also be considered from the mathematical point of view; even apparently random phenomena obey a hidden order that is revealed by mathematics as the organizing principle.

Alle historische Wissenschaft strebt mathematisch zu werden. Die mathematische Kraft ist die ordnende Kraft. Jede mathematische Wissenschaft strebt wieder philosophisch zu werden - animirt oder rationalisirt werden - dann poetisch - endlich moralisch zuletzt religiös. (NS III, 459)

Therefore mathematical representation of natural phenomena is at the beginning of the sequence that leads from mathematics and scientific representation of the world to poetic representation, which eventually becomes a transition to moral and religious knowledge. Nature itself

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Pfefferkorn, 30-47. Her discussion includes many aspects of Zufall, starting with mere chance, exploring chance as Fortuna or play with the given elements, and extending to the partly religious significance of the accidental as wonder.
is undergoing these transitions; therefore all natural laws must also be considered as changing relationships.


Die Natur kann nicht stillstehend, sie kann nur fortgehend - zur Moralitaet erklärt werden.

Einst soll keine Natur mehr seyn - In eine Geisterwelt soll sie allmählich übergehn. Sollten die unabänderlichen Gesetze der Natur nicht Täuschung - nicht höchst unnatürlich seyn. (NS III, 601)

Many of these transformations of nature from a physical into a spiritual world are accompanied by the seemingly accidental exceptions outside the natural laws. In Novalis' view the origin of the universe and the origin of life on earth are also such "accidental" phenomena that have had an immense significance for us. In mathematics there are certain points, which are called "singularities, i.e. they do not obey the equations that govern the fields where they occur; they are outside the rule. In nature these events have an element of wonder, because they also correspond to Unregel. Classical physics dealt with continuous phenomena, and its laws had no place for the phenomena that did not obey its equations. Only in the 20th century quantum mechanics was developed to interpret data from particle physics, where the significant events proceed by
jumps from one energy level to another. Novalis' comment that nature proceeds in jumps, or sprungweise (NS III, 273), i.e. natural history of the world is discontinuous, was revolutionary for his time.
Romantic Nature Philosophy in *Lehrlinge zu Sais*.

The incipient novel of nature and nature philosophy that Novalis began to write during his studies in Freiberg was never completed, so that the remaining fragments, *Der Lehrling* and *Die Natur*, cannot be considered as a complete exposition of Novalis' nature philosophy. The completed fragments, which were originally regarded only as incomplete sketches, have been considered by recent research as intricately structured, thematically complete compositions. As such they discuss several aspects of romantic nature philosophy that were important for Novalis, and express some of Novalis' ideas on the relationships between nature, poetry, and human destiny. These ideas appear in the note-books and fragments and later find their literary expression in the novel *Heinrich von Ofterdingen*, especially in the fairy tale *Klingsohra Märchen*. In all of his works Novalis projects a coming "golden age" as the ideal that represents a new union of humanity and nature brought together by love and poetic spirit. In *Lehrlinge zu Sais* one of the dominant ideas is that of nature's language. This language and the task of its decoding symbolize a way to recover the distant harmonious past and to find signposts pointing to the future. The composition of these fragments and the figures depicted in them also belong partly to nature's language and partly to the poet's
attempt to find some medium of communication between nature and man. Novalis considers many different, mainly visual patterns that are accessible to our senses as nature's language. Finding a logical representation of nature's language is also the main purpose of a scientist, whose experiments are generally designed to observe, record, and classify these patterns. This part of nature's language is also the language of modern science, only the scientist converts these patterns into another more abstract language, that of mathematics. Novalis' thoughts on nature form an important part of romantic nature philosophy and are not limited to the abstractions of mathematics and classical physics. In these fragments he discusses different aspects of nature's language, because human reception of this language is as individualistic as their personal images of nature itself. Yet Novalis' conception of nature and natural phenomena is deeply imbedded in the structure of the Western cultural tradition, combining ideas from the ancient cultures of Greeks and Romans with the discoveries and philosophical speculations of the 18th century. Like most of the writers and nature philosophers of this period, Novalis sees nature and especially the earth as feminine and the heavens and the spiritual forces as masculine. Like Schelling and the later romantic nature philosophers, he sees animal life as masculine and plant life as feminine. According to present day enlightened
views these attitudes seem chauvinistic and old-fashioned, yet all his works indicate that the feminine element was extremely important for Novalis in his life and in his poetry. Novalis view of nature as essentially feminine is accented by the choice of the temple at Sais as the center for the conversations and reflections which constitute these fragments. The temple at Sais is also the end of the search for Hyazinth and the place where the mysterious child figure will return. Even more important is the association of this temple with the goddess Isis and her mysteries.

The Great Goddess Isis.

In the novel fragment *Lehrlinge zu Sais* the quest of the apprentices and their visitors is directed towards the numinous central image of the great goddess Isis. She represents nature in all of its different forms. The figures of the apprentices and the teacher surround the goddess, and each of them represents a different path to self-discovery and the highest wisdom. She is a manifestation of the eternal; she seems to have many forms and representations and yet remains always the same. She is the essence

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29 Kristin Pfefferkorn also discusses the figure of Isis as the great mother goddess of nature in chap. 7 of her book, *Novalis: A Romantic's Theory of Language and Poetry*. pp. 116-139.
of life, and yet is herself beyond life and its limitations. In her attributes she is very close to a description of the Great Goddess common to all the ancient religions of the past. She is considered older than the Indo-European male gods, who later came to dominate most of the great religions of mankind\textsuperscript{30}. Joseph Campbell discusses the significance of this goddess as follows:

... in the temples even of the first of the higher civilizations (Sumer, c. 3500-2350 B.C.), the Great Goddess of highest concern was certainly much more than that (a fertility goddess). She was already, as she is now in the Orient, a metaphysical symbol: the arch personification of the power of Space, Time and Matter, within whose bound all beings arise and die; the substance of their bodies, configuration of their lives and thoughts, and receiver of their dead. And everything having form or name – including God personified as good or evil, merciful or wrathful – was her child, within her womb\textsuperscript{31}.

Elements of the divine expressed by the feminine figure have a great importance for Novalis; The goddess Isis is the focus towards which tend all the conversations and reflections of the apprentices and their visitors. Feminine figures dominate Klingsohrs Märchen. The sacrifice of Mother is a very important part of the transformation of humanity and the entire universe in preparation for the coming of the "golden age." The mythical power of this

\textsuperscript{30}The great goddess and its significance in early European history is discussed in detail by Marija Gimbutas in her book \textit{The Language of the Goddess}.

transformation places Mother close to the figure of the
goddess as represented by Isis. Ginnistan, the power of
fantasy and imagination, accompanies Eros in his wanderings
and finally finds her right mate in Father, the per-
sonification of the senses. Sophie, divine wisdom, belongs
to the heavenly realm from the very beginning, although she
she is separated from it and lives in the human world. The
child Fabel, the spirit of poetry, is also female. Except
for Eros, the male figures are relatively static in this
fairy tale. Therefore, it seems very likely that the femi-
nine principle in its many forms had a very deep personal
meaning for Novalis and for his poetry beyond the trans-
figuration of Sophie von Kühn into a personal guardian
angel (Schutzgeist). Sophie found her place in the spirit
world. Novalis himself after intense grief discovered a new
creative life in his daily work, his studies and in his
poetry.

The Egyptian goddess Isis, the wife of Osiris and the
mother of Horus was an important goddess in Egyptian mytho-
logy. Eventually she absorbed the qualities of other god-
ess figures and became the Great Goddess of the mystery
religions of the entire Mediterranean world. Her worship
continued long after the decline of ancient Egypt and its
civilization, and became an important part of religious
life in Imperial Rome in the first two centuries AD, when
Eastern mystery religions were replacing Roman gods. This
worship also influenced the development of the figure of Mary as the Mother of God in the Christian religion. In the *Golden Ass*, a work that was probably well known to Novalis, the goddess Isis tells Apuleius who she is:

I am she that is the natural mother of all things, mistress and governess of all the elements, the initial progeny of worlds. chief of the powers divine, queen of all that are in in hell, the principal of them that dwell in heaven, manifested alone and under one form of all the gods and goddesses. At my will the planets of the sky, the wholesome winds of the seas, and the lamentable silences of hell are disposed; my name, my divinity is adored throughout the world, in divers manners, in variable customs, and by many names.(she enumerates these names and concludes) ...the Egyptians, which are excellent in all kind of ancient doctrine, and by their proper ceremonies accustomed to worship me, do call me by my true name, Queen Isis. (Apuleius, 237-8)

In Novalis' time all educated people were familiar with Greek descriptions of Egypt, its history, customs and places of worship. 18th century travelers had also reported on the wonderful immensely old temples of Egypt and the mysterious hieroglyphic inscriptions found there. The Egyptian gods Isis and Osiris were associated with the mysteries of the ancient East and played a role in the ceremonies of the Freemasons and Rosicrucians. In Mozart's opera *The Magic Flute* the high priest Sarastro and temple choir, who represent the Enlightenment, sing hymns to Isis and Osiris. The view of the feminine principle, however, is just the opposite of Novalis. Schikaneder's, and presumably
Mozart's, Queen of the Night is an embodiment of the negative principle capable of all kinds of excesses expressed in the vocal acrobatics of a coloratura soprano. Women in this fairy tale opera requires masculine guidance\textsuperscript{32}. An example is Pamina who is allowed to accompany her beloved Tamino through the tests of fire and water. In this opera, which represents many of Enlightenment ideals, the feminine goddess as the ruler of the night and the subconscious is separated from Isis, the consort of Osiris. Her destructive power must be totally subjugated by the masculine sun god and his priest Sarastro before the Enlightenment sun can illuminate the new rule of Tamino and Pamina. Fr. Schiller, who exerted considerable influence on the young Novalis, had written about the Egyptian gods in Die Sendung Moses\textsuperscript{33}, and later wrote a ballad Das verschleierte Bild zu Sais\textsuperscript{34} dealing with the taboo associated with the statue of the goddess\textsuperscript{35}. Although the Greeks had done much to establish a

\textsuperscript{32} Novalis' emphasis on the feminine element differs from the nature philosophy of Schelling, who connects masculine with spirit and feminine with nature or the earth. This division is strongly emphasized in G. H. Schubert's books on romantic nature philosophy.


\textsuperscript{34}\textit{Schiller's Werke}, Nationalausgabe 2 part 1, 140.

\textsuperscript{35}In 1798, when Novalis was sketching some of his ideas for the \textit{Lehrlinge}, Napoleon invaded Egypt. During this expedition the Rosetta stone was found in the Nile delta region. The inscription on this stone in Greek, Egyptian demotic, and hieroglyphic script was partially deciphered only about ten years later by Champollion. During the last years of Novalis' life, however, Egyptian
nature philosophy, which later served as a basis for the development of modern science, they felt that Egyptian civilization had a deeper understanding of nature's mysteries, but this ancient knowledge had been gradually lost as the power of Egypt gradually declined, and the old temple inscriptions could no longer be deciphered. The temple at Sais, not far from Alexandria in the Nile delta region, was famous for its sanctuary of the goddess and the inscription: "I am that which is, that which was, and that which will be; no one has lifted my veil." Schiller had used the theme of the veiled goddess in his ballad *Das verschleierte Bild zu Sais*, but his figure of the goddess is quite different from that of Novalis: she is silent, awe-inspiring and enigmatic. Schiller's apprentice is punished for his transgression. Any attempt to lift the veil is the sin of hubris, comparable to eating the forbidden fruit from the Tree of Knowledge in the biblical Eden. Novalis' apprentice is searching for a way to transcend the old law without offending the goddess; he is the romantic idealist who wants to expand the limits of all experience and to transform the metaphysical foundations of the divine.

hieroglyphs had not yet lost their mystery.
Synthesis of Nature's Patterns.

Although *Lehrlinge zu Sais* is the first attempt by Novalis to express his ideas in the form of a literary narrative, he already uses some characteristic devices to indicate a syncretic, all-encompassing view of nature. Novalis chose the temple at Sais in ancient Egypt as the site of his prose fragments for the proposed novel on nature philosophy, yet the conversations and reflections of these fragments deal with questions that are typical for nature philosophy at the end of the 18th century, and in particular with the relationships between man, nature and art in German idealist philosophy. In his later work, in particular in *Klingschre's Märchen*, Novalis uses figures from many different periods and different cultures to indicate the universality of the projected transformation of humanity and nature. In the fragments, *Der Lehrling* and *Die Natur*, Novalis attempts to integrate the entire history of nature philosophy, starting with the presumed harmonious relationship between men and nature in the so called "golden age" of pre-history, and ending with the latest achievements of 18th century natural sciences. This integration process is a recovery of the past to energize the present as a preliminary stage for the future. Therefore signs and omens of the future state of harmony belong to this total history of nature; such an omen is the brief
appearance of the child as a messenger from a different level of existence. The temple at Sais here represents a mystical intersection of different levels of time and place, where the connections to the golden past have not been completely lost. The secrets of this past are hidden in the hieroglyphs of the ancient Egyptian inscriptions, which are sequences of simplified objects of nature, and in Novalis' view are close to the true script of nature itself. This script can be read in the patterns that nature inscribes on her creations, both in the organic and inorganic world. Similarly, the relic of another ancient civilization, the language of Sanskrit, became a symbol for the Adamic language of the Kabbalah and the Judaic tradition, which regards everything that is created as a manifestation of the true language of God. This true language not only gives all things their right names, but also has the magical power of creation. It is the origin of life. This view, that the true language is directly related to the powers of creation, is common to both Jewish and Western mysticism. Traces of this mysticism are always present in Novalis' poetry as magical forces that oppose the purely rational discourse of Enlightenment, which he saw as

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Gershom Scholem states: "All creation - and this is an important principle for most Kabbalists - is the point of view of God, nothing but an expression of his hidden Self that begins and ends by giving itself a name, the holy name of God, the perpetual act of creation. (Mysticism, 17)"
an expression of "petrified and petrifying" reason.

The first fragment of Die Lehrlinge zu Sais, Der Lehrling, has been extensively studied by Striedter and Gaier, who use a structuralist approach and relate the structure of this fragment with the ideas expressed in it. I will attempt to look at some other aspects of this work that show a connection to Novalis' fragments and to his thoughts concerning scientific studies and the role of science in expanding the horizons of individual knowledge.

The first paragraph deals with examples of nature's mythical cyphers. Time has obscured the significance of these cyphers, which men can no longer grasp. These examples are visual patterns which we observe in nature. They characterize plants and animals, birds and other living things; they are found in the rocks and other formations of the earth and in the constellations and planetary paths in heaven. These patterns are formed by nature itself, and have constituted the visual impressions of the universe since the beginnings of human civilization. The other patterns are experimentally produced by scientists, who attempt to visualize the invisible forces in nature.\(^{37}\) In

\(^{37}\) Novalis uses two examples from 18th century science: Chladny's representation of sound waves as figures of sand on glass plates, and the lines of magnetic field as shown by the alignment of iron shavings on glass or paper above a magnet.
many cases scientific experiments are designed to produce a visual pattern as a representation of a definite natural phenomenon as certain experimental conditions are varied. The modern scientist usually produces these patterns with the help of electronic instruments and measuring devices, because our senses are not able to perceive the infinitely small realm of particle physics or the immensity of the expanding universe. The instrumental patterns are then translated into mathematical equations, which have become the universal language of science. Manipulation of these patterns and of the mathematical equations lead to new hypotheses about natural laws, which in turn are tested by comparing other patterns with the proposed mathematical results. In Novalis' time, however, the patterns directly received by the five senses were an important part of nature study. Novalis' work at the mining academy in Freiberg concentrated on the physical characteristics of various rocks and minerals. The characteristics important for field surveys were color, hardness, crystal formation or other indications of structure and sometimes even taste (e.g. "Bleyzucker"). Equally important was the location of these minerals in the earth's strata and the composition of the other materials found at the geological test sites. From these mineralogical studies Novalis learned the concept of sequences.
Much of what we consider as an "accident" in Novalis' view also forms a pattern, which we have not learned to recognize. The "accidental" events in nature are those that fall outside the laws of physics. All origins are such singular points, and every act of creation has an element of the accidental in it. In this first paragraph Novalis implies that all our understanding of nature's patterns and the language encoded in these patterns is fleeting and fragmentary: "Ein Alcahest\textsuperscript{38} scheint über die Sinne der Menschen ausgegossen zu seyn."

Once Novalis has indicated the general problems, which any student of nature has to consider, he turns to a discussion of three different figures, who are the paradigmatic examples for acquiring the wisdom of understanding nature and the ability to read her magic script. They represent the scientific and poetic/mystical approaches to nature. The teacher follows the path of a scientist. He observes diverse natural phenomena, determines their characteristic patterns or signatures, and superimposes these patterns on other phenomena. The teacher looks at the external world, he observes, experiments, and classifies

\textsuperscript{38} Alcahest is one of the terms from alchemy, which occasionally appear in Novalis' works. This term was derived by Paracelsus to describe a universal solvent capable of dissolving and absorbing everything that exists. The implication is that perceptions of the senses and later memories of these perceptions are transitory. (Balmes, N III, 120; see also Gaier, 84)
his observations until a harmonious image of nature emerges, but he does not explain this image to the apprentices.

Den Sternen sah er zu und ahmte ihre Züge, ihre Stellungen im Sande nach. In's Luftmeer sah er ohne Rast, und ward nicht müde seine Klarheit, seine Bewegungen, seine Wolken, seine Lichter zu betrachten. Er sammelte sich Steine, Blumen, Käfer aller Art, und legte sie auf mannfache Weise sich in Reihen. Auf Menschen und auf Tiere gab er Acht, am Strand des Meeres saß er, suchte Muscheln. Auf sein Gemüt und seine Gedenken lauschte er sorgsam. ... Nun fand er überall Bekanntes wieder, nur wunderlich gemischt, gepaart, und also ordneten sich selbst in ihm oft seltsame Dinge. Er merkte bald auf die Verbindungen in allem, auf Begegnungen, Zusammentreffen. ... Bald waren ihm die Sterne Menschen, bald die Menschen Sterne, die Steine Tiere. Die Wolken Pflanzen, er spielte mit den Kräften und Erscheinungen, er wußte, wo und wie er dies und jenes finden, und erscheinen lassen konnte, und griff so selbst in den Saiten nach Tönen und Gängen umher. (NS I, 80)

In Novalis' opinion every picture of the outside world is highly individual and is determined by an inner readiness to form concepts out of the chaotic multiplicity of sensual apperceptions. This picture of nature cannot be imposed as a rigid dogma on those willing to learn, but is formed by the interaction of the inner subjective world with the external world of nature. In general Novalis seems to prefer the poetic approach to nature, but it does not mean that he neglects the importance of scientific work. He sees the two paths towards understanding of nature's secrets as the dialectical opposites that must eventually
be unified in a great synthesis of all experience. Several comments in Novalis' notebooks indicate that he values the experimental scientist and his accomplishments:

Wie wenig Menschen haben Genie zum Experimentieren. Der ächte Experimentator muß ein dunkles Gefühl der Natur in sich haben, das ihn, je vollkommener seine Anlagen sind, um so sicherer auf seinem Gange leitet und mit desto größerer Genauigkeit das versteckte entscheidende Phänomen finden und bestimmen läßt. Die Natur inspirirt gleichsam den ächten Liebhaber und offenbart sich um so vollkommener durch ihn. ... Der ächte Naturliebhaber zeichnet sich eben durch seine Fertigkeit die Experimente zu vervielfältigen, zu vereinfachen, zu combinden und zu Analysiren, zu romantisiren und popularisiren, durch seinen Erfindungsgeist neuer Experimente ... aus. Auch Experimentator ist nur das Genie. (NS III, 258)

In contrast to the scientist the poet is not concerned so much with the regular and predictable interplay of natural phenomena as with the occurrence of the unusual and accidental, as the elements of wonder which shape aesthetic contemplation of nature. Poetic understanding of nature involves a close contact between the external world, the poet's senses, and his power of imagination, which soars beyond the limits of reason and beyond the limits of space and time. A synthesis of these diverse paths has been achieved by the figure of the magical child in the first fragment of Lehrlinge zu Sais. He simply appears as a presence who affects everybody around him; he is the only one of the figures in the first segment whose appearance is described, but Novalis never tells us what special wisdom
this child represents. He is a visitor from another level of existence, the true child of the goddess Isis, who may come from the distant past or from the future "golden age", when the laborious process of learning and self-discovery will be replaced by instantaneous and direct revelation without any mediation of abstract systems of communication such as language, mathematics, or the sciences. Poetic perception for Novalis is the closest approximation to this ideal mode of conversation.

Most important for the apprentices' road to self-discovery and understanding of nature is the figure of the unskilled apprentice.

Immer traurig sah er aus, lange Jahre war er hier, Ihm glückte nichts, er fand nicht leicht, wenn wir Kristalle suchten oder Blumen. In die Ferne sah er schlecht, bunte Reihen gut zu legen wußte er nicht. Er zerbrach alles so leicht. Doch hatte keiner einen solchen Trieb und solche Lust am Sehn und Hören. (NS I, 81)

He is so eager to learn and to understand that he is clumsy in executing the tasks of data gathering and observation which in the teacher's way of learning belong to the first stages of learning nature's language. The teacher's way is directed outwards, towards the physical manifestations of nature and the patterns which these phenomena generate. Only when the teacher has amassed an immense quantity of data does he begin to reorganize the observed patterns and to create new figures through free play, i.e. he proceeds
from experimental data to a formulation of hypotheses and natural laws.

Der Lehrling darf noch nicht raisonniren. Er muß erst mechanisch fertig werden, dann kann er anfangen nachzudenken und nach Einheit und Anordnung des Gelehrten streben. Das voreilige Denken hält mehr auf, als es befördet. (NS III, 245)

The unskilled apprentice senses a deep mystery in the patterns that constitute nature's language. He is unskilled because he is afraid to destroy this mystery in the repetition of collecting specimens and forming sequences of these specimens away from their place in living nature. When he finally finds the small stone that provides the link for all the sequences of knowledge, which the teacher and the apprentices have so far accumulated, he has not only found the center point that completes his image of nature, but he has also reached the stage of inner development where all the different aspects of the human soul interact and reinforce each other through spiritual contact and exponential growth or Potenzierung.

In unsre Mitte trat er bald, und brachte, mit unaussprechlicher Seligkeit im Antlitz, ein unscheinbares Steinchen von seltsamer Gestalt. Der Lehrer nahm es in die Hand, und küßte ihm lange, dann sah er uns mit nasse Augen an und legte dieses Steinchen auf einen leeren Platz, der mitten unter andern Steinen lag, gerade wo wie Strahlen viele Reihen sich berührten. (NS I, 81)
The unskilled apprentice is the genius of nature, the inventor and discoverer of nature’s secrets. As if by accident he has in one leap bypassed his associates and truly found the philosophers’ stone.


In this respect genius is somebody who can touch with love anything in nature. The seemingly unskilled apprentice was able to find the center point of his search, but Novalis warns all others that these discoveries are not easy. Most people have to work hard for every bit of wisdom that they discover in their lifetime.

The Figure of the Apprentice

The apprentice, who at this time has emerged as the narrator and the central figure of the story, realizes that his way to nature is different than that of the teacher. The teacher directs his activities at first towards the external world, to every detail of natural phenomena, and nature rewards his attention and care; the apprentice,
however, realizes that his way leads inward. He does not try to imitate the teacher or the other two apprentices. He is neither an observer nor collector by nature. His way to understanding of the world is through introspection and reflection. He seeks the final answer in philosophy and in the subjective inner world of his own soul:

Mich führt alles in mich selbst zurück. ... Mich freuen die wunderlichen Haufen und Figuren in den Sälen, allein mir ist, als wären sie nur Bilder, Hüllen, Zierden, versammelt um ein göttlich Wunderbild, und dieses liegt mir immer in Gedanken. Sie such' ich nicht, in ihnen such' ich oft. (NS I, 81)

The accumulated knowledge of the past appears to him as hollow images surrounding the divine figure, the sleeping goddess who embodies all the secrets of nature. The apprentice seeks wisdom, but at the present stage he realizes that the images surrounding the goddess do not reveal their essence in mere appearance. They are just as opaque and unknowable as the Kantian Ding an sich. He wishes to be in the presence of the departed apprentices, because he feels that their personalities confer a special illumination on everybody around them. In these two departed figures the apprentice senses a divine complement to his search for truth, and a personal predilection for the path of mysticism and religion. This mystical illumination cannot be achieved through intellectual activity alone, but requires a highly developed sense of perception and an
ability to respond to the slightest of stimuli. The role of the teacher is to stimulate and develop these latent abilities.

Vielmehr will er, daß wir den eignen Weg verfolgen, weil jeder neue Weg durch neue Länder geht, und jeder endlich zu diesen Wohnungen, zu dieser heiligen Heimat wieder führet. Auch ich will also meine Figur beschreiben, und wenn kein Sterblicher, nach jener Inschrift dort, den Schleier hebt, so müssen wir Unsterbliche zu werden suchen; wer ihn nicht heben will, ist kein echter Lehrling zu Sais. (NS I, 82)

Each personal quest for self-discovery and wisdom describes an individual figure, another pattern that resembles the hieroglyphs of nature. In Novalis' opinion this path is not complete until the true disciple searching for the mysteries of life lifts the veil of the goddess and by this forbidden act touches infinity itself.

Divergent Views of Nature

The second fragment of *Die Lehrlinge zu Sais* deals with different approaches to the understanding of nature itself. Different voices discuss the manifold relationships of men and nature. These voices are heard at the ancient temple in Sais, but, although they constantly refer to the past, their concerns and ideas are those of the late 18th century nature philosophy. These discussions follow a triadic structure characteristic of the literary works and
philosophical discussions of the time. The first and the third parts of the fragment resemble the conversations of the Jena romantics (Symphilosophieren) or an academic seminar. They are centered around the fairy tale Hyazinth und Rosenblütchen. This fairy tale illuminates the quest of the apprentice, described in the first fragment, and suggests a possibility of finding through the power of love the goddess Isis, the symbol for the origin of all existence. The first fragment, Der Lehrling, dealt with nature’s language and with gradual concretization of the apprentice’s aims in approaching the secrets of nature. There was no clear indication how he could achieve the nucleus of true knowledge that is hidden by the outside appearance of things. In this fragment the relationship of humanity and nature is discussed from many different aspects. The apprentice is here a silent listener, who becomes confused by the divergent viewpoints of the conversing voices. The fairy tale, told by a cheerful friend, is a poetic summary of the earlier discussions and an indicator of yet another way towards the truth by transforming the philosophical speculations of the discordant voices through love and poetic imagination.

Es mag lange gedauert haben, ehe die Menschen daraufachten, die mannigfachen Gegenstände ihrer Sinne mit einem gemeinschaftlichen Namen zu bezeichnen und sich entgegen zu setzen. (NS I, 82)
The first sentence of the fragment *Die Natur* is a statement based on Fichte's philosophy that establishes the birth of consciousness and reflection as the positing of the ego, which then posits the complementary and opposing non-ego. This statement also implies a long pre-history of the human race as an integral part of nature before this separation. Once human beings learned to view other elements in nature as separate from themselves, they gave them names and established a language. A true history and true science are only possible after consciousness and language have been established; both require a distancing from the contemplated object and careful observation of many distinct objects and processes. Novalis compares this increasing multiplicity of human efforts to understand the world surrounding them to the separation of a light beam in a prism, which produces many beautiful colors, but the refracted beam is difficult to unite and to restore to its original white purity. Novalis suspects that this increasing differentiation and fragmentation of human efforts has become a sickness and inability to achieve any unified view of the world and their own existence. Efforts of scientists are directed towards an analysis of natural phenomena, and very little is expended towards a synthesis, a representation of nature as a harmonious entity. To find models for a new unity and harmony the philosopher of nature must go back to the early philosophy and science when the con-
structured cosmologies were closer to the original "golden age" of antiquity.38

This belief in a utopian mode of existence survived through the Middle Ages and Renaissance, and appeared in literature as Arcadia or locus amoenus, where simple people lived close to nature untroubled by the cares of increasingly complex societies. Novalis points out that in these early stages of civilization men did not hesitate to ask the most sublime questions and searched for answers both in the observation of various objects in the real world and in the projections of their imagination in poetry and myth.

Wir finden, daß gerade die erhabensten Fragen zuerst ihre Aufmerksamkeit beschäftigten, und daß sie den Schlüssel dieses wundervollen Gebäudes bald in einer Hauptmasse der wirklichen Dinge, bald in dem erdichten Gegenstande eines unbekannten Seins aufsuchten. (NS I, 83)

Eighteenth Century German intellectuals saw these origins in the civilization of ancient Greece. Novalis first considers the ideas of the pre-Socratic philosophers,

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38 The idea of this "golden age" in the works of Novalis has been extensively researched by H-J Mähl in his book Die Idee des goldenen Zeitalters im Werk des Novalis. Mähl follows the history of the concept of a "golden age" in Western culture starting with Hesiod in ancient Greece and continuing to Rome and its poets Ovid and Vergil. Ovid's Metamorphosis starts with a description of the four ages in the history of human race; the first of these - luminous in the distant past - was the golden age when all existence on the earth was harmonious and idyllic.
who were among the first to think about the world logically and rationally. They wanted to go behind the appearance of the things communicated by the senses and to find a systematic universe subject to natural laws.\footnote{In his book \textit{Masks of the Universe} E. Harrison claims that the pre-Socratic philosophers were the first to construct a universe on the principles of mathematics and rational thought. He calls this model "the geometric universe."}

The ancient Greeks were not the first people who collected data about celestial bodies or discovered the use of numbers and their relationships. Babylonian astronomy (in combination with astrology) and Egyptian mathematics and chemistry existed long before the beginnings of Greek civilization, but these discoveries were used for religious or commercial purposes not for a consistent interpretation of nature. The early Greeks approached natural phenomena as scientists and philosophers; they analyzed their observations and tried to find patterns in them. They wanted to find a harmonious unity behind the multiplicity of phenomena and to interpret the cosmos as a single unified system. They speculated that if there existed such a basic unity in nature then there must exist a primary matter from which were derived all the material things. When Novalis says: "Bemerklich ist hier die gemeinschaftliche Ahndung
desselben im Flüssigen, im Dünnen, Gestaltlosen", (82) then he must refer to the early Ionian philosophers\textsuperscript{41,42}.

Although the narrative at the beginning of the fragment is abstract and impersonal, the implication is clearly there that these results do not satisfy Novalis, who prefers "Märchen und Gedicht" to these abstract scientific explanations. In the ancient world interpretations of natural phenomena were found in poetry, in fairy tale and in

\textsuperscript{41}Thales of Miletus thought that this primary element or \textit{Ursstoff} was water, Anaximenes considered air and Heraclitus fire as the primary substances. Eventually the search for the basic elementary matter constituting all things in nature led to the suggestion that all matter is divisible and consists of tiny indivisible particles. This idea first appeared in the teachings of Empedocles, who thought that objects can come into being and be finally destroyed, but they are all composed of indestructible particles of the four basic elements: air, fire, water and earth. Transformations of ordinary matter take place through the polar, and not quite scientific, forces of love-hate, or harmony-discord. A logical further development of Empedocles' theory was the so called Atomist philosophy, which was first proposed by Leucippus of Miletus and later elaborated by Democritus of Abdera. Democritus' name has become permanently associated with atomism in the history of science, but he built his theory on the ideas and suggestions of his predecessors. Atoms move in a void, and all possible substances are formed by collision and combination of atoms. Considering that comparable scientific theories were only developed in the 19th century, the ideas of Greek nature philosophers are truly astonishing.

\textsuperscript{42}This discussion is based on several sources: first, Balmes, N III, 112, mentions the pre-Socratic philosophers; second, an entire chapter in E.Harrisons book \textit{Masks of the Universe} is devoted to a discussion of scientific models proposed by Greek philo-sophers; third, F.Coppleston's \textit{A History of Philosophy}, vol.I, part 1 deals with pre-Socratic philosophy, pp. 13-80)
myths. Instead of mathematical formulas and mechanical laws, interpretations were based on the familiar relationships between men, animals, and gods. These images were on the human scale and were enveloped in poetic phantasy; i.e. the history of the world became a history of human experience told by a poet. There exists a special relationship between nature and human beings, as if by accident the spirit of nature is best expressed through human characteristics, in particular through human emotions. That is the reason why nature seems to have a special affinity for poetry.

Daher ist auch wohl die Dichtkunst das liebste Werkzeug der eigentlichen Naturfreunde gewesen, und am hellsten ist in Gedichten der Naturgeist erschienen. Wenn man echte Gedichte liest und hört, so fühlt man einen innern Verstand der Natur in sich bewegen, und schwebt, wie der himmlische Leib derselben, in ihr und über ihr zugleich. (NS I, 84)

... am Ende weiß der Denker aus Jedem Alles machen - der Philosopf wird zum Dichter. Dichter ist nur der höchste Grad des Denkers, oder Empfinders etc. (NS III, 406)

Instead of the painstakingly slow progress of the scientist Novalis is attracted to the genial touch of the productive powers of imagination that allow the poet to soar far above the slow and difficult path of the scientist. While the scientist attempts to observe the real world in all of its manifestations, the poet's intuition allows him to touch the spirit of nature (Berührung) and to become a part of it. Nature dances in his presence and
opens her heart, while the scientist sees only the dissected and distorted fragments of her living and loving self. In these sentences Novalis criticizes the methods that scientists use to explore nature and its creatures. It has been recorded that Novalis' teacher Werner was opposed to unnecessary disturbance and destruction of natural objects, even minerals and other inert materials. (Gaier, 78) This reverence of nature is also characteristic of Novalis, who finds dissection repugnant. The sentence: "Unter ihren Händen starb die freundliche Natur, und ließ nur nur tote zückende Reste zurück...", (84), refers to the experiments of Galvani who first observed electric phenomena when different metals came in contact with the muscles of a frog's leg. The resulting contractions were used for a long time as a galvanometer, i.e. a device to indicate presence and strength of electric current. Later, when he became acquainted with Johann Wilhelm Ritter, who saw in galvanism the underlying life-force in nature, Novalis changed his mind and saw in galvanism a positive force (NS I, 335-347). Although Novalis states: "Naturforscher und Dichter haben durch Eine Sprache sich immer wie Ein Volk gezeigt.", (84), the rest of the paragraph defines and emphasizes the division between these two groups. The scientist is associated with analysis, dissection and destruction of nature's creatures in the name of knowledge; the poet finds the deepest pleasure in his rela-
tionships with nature. It speaks to his soul and mirrors
the images of his imagination.

Nature manifests itself in so many different images
and forms that every human being can find some contact with
nature and can establish some kind of relationship with
her. That nature can aspire to the sublime is indicated by
the phrase; "... so zeigt sie sich dem Gotte göttlich, und
stimmt zu dessen hohem Geiste." (85). Most people do not
realize this greatness in nature, but the best of them feel
a deep affection, a yearning which inspires them to con-
template the majesty of nature and to search in its
manifold phenomena for the connecting links which form the
great system of the universe.

Wenige bleiben bei dieser herrlichen Umgebung ruhig
stehen, und suchen sie nur selbst in ihrer Fülle und
ihrer Verkettung zu erfassen, vergessen über der
Vereinzelung den blitzenden Faden nicht, der reihen-
weise die Glieder knüpft und den heiligen Kronleuchter
bildet, und finden sich beseelt in der Beschauung
dieses lebendigen, über nächtlichen Tiefen schwebenden
Schmucks. (NS I, 85)

The ways of nature are like the ways of men. Novalis
repeats again his original statement and follows with a
different analogy: we understand only what is like us.
People see in nature only what they want to see in her.
Some people want to recapture memories of their past.
others look for the future and new worlds to conquer. Some
search for the images of the divine, others for the means
to satisfy their desires and needs. Still others see a fault in the wildness of nature and want to tame and civilize it. In the present age excessive exploitation of natural resources and continuous destruction of many plant and animal species have given a bad connotation to the process of taming nature. In the 18th century civilization of nature according to the projections of the rational mind was a noble undertaking. Novalis shares this cultural optimism with the philosophers of the Enlightenment. When Novalis implies that a certain process of civilization and moral education will transform nature and bring about a new state of harmony where humanity and nature will again be united in love, he sees this civilization as a twofold process: it is a restoration of the original perfection, which once existed in the distant past, and an elevation of both nature and humanity to a higher level of consciousness and freedom. These intentions are characteristic of the romantic nature philosophy and go beyond the limits of the technical dominance of nature outlined by the rationalists of the Enlightenment. The implied goal in the first process is the restoration of nature as a mythical Garden of Eden. For this purpose the entire nature must be ennobled:

Sie teilten sich gesellig in das große Werk, die einen suchten die verstummten und verlornen Töne in Luft und in Wäldern zu erwecken, andere legten ihre Ahndungen und Bilder schönerer Geschlechter in Erz und Steine nieder, bauten schöner Felsen zu Wohnungen wieder, brachten die verborgenen Schätze aus den Gräften der
Erde wieder ans Licht; zähmten die ausgelassenen Ströme, bevölkerten das unwirtschaftliche Meer, führten in öde Zonen alte, herrliche Pflanzen und Thiere zurück, hemmten die Waldüberschwemmungen, und pflegten die edleren Blumen und Kräuter, öffneten die Erde den belebenden Berührungen der zeugenden Luft und des zündenden Lichts, lehrten die Farben zu reizenden Bildungen sich mischen und ordnen, und Wald, Wiese, Quellen und Felsen wieder zu lieblichen Gärten zusammen zu treten, hauchten in die lebendigen Glieder die Töne, um sie zu entfalten, und in heiteren Schwingungen zu bewegen, nahmen sich der armen, verlässnen, für Menschensitze empfänglichen Tiere an, und säuberten die Wälder von den schädlichen Ungeheuern, diesen Mißgeburten einer entarteten Phantasie. (NS 1, 86)

Novalis actually describes here human activities in nature from the early history to the late 18th century. This civilization of nature is also the history of human civilization; the development of agriculture, architecture, mining and the arts. In general nature is civilized to suit the ideas and convenience of men. At present these ideas might appear naively optimistic and clearly anthropocentric, but they follow the basic concepts of the idealist philosophy: nature must be brought to consciousness and eventually to morality through the efforts of man. The last lines of this very long sentence indicate that even nature suffers from the presence of degenerate creatures. It is difficult to determine what Novalis meant by "schädliche Ungeheuer." We may assume that these monsters were the old predators, e.g. wolves and bears, which had largely disappeared from 18th century Germany, perhaps they were the mythical beasts of old fairy tales, symbols of evil and
violence that would have no place in the harmonious world of future. This "golden age" is described as in a vision:

Dann werden die Gestirne die Erde wieder besuchen, der sie gram geworden waren in jenen Zeiten der Verfinsterung; dann legt die Sonne ihren strengen Zepter nieder und wird wieder Stern unter Sternen, und alle Geschlechter der Welt kommen dann nach langer Trennung wieder zusammen. (NS I, 88)

These themes of regeneration as a new awakening of the petrified nature and a transformation of the human soul are developed in more detail in the last part of Klingsohrs Märchen in the novel Heinrich von Ofterdingen. (NS I, 290-315) There, as I will show later, the discoveries of the late 18th century science: galvanism, voltaic battery and static electricity have been completely poetized and mythologized as agents in the transformation and unification process of nature and human soul. The final result again is the union of the earth and the realm of the stars and Aufhebung of the sun as a symbol of time that carries with it the processes of death and decay.

If civilization of nature is a conscious activity that must be pursued to achieve new harmony between man and nature, then certain guidelines should be established so that people could avoid unproductive approaches that have been common in recent history. Novalis claims that we must learn from artists and poets how to follow nature's signs
and to interpret her secrets. Isolation from nature and misguided attempts to interpret it in terms of one-sided and superficial knowledge will certainly fail.

Keiner irrt gewiß weiter ab von Ziele, als wer sich selbst einbildet, er kenne schon das seltsame Reich, und wisse mit wenig Werten seine Verfassung zu ergründen und überall den rechten Weg zu finden. Von selbst geht keinem, der sich los riß und sich zur Insel machte, das Verständnis auf, auch ohne Mühe nicht. (NS I, 87)

The only understanding of nature which does not require long years of study is that given to children and childlike people who have a special talent for an unconscious or semi-conscious immersion in nature, and who are able to intuit a higher consciousness through this mystical experience.

This reference to the child-like qualities that can establish an immediate contact with nature is related to the figure of the mysterious child in the first fragment, Der Lehrling. The child is the romantic metaphor for the future and the coming "golden age." In the present age people have to develop their own faculties and senses to the utmost; they have to achieve an equilibrium between inner subjective nature and the external world before they approach wisdom. This is the path that was chosen by the teacher.

As different voices continue to represent different viewpoints about nature and men, Novalis frequently
attributes positive or negative valuations to these views. Two groups of voices oppose the essentially positive views of nature presented so far. They either find pleasure in nature as it is at present or aspire to civilize it and convert it to a worthy partner for developing humanity. The first group, identified by the term, *Einige*, do not see any value in the exploration of nature and its phenomena. These attempts are doomed from the beginning since any efforts only lead to new complexities and new infinities, while the discovered patterns and sequences disappear in an unknowable abyss. They think that only negative destructive forces dominate natural processes;

Auch bleibe die Natur so weit man käme, immer eine furchtbare Mühle des Todes: überall ungeheuer Umschwung, unauflösliche Wirbelkette, ein Reich der Gefährlichkeit, des tollsten Übermut, eine unglücksschwangere Unermeßlichkeit; die wenigen lichten Punkte beleuchten nur eine desto grausendere Nacht, und Schrecken aller Art müßten jeden Beobachter zur Gefühllosigkeit ängstigen. (NS I, 88)

Not only do they see the world as a vale of tears, these people regard exploration and acquisition of knowledge as dangers which tend to destroy men or lead them to madness. They see dark, demonic forces in nature, which constantly threaten to reduce men to the level of lower life forms. This fear of the demonic natural forces later becomes one of the dominant themes in romanticism. It is
found already in the works of Tieck, but is not characteristic for Novalis.

Another group, the courageous ones, also see nature as an enemy, but they are willing to fight these destructive forces by any means available. They see scientists and artists as the avant garde in this battle with nature: the scientist can use his knowledge to develop weapons against nature, and the artist attempts to tame and civilize the wild, negative aspects of nature.

Der Naturforscher sei ein edler Held, der sich in den geöffneten Abgrund stürze, um seine Mitbürger zu erretten. Die Künstler haben ihr schon manchen geheimen Streich beigebracht, fahrt nur so fort, bemächtigt euch der heimlichen Fäden, und macht sie lüstern nach sich selbst. (NS I, 89)

Both help to subjugate nature to human needs. If it is possible for other worlds to join this struggle, then men will build a new universe as a true land of fantasy. All this is within the grasp of men because they are the only creatures who have freedom while the rest of nature lies in bonds of necessity.

The third group does not see nature as an enemy. They respond to the idea of freedom and find at the source of freedom a reflective medium which allows them to construct a whole world in thought. They value their own thought processes above everything else and think that reflections
of the rational mind impose order on the diversity of nature and thus provide a key to all of nature’s secrets.


These voices are representative of enlightenment and 18th century rationalism. The universe is a giant clock, and the universal laws governing it are given by Newtonian mechanics and by the new mathematics; both abstract constructions of the rational mind. Like the mathematician Laplace they believe that given the correct mathematical equation the processes of the entire universe can be predicted and explained.

The interplay of the voices lead from the early history of the pre-Socratic nature philosophers to philosophical and scientific concerns of the 18th century. Human perceptions of nature have ranged from a simple acceptance of the nature as it appears to the senses to a mental construction of nature as an abstract system. These voices then represent a history of human relationships with nature, which then entered many philosophical systems of the past. The only individual voice in this spectrum of
differing opinions, that of the serious man, reiterates that nature is too complex and presents too many different perspectives to be explained by the simple models of the previous speakers. In particular, those people who fear the destructive forces of nature are scared by the monsters of their uncontrolled imagination. They forget the powers of their conscious mind. If man enters in a reciprocal relationship with nature both can only gain from it: man by extending his consciousness by moral activities in nature, and nature by association with the conscious, thinking human ego. Many critics have identified this serious man with Fichte, and influence of idealist philosophy is clearly expressed here. In his Wissenschaftslehre Fichte states that the first action is the positing of the Ego by itself and the second action is the positing of a Non-ego in opposition to the Ego. Since Non-ego contains everything that is not included in Ego, it must represent nature as the real world. The individual ego is required to strive endlessly towards the ideal contained in the transcendental ego and to generate moral order by its activities. In a Fichtean sense the positing of the world as a Non-ego is necessary in philosophy, because it sets up the conditions for all moral action. Although this view is more positive than the others, it still limits the role of nature to the passive field of human activities, and as such it
remains subordinate to the Absolute Ego, which is the beginning and end of all cognition in idealist philosophy.

Fairy Tale and the Concept of Love.

Naturally the apprentice is confused by all these voices. Each of them has a certain validity, and yet, at this point a general synthesis of the discordant elements appears impossible. Human relationships with nature can only be whole and harmonious if they involve the entire human soul, its imagination, its feelings and its highest emotion—love. At this point of indecision Novalis introduces the fairy tale, Hyazinth und Rosenblütchen, told to the apprentice by a joyful playmate. The fairy tale, probably the first that Novalis wrote, expresses in a simple language the dilemma of the young apprentice, who is searching for a better understanding of himself and for the goddess who embodies the origin of all that exists. The playmate with roses in his hair introduces a new component in the apprentice’s world: human emotions and love. Love does not come to those who spend their days in lonely contemplation. The apprentice behaves just like Hyacinth, who wanders around immersed in melancholy thoughts. Once he had been happy as all people were happy during the ancient

43 Ulrich Gaier gives an extensive interpretation of this fairy tale in his book Krumme Regel, 11-33.
"golden age." The fairy tale is the appropriate medium to describe this happy time, because it has preserved some of the child-like wonder and innocence, and yet, as Novalis states on p. 83, does not hesitate to ask the most sublime questions. Fairy tale is also the poetic medium which connects present to the past and to the future. In this fairy tale world things, plants and animals speak the same language as people. Rosenblütchen was part of this golden age of childhood, she and Hyacinth were the archetypal prince and princess of the fairy tale, a memory of a time that once existed. The break with the past occurs as a magician arrives from far away lands, tells Hyacinth many wonderful things and gives him a book, a symbol of the rational learning, which brings doubt and questions in the innocent world of Hyacinth and Rosenblütchen. This book is useless to Hyacinth, who has no experience relating its abstractions to his experiences in the limited sphere of his existence. Once lost the language of nature and the inner harmony is not easy to regain. An old woman in the woods, perhaps a personification of nature and the feminine principle, burns the book and sends Hyacinth on the quest for the sleeping goddess\textsuperscript{44}. Hyacinth does not fight any dragons

\textsuperscript{44}This quest is pictured as a journey in space and time where both of these quantities are relative. This quest is a distinct mythological motif, described by Joseph Campbell as "a hero's journey (Power of Myth, 123-63), found in myths and fairy tales everywhere in the world.
or pass any other tests of courage and strength; his quest is a journey through the landscape of the soul. At first he travels through a rough waste land which represents his disorganized drive for knowledge and his inner chaos. As his mind and feelings (Gemüt) change his surroundings become more hospitable, and Hyacinth learns to experience the serenity of nature as it penetrates his being. His senses have become more acute, and time seems to contract. By now Hyacinth has arrived at a better understanding of himself and has learned the language of nature. He finally arrives at the temple of the goddess surrounded by palms. This must be the temple at Sais and also the home of the eternal seasons, *Behausung der ewigen Jahreszeiten*, NS I, 94, where all seasons and divisions of time are united, and past, present and future are accessible all at once. The temple at Sais acquires a significance similar to the stone that was found by the unskilled apprentice. The temple as the home of the goddess represents a junction of many different levels of existence where time is eternal, and all history of nature and civilization is summed up in a single unit. Yet another condition must be met: Hyacinth approaches the goddess and lifts her veil in a dream, since the numinous world of the infinite cannot be reached by mortals. At the end of the first fragment the apprentice himself had vowed:
Auch ich will also meine Figur beschreiben, und wenn
kein Sterblicher, nach jener Inschrift dort, den
Schleier hebt, so müssen wir Unsterbliche zu werden
suchen; wer ihn nicht heben will, ist kein echter
Lehrling zu Sais. (NS I, 82)

Dream confers a fleeting immortality to Hyacinth, and
in this moment he finds Rosenblütchen and - himself.

Einem gelang es - er hob den Schleier der Göttin zu
Sais -
Aber was sah er? Er sah - Wunder des Wonders - Sich
Selbst.
(NS I, 110)

As this distich indicates Novalis was trying to
emphasize the journey of self-discovery as a necessary con-
dition for the discovery of the true essence of nature. The
sleeping goddess is awakened and brought to a certain state
of consciousness herself. Why does Hyacinth find Rosen-
blütchen as he lifts the veil of the goddess? It seems,
that Novalis wanted to emphasize that man must experience
love before he can truly understand himself. He must merge
his own individual self with that of another person in a
relationship of "Ich und Du." He must find his feminine
counterpart as his polar opposite and through the union
with her make himself complete. Rosenblütchen represents
the goddess only for Hyacinth. She is the finite real per-
son, who is the symbol for the goddess, who has many names
and many different faces. Ulrich Gaier explains the sig-
nificance of this relationship as follows:
... wenn die unendliche Mutter der Dinge sich Hyazinth in Rosenblütchen ausdrückt, so ist Unendliches und Einzelnes, Einigkeit und Mannigfaltigkeit, Natur und Mensch im Sinne eines Ausdrucks - oder Sprachverhältnisses einander zugeordnet: jedes Einzelne kann Symbol für die unendliche Einheit des Ganzen werden. Voraussetzung dafür ist die liebende Vereinigung, also die Verbindung von Einheit und Zweiheit. (Gaier, 93)

The union of the polar opposites indicates an overcoming of an insufficiency in the real world, the duality, and represents a step towards the ideal. Love as the true union of souls and the principle of synthesis represents an elevation of consciousness that is impossible to attain through perceptions of the five senses or through speculations of the rational mind. Although Novalis describes the love of Hyacinth and Rosenblütchen in erotic terms and tells us that they have many children and live happily ever after, his understanding of love emphasizes the spiritual union above the physical. The celebration of love and rebirth of nature at the end of Klingsohrs Märchen, complete with a marriage bed, also uses the metaphor of sexual union for the great synthesis of all existence. Hyacinth has found the secret of the goddess, but the quest of the apprentice has only just begun. The first fragment, Der Lehrling, had indicated that this path is highly individual and cannot be mapped out by other people. The lesson of the fairy tale is that the self is not complete in monastic isolation. That is the danger in the existence of the
apprentice since by his own admission he tends to return to
his own thoughts.

Voices of Nature

After the apprentices have left, the conversation is
continued by the voices from natural objects in the temple.
They have been isolated here in collections of specimens
and as material used for experiments. They long for the
freedom and their proper place in nature, where they were
connected to the great system of nature's creations. They
claim that men do not understand what constitutes order in
nature and that they constantly disturb it in their drive
for knowledge and self-interest. Nature's voices speak of
the golden age of harmony before man wanted to become like
God and separated himself from nature. This metaphysical
sin of hubris banished man from the early paradise and
drove him on a search that the seductive voices of the
unconscious nature cannot understand. They praise the life
of the senses, feelings and pleasure, a loss of identity,
and a passive return to a life guided by instincts and wish
that people would heed their advice:

Lernt er nur einmal fühlen! Diesen himmlischen, diesen
natürlichsten aller Sinne kennt er noch wenig; durch
das Gefühl würde die alte, ersehnte Welt zurückkommen;
das Element des Gefühls ist ein inneres Licht, was
sich in schöneren, kräftigern Farben bricht. Dann
gingen die Gestirne in ihm auf, er lernte die ganze Welt fühlen, klärer und mannigfaltiger, als ihm das Auge jetzt Grenzen und Flächen zeigt. Er würde Meister eines unendlichen Spiels und vergäße alle törichten Bestrebungen in einem ewigen, sich selbst nährenden und immer wachsenden Genusse. Das Denken ist nur ein Traum des Fühlens, ein erstorbenes Fühlen, ein blaßgraues, schwaches Leben. (NS I, 96)

These lines were often quoted to indicate Novalis' total submersion in feelings and dreams without any consideration of the real world and rational thinking. This interpretation, however neglects entirely Novalis' intense preoccupation with philosophy and his interest in the natural sciences. Considering that Novalis was also collecting materials for Das allgemeine Brouillon at the same time when he was formulating Lehrlinge zu Sais, it is difficult to imagine that he would advocate a life of mere sensual pleasure and a return to a state of precognition as the proper way to understand nature and reality. Just like the other voices heard by the apprentice, these voices of nature must be interpreted as a necessary component in the symphony of nature and not as an end in itself. The collection of philosophical fragments in Novalis' notebooks indicate that while he assigned a high value to a rich emotional life, and considered love as the highest expression of the human soul, he did not advise neglect of philosophical inquiry or scientific studies. When the voices say: "Das Denken ist nur ein Traum des Fühlens, ein erstorbenes Fühlen, ein blaßgraues, schwaches Leben," (96) they
emphasize the mysterious forces of the subconscious, of
dreams and undefined feelings that were neglected in the
 glorification of reason by the enlightenment. These
sensual, inchoate elements in nature must be experienced
and brought to a state of consciousness by the activities
of the self.

Conversations of the Travelers.

The first part of the fragment, Die Natur, was an
exploration of the multiple perspectives that constitute
the relationships between nature and humanity. The
apprentices at Sais had to understand these relationships
before they could continue in their quest for knowledge and
for the true nature behind the veil of ever-changing
manifestations of natural phenomena. This true nature,
regarded as the origin of creation, was symbolized by the
veiled statue of the goddess Isis. The fairy tale, Hyazinth
und Rosenblütchen, then suggested the past and future expe-
riences and development of the apprentice, and also implied
that his quest would be successful if he were touched by
the power of love. This section of the fragment attempts to
construct a unified philosophy of nature stating different
viewpoints and gradually working towards a synthesis by an
exchange of perceptions and ideas. These conversations
represent Novalis' own synthesis of the philosophical
systems of his time and those of the past. In such an experiment different ideas are compared, contrasted and combined in different variations. The thought processes are then shown to be similar to those of chemistry, where several elementary substances are combined to form different new compounds; i.e. nature philosophy itself constitutes a process that is analogous to processes in nature. In the first fragment of the novel the teacher and the apprentices arranged many different stones in a systematic array, but only when the "unskilled" apprentice found the missing stone, the arrangement formed a significant "figure". This seemingly ordinary stone represented the centerpoint for all the other series, the connection for various series of natural phenomena. The travelers are also trying to find a center or a point of intersection for a system of their philosophical concepts.

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45 Ulrich Gaier, who has extensively analyzed Lehrlinge zu Saß, comments on the density and difficulty of this text:

Dami hat sich auch der zweite Teil "Die Natur" in allen Teilen als genau komponierte Einheit gezeigt, die mit dem "Gespräch der Reisenden" den vielleicht kompliziertesten Text in der deutschen Literatur einschließt (Gaier, p. 105)

Dennis Mahoney sees in these conversations a "true experiment" consistent with Novalis' views on thought experiments. (Mahoney, p. 38)
The first speaker is concerned with epistemological questions. Following mainly the ideas of Fichte's *Wissenschafterlehre* he attempts to explain the connections between the sense perceptions and the origin of thoughts. The physical model for the perceptions and thoughts arising out of reflection is the propagation of wave motion in still water, the fluid medium. The waves of the reflective activity spread out from the center in ever widening circles. The image resembles that of a reflection in a mirror, except that the activity described by Novalis is circular and not linear. If the center of the reflection is placed in a three-dimensional medium, then the advancing wave is a sphere, which provides many more points of new interactions. This model is an expression of Fichte's philosophy transformed in agreement with Novalis' concept of the multi-dimensional character of all processes, in nature or in the inner world of thought. This enormous expansion in a multi-dimensional medium gives human thoughts freedom to indulge in a play with an infinite variety of combinations and variations. A kind of resonance is set up between two different media: one in nature, the other in the subjective world of inner feelings and thoughts. The center point here is the human self which connects the reflection media in the external world to the inner world of the soul. This resonance or play of ideas allows interactions between both worlds that are beneficial to both.
Er glaubt es am höchsten gebracht zu haben, wenn er, ohne jenes Spiel zu stören, zugleich die gewöhnlichen Geschäfte der Sinne vornehmen, und empfinden und denken zugleich kann. Dadurch gewinnen beide Wahrnehmungen; die Außenwelt wird durchsichtig, und die Innenwelt mannigfaltig und bedeutungsvoll, und so befindet sich der Mensch in einem innig lebendigen Zustande zwischen zwei Welten in der vollkommensten Freiheit und dem freudigsten Machtgefühl. (NS I, 97)

This resonance or reciprocal response to stimuli extends to the relationship between the human body and nature,

Den Inbegriff dessen, was uns rührt, nennt man die Natur, und also steht die Natur in einer unmittelbaren Beziehung auf die Gliedmaßen unseres Körpers, die wir Sinne nennen. Unbekannte und geheimnisvolle Beziehungen unseres Körpers lassen unbekannte und geheimnisvolle Verhältnisse der Natur vermuten, und so ist die Natur jene wunderbare Gemeinschaft, in die unser Körper uns einführt, und die wir nach dem Maße seiner Einrichtungen und Fähigkeiten kennen lernen. (NS I, 97)

Our ideas about nature are directly related to the perceptions of the senses that connect us to the external world. A deeper understanding of the object world then requires both an investigation of the human body as an organic system and a practice in the play of thoughts in a reflective medium. If this play of thoughts is focussed on the human body then the body itself becomes a microcosm, which mirrors the great organism of nature; and nature in turn is viewed as a macroanthropos, a giant analog of the human body. The reflective thought processes meanwhile gen-
erate new sequences and combinations of thoughts just like the expanding wave motion in a fluid medium enfolds an increasing volume. Some of these thought waves, Bewegungen, then constitute letters of nature, Buchstaben der Natur, the foundation for decoding nature's hieroglyphic language.

The second voice interjects that it is a gamble to construct nature models internally from its interplay of forces and external phenomena. This speaker does not accept the unity of man and nature as expressed through the activities of conscious thought. In his opinion nature consists of an immense variety of substances, forces and life forms, which exist in a precarious equilibrium.

Es wäre denkbarer, daß sie das Erzeugnis eines unbegreiflichen Einverständnisses unendlich verschiedener Wesen wäre, das wunderbare Band der Geisterwelt, der Vereinigungs- und Berührungspunkt unzähliger Welten. (NS I, 98)

Instead of the concept of unity of the first speaker's model, where everything is connected to the thinking individual, this second voice proposes a model of nature and the world that is based on an immense complexity. Significant aspect of this representation is the idea that nature itself is a point of contact between many different worlds. Novalis himself has expressed similar thoughts in his fragments:
Die Welt ist, wie Objekt überhaupt Resultat eines unendlichen Einverständnisses, und unsre eigne innere Pluralitaet ist der Grund der Weltanschauung. (NS III, 682)

Mahoney thinks that the model of the world described by the second voice refers to Leibniz and his Theodizee. Although Leibniz's ideas influenced Novalis, his notes contain few references to Leibniz. Several of them deal with Leibniz's ideas in the development of differential and integral calculus and the significance of this mathematical model for the philosophy. There is a brief reference to Leibniz in a letter to Caroline Schlegel, which is also repeated in the fragments. There Novalis compares his contemporaries: Fichte, Schelling, Baader and Richter to earlier nature philosophers.

Das Beste in der Natur sehen indeß diese Herrn (Schelling, Richter, Baader) doch nicht klar. Fichte wird hiernach seine Freunde beschämen und Hemsterhuis ahndete diesen heiligen Weg zur Physik deutlich genug. ... Leibnitzs Theodizee ist immer ein herrliches Versuch in diesem Felde gewesen. Etwas ähnliches wird die künftige Physik, aber freylich in einem höhern Style. (NS III, 469; also Lett. to Caroline Schlegel, 1/20/1788)

Obviously this note does not clarify Novalis' views on Leibniz's conception of nature and creation. *Praestabilirte Harmonie* is mentioned by Novalis in a reference to moral and religious concepts:

Die praestabilirte Harmonie wird der Erfolg, oder die Constitution der vollkommenen moralischen Welt seyn.
Schönheit beruht auch auf praestabilirter Harmonie. Im Bewusstsein Gottes findet eigentlich praestabilirte Harmonie statt. Durch das Flchtische System wird sie bewiesen und neccessitirt. (NS III, 414)

Since the aim of the romantic nature philosophy is to bring morality and new harmony to nature and humanity, Novalis considers this harmony as a necessary condition for the future "elevated" state of nature.

The third voice at first refers to the gamble involved in forming concepts of nature. He thinks that the gamble is justified and the philosopher or scientist, who considers the extreme and the accidental, will achieve more than his cautious counterparts. Yet he has reservations about all the "good" systems of nature, be they philosophical or empirical. These systems may lead to explanations of phenomena and even production of new effects, and yet lead to no true knowledge, "die Erkenntnis der Natur wird aber noch himmelweit von ihrer Auslegung verschieden seyn." (99) Novalis here emphasizes the difference between the cognitive knowledge, Erkenntnis, and Auslegung or explanation. To attain cognitive knowledge other approaches to an interpretation of nature must also be considered. If the second speaker emphasized the expanded, complex space of innumerable worlds, the third voice deals with the importance of time. He claims, that it is the role of the historian, or, in an almost mystical sense, the role of the prophet of time, Zeitenseher, to follow the changes in nature in time and to make predictions for the future.
A.G. Werner's work on the classification of minerals: Von den äußerlichen Kennzeichen der Foßilien, was an example of such a history of nature. Because of rapid scientific development in the sciences at the end of the 18th century this work and many other similar histories had to be constantly revised. In addition to these constant revisions Werner's Oryktognosie was challenged by the new science of analytical chemistry, which could give better information about the basic constituents of minerals than the comparison of the external physical characteristics. In this time of rapid change in many areas of science the romantic philosophy also emphasized the dynamics of change and exploration of new horizons in contrast to the rigid

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48 In the Hanser edition of Novalis' works H.J. Balmes comments that in the 18th century history of nature or Naturgeschichte was not yet a diachronistic representation of a historical development in the modern sense, but a comprehensive description and classification of all information in a certain field.

Die Naturgeschichte ist so nach Adelung "ein Verzeichnis und die Beschreibung der zu dem Naturreich gehörigen Dinge", die als "Gedächtniswissenschaft" vor allem mnemotechnische Funktionen erfüllte: das Ganze der Natur gleichzeitig im Gedächtnis präsent zu haben. (N III, Kommentar, 452)
mechanisms of enlightenment. In a Newtonian universe the
equations themselves constitute eternal truths. In the
romantic nature philosophy mechanism and organism, matter
and spirit, represent dualities that constantly change and
attempt to unite with their polar opposites. In reflection
process nature as the object acquires some of the proper-
ties of the subject; it acquires personality and spirit.
For Schelling, e.g. nature was an external objectivation of
the infinite in finite. Novalis’ model of nature is similar
to that of Schelling, but here it also includes history as
a process of development; if nature is an external objec-
tivation of the Absolute, where the Absolute is perceived
as spirit (Geist) and is the origin of both subject and
object, then any development of natural systems is a pro-
gressive self-expression of the spirit in the real world, a
process that must have a history.

Alles Göttliche hat eine Geschichte, und die Natur,
dieses einzige Ganze, womit der Mensch sich
vergleichen kann, sollte nicht so gut wie der Mensch
in einer Geschichte begriffen sein oder, welches eins
ist, einen Geist haben? Die Natur wäre nicht Natur,
 wenn sie keinen Geist hätte, nicht jenes einzige
Gegenbild des Menschheit, nicht die unentbehrliche
Antwort dieser geheimnisvoller Frage, oder die Frage
zu dieser unendlichen Antwort. (NS I, 99)

Then history of nature represents a parallel sequence
to that of human history, and both of these sequences are
constantly interacting with each other.
The fourth voice heard is that of a beautiful young man who speaks with great enthusiasm of the special talent of poets for sensing the heartbeat of nature. It is interesting that the young poet begins his speech with a scientific metaphor:

"Nur die Dichter haben es gefühlt, was die Natur den Menschen sein kann", begann ein schöner Jüngling, "und man kann auch hier von ihnen sagen, daß sich die Menschheit in ihnen in der vollkommensten Auflösung befindet, und daher jeder Eindruck durch ihre Spiegelhelle und Beweglichkeit rein in allen seinen unendlichen Veränderungen nach allen Seiten fortgepflanzt wird." (NS I, 99)

In chemistry many reactions between solid substances can only be initiated in a solution, i.e. in a fluid medium. Ncvalis considers chemistry as a science of motion and excitation in the material world, where fluid media allow many significant contacts to occur. By analogy poetry acts in a similar way in the spiritual world; in poetic imagination the humanity itself is suspended in an elastic medium and is able to interact directly with nature's stimuli. Again the first important part of the analogy is contact and interaction, Berührung, the second is the reflection and expansion of the interaction through the entire medium. Through the power of his poetic imagination the poet imbues nature with human feelings and emotions. Nature might appear as an unconscious mechanism, but the poet discovers its unique relationship to the human heart,
both direct and accidental. Zufall, the accidental, is again important in opening doors to new relationships. Poetry itself becomes a symbolic artistic medium through which poets learn to translate the secret language of nature into images that correspond to the dream images of the subconscious. Through poetic metaphor nature becomes a representation of man and his soul. Poets are the mediators between nature and man, yet they do not realize the power of their art. The old myths recognize the magic powers of the poet; Orpheus' songs could enchant plants and stones, and could tame animals. Still there are elements in nature, stones and constellations of the stars, that have an aura of the sublime about them. In particular Novalis refers to stones as petrified matter, an opposite to the fluid element, which is the medium of poetry and thought. "Das Erhabene wirkt versteinernd," is a puzzling comment. The answer must be a relationship between the essence of the stone, its transformation into a sculpture by the artist's hand and the extreme antiquity of ancient statues. Much of the antique world has been preserved for us as stone figures and structures. The temples and gods of ancient Egypt and of Greece are voices from the past, figures of the sublime in human history.

Man wird durch die Antiken gezwungen sie als Heiligtum zu behandeln. (NS II, 648)
In his fragments Novalis refers to the well-known sculpture of Laocoön as a petrification of the utmost emotion:

Ließe sich nicht ein umfassender, kurz höhergradiger Moment im Lacoontischen Drama denken — vielleicht der, wo der höchste Schmerz in Rausch — der Widerstand in Ergebung — das höchste Leben in Stein übergeht. (Sollte der Bildhauer nicht immer den Moment der Petrefaction ergreifen — und aufsuchen — und darstellen — und auch nur diesen darstellen können?) (NS III, 413)

Then a statue would represent the moment of the highest emotion in stone, a moment that is transformed into eternity and, therefore, touches the sublime.

In quiet conversation the voices of the travelers elaborate their thoughts. In each of them we hear echoes from the opinions of the other voices. The philosopher returns to his views that answers to the most significant questions are to be found in the inner realm of thought, but these views are modified by the ideas of the other three speakers. Now the philosopher considers creative contemplation (schaffende Betrachtung) as the most important activity. In this contemplation the mind always returns to that point in the reflective medium where knowledge and creativity are at an equilibrium. This is the moment when the ego conceives itself, (Selbstempfängnis). In Schelling's opinion the history of nature begins at this point, and a new relationship with nature is possible. The basis
of Fichtean philosophy has been transformed by blending it with the influences of Plotinus\textsuperscript{47} Hemsterhuis, and Western mysticism. The result is a romanticized concept of nature philosophy. Philosophically the unfolding of the spirit in the real world (Plotinus' emanation) through the consciousness of the ego (Fichte and Schelling) is the true theory of nature. Since the internal world of thought is in harmony with the universe, a system of thought can provide a true image of it.


The second voice spoke at first of the connection between many spatial systems as a possible beginning for the formation of a concept of nature. Now he considers das große Zugleich of nature as an interaction of many different forces at each point in time. This is nature where everything is activated by Schelling's world soul, die Weltseele, the guiding and driving principle of all

\textsuperscript{47}The influence of Plotinus on Novalis is explored by H.-J. Mähl in his article "Novalis und Plotin."
phenomena in nature. This is a representation of nature that is "mitten in der Zeit gegenwärtig, vergangen und zukünftig zugleich" as is the goddess Isis in the fairy tale of Hyazinth und Rosenblütchen. Moreover, nature also acts at a distance and unifies all the different systems of galaxies through these forces. Action at a distance as a manifestation of nature’s forces is also considered in Novalis’ notebooks. The best examples of this kind of action are: light, gravity, electricity and magnetism.

Das Licht ist unstreitig galvanisches Produkt. Bey ihm ist offenbar Actio in distans, Die Luft ist Leiter dieser Action. (NS III, 471)

Typical for Novalis is the extrapolation from physical phenomena to mental processes:

Alle Actionen, selbst die des Denkens, werden auf die Actio in distans zurückgeführt werden. (NS III, 472)

If light is the action at a distance that can form connections between distant solar systems then by analogy thought could be a similar spiritual connective medium in the universe. The original idea has progressed from a complex space to time and finally to the "fluid" medium of thought.

The third speaker now considers three possible roles that true friends of nature assume in their relationships with it. He first acknowledges the accomplishments of the
philosopher, who follows the active path of an artist. Con-
sciously and through his will he creates a new world in his 
mind.

Billig stellt der Künstler die Tätigkeit obenan, denn 
sein Wesen ist Tun und Herbringen mit Wissen und 
Willen, und seine Kunst ist, sein Werkzeug zu allem 
gebrauchen, die Welt auf seine Art nachbilden zu 
können, und darum wird das Prinzip seiner Welt Tätig-
keit, und seine Welt seine Kunst. NS I, 102)

This artistic and conscious activity reduces the world 
to a mysterious but essentially simple figure. This figure 
is related to the changing configurations of a dance; "ja 
man möchte sagen die Natur tanzt, ..." Dance implies not 
only the inherent order of the changing figures, but also 
the feeling of joy expressed by music and movement. This 
representation of dance as a model of the basic order, that 
derlies change, is also shown in Schiller's poem Der 
Tanz. An influence of Schiller's ideas, in particular the 
instinctive drive for play, Spieltrieb, is also apparent 
here. Schiller considered this instinct for play as one of 
the most human characteristics48. Novalis transfers this 
element of play to the relationship between the artist-
philosopher and nature. Through this interaction nature 
acquires the human attributes of dance and play. The artist

48Schiller, Über die ästhetische Erziehung des Mens-
chen. (NA 20, 309).
reconstructs the world in this dance of images, and nature becomes visible through art.

There are other friends of nature, who do not create new figures and images, but learn from nature by careful observation and comparison of many different natural phenomena. Their work requires patience and painstaking attention to detail. These observers and experimenters collect data and establish sequences of related objects: minerals, plants and animals. These sequences then form the complex network of interconnected series, which is another representation of nature. Once the last missing links for this network have been found, such as the missing stone found by the unskilled apprentice, these scientists also acquire wisdom and true understanding of nature, "so ist auch unvermerkt ein höherer Geist über sie gekommen." Both the artist-philosophers and the scientists have led active lives. They have followed the outlines of Fichte's philosophy, which defines the moral duty of every individual as an activity in the field of non-ego or Nicht-Ich. Finally they have arrived at similar systems as representations of nature. If earlier in this fragment Novalis stated that poets and scientists have always spoken the same language, then here he indicates a similar relationship between philosophers, artists and scientists.

In contrast to these two groups who actively and consciously search for answers are those childlike people, who
live only to give and receive love. These blessed people, who appear as representative figures in Western mysticism and German Pietism, both strong influences in Novalis' spiritual development, find the deepest secrets in a mystical union with nature or with God.

Was brauchen diese glücklichen Seelen zu wissen, die das beste Teil erwählt haben, und als reine Flammen der Liebe in dieser irdischen Welt nur auf den Spitzen der Tempel oder auf umhergetriebenen Schiffen, als Zeichen des überströmenden himmlischen Feuers lodern? (NS I, 103)

Novalis compares these people to flames that appear on high temples and on ships. Again he has chosen a scientific image to represent the ethereal character of love. These flames are electrical discharges, also called St. Elmo's fire, which appear during storms in highly charged atmosphere around high and sharply projecting objects. These electrical phenomena become increasingly more important in Novalis' writing after his meeting with J.W.Ritter, and are used as metaphors for spiritual rebirth in Klingsohrs Märchen. They also suggest the fiery halos, which appeared around the heads of Christ's apostles at Pentecost as the sign of the presence of the Holy Ghost.

Philosophers and scientists follow in the footsteps of these loving souls in the hopes of finding some traces of the lost golden age; poets attempt to recreate and to transmit in their songs their gift of love. Here appears
Novalis' belief in love as the highest power in the world. Love can provide the deepest insights by revelation to the fortunate few without the mental or physical activities that characterize those who belong to this world and time. The child figure in the first fragment is one of these blessed people, who come as memories of the past and as heralds of the distant future.

The voice of the young poet brings together the elements from the previous conversations and unites them in the realm of poetry. He identifies himself with the inner life of nature as revealed in love and creation. These processes lead us back to the fluid element in nature; an element which represents flow and motion, has no set form and no definite limits. Eros is experienced as a longing for the infinite, or "Sehnsucht nach dem Zerfliessen." This loss of identity by submersion in the liquid element is similar to the transition from daylight into the realm of night in Novalis' Hymnen an die Nacht. It is a return to the world of subconscious intuition, to a certain primal unity with the soul of the world. This return to the origins of creation in the subconscious is one of the first literary expressions of descent to the Dionysian realm. The contrast between these two spiritual movements was later emphasized by Friedrich Nietzsche in his Geburt der Tragödie. Nietzsche found the beginnings of Greek art in Dionysian rapture and ecstasy. Water is both the Dionysian
element of unconscious life force and, as water of life, the Christian symbol for life in Christ and rebirth through the spirit of God. As one of the oldest images in mythology water is connected to the mysteries of life and death, and is the true element of the Great Goddess. The still waters mirroring the sky project a union of opposites: nature and spirit, Yin and Yang, the depth of love and the height of human aspirations. This section of Die Lehrlinge zu Sais represents a poetic view of the world that later became identified with romantic poetry: a longing for the infinite, a mysterious immersion in the subconscious, dreams, intoxication, love and death. Later romantic poets experienced the danger of this submersion in the flow of the subconscious and the danger in the demonic forces of nature. Novalis himself possessed a harmonious personality, that could always find the equilibrium between dreams and reality and between the conscious and subconscious aspects of creation. He was not threatened by the powers of the night.

Even in this most extreme statement of the poetic understanding of nature Novalis uses his scientific learning. When he brings together the two fluid forms, water and fire, he refers to the discovery in late 18th century that water was not a basic elements as had been believed since the time of the ancient Greek philosophers but a combination of oxygen and hydrogen.
Was ist die überall erscheinende Flamme? Eine innige Umarmung, deren süße Frucht in wollüstigen Tropfen heruntertaut. Das Wasser, dieses erstgeborene Kind lustiger Verschmelzungen, kann seine wollüstigen Ursprung nicht verleugnen und zeigt sich als Element der Liebe und der Mischung mit himmlischer Allgewalt auf Erden. (NS I, 104)

These lines certainly refer to the fiery origin of water as the explosive combination of two invisible gases. Water and fire were also the elements, which had formed the surface of earth according to the theories of Neptunists and Vulcanists of late 18th century. Novalis' teacher A.G. Werner was one of the leading Neptunists of the time, and Novalis was well acquainted with his ideas.

The original fluid element, which is more than ordinary water, das Urflüssige, is a connection to the past golden age and a promise of the future. In the present people have lost their feeling for this magic fluid which penetrates the entire universe. Most of the people, who deal with liquids are only "Scheidekünstler", representatives of the petrified reason, who can only divide and destroy since they have no feeling for mystery. Now only a few selected beings, who have a special "organ" for nature are able to understand its mysteries. Then it is the duty of poets to awaken this forgotten sense for nature in human hearts and to proclaim the magic powers of the great flow of world soul.
The fragment ends with a meeting between the teacher, the apprentices and the travelers. It becomes clear that the travelers have been searching for a certain legendary tribe, descendants of the fortunate people from the golden age, who represent the lost perfection and harmony. Their language, which was once the communicating medium for the realm of all creation, has been lost almost completely. The narrative returns to the topic of the holy language and the holy hieroglyphs, which were discussed in the first fragment, Der Lehrling. This search of the travelers has led them to Sais as the sanctuary of ancient learning. Their quest is essentially the same as that of the teacher and the apprentices; they all want to find the magical language of nature in order to decode the cypher which promises a solution to the secrets of the universe.

At the end the teacher summarizes the themes discussed in this fragment. Knowledge, diligence, experience and imagination are all important to the apprentices, who want to become teachers and interpreters of nature. Each way to wisdom is individual, and each individual must foster and develop all of his abilities, but they all must approach nature with faith and dignity and to speak of her with deep respect. A teacher, who must communicate between nature and people, and to show the distinction between the ideal nature and the nature as it appears to us, must also be a
poet, but most of all he must have a special gift, a spark of genius. This inborn quality is not part of any other privileges in life. It can appear in any age, in any social group and generally manifests itself in people of great simplicity.

These novel fragments present views about the real meaning of nature in many variations. The thoughts, which gradually emerge in poetic images, illustrate the main themes of the fragments: man’s exploration of the world in which he lives and the exploration of that magic inner world of conscious thought, fantasy and imagination that represents his soul. This quest is presented as conversations about nature and about nature’s influences on philosophy, poetry and science. Novalis’ intent in this work is to unite the discordant voices of the present fragmented age and to anticipate the birth of a new consciousness in nature and in society. The present condition of the world is a trend towards fragmentation instead of unity and harmony. In the sciences this divisive trend is represented by analysis that penetrates phenomena of nature in all dimensions. Novalis wants to present the world as it could and should be, when the creative imagination would breathe a new life into the petrified world of inert objects. Art and poetry should provide us with a glimpse of a future age of harmony, where all fragments and dissonances would be fused together in a new totality.
Nature Philosophy in Klingsöhrs Märchen

Klingsöhr’s fairy tale has an important role in the unfinished novel Heinrich von Ofterdingen, which deals with the gradual development and education of a poet. It is a process that includes both self-discovery and the discovery of the universe. The poet must grow through contact with many different aspects of nature and human relationships to gain an understanding of the active, creative forces in nature and to use these forces for further development of the human spirit and nature itself. In this case the hermeneutic process operates on a multiplicity of levels. The dynamic forces of nature in this fairy tale are transformed into images, which are activated by the most "fluid" of the forces in the human world, i.e. the poetic principle. The child Fabel, the spirit of poetry and invention represents the Poetisierung der Wissenschaften as a free play with the physical components until new combinations are found. Fabel can activate the substances from the world of chemistry and physics that are inert by themselves, and she can use them to perform the wonderworks of the fairy tale. This fairy tale also illustrates the importance of journeys in the quest for individual self-recognition that Novalis had already considered in Die Lehrlinge zu Sais. Travels symbolize an expansion of the available space-time
in the internal/external system of reference. If Novalis seems to dwell too much on *der Weg nach Innen*, then it is because he sees in the internalization process the necessary balance for the mastering of the outside world. It does not mean, however, that Novalis has changed his opinion about the collection of empirical data and their significance in scientific work. He wants to point out that scientific experiments, which do not possess an element of intuition and creative imagination that the poetic spirit brings to the natural sciences, become a mere repetition of meaningless facts and figures, suitable only for the work of *Schreiber* as the embodiment of petrified and petrifying reason. To acquire real knowledge the outside world cannot be subdivided into many independent regions of scientific investigation, but must be considered as a complex system of interlocking sequences. Above all, Novalis is concerned with the totality of many different interpretations of nature through its entire history. Human understanding of nature has to be changed through a long process of *Potenzierung*, an exponential heightening of individual abilities necessary for this understanding in combination with a judicious unfolding of the hidden forces in nature. This combination of potencies is expressed as poetic transformation of the world, and art becomes the "fluid medium" which unites isolated spheres of existence and reconciles diverse
elements both in nature and in the human spirit. Novalis deplores the general tendency of the sciences, e.g. physics to look at individual phenomena without considering all the related forces and situations that can have an effect on the experiment. He sees the true science of nature as an infinite series which includes all known phenomena as its members:

Die Naturlehre muß nicht mehr capitalweise - fachweise behandelt werden. Sie muß (ein Continuum) eine Geschichte - ein organisches Gewächs - ein Baum werden - oder ein Thier - oder ein Mensch." (NS III, 574).

This idea is reiterated several times in Novalis' notebooks; all groups of animate and inanimate nature are related and joined together with humanity in a great interconnected system. In notes to Fr. Schlegel's Ideen he writes:


True understanding of nature means that humanity cannot separate itself from nature. Man cannot be defined without nature just as the concept of Ich has no real meaning without the Nicht-Ich posited in opposition to it. The
empirical self works in the real world within the limits that nature imposes on it, and its role should not be subjugation of nature. An equivalence of the different life forms is expressed again in the future plans for the continuation of Heinrich von Ofterdingen. Heinrich is supposed to undergo several metamorphoses where he is changed into a tree, a stone, and a ram. (NS III, 574) Here the educational process of the poet is not limited to mere observation and rationalization of different natural phenomena, which have to be experienced both consciously and subconsciously, but involves an actual transformation, a union mystica with nature and its creatures.

Natural phenomena in Klingsor's Fairy Tale are combined with figures from different mythologies and different civilizations. To achieve the great synthesis of nature and human experience, Novalis wants to include as many diverse elements as possible. Many of these figures have multiple meanings as indicated in the notes and sketches for the fairy tale.

Arthur's realm at the beginning of the fairy tale is the realm of the physical sciences. We now consider physics as the science of careful empirical experimentation and utmost theoretical abstraction. For Novalis physics was also the realm of fantasy: "Die Physik ist nichts, als die Lehre von der Fantasie." (NS III, 558). In the transforma-
tion of Arctur's realm his imagination projected a dynamic path for natural history from a frozen inorganic world to a new golden age of harmony. At first nature is a lifeless world waiting for its salvation, a realm of abstraction and mathematics where the dance of stars and constellations illustrates the laws of probability or chance.

Arctur's Realm as the Realm of Physics

The physical and chemical aspects of Arctur's realm at the beginning of Klingsor's Tale represent a limited frozen world inhabited by latent spiritual powers of the universe. This world lies in the frozen North, where certain physical forces are at play, but they do not seem to be able to free themselves from the spell that has come over the land, the sea, and the city. All is empty and lifeless.
endlich wie diese verschwand, und einem schlichten, grünen Kranz Platz machten, um diesen her einen weiten Kreis schlossen: alles dies spiegelte in dem starren Meere, das den Berg umgab, auf dem die Stadt lag, und auch der ferne hohe Berggürtel, der sich rund um das Meer herzog, ward bis zum Mitte mit einem milden Abglanz überzogen. (NS I, 280-1)

The fairy tale begins with a statement that a long night has just descended on the land of Arctur. Everything seems empty and dark until the old hero, who is later identified as Eisen, or the personification of iron, beats his shield three times. Iron is the magnetic metal; according to opinions of 18th century sound is also able to precipitate physical phenomena. Here the sound of the reverberating iron shield initiates a show of light and color that originates in the palace. The light increases in intensity; it illuminates buildings and the entire landscape. The play of lights suggests the presence of warriors with their weapons; mystical warriors bow toward the apparitions of crowns and finally form a ring around a green circle of light. This magical play of light is Aurora Borealis or Northern lights. In Das allgemeine Brouillon Novalis speculates:

Electricität – vielleicht unreifes Feuer – wie das Nordlicht unreife Electricität. (NS III, 319)

48 Balmes, Kommentar, p. 145; Messmer, who interpreted hypnosis as "animal magnetism," saw magnetism as a connection between the earth and the world of the stars.
The nature of this light as an incomplete form of
electricity suggests the image of the sleeping princess who
must be awakened by the prince before she can become a com-
plete being\textsuperscript{50}.

Novalis believed, as did many of his contemporaries,
that magnetism was the fundamental force in nature from
which all other forces were derived. It was logical for him
to place Arctur's realm in the far North, because it was
known that earth did have a magnetic pole in the North.
Since the magnetic force lines tend to flow together at the
poles, it was easy to assume that the North as the con-
fluence of the magnetic lines of force was the origin of
all dynamic activities in nature. According to this view
Arctur's realm has plenty of latent energy that needs to
find contact with other forces in nature or in the human
world before the spell is overcome.

\textsuperscript{50} In scientific terms Novalis' suggestion is very
close to the modern interpretation of northern lights. In
modern particle physics northern lights have an electro-
magnetic origin. Charged particles streaming from the sun,
especially during high sunspot activity, impinge upon
earth's atmosphere and by collision (or "Berührung in
Novalis' nomenclature) transfer their energy to the ions
and atoms of the upper atmosphere. These excited particles
in turn lose some of the acquired energy by radiation,
which we see as northern lights. The magnetic field of the
earth concentrates these particles around the magnetic
poles; therefore, northern lights are seen primarily in
northern latitudes; while their polar opposite, the
southern lights, are seen in the regions of Antarctica.
The origin of the Northern Lights is revealed as the old hero Eisen is called to the palace.

',Hast du noch nichts entdeckt?,' sagte die schöne Tochter Arcturs, mit klagender Stimme. Sie lag an seinem Polstern auf einem Throne, der von einem großen Schwefelkristall künstlich erbaut war, und einige Mädchen rieben emsig ihre zarten Glieder, die wie aus Milch und Purpur zusammengeflossen schienen. Nach allen Seiten strömte unter den Händen der Mädchen das reizende Licht von ihr aus, was den Palast so wundersam erleuchtete. (NS I. 291)

Arctur's daughter Freya is the origin of the magical light phenomena in this frozen land of the North. The description of Freya and her surroundings indicate that the forces she controls are those of static electricity. Freya lies on a throne made of a single crystal of sulfur, which is an insulator commonly used in experiments during the 18th century. Freya's attendants are rubbing her body thus generating static electricity. Although there was a lot of curiosity about electrical phenomena, during the 18th century experiments were limited to investigations of static electricity, which was usually generated by friction. It was very difficult to store this kind of electricity, and various materials were used to insulate electrical forces from conductors. In spite of these efforts most electrical charges were quickly dissipated. At the time when Novalis was writing Klingsohr's tale, Volta had prepared his first battery, which was then quickly dupli-
cated by Ritter. At this time the forces responsible for galvanism were not clearly understood, but numerous experiments soon indicated that both chemical and electrical processes were involved\textsuperscript{51}. The galvanic battery soon proved to be a better and more convenient source of electricity. It is possible that Novalis realized that electricity flowing through a galvanic chain was a more advanced form of electrical energy, at least in terms of technical applications, and endowed the isolated princess Freya with static electricity as a powerful but less advanced force. She becomes the sleeping princess, who represents a potential source of energy, stored for the future transformation, when Eros will come to her with the giant galvanic chain in order to unite the opposing forces in the universe.

Even in this isolated state Freya can transfer some of her energy to the figures around her.

Der Held (Eisen) schwieg. "Laß mich deinen Schild berühren", sagte sie sanft. Er näherte sich dem Throne und betrat den köstlichen Teppich. Sie ergriff seine Hand, drückte sie mit Zärtlichkeit an ihren himmli-
schen Busen und rührte seinen Schild an. Seine Rüstung klang, und eine durchdringende Kraft beseelte seinen Körper. Seine Augen blitzten und das Herz pochte hörbar an den Panzer. Die schöne Freya schien heiterer, und das Licht ward brennender, das von ihr ausströmte... Die Dienerinnen legten eine himmelblaue Decke über die Prinzessin, die sie bis über den Busen bedeckte. (NS 1, 291-2)

\textsuperscript{51}For a more detailed discussion of galvanism see the chapter on J. W. Ritter.
This is the first sign of contact or *Berührung* in the complex of dynamic natural phenomena that constitute magic transformations in this tale. This contact has some sexual attributes: Freya first places the knight's hand on her breast and only then touches his shield. Since the knight is also standing on a carpet he is insulated from his surroundings. Freya and Eisen (or Iron) then form a closed circuit, which energizes Iron and gives him a semblance of life. His eyes, representing the sense of sight, sparkle and his heart begins to beat. Through this contact Iron has been endowed with the same human characteristics that are attributed to figures in the human world. In a purely physical sense Iron is magnetized and charged with electricity by this encounter. Since iron is the most common metal that has magnetic properties, this is one reason why Novalis chose it for the old knight. In his notes he gives another reason:

*Das Eisen nähert sich am meisten der Masse des Erdkörpers - Es steht mit ihm in nächster Sympathie.* (NS I, 661)

Iron can mediate between Arctur's realm and the earth because of this special relationship. Freya herself is too isolated from the rest of the universe to communicate with the human world. The blue cover is supposed to further pro-
tect her electric powers from being dissipated without a
definite purpose.\footnote{At the end of 18th century people who conducted}
\textit{experiments with static electricity believed that blue}
materials isolated and preserved the electric charge better
than any other color. (balmes, \textit{Kommentar}, 172-3) The sym-
bolism of the color blue must also be a contributing fac-
tor, connecting Freya to the blue flower}

Arctur’s land is also very beautiful, a true
fairyland. Nothing is distinct in the distance, but the
city itself is portrayed clearly:

Die Stadt erschien dagegen hell und klar. Ihre
glatten, durchsichtigen Mauern warfen die schönen
Strahlen zurück, und das vortreffliche Ebenmaß, der
edle Styl aller Gebäude, und ihre schöne Zusammen-
ordnung kam zum Vorschein. Vor allen Fenstern standen
zierliche Gefäße von Ton, voll der mannigfaltigsten
Eis- und Schneeblumen, die auf das anmutigste
funkelten.
Am herrlichsten nahm sich auf dem großen Platze vor
dem Palaste der Garten aus, der aus Metallbäumen und
Kristallpflanzen bestand, und mit bunten Edelstein-
blüten und Früchten übersät war. Die Mannigfaltigkeit
und Zierlichkeit der Gestalten, und die Lebhaftigkeit
der Lichter und Farben gewährten das herrlichste
Schauspiel, dessen Pracht durch einen hohen Spring-
quell in der Mitte des Gartens, der zu Eis erstarrt
war, vollendet wurde. (NS I, 281)

First this city is an ideal of beauty, sparkling in
the play of the northern lights. Flowers, trees and various
plants are all there, but they are not living organisms.
They represent static models or prototypes of plants and
flowers that will grow later, when the day of rebirth
arrives. Different inorganic materials are used to describe the garden: crystals and gemstones form the fruits and flowers, trees are made of metal. The richness of the scene calls to mind a baroque palace ornamented with gold, silver and precious stones. These materials also have a special significance in the nature philosophy of the period. The ordered geometric structure of crystals places them on a high level in the inorganic realm; they are not mere lumps of amorphous matter. Metals have other interesting properties: they are malleable and can be worked into many complex forms, and they are good conductors of heat and electricity. Novalis as a student of mineralogy is interested in crystals and recognizes their beauty, color, and their fascinating growth patterns that frequently resemble organic plant forms. Metal trees recall a visually striking experiment from chemistry, certainly known to Novalis, where one metal displaces another from a solution of a metal salt and forms deposits of rapidly growing metal

53Johannes Mahr considers two processes of transition that determine action in Klingsohrs Märchen: ',Der Übergang in den Tag erheilt nur, was in der Dunkelheit schon da ist. Der Übergang in den Frühling macht nur lebendig, was in Erstarrung steht – doch einzig in Pabel ist die Ewigkeit schon angebrochen. Durch sie verbreiten sich ein ewiger,Frühling‘ und ein ewiger ,Tag‘ über die Erde." (Mahr, 214)
In some of his last notes Novalis writes:

Es giebt flüssige und gasartige Fossilien, nicht so Pflanzen und Thiere. Sollten die Steine in Steinen (Krystalle) gleichsam die Blätter und Blüthen der Fossilien seyn, die Sinne derselben? (NS III, 681)

Novalis sees in this phenomenon of crystal growth a prefiguration of plant formation and regularity of growth patterns. These phenomena could then justify the use of the "magic wand of analogy" to discover similarities between the living world of plants and that of rocks and minerals.

In Klingsöhrs Märchen Arctur is portrayed as the king of the stars whose kingdom lies in the North. He appears with his followers in the palace. A beautiful bird behind Freya's throne greets his entrance with a prophetic song.

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A simple demonstration of a metal "tree" uses a copper wire, which can be wound together to form the framework for the "tree". If this wire is immersed in a solution of silver nitrate, some of the copper dissolves and the wire network is rapidly covered with a growth of silver crystals. This growth is quite rapid, especially when viewed under a microscope, and shows remarkable similarity to accelerated plant growth. Balmes (171) refers to a similar chemical reaction using copper and zinc as an explanation for "metal trees."

In Christenheit oder Europa Novalis advises:

"An die Geschichte verweise ich euch, forscht in ihrem belehrenden Zusammenhang, nach ähnlichen Zeitpunkten, und lernt den Zauberstab der Analogie gebrauchen." (NS I, 512)

Arctur is a bright star in the sign of Boötes also in the configuration of the northern crown, nördliche Krone. (N III, 171).
that envisions future events. Arctur and his daughter begin a heavenly play of cards.


In this play of cards Novalis introduces the concept of play and of chance in the relationships of the stars and other heavenly bodies. The images on the cards are composed of the constellations of the stars themselves. Freya plays her cards in the sequence as they appear, i.e. she follows the natural sequence, while Arctur chooses his cards with great care. In a way these cards are another representation of Nature's book, which was already discussed in Lehrlinge zu Sais. Arctur can read this book and he can read the significance of the constellations as they are combined. Therefore Arctur is also a heavenly scientist, and his play of cards is an experiment in the realm of the stars, but even he is sometimes forced to obey the necessity of the
natural law. The purpose of the experiment is, however, to find those combinations that reveal the hidden harmony of natural events as they are revealed by the abstract signs of the cards. Arctur's magical card play has elements of astronomy, astrology, and mathematics.

Astronomy is one of the oldest sciences in world history. Ancient Babylonians and Egyptians observed the paths of stars and planets in the skies and determined time and the onset of seasons from the location of certain constellations. Novalis always tried to present scientific discoveries as the sum of all knowledge about a certain topic from the earliest beginnings to the latest discoveries. In these historical sequences he sees any scientific concept as a sum over the entire time sequence up to the present. Astronomy as one of the earliest sciences becomes the precursor of physics and metaphysics.

Das Astralsystem ist das Schema der Physik.  
(NS III, 449)

Die Astronomie ist die reale Algebra der Physik - die Astronomie kann man auch die Metaphysik der Natur nennen.

Metaphysik und Astronomie sind eine Wissenschaft, ...

Gott, Freyheit und Unsterblichkeit werden einst die Basen der geistigen Physik ebenso werden - wie Sonne, Licht und Wärme die Basen der irdischen Physik.  
(NS III, 312)

Results of the card play are soon translated into motion.
The play of cards determines the motion of the stars and their constellations, as the abstract symbols are translated into the dynamics of the universe. This dance of stars is accompanied by music that recalls the ancient belief in the music of the spheres, which for a long time was a characteristic of the medieval universe. In Novalis' poetic realm of the stars there are no crystalline spheres assigned to each planet; the star constellations dance and present continuously changing aspects of their configurations. The change of patterns reminds one of Schiller's poem Der Tanz, where the figures of the dance represent the changes in the social order of human life. (NA II, part 1, 106). The music itself is inherent in nature since nature's language belongs to the music of the universe as already indicated at the beginning of Lehrlinge zu Sais.
Wer wahrhaft spricht, ist des ewigen Lebens voll, und wunderbar verwandt mit ächt en Geheimnissen dünkt uns seine Schrift, denn sie ist ein Accord aus des Weltalls Symphonie. (NS I, 79)

The same concept of music as a symbol for a creative harmony in the universe occurs in Novalis' Die Christenheit oder Europa as an accusation of the Enlightenment, the movement that has destroyed this harmony.

Das Resultat der modernen Denkungsart nannte man Philosophie und rechnete alles dazu was dem Alten entgegen war, vorzüglich also jeden Einfall gegen die Religion. Der anfängliche Personalhaß gegen den katholischen Glauben ging allmählich in Haß gegen die Bibel, gegen den christlichen Glauben und endlich gar gegen die Religion über. Noch mehr - der Religionshaß dehnte sich sehr natürlich und folgerecht auf alle Gegenstände des Enthusiasmus aus, verketzte Fantasie und Gefühl, Sittlichkeit und Kunstliebe, Zukunft und Vorzeit, setzte den Menschen in der Reihe der Naturwesen mit der Noth oben an, und machte die unendliche schöpferische Musik des Weltalls zum einformigen Klappern einer ungeheuren Mühle, die vom Strom des Zufalls getrieben und auf ihm schwimmend, eine Mühle an sich, ohne Baumeister und Müller und eigentlich ein ächtes Perpetuum mobile eine sich selbst mahlende Mühle sey. (NS I, 515)

This creative music of the universe seems to come from the stars themselves. Music, mathematics, and physics are all essential components of Arctur's realm. His first present to Fabel is the magical lyre, which unites the poetic principle she represents with the art of music. (NS I, 304)

Achte Mathematik ist das eigentliche Element des Magiers. In der Musik erscheint sie förmlich, als Offenbarung - als schaffender Idealism. Hier legitimiert sie sich,
This combination of physics, mathematics and music is not accidental. Since the time of Pythagoras music and mathematics have been closely associated because intervals of the musical scale can be expressed in numbers. The entire performance in Arctur’s realm is closely connected to the arcane figures on the cards, and suggests a relationship between mathematical probability, which determines the play of cards, and the ancient science of astrology, which connects constellations with future events. In this aspect Arctur is also the ruler of chance, but his play with chance is directed towards positive ends in contrast to the rigid rule of the underground fates, who represent the certainty of death.

So far it has been established that Arctur is the king of the stars and planets, the king of astronomy and astrology, and mathematics and music, but eventually he is also associated with other natural sciences. He rules over all the materials from the depths of the earth: metals, crystals, and other minerals. All these substances seem to be under an enchantment - they are lifeless elements of the so-called inorganic world. By connecting the realm of the stars and the planets with the treasures of the earth Novalis deliberately combines old and new ideas about
chemistry and physics. "Alte Idee der Sympathie und des Parallelism der Planeten und Metalle." (NS III,661). In the ancient sciences of alchemy and astrology, the stars and various materials on the earth were under the guidance of the old gods. There was a strict order in the universe, and divine forces exerted their influence upon natural phenomena of the earth. Everything was explained in poetic language, using anthropological images that compared the interaction of natural forces with human relationships. The old alchemists preferred to use the language of mythology to describe their observations and experiments\textsuperscript{57}. Then chemistry became an allegory for psychological phenomena. This interpretation would appeal to Novalis, who always attempted to find analogies in different spheres of experience as proof for the essentially uniform structure of diverse phenomena. Alchemy and its language were suitable for a fairy tale where the original figures form new unexpected combinations. Arctur, as the supreme alchemist, rules over the motions of the heavenly bodies and the mineral riches underground. In the writings of the alchemists, names of the planets were frequently used to

\textsuperscript{57} Later psycho-analysts, such as C. G. Jung, saw patterns from the dream world and the subconscious in alchemy and its descriptions of chemical operations, e.g. Psychology and Alchemy Part I. Introduction to the Religious and Psychological Problems of Alchemy, 1-38; and Part III, 2. The Psychic Nature of Alchemical Work, 242-88).
describe metals, and each of these planets was ruled by its own particular god. (Crosland, 5-11). Just before the Age of Reason the description of alchemical processes was frequently very elaborate and full of colorful but obscure images. Sometimes it was difficult to distinguish between treatises of alchemy and elaborations of mythological tales. This fusion of different disciplines appealed to Novalis, who saw another Poetisierung der Wissenschaften in the language of alchemy and its extensive use of allegory and metaphor in describing physical phenomena. This fusion of the modern sciences and the ancient "occult" sciences is found again in the work of G.H. Schubert, where the lore of the ancients is no longer just a metaphor, but an important part of the argument. Novalis lived at a time when the modern sciences were just beginning to develop their methods of setting up a hypothesis and proving it by experiment. At the same time most educated people were acquainted with some concepts of alchemy, and still viewed chemical substances and their reactions in terms of the old metaphors. A uniform language of the physical sciences had not yet been established, and most chemists still used some of the names and vocabulary from the magic age of alchemy. (Crosland, 65-67) For Novalis this deliberate choice of

C.G. Jung points out connections of these images to the dream world and the subconscious. (PA II, 2).
intricate images in the secret manuscripts of the alchemists served as a model for another formulation of a new mythology to replace the old, in agreement with the ideas of his friend Fr. Schlegel. It also allowed him to include historical aspects of the natural sciences in his great synthesis of the opposing forces in the universe as preparation for the coming "golden age." Therefore, Arctur's realm combines the features of astronomy and astrology, alchemy and modern chemistry, physics, mathematics, and magic. As the king of the stars Arctur is accompanied by the spirits of the stars, who surround his throne. The old knight, Eisen, also belongs to these spirits. It was mentioned above that Eisen has a special affinity with the earth. Here Novalis does not follow the alchemical assignment for iron, which is the metal associated with the planet Mars, but he retains the warlike aspects of this element by introducing Eisen as the old knight. Once star configurations are favorable, the old knight is summoned to initiate the change in the human world.

Der alte Held hatte bisher auch sein unsichtbares Geschäft emsig betrieben, als auf einmal der König voll Freuden ausrief: 'Es wird alles gut. Eisen, wirf dein Schwert in die Welt, daß sie erfahren, wo der Friede ruht.' Der Held riß das Schwert von der Hüfte, stellte es mit der Spitze gen Himmel, dann ergriff er es und warf es aus dem geöffneten Fenster über die Stadt und das Eismeer. Wie ein Komet flog es durch die Luft, und schien an dem Berggürtel mit hellem Klang
Freya's touch had activated the old knight Eisen who now throws his magnetic spear into the world. This spear appears as a comet and falls to earth as a shower of meteorites. The magnetic meteorite also signifies a momentary penetration of a force from a higher world into that of the human world on earth. Eisen belongs to the realm of Arctur; he also personifies the metal iron, which normally exhibits magnetic properties. This for Novalis was an indication of a low level of consciousness in the mineral world. He share this view with Goethe as his notes indicate: "Goethes Meinung - daß jede Substanz, seine engern Rapports mit sich selbst habe, wie das Eisen im Magnetism." (NS III, 573). Iron as found in nature may not exhibit its latent magnetic potential; therefore Freya, who herself is associated with static electricity, must awaken the old hero Eisen, i.e. activate his magnetic properties. His special affinity to earth then determines his role as the magnetic messenger. Iron was found in many common minerals, and Novalis was well acquainted with the chemistry and physical properties of these minerals. This metal had been known since the antiquity, it had become associated with the modern or iron age. According to J.W. Ritter, iron was in the center of his electrochemical
series, i.e. its electric properties placed it in the center of the sequence of metals used in his galvanic experiments. Ritter's basic thesis, that all phenomena in nature have a galvanic origin, strongly influenced Novalis' view of nature, and typically provided him with another analogy for an access to the spiritual sphere.

Unser Denken ist schlechterdings nur eine Galvanisation - eine Berührung des irdischen Geistes - der geistigen Atmosphäre - durch einen himmlischen, außerirdischen Geist. Alles Denken etc. ist also an sich schon eine Sympraxis im höheren Sinn." (NS III, 263)

In this sense the splinters from Eisen's sword are messages from Arctur's realm to the human world. Each splinter is a connection to this spiritual world and a plea for a release from the frozen lifeless state.

All the fairy tale figures representing the materials used in the experiments of electricity and magnetism come from Arctur's realm: Iron, Gold, Zinc and Tourmaline. When Fabel needs help to continue the poetic transformation of the world, she goes to Arctur and asks for the necessary chemical substances. First the fates from the underworld require flowers that are grown in fire. The gardener, Zinc, who can grow these flowers, belongs to the nature spirits in Arctur's palace.
Before Fabel can initiate galvanic rebirth of the earth and gather the ashes of Mother, she again goes to Arctur and acquires her galvanic assistants from his realm.

This realm is unable to redeem itself and to reunite Arctur and Sophia, because the laws of probability can lead to many wonderful accidents, but these accidents are like the play of cards, they lack direction without the active creative principle of the human mind. The poetic aim is:

"Das Abstrakte soll versinnlicht, und das Sinnliche Abstract werden - Entgegengesetzte Operationen - die Eine mit der Anderen besteht und vollendet wird." (NS III, 299)

The magic world of the fairy tale is for Novalis the true spiritual world where all things are possible. The magic operations and transformations correspond to the activities of the human mind and soul as they unfold and develop. In this aspect Arctur as the ruler of the stars and the signs of the zodiac also influences the magic idealism of the human realm, but he has no direct contact (Berührung) with this world without Sophie, the eternal wisdom of the universe.

The Human World at the Beginning of Klingsohr’s Tale.

While the introduction to Arctur’s realm began with a description of the frozen land and the city, the human world is shown as the inside of a home.
Zur Zeit lag der schöne Knabe Eros in seiner Wiege und schlummerte sanft, während Ginnistan seine Amme die Wiege schaukelte und seiner Milchschwester Fabel die Brust reichte. Ihr buntes Halstuch hatte sie über die Wiege ausgebreitet, daß die hellbrennende Lampe, die der Schreiber vor sich stehen hatte, das Kind mit ihrem Scheine nicht beunruhigen möchte. Der Schreiber schrieb unverdrossen, sah sich nur zuweilen mürrisch nach den Kindern um, und schnitt der Amme finstere Gesichter, die ihn gutmütig anlächelte und schwieg. Der Vater der Kinder ging immer ein und aus, indem er jedesmal die Kinder betrachtete und Ginnistan freundlich begrüßte. Er hatte unaufhörlich dem Schreiber etwas zu sagen. Dieser vernahm es genau, und wenn er es aufgezeichnet hatte, reichte er die Blätter einer edlen, göttlergleichen Frau hin, die sich an einen Altar lehnte, auf welchen eine dunkle Schale mit klarem Wasser stand in welches sie mit heiterm Lachen blickte. . . .

Die Mutter des Knaben, die wie die Anmut und Lieblichkeit selbst aussah, kam oft herein. Sie schien beständig beschäftigt, und trug immer irgendein Stück Hausgerät mit sich hinaus: bemerkte es der argwöhnische und mit spähenden Blicken sie verfolgende Schreiber, so begann er eine lange Strafrede, auf die aber kein Mensch achtete. (NS I, 294)

In his Studien zu Klingsohrs Märchen Novalis outlines this scene in the human world (or soul), as follows:

Die Liebe in der Wiege – die Träume. (Ihre Wohnung – das menschliche Gemüt.)


The human family is a representation of the different qualities of the human soul. The first generation of this family consists of Father as a representation of the senses, Mother as the heart, and Ginnistan, the children’s
nurse as fantasy, while reason appears as the sinister figure of the Schreiber. Somewhat aloof and mysterious is Sophie, the noble woman at the altar. Description of these figures indicates that the human world is dominated by alienation and conflicting tendencies.\footnote{It is not the purpose of this study to investigate psychological implications of these relationships; a recent study [Friedrich A. Kittler, Irrwege des Eros und die "absolute Familie". Psychoanalytischer und disкурсanalytischer Kommentar zu Klingsohrs Märchen in Novalis’ ,Heinrich von Ofterdingen’, in Psychoanalytische und psychopathologische Literaturinterpretation, eds. Bernd Urban & Winfried Kudszus, Wissenschaftliche Buchgesellschaft: Darmstadt, 1981] has been devoted to these questions.}

In terms of science and nature philosophy, these irregular relationships present a combination of development and Potenzierung, which uses the figures of this human family as experimental variables that can be combined in different ways to express abstract philosophical ideas.

The human world is in disarray: Father and Mother pass each other without touching; the heart and the senses are active in different areas of the house. Mother, or the heart, should have been the center of this household, but she is preoccupied with household cares. Father is placed between two opposing forces: on one side the seductive Ginnistan, on the other the cold and calculating Schreiber. Fabel and Eros, poetry and love, are still small children growing under the care of Ginnistan and Sophie. As long as
these two are present the negative force of reason represented by Schreiber cannot acquire dominance over human soul. Sophie belongs to the transcendent realm of Arctur, she is displaced from her true role as his consort. Schreiber, who is related to the Fates of the underworld, does not have any proper mate. As the petrified and petrifying reason he has isolated himself from life and nature. At the beginning of the tale there exists a temporary equilibrium in the human world, but there is not enough stability to prevent a tragedy when Ginnistan and Eros leave on their wanderings. Eros, the child of Mother and Father, is nurtured by Ginnistan as is her own child Fabel. In social terms this would be a rather unconventional household, but if we consider that these figures represent different aspects of the human soul, then these relationships become quite natural. The sexual act taken here as an interaction or Berührung between the Father as the representative of the senses and the Mother as the heart has produced love in the form of the little child Eros. Another interaction between the Father and Ginnistan as fantasy has produced another child, Fabel, the creative poetic principle. Sophie acts as a guardian angel to the children, but she does not truly belong to the family.

Novalis felt that Sophie von Kühn was his personal guardian angel, mein Schutzgeist.
Schreiber produces only numbers and geometrical figures, indicating that at best he is sterile and can produce only abstractions. He is the natural enemy of both Mother and Ginnistan. The children are the hope for the future and new harmonious relationships; as a mathematical combination of their parents' qualities they belong to a higher stage of development, but at the beginning of Klingsohr's Tale they are not yet ready to fulfill their destiny. During the action of the fairy tale they both must follow a complex path of development before the world and the human family is transformed and all the negative forces neutralized and defeated. Eros follows the psychological inner growth in the transition from a child's love for his mother and for his nurse to love for the whole universe and in particular for Freya, his true counterpart. In contrast Fabel remains a child, although she has to complete many difficult tasks before she can spin the songs of eternity.

Die Poesie ist die Jugend unter den Wissenschaften – Als Kind mag sie ausgewichen haben, wie ein Engel unter der Madonna, der den Finger so bedeutend auf den Mund drückt, als traut er diesem Lichtsinn nicht. (N II, 558)

The first contact between the realm of Arctur and the developing human family is the little splinter from the

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*Novalis is probably describing the painting of Raphael's Madonna, which he and other Romantics had seen on their visit to Dresden in 1788.*
sword of Eisen that falls to the earth as a magnetic meteorite and points to the North. This splinter is a connection to the isolated world of Arctur and a pointer towards the future. (Mahr, 215-16). Its properties illustrate the polar nature of magnetic forces. As the little snake, which Ginnistan fashions from it, this piece of iron loses its magnetic polarity and becomes the ancient sign of Ouroboros: the snake that bites its own tail, the symbol of completeness and integration. The fusion of physics and alchemy is accomplished by the play of fantasy; by the fashioning of Ouroboros Ginnistan suggests her role in the future wanderings of Eros. Still the splinter comes from the realm of Arctur; it embodies an element of chance and implies the transformation that will be brought about by galvanic forces.

Eros and Ginnistan.

The travels of Eros and Ginnistan take them for the most part through different levels of psychological devel-

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62C. G. Jung discusses the significance of Ouroboros in connection with the duality of existence. "The alchemi- cal parallel to this polarity is the double nature of Mer- curius, which shows itself most clearly in the Uroboros, the dragon that devours, fertilizes, begets, slays, and brings itself to life again. Being hermaphroditic, it is compounded of opposites and is at the same time their unit- ing symbol: at once deadly poison, basilisk, scorpion, panacea, and saviour. (Psychology and Alchemy, 371-2)
opment that have little to do with the physical sciences. Although Eros purpose is to go directly to the North, to the realm of Arctur, fantasy is the leader on the first stage of the journey, and takes the young Eros to her father the Moon. Moon rules over a land somewhere between heaven and earth, where the two travelers are greeted by figures who represent weather phenomena:

Der ungestüme Geist der Flut folgte der sanften Ebbe. Die alten Orkane legten sich an die klopfende Brust der heißen leidenschaftlichen Erdbeben. Die zärtlichen Regenschauer sahen sich nach dem bunten Bogen um, der von der Sonne, die ihn mehr anzieht, entfernt, bleich dastand. Der rauhe Donner schallt über die Torheiten der Blitze, hinter den unzähligen Wolken hervor, die mit tausend Reizen dastanden und die feurigen Jünglinge lockten. Die beiden lieblichen Schwestern, Morgen und Abend, freuten sich vorzüglich über die beiden Ankömmlinge. (NS I, 298)

These changing aspects of the atmosphere express the sensuality in the realm of Moon. They form a fantastic pageant to greet the visitors. Ginnistan is at home in this changing and insubstantial world. A few years later the nature philosopher G.H. Schubert treats atmosphere as the connecting medium between the earth and the spiritual world. According to his concept of the universe all matter longs for a dissolution in gaseous state and for an escape from the gravitational forces of the earth. Novalis does not attribute any superior value to the world of the moon. It is filled with many wonders, its dreams reveal secrets
of the future, but it is also an illusory land of fantasy where the uncritical mind can be lost. Although Moon's realm is located somewhere between the earth and the realm of Arctur, it does not have higher valuation than the earth either spiritually or morally. Novalis is conscious of the danger for the romantic view of the world, if fantasy is not controlled by understanding, and expresses caution about these dangers. The land of fantasy is certainly no substitute for the "true heaven."

Ich bin überzeugt, daß man durch kalten, technischen Verstand, und ruhigen moralischen Sinn eher zu wahren Offenbarungen gelangt, als durch Fantasie, die uns bloß ins Gespensterreich, diesen Antipoden des wahren Himmels, zu leiten scheint. (NS III,578)

Many critics have commented on this particular fragment of Novalis starting with Obenauer. (Obenauer, 277-8). Fantasy alone without the moderating influences of reason and morality leads to the insubstantial and treacherous world of dreams, where the individual becomes either a passive observer or an emotionally unstable manipulator of emotions. Eros is seduced by Ginnistan and becomes trapped in the sensual desires of physical love. He assumes the role of the antique god Eros, who no longer follows the path towards the North, but flies restlessly around the world wounding unfortunate lovers with his arrows. Now he follows the path of Ouroboros, the circle of repetition, instead of the magnetic arrow.
Important for the rest of the tale is the theatre of dreams in Moon's treasure chamber that shows a spectacle of life and prefigures the threatening battle between the forces of life and death. This play of dreams also forms connections to the original dream of Heinrich von Ofterdingen at the beginning of the novel. The blue flower recurs as a leitmotif that connects the experiences of Eros and Heinrich. In Eros' dream he is united in the flower with a beautiful girl, the sleeping Freya. This theater of dreams suggests the ending of the tale, not clearly, but through a combination of related changing images.

When Fabel returns from the realm of Arctur with the heavenly lyre, she is able to calm Eros with her song. Fabel leaves the sleeping Eros with Ginnistan, who has become serious and lost her careless frivolity. Yet on her return to the underworld of the fates Fabel tells the Sphynx that love is with Sophie.

Die Sphinx fragte: ... 'Was ist das ewige Geheimnis?' - 'Die Liebe.' - 'Bei wem ruht es?' - 'Bei Sophien.' (NS I, 308)

After the destruction of the fates and their realm of the black light Fabel asks Perseus, (who is also Eisen), to cut Eros' wings with the scissors that the fates used to cut the threads of life.

Fabel sah durch die Felsenklucht hinaus, und erblickte den Perseus mit dem großen eisernen Schilde. Die
Schere flog von sich selbst dem Schilde zu, und Fabel bat ihn, Eros' Flügel damit zu verschneiden, und dann mit seinen Schilde die Schwestern zu verewigen, und das große Werk zu vollenden. (NS I, 303)

Since the scissors are magnetized by contact with the magnetic iron shield, the cutting of the wings represents a magnetic limitation of Eros' irresponsible restlessness. Magnet pointed to the North at the beginning of Eros' journey, now he is again guided by magnetic lines of force.

The Anti-World of the Fates.

The underworld of the fates is the negative pole in a force field between life and death. Novalis characterizes it as a photographic negative of the visible world.

Alle Figuren waren hier dunkel. Die Luft war wie ein ungeheuerer Schatten; am Himmel stand ein schwarzer strahlender Körper. Man konnte alles auf das deutlichste unterscheiden, weil jede Figur einen andern Anstrich von Schwarz zeigte, und einen lichten Schein hinter sich warf; Licht und Schatten schienen hier ihre Rollen vertauscht zu haben. Fabel freute sich in einer neuen Welt zu sein. ...
Sie trat in die ungeheure Höhle, und ging fröhlich auf die alten Schwestern zu, die bei der kärlichen Nacht einer schwarzbrennenden Lampe ihr wunderliches Geschäft trieben. (NS I, 301-2)

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83Photography was not invented when Novalis wrote Klingsoehrs Märchen, but it was known that light could interact with certain chemicals (silver salts), and turn them black. J. W. Ritter used a strip of paper soaked in silver chloride to discover the action of ultraviolet rays. (Ritter, Entdeckungen, 117-127)
Fabel sees the land of the fates as a new adventure and is not intimidated by it. In Novalis’ view poetry and the creative spirit are not afraid of the dark world of the fates, but can reach these depths and again return to life. Fabel is a spinner just like the fates, but she sings and talks while she is spinning, creating new songs and tales that oppose the grim activities of the sisters. Her song is a prophecy that wakes the spirits of the past, who appear as small points of light and threaten the shadow world of the fates. The relationship between Schreiber and the fates is revealed; their black lamp is the counterpart of the lamp that Schreiber had in the human home on the earth. Schreiber himself has attributes of destructive time and death.

'Ich danke dir für deinen guten Willen’, sagte Fabel; 'man sieht dir jetzt die gute Zeit an; dir fehlt nur noch das Stundenglas und die Hippe, so siehst du ganz wie der Bruder meiner schönen Basen aus. (N5 I, 303)

Neither the fates nor Schreiber have any power over Fabel, who carries out all the difficult tasks that the sisters assign to her by climbing up to Arctur’s realm for help. Arctur rules over the forces that are able to transform the world, but he is a passive spectator who cannot act by himself. On her first visit to Arctur Fabel obtains a lyre, the symbol of music and poetry. With this lyre
Fabel acquires the powers of Orpheus, who could enchant the
nature and even the inhabitants of Hades\footnote{A contemporary reference to the power of music can
be found in Mozart’s \textit{Zauberflöte}, where both Tamino’s magic
flute and Papageno’s glockenspiel tame animals, evil
spirits and enemies of the temple of wisdom.}

It is Fabel's ability to travel between these
extremes of existence that gives her the power to work for
the age of eternity. She makes the grim sisters ridiculous.
Tarantulas that the fates demanded for the oil for their
black lamp end up biting them.

Sie wurden ebenfalls von den erzürnten Taranteln
gestochen. Sie konnten sich nun nicht an Fabel
vergreifen und sprangen wild umher. 'Spinn uns
gleich', riefen sie grimmig der Kleinen zu, 'leichte
Tanzkleider. Wir können uns in den steifen Röcken
nicht rühren, und vergehen fast vor Hitze, aber mit
Spinnensaft mußt du den Faden einweichen, daß es nicht
reißt, und wirke Blumen hinein, die im Feuer gewachsen
sind, sonst bist du des Todes.' (NS I,

The chemical flowers of zinc oxide Fabel again obtains
from the inanimate nature that is under Arctur's control.
These flowers are formed by burning zinc dust in air, i.e.
they are a combination of a metal, which is important in
the galvanic chain, and of oxygen that is also known as
\textit{Lebensluft} or air of life\footnote{See additional discussion of flowers of zinc under
Chemical Transformations.}.

Both elements oppose the world of death and darkness.
Fabel carries out her tasks in such a way that the fates
are overcome by the forces of poetry, music, and natural science. Finally Fabel calls Perseus, who is a Greek hero, another form of the old knight Eisen, and a constellation of stars in Arctur's realm, to complete the work by turning the sisters to stone. According to Greek mythology Perseus had a head of Medusa on his shield, and anybody who looked at it turned to stone. Transformations initiated by Fabel in different areas of the universe go in opposite directions: when the figures of the underworld are turned to stone, the petrified world becomes living nature.

Transformation by the Flame.

When Mother is burned at the stake, as the intended victim of the destructive reason, the human world is in total disarray. Love and fantasy have left home and have lost their direction and purpose. Fabel has escaped to the lower world of the fates. Schreiber has become the ruler of the earth and enslaved it by his mechanical laws. The burning of Mother, however, becomes the turning point in the battle between the forces of life and those of darkness and death. Schreiber does not understand the forces that Mother represents, and unknowingly initiates a transformation of cosmic significance that he is unable to control. All of these events have been predicted in the theater of dreams
in the realm of the Moon. (NS I, 299-300) Before this event the emotional aimlessness of Eros and Ginnistan seems to paralyze the human soul, and the destructive mechanical forces of reason become rulers of the human world. The original outline for **Klingsohrs Märchen** shows that Novalis first intended that Eros would be burnt at the stake. This original plan would have been closer to the old mythologies, where the young hero or the god of creation must die and be resurrected to symbolize the cycle of life and death. Osiris in ancient Egypt, Dionysos in Greece, and Jesus Christ all undergo a painful death and are resurrected. That Novalis changed his mind and selected Mother for the sacrificial figure indicates that he valued very highly the attributes of Mother/Heart as the creative force and origin of life. It was pointed out in the discussion of the goddess Isis in the section on **Lehrlinge zu Sais** that the feminine principle in nature and human life was very important to Novalis. The image of Mother in **Klingsohrs Märchen** is transformed from a part of the human soul to a divine power that absorbs the energy from the kingdom of the sun and becomes a part of all creation. Fabel is a witness to this event.

_Sie sah bald von weitem die hohe Flamme des Scheiterhaufens, die über den grünen Wald emporstieg. Traurig sah sie gen Himmel, und freute sich, wie sie Sophiens blauen Schleier erblickte, der wallend über die Erde schwebte, und auf ewig die ungeheure Gruft bedeckte._
Die Sonne stand feuerrot vor Zorn am Himmel, die gewaltige Flamme sog an ihrem geraubten Lichte, und so heftig sie es auch an sich zu halten schien, so ward sie doch immer bleicher und fleckiger. Die Flamme ward weißer und mächtiger, je fahler die Sonne ward. Sie sog das Licht immer stärker in sich, und bald war die Glorie um das Gestirn des Tages verzehrt und nur als eine matte, glänzende Scheibe stand es noch da, indem jede neue Regung des Neides und der Wut den Ausbruch der entfliehenden Lichtwellen vermehrte. Endlich war nichts von der Sonne mehr übrig, als eine schwarze ausgebrannte Schlacke, die herunter ins Meer fiel. Die Flamme war über allen Ausdruck glänzend geworden. Der Scheiterhaufen war verzehrt. Sie hob sich langsam in die Höhe und zog nach Norden. (NS I, 307)

This change of the funeral pyre into an elemental force is spiritual and ultimately religious. The complex transformation begins as Mother is burned at the stake - a common punishment for heretics and witches. Her inner being is compassion and sympathy for life, which is heresy in the realm of the calculating reason. The influence of Mother, or of the great Goddess, who is the universal manifestation of the feminine principle, in human life are not acceptable to the materialistic Schreiber in his drive for dominance. Novalis here expresses his opposition to the extreme trends of the Enlightenment that glorified the rule of logical reason, and viewed the world as a giant machine. The funeral pyre becomes the ultimate victory for the forces of eternal life, as Mother’s human shape is destroyed in a chemical combination with the element of life - oxygen. This chemical transformation changes both Mother and the flame. The purity of Mother’s spirit sublimates the
ordinary elemental force of fire into a bright flaming
force of life. The fire consumes only Mother's earthbound
qualities and imperfections and transfers her spirit to a
higher level of existence.

Der Geist ist der Oxigene des Körpers - die Seele ist
die eindringende Basis des Oxigens. Leben ist ein
Feuerproceß. Je reiner der Geist ist, desto heller und
feuriger das Leben ... (NS III, 318)

Interesting in this context is the comment of Hegener,
who sees the existing world as a combination of light and
shadow. The relationship between these two opposites is
revealed in combustion process. Mother is the intended vic-
tim of this process.

Solche Verbrennungs Vorgänge, denen die Welt der
Schatten als Kehrbild zugeordnet ist, gehen den
endgültigen Verklärungen voraus, denn immer wird die
dadurch entstehende Asche zum Blüthenstaub für höhere
Welten. Immer geht aus der Asche des Herzens letztlich
das verklärte Herz hervor, das, alles verklärend, das
Universum neu begründet. Eine verzehrende Flamme ver-
brennt immer die unvollkommene Welt. (Hegener, 224)

Hegener points out the connection between combustion
and death, and the connection between the funeral pyre and
the shadow world of the fates. Since Schreiber wants to
destroy Mother by burning, he obviously thinks that he has
complete control over this process. It is significant,
however, that combustion is also a combination with oxygen
or the element of life. Most interpretations of Klingsohr's
Tale consider only the ashes of Mother as the beginning of a new life for the whole world. The role of the flame in the transformation of Arctur’s realm is hardly mentioned. The ashes of Mother certainly become a sacrament for the new world, but the transfigured flame as the life-giving and world illuminating phenomenon initiates cosmic changes in Arctur’s realm. This flame, which has absorbed the spiritual qualities of Mother and the light energy of the sun is equally important for the creation of the eternal age of harmony. It should also be noted that Schelling defined light as the spiritual or positive principle in nature that by its presence activates all dynamic forces in nature. The flame arising from Mother’s funeral pyre could also be interpreted as the ideal principle of light returning to its origins in the realm of Arctur.

The rule of the rational but ultimately destructive mind and the illumination of the world from outside, come to an end. Galvanic processes are not used in the transformation of Mother since she herself is the embodiment of life force that is not asleep as some other figures of the tale. The ashes left over from the chemical part of the transformation are collected by Tourmaline, an inorganic crystalline substance working under the poetic guidance of Fabel. These ashes then are given to Sophie who dissolves
them in her magic water, the divine water of life. This solution is shared as a new sacrament among the earth figures of the fairy tale, introducing a new era of existence according to Fabel’s prophecy:

Ein jeder lebt in Allen,  
Und All’ in Jedem auch.  
Ein Herz wird in euch wallen,  
Von Einem Lebenshauch. (NS I, 302-3)

While all the other figures in Klingschors Märchen retain their human form until the end of the tale, Mother is transformed into ashes and fire, a new sacrament and a spiritual illumination.

Sophie reichte die Schale dem Eros und dieser den andern. Alle kosteten den göttlichen Trank, und vernahmen die freundliche Begrüßung der Mutter in ihrem Innern, mit unsäglicher Freude. Sie war jedem gegenwärtig, und ihre geheimnisvolle Anwesenheit schien alle zu verklären. Die Erwartung war erfüllt und übertroffen. Alle merkten, was ihnen gefehlt habe, und das Zimmer war ein Aufenthalt der Seligen geworden. Sophie sagte: 'Das große Geheimnis ist allen offenbart, und bleibt ewig unergründlich. Aus Schmerzen wird die neue Welt geboren, und in Tränen wird die Asche zum Trank des ewigen Lebens aufgelöst. In jedem wohnt die himmlische Mutter, um jedes Kind ewig zu gebären. Fühlt ihr die süße Geburt in Klopfen eurer Brust.' (NS I, 312)

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88This liquid represents das Urflüssige, or the universal solvent Alkahest (All-Geist of Paracelsus) of the alchemists (Crosland, 42).
Chemical Transformations.

Novalis combines concepts from alchemy and modern chemistry when he talks about the flowers of Zinc. One of the tasks assigned to the little Fabel is to find flowers born in fire for the robes of the underground fates. Fabel goes to Arctur for help: she needs the assistance of the gardener Zinc, who is the only one who can grow these flowers.

'Ich brauche', sagte Fabel, 'Blumen, die im Feuer gewachsen sind. Ich weiß, du hast einen Blumengärtner, der sie zu ziehen versteht.' - 'Zink', rief der König, 'gib uns Blumen.' Der Blumengärtner trat aus der Reihe, holte einen Topf voll Feuer, und sätete glänzenden Samenstaub hinein. Es währte nicht lange, so flogen die Blumen empor. Fabel sammelte sie in ihre Schürze, und machte sich auf den Rückweg. (NS I, 309)

In the old system of alchemy fanciful names for various chemical substances were commonplace. Flowers were usually substances that were formed by sublimation, i.e., these substances evaporated during the actual chemical reaction and were collected by precipitation on a cold surface. These substances generally formed loose crystals that resembled the growth of flowers (Crosland, 17). One of the few names of this type, which is still used, is the term "flowers of sulphur" for powdered sulphur. Zinc oxide was commonly obtained by burning fine flakes of zinc metal (Novalis' Samenstaub) and retrieving the oxide by collect-
ing its vapors on a cold surface. The chemical reaction is accompanied by showy color effects; zinc burns with a bright green flame, while the oxide is yellow when hot and changes to white when cooled. Arctur's flower gardener is certainly able to "grow" these flowers by oxidation of the metal zinc.\footnote{Zinc oxide is a common white pigment and has also been used in medicine for a long time as the main ingredient in an antiseptic salve for skin disorders, (i.e. zinc ointment, which is still available).}

Novalis here seems to make fun of the fates and their request for the flowers of zinc oxide, a chemical joke quite in line with the other discomforts that the fates have to suffer. They are adorned with white flowers grown in a fire, i.e. representing light, warmth and oxygen, although their nature is opposed to these qualities, and they can see only darkness by the light of the black lamp.

Quite different is the role assigned to tourmaline, one of the precious stones that attracted a lot of interest among the scientists of the late 18th century because of its unusual electro-magnetic properties. Novalis writes:

Turmalin ist beständig magnetisch und beständig elektrisch zugleich - er hat die stärkste Erregbarkeit gegen beide Kräfte. (NS III, 63)
Tourmaline is a material substance, which can act on other substances through the invisible forces that are released by the poetic influence of Fabel.

"Materielle Bewegung - oder thätige Materie (daher natürlich - veränderlich - transitorisch) ist gleichsam das Mittelglied zwischen Chymie und Mechanik - wie sie selbst Einbildungskraft ist, so läßt sie sich auch nur durch Einbildungskraft fassen. (Naturverstand - Naturwitz - Naturgedächtniß - Naturvernunft - Natur- sinn etc.) (NS III, 412)

In Novalis' view tourmaline is one of the important intermediary substances that indicate transition from one state to another. Tourmaline has some interesting physical properties due to the flow of electrons through the crystal. These electric and magnetic properties were deemed particularly interesting by the romantics as an illustration of latent dynamic forces in the mineral world. It was known in the 18th century that tourmaline acquires electric charge when heated and is able to attract light substances, e.g. in Klingsohrs Märchen the ashes of the Mother from the funeral pyre.

Although an electric property of matter is involved in this process, the collection of ashes is an electrostatic not a galvanic, or electrochemical, phenomenon and does not belong to the sequence of galvanic stimuli, 68

68The petrified resin, amber, also develops static electricity when rubbed and its Greek name, electron, has given us the name for electricity.
which bring back to life Atlas, Father and Freya. It is not clear whether Novalis was aware of the complex physical properties of tourmaline. He used this particular stone to collect ashes of Mother because he wanted to emphasize the importance of latent energy in seemingly inert matter. Poetry liberates the hidden forces of inorganic processes and elevates them to symbolize organic or spiritual transformations. The gathering of Mother’s ashes then becomes a concentration of physical and spiritual energy. This energy is transferred to Sophie’s magic solution and shared by the human community and the entire earth.

Transformation of Space and Time

The destruction of the sun by the flame into which the mother is transformed after being burned at the stake is one of the more puzzling events in Klingsohr’s fairy tale. Why should Novalis find it necessary to destroy the source of light and the center of our solar system in his transformation of the universe as the preparation for the coming “golden age?” There is no obvious connection to the celebration of the night as the realm of dreams and rapture as was the case in Hymnen an die Nacht. All the light radiating from the sun is now collected by the flame. This spiritual emanation of Mother as the allegorical represe-
tation of the moral organ, the heart, now provides the illumination for the new unified world. Therefore, the new transcendental world will not be based on physical principles, which are derived from observations of scientific experiments in the material world. The natural phenomena themselves, considered either as properties of the solid real objects or as interplay of invisible forces, will change into purely spiritual interactions outside the categories of time and space. The destruction of the sun is not merely a destruction of the sun as the symbol for the light of reason, which was exalted during the Enlightenment. The implications are much more radical: destruction of the sun is also destruction of earth time, destruction of life in the real world, and destruction of nature as we know it. Life is a system of organic processes imbedded in time. Scientific method and philosophy is based on thinking in terms of events or processes defined by time and space. Thinking itself is a process tied to time. It is clearly indicated in Novalis' study notes and fragments that he fully realized the significance of time and space; e.g. in the notes taken during the period of his Fichte studies he writes:

Raum ist die äußere Bedingung, Zeit die innere Bedingung, der sinnlichen Anschauung oder des Gefühls. (NS II, 43)
This concept of time and space is basically the same as Kant's definitions in *Kritik der reinen Vernunft*:

Die Zeit ist die formale Bedingung a priori aller Erscheinungen überhaupt. Der Raum als die reine Form aller äußeren Anschauung ist als Bedingung a priori bloß auf die äußeren Erscheinungen eingeschränkt. ... Wenn ich a priori sagen kann: alle äußere Erscheinungen sind im Raume, und nach den Verhältnissen des Raumes a priori bestimmt, so kann ich aus dem Prinzip des inneren Sinnes ganz allgemein sagen: alle Erscheinungen überhaupt, d. i. alle Gegenstände der Sinne, sind in der Zeit, und stehen notwendiger Weise in Verhältnissen der Zeit. (81)

Kant considers time and space as principles of cognition a priori, and there can be no empirical reality without the imposition of the conditions of space and time. Novalis is aware that philosophy cannot be separated from these conditions, and summarizing the fundamental ideas from Fichte's *Wissenschaftslehre* he writes:

Die Zeit kann nie aufhören. Wegdenken können wir die Zeit nicht - denn die Zeit ist ja die Bedingung des denkenden Wesens - die Zeit hört nur mit dem Denken auf. Denken außer der Zeit ist ein Unding. (NS II, 180)

In the present form of the universe, just as in the present form of human life, there are definite limits imposed on all activities by the conditions of space and time. All our conscious efforts: philosophy, science, language and the arts have been developed within these limits and have been given form and structure because of these
limits. Philosophy and science have founded numerous systems and theories in order to determine these limits, and in order to establish the relationships that these conditions impose on our understanding of the world. Cosmology was one of the first activities of the human mind, as the observations of the heavenly bodies were combined with the explanations of the origin of the world. These observations have led to different systems that demonstrate order in the universe. The sun, the moon and the planets have always been very important in these cosmologies, whether they were constituted by ancient myths or by the observations of developing sciences. In history of science the sun is one of the most important reference points in any rational representation of the real world. Space and time are necessary for the definition of each and everyone of the natural phenomena. This dependence is clearly demonstrated in Newtonian mechanics, which reduces the motion of objects in space to simple mathematical relationship of time and coordinates of three-dimensional space, i.e. these laws trace the positions of objects in time⁶⁸.

The movements of celestial configurations which Novalis describes at the beginning of Klingsohr's tale also

⁶⁸Newton's interpretation of the universe was only possible after Kepler, Copernicus and Galileo had demonstrated that sun is the center of the solar system, and the earth and other planets rotate around it.
follow the laws of the real astronomical universe, and their dance is based on the interaction of space and time. We belong to a certain period in the history of the world, and are limited even in our imagination by the social and cultural context of the current time interval. Novalis was conscious of these limits, and many comments in his notebooks indicate that all individuals must work in these limits and develop the empirical self towards an ideal of humanity.

... Alles ist beschränkt, auch des Menschen Wissenschaft soll nach Zeit und Ort etc. bestimmt seyn. Höher kann der Mensch nicht bringen, als daß er einsieht, welches Wissen sich just für seine Stufe paßt - für die Dauer und Constitution seines Lebens - und den Wissenstrieb nicht krankhaft begünstigt - ihn in Harmonie mit seinen übrigen Kräften und Anlagen läßt. Zur Wissenschaft ist der Mensch nicht allein bestimmt - zur Menschheit ist er bestimmt. Universaltendenz ist dem eigentlichen Gelehrten unentbehrlich. (NS III, 600-1)

In his extensive study Die Idee des goldenen Zeitalters im Werk des Novalis, Hans-Joachim Mähl proposes that Novalis’ early ideas about time were close to those of Kant and Fichte. (278). In agreement with these philosophers he considered the “golden age” as an ideal that could only be approximated but never achieved in real life. Approach to this ideal can be conceived as similar to the mathematical concept of a series, which approaches infinity as its abstract limit. The above quote expresses
the impossibility of conceiving of life and any activity of
the self towards a moral goal outside the limits of time.
In Mähl's view the experience of Sophie Kuhn's death and
the deep emotions which were brought forth by this tragic
event turned Novalis' thinking away from the abstractions
of Fichte's Wissenschaftslehre, which was based on objec-
tivations of the transcendental Ego and its activities in
the real world of the Non-ego, towards the old poetic image
of a "golden age" in the distant mythological past. This
past as an image of a pre-conscious harmonious unity
between man, nature, and God becomes both a remembrance of
past happiness and a prophetic vision of the distant
future. The spiritual transformation of humanity and
nature, towards which all moral activities are directed,
now is seen as preparation for this goal. Already in
Lehrlinge zu Sais there are hints that the return of the
child will end all lessons at the temple in Sais; i.e. all
scientific knowledge and philosophical speculation will
cease to have any meaning on another plane of existence,
where all wisdom will be transmitted directly and
instantaneously without any mediation. The novel Heinrich
von Ofterdingen also describes the deliberate synthesis of
positive life experiences as a preparation towards a coming
"golden age." The story of Heinrich is the education of a
poet, who is chosen as the ideal transition figure from the
present age of discord and fragmentation to the coming age of harmony. Schiller thought that only aesthetic education would be able to educate humanity towards freedom; Novalis goes beyond this goal and wants to transfer the entire human existence to a higher level. The aesthetic philosophy of the romantic period states that only poets can suggest the presence of the ideal through the poetic images of the real world. (Schelling, SW II, 828) In Klingsohrs Märchen only Fabel, the spirit of poetry, freely travels between the different levels of existence and directs the forces that energize all natural processes in the world and impel them towards a redemption of the universe. This ideal is achieved through continuous interaction between the hidden forces in nature and the creative qualities of the human soul. The path towards this ideal includes the moral aims found in Kant's and Fichte's philosophy, but these aims are combined with Novalis' romantic view of nature, i.e. nature must be elevated from its pre-conscious state to a conscious moral entity through its interaction with man. Already in Das allgemeine Brouillon Novalis speaks of a spiritual science of physics:

Die Astronomie ist die reale Algeber der Physik - die Astronomie kann man auch die Metaphysik der Natur nen-

Metaphysik und Astronomie sind Eine Wissenschaft. Die Sonne ist der Astronomie was Gott in der Metaphysik ist. Freyheit und Unsterblichkeit sind wie Licht und Wärme. Gott, Freyheit und Unsterblichkeit werden einst
die Basen der geistigen Physik ebenso werden - wie
Sonne, Licht, und Wärme die Basen der irdischen
Physik. (NS III, 311)

Freyheit und Unsterblichkeit gehört wie Raum und Zeit
zusammen - (NS III, 368)

Freedom and immortality are compared here to physical
quantities, to light and heat in the first quote and to
space and time in the second. At the end of Klingsöhrs
Märchen both conditions for the new spiritual physics,
geistige Physik, are realized: Freya, the principle of
freedom and peace, has been awakened by Eros, and Fabel’s
song has introduced the state of eternity. The physical
condition of the universe has been transformed into a
spiritual state where the physical sciences of the present
real world are irrelevant. That the energy of the sun is
transferred to the flame representing Mother as the heart
and the principle of life is highly significant. Life is no
longer subject to the necessity of death and decay under
the rule of time; it has become eternal, purified of all
material components of physical existence.

Unser Leben ist unvollkommen, weil es Perioden hat. Es
sollte nur Eine Periode seyn, dann wärs unendlich.
(NS III, 329)

Only Hegener has seriously considered the implications
that the destruction of the daytime world has for the
"golden age" projected in the future.
So zeigt das Märchen von Klingsohrs den Untergang der Tagwelt als einer unvollkommenen schattenhaften Welt; denn ihr Licht, das Licht der Sonne, ist ein geraubtes Licht, das eigentlich eine unvergängliche Welt erwärmen mußte. ... Alle diese Beispiele zeigen, daß selbst das Sonnenlicht hier von einem Dunkelheitsaspekt her begriffen wird. (Hegener, 219-20)

He sees the coming "morning" as a figure of speech that describes a future utopian condition for which we have no concept or name.

Immer ist die sonnenhafte Tagwelt in allen ihren Ausprägungen selbst nur Figur der höher potenzierten Tagwelt, die eigentlich eine verklärte Nacht ist. (Hegener, 221)

It is important for any interpretation of Novalis' work to distinguish between the qualities of "golden age" as the end of time, which belongs to eternity, and the qualities belonging to the present stage of the world history or even to any "golden age" of the past. The "golden age" of the future is so far above our comprehension that it can only be suggested in a fairy tale which allows freedom to imagination and in itself goes beyond the ordinary limits of space and time. The fairy tale does not see as its aim the destruction of time and space or a new definition of these quantities; it merely shapes these conditions according to its own subjective purposes. The fairy tale reflects our dreams and subconscious desires, and, there-
fore, mirrors these elements of the secret soul as an essential part of its magical world. The fairy tale very often represents the symbolic path of self-realization, the path that every individual must take to become aware of his identity and his relationship to nature and the world. All of Novalis' fairy tales describe a path of development; either relatively simple as in *Hyazinth und Rosenblütchen* or intricate as in *Klingsohrs Märchen*. The structure of all these tales is triadic: once there was a time of harmony that was followed by division and disharmony. We live in a time of fragmentation as a consequence of the developing consciousness, which has come under the control of analytical reason. This rational mind can define subject/object relationships, analyze properties of miscellaneous objects and classify its accumulated knowledge in elaborate systems, but it cannot unite these fragments of knowledge into a harmonious whole because it is incomplete itself.

The idea of achieving this unification as a combination of learning and experience on many different levels permeates Novalis' thinking about the coming "golden age" and its characteristics. In *Klingsohrs Märchen* the limits of present existence are overcome by transformation of the divided universe through the principle of poetry. Only Fabel as the embodiment of this principle can easily move between the three levels of space: the world, the
underworld and Arctur's realm. This division of universe in three separate regions is not scientific, but based on a fusion of partly mythological, partly religious divisions which contain elements from many different cultures. Therefore, the three regions are not just different levels in space, but different levels of existence. All these regions are incomplete. Arctur's realm is not truly divine, it is locked in a state of beautiful enchantment where only the stars can move through their stately dance, but everything else is lifeless. The underworld is not a Christian hell, but a realm of fates where the light is black and shadows are light; the quality of light in the underworld is the polar opposite to that on earth. This is the land of the black sun, an old alchemical symbol, which once described the black impure stage in the purification of metal ores from which emerged the purified metal70.

70In his interpretation of the alchemical symbols in terms of dreams and subconscious images C.G. Jung calls the black sun an image of "the black night of the soul." (Psychology and Alchemy, 110; see also fig. 34, p. 88.) Since alchemists frequently used the same description for chemical and psychological processes, the analogy is suggestive. Novalis knew that alchemy frequently operated on different levels, and although there is no reason to assume that his interpretation of the "black sun" would be the same as Jung's, they both saw in the symbols of alchemy a reflection of a magic and secret world similar to fairy tale and dreams. There is a strong influence of romanticism in Jung's psychoanalysis, and presumably he was acquainted with Novalis' writings.
In preparation for the new world the illumination from the outside is consumed by the spiritual light of the flame, i.e. the sacrifice of the human heart for the benefit of both heaven and earth. In Novalis' transformed universe the heart becomes the new reference point that defines all relationships in terms of love. The old natural sciences are no longer valid in the spiritual universe where all polarities are eliminated. Space has been transformed, earth and heaven are no longer separated, and the time becomes an eternal spring. The destruction of the sun also implies a destruction of the realm of the fates, where the sun was black and the shadows were bright. As the polar opposite of the real sun, this realm of broken lives and death cannot exist without its counterpart. The same idea recurs in the poem Die Vermählung der Jahreszeiten.

Edda, sagte der König, was ist des liebenden Herzens Innigster Wunsch? was ist ihm der unsäglichste Schmerz?
Sag es, wir wollen ihm helfen, die Macht ist unser, und herrlich
Werde die Zeit, nun du wieder die Himmel beglückst.
Wären die Zeiten nicht so ungesellig, verbände Zukunft mit Gegenwart und mit Vergangenheit sich,
Schlösse Frühling sich an Herbst, und Sommer an Winter,
Wäre zu spielenden Ernst Jugend mit Alter gepaart:
Dann mein süßer Gemahl versiegte, die Quelle der Schmerzen
Aller Empfindungen Wunsch wäre dem Herzen gewährt.
(NS I, 355)
Stages of Galvanic Rebirth

In the discussion of Novalis' fragments a section was devoted to the significance of Berührung as the initiating action for many different stimuli and natural phenomena. Novalis' theory about touching and contact is particularly fitting for a discussion of electric and galvanic phenomena, where making contact allows electricity to flow through the circuit because the latent forces of electricity present in all matter have been liberated.

The wonderful deeds in this fairy tale are performed by Fabel with the help of the physical forces hidden in the figures from Arctur's realm; in the old knight Eisen, in Zinc, in Gold and in Tourmaline. These are the electromagnetic forces which are also related to the chemical activity of these elements. Novalis has deliberately chosen substances used in the experiments of J.W. Ritter\textsuperscript{71}. Fabel

\textsuperscript{71}Novalis had read about Ritter's work during his studies at Freiberg and got to know him personally in late 1799. He certainly witnessed some demonstrations of Ritter's experiments in Jena using a "portable" battery, which consisted of copper and zinc plates separated by leather pads soaked in a salt solution. Ritter's basic thesis was that every phenomenon in nature is a manifestation of galvanism as the life force, which is present in both organic and inorganic nature. Ritter was able to arrange most of the common metals according to their "electrochemical potentials" and to demonstrate that galvanism does not always require animal tissue as part of the circuit and is also present in the sequences of inorganic materials. Among the common metals the greatest potential difference is between gold and zinc. Immersed in a liquid, commonly a salt solution, these metals develop electric current if connected by a conducting metal wire. Iron is at the center
rejuvenates Atlas and Father by means of an early electro-shock therapy by setting up a simple galvanic circuit. Once the contact is made, and electricity flows in the circuit, life forces flow through the paralyzed figures of Atlas and Father. There exists a progressive complexity of this energizing and awakening process in the sequence: Atlas, Father, Freya, which is in agreement with Novalis' views that more complex systems require complex and repeated stimuli before they can undergo the desired transformation.

Alle Berührung ist ein Anlaß zur Erregung der Einenden, systematisierenden Kraft - i.e. der Welt-seelG - oder der Seele überhaupt. ... Die Berührung selbst hat Grade und Größen - und Richtungen i.e. Figuren. Unwirksame Berührungen sind keine Berührungen im strengeren Sinne - es sind nur scheinbare Berührungen ... Achte Berührungen sind wechselseitige Berührungen. (NS III, 341)

After defeating the fates of the underworld, Fabel makes her third visit to Arctur's realm to obtain help for the final transformations. She begins her plea with a prophecy of the coming state of harmony:

,Der Flachs ist versponnen. Das Lebloze ist wieder entseelt. Das Lebendige wird regieren, und das Lebloze bilden und gebrauchen. Das Innere wird offenbart, und das Außere verborgen. Der Vorhang wird sich bald heben, und das Schauspiel seinen Anfang nehmen. Noch

of Ritter's chemical and galvanic sequences; since iron is also a common metal, it was simple to assume that iron was the central or basic element, Urgstoff, on the earth.
einmal bitte ich, dann spinne ich die Tage der Ewigkeit.' - 'Glückliches Kind', sagte der gerührte Monarch, du bist unsere Befreierin.' - 'Ich bin nichts als Sophiens Pate' sagte die Kleine. 'Erlaube, daß Turmalin, der Blumengärtner und Gold mich begleiten. Die Asche meiner Pflegemutter muß ich sammeln, und der alte Träger muß wieder aufstehn, daß die Erde wieder schwebe und nicht auf dem Chaos liege.' Der König rief allen dreiern, und befahl ihnen, die Kleine zu begleiten. (NS I,310)

Fabel and her companions come to the old giant Atlas of the Greek mythology, who represents the inanimate earth.

Er schien vom Schlage gelähmt, und konnte kein Glied rühren. Gold legte ihm eine Münze in den Mund, und der Blumengärtner schob eine Schüssel unter seine Lenden. Fabel berührte ihm die Augen, und goß das Gefäß auf seiner Stirn aus. Sowie das Wasser über das Auge in den Mund und herunter übers ihn in die Schüssel floß, zuckte ein Blitz des Lebens ihm in allen Muskeln. Er schlug die Augen auf und hob sich rüstig empor. (NS I, 310)

Fabel and her companions awaken Atlas with a simple galvanic circuit consisting of gold, zinc and water as the conductive fluid. Through this process they make a contact with the sleeping giant and return him back to life and the great chain of life in the universe. His reaction to the electric shock is similar to the activation of Eisen by Freya. His eyes begin to sparkle as he becomes receptive to sense stimuli through an active contact with the hidden electrical forces. Novalis sees these forces in the same terms as Schelling:

Überall wird eine Kraft oder Action (quod idem est) transitorisch sichtbar - die durchaus verbreitet,
unter gewissen eintretenden Bedingungen (Berührungen)
sich zu offenbaren, wirksam zu werden scheint. ... 
(Alle Wirkungen sind nichts, als Wirkungen einer
Kraft – der Weltseele – die sich nur unter
verschiedenen Bedingungen, Verhältnissen und Umständen
offenbart – die überall und nirgends ist. (NS III, 
423)

It is Fabel’s task to reveal the dynamic nature of the
world soul, and to provide connections between isolated
sequences in nature so that the flow of the activating life
force is not impeded.

When Fabel returns to her old home she sees only
desolation outside, but there are some significant changes
inside the house...

Fabel entfernte sich und eilte dem Hause zu. Es war zu
völligen Ruinen geworden. Epheu umzog die Mauern. Hohe
Büsche beschatteten den ehemaligen Hof, und weiches
Moos polsterte die alten Stiegen. Sie trat ins Zimmer.
Sophie stand am Altar, der wieder aufgebaut war. Eros
lag zu ihren Füßen in voller Rüstung, ernster und
edler als jemals. Ein prächtiger Kronleuchter hing von
der Decke. Mit bunten Steinen war der Fußboden aus-
gelegt, und zeigte einen großen Kreis um den Altar
her, der aus lauter edlen bedeutungsvollen Figuren
bestand. Ginnstan bog sich über ein Ruhebett, worauf
der Vater in tiefem Schlummer zu liegen schien, und
weitete. (NS I, 311)

Sophie has returned to the house in the human world,
and an altar has been restored there to indicate a renewal
of spiritual and religious values. In place of Schreiber’s
lamp there is an ornate chandelier, and the floor is cov-
ered with mosaics. Magic signs encircle the altar; an ele-
ment of the supernatural and a suggestion of the hieroglyphs of nature's language that was not there at the beginning of the story. Transformation of the human world begins with the awakening of the Father, a representative of the senses, who had been imprisoned by Schreiber and isolated from the life forces of nature and beauty.

Sie (Fabel) rief ihren Begleitern Gold und Zink, und nahete sich dem Ruhebette. Ginnistan sah erwartungsvoll ihrer Beginnen zu. Gold schmolz die Münze und füllte das Behältnis, worin Vater lag, mit einer glänzenden Flut. Zink schlang um Ginnistans Busen eine Kette. Der Körper schwamm auf den zitternden Wellen. 'Bücke dich, liebe Mutter,' sagte Fabel, 'und lege die Hand auf das Herz des Geliebten.'

Ginnistan bückte sich. Sie sah ihr vielfaches Bild. Die Kette berührte die Flut, ihre Hand sein Herz; er erwachte und zog die entzückte Braut an seine Brust. Das Metall gerann, und ward ein heller Spiegel. Der Vater erhob sich, seine Augen blitzten, und so schön und bedeutend auch seine Gestalt war, so schien doch sein ganzer Körper eine feine unendlich bewegliche Flüssigkeit zu sein, die jeden Eindruck in den mannigfaltigsten und reinendsten Bewegungen verriet. (NS I, 311)

This time Gold melts his coin and the fluid gold fills the bed where Father is sleeping. Zinc gives Ginnistan a chain so that she becomes part the galvanic chain. Fantasy forms a bond with the senses and closes the circuit by placing her hand on Father's heart. Fabel, the child of Father and Ginnistan, or a Potenzierung of these qualities of the human soul has returned to restore the rightful relationship between them. In alchemy gold usually represents a king, and the shining flow indicates that the
previously impure metal has been purified and restored to its pristine state. In the same way Father as the representative of the senses has finally been liberated from his slavery to destructive reason, and is able to reflect true images of the outside world. Ginnistan in turn has been freed from her misguided attachment to Eros. (Mahr, 226) Now she sees her true reflection in the golden mirror. This reflection is another form of multiplication of images or Potenzierung, so that Ginnistan has also been awakened to her true purpose. Now she is not merely fantasy, but imagination or Einbildungskraft. It is apparent that the awakening of Father is more complex, and the galvanic circuit is combined of more diverse elements than in the case of Atlas. In a purely physical sense Novalis speculates that galvanism may be associated with liquefaction.

Geringe Grade von Elektrizitaet müssen den Magnetism erhöhen. Fluiditaet ist gewiß auch ein Effekt des Galvanism - wahrscheinlich sind ehmas durch Galvanism mehrere Substanzen in flüssigem Zustande gewesen und daher die wunderlichen Auflösungen und Verbindungen, die man trifft im Mineralreiche. Vielleicht ließe sich noch jetzt manches fließend machen, selbst bey minderer Hitze. (MS III, 609)

Apparently Father himself has acquired a fluid nature under the influence of galvanic forces, and is, therefore, able to be more receptive to outside influences. The golden mirror becomes a golden symbol of reflection that dissolves all illusions and reflects only the truth. Thus the mirror
serves the same purpose as the sacred water in Sophie’s bowl at the beginning of the tale.

Das glückliche Paar näherte sich Sophien, die Worte der Weihe über sie aussprach, und sie ernannte, den Spiegel fleißig zu Rate zu ziehn, der alles in seiner wahren Gestalt zurückwerfe, jedes Blendwerk vernichte, und ewig das ursprüngliche Bild festhalte.
(NS I, 311-2)

In his notebooks Novalis had indicated that fantasy and understanding are a natural pair of human qualities. If this relationship holds for Father and Ginnistan, then the rejuvenation of Father has also changed his true nature and combined senses with understanding.

The awakening of the sleeping princess Freya is the last and most significant transformation in Klingsohr’s Tale. It can take place only when other changes are completed. The flame from Mother’s funeral pyre thaws the ice that imprisoned the land of the North, and signs of spring are everywhere. Friendship and good will appear to rule the land.

Es war ein mächtiger Frühling über die Erde verbreitet. ...
So far Fabel and her assistants have carried out their galvanic activation processes in different areas of the earth: the awakening of Atlas restored the planet Earth to its rightful place in the universe, and the awakening of Father and his union with Gimmistan restored harmony to the human soul. Now the predicted union of Eros and Freya must also include the spiritual world of Arctur. For this immense task a simple galvanic chain is no longer adequate. Novalis has consistently indicated that complex entities require a complex sequence of contacts, or Berührungen, so that these contacts would be effective. From this viewpoint the awakening of Freya is truly a complex chain of physical and spiritual reactions.


(NS I, 313)
In his book Johannes Mahr states that Freya can be considered as the fluid element in a galvanic chain reaction.

So dienen Freya und das Meer als die flüssigen Glieder der Kette, die verbunden werden durch die Festen Körper Gold und Eisen. (Mahr, 235-6)

This interpretation does not quite fit Novalis’ description of the chain of events in the fairy tale, and one must remember that Novalis’ descriptions of scientific experiments are usually quite accurate. First of all Freya sleeps on a crystal of sulfur, which is an insulator and isolates her electric powers from the rest of the world; nor can the figure of Freya be reconciled with something liquid, unless the term is used in a purely spiritual sense. Galvanic reactions and the batteries known at this time were not very powerful, and could not produce the powerful shock described above. This spark can only come from the static electricity stored in the body of Freya herself72.

72It is very likely that here Novalis describes a famous experiment by Otto von Guericke performed in 1673. Von Guericke prepared a large ball of pure sulphur and mounted it in an induction machine, i.e. the sulphur ball was rubbed by a simple mechanical arrangement and acquired considerable electric charge. It attracted light objects, produced sparks if sharp metal rods were brought close to the ball, and it also glowed in the dark.
In the awakening of Freya Novalis uses two electrical processes: galvanic chain and static electricity\textsuperscript{73}. Eros and Freya represent manifold forms of polarity existing in a fragmented world: male-female, North and South, positive/negative electricity, the ideal and the human world. When Eros holds Eisen's sword, an electrical discharge similar to lightning, passes between the two oppositely charged bodies eliminating this polarity and the separation between them. Powerful electrical current also flows through Fabel, Eisen and down the gold chain to the sea. One must remember that at the beginning of the fairy tale several electrical and magnetic phenomena were associated with Freya: her attendants were rubbing her body thus generating static electricity, she was the source of the magnetic force that energized Eisen, and Arctur's castle was illuminated by Aurora Borealis, which seemed to issue from the body of Freya. Although sleeping, Freya represents the electromagnetic phenomena of the skies and the spiritual element of the universe and the stars. Eros brings with him the connections to electromagnetic elements from the earth: a gold chain leading to the sea and a sword of iron as a

\textsuperscript{73}Essenborn claims that Freya's electricity must be discharged before the final kiss. Eros is supposed to be shielded from this discharge by his armor. Yet Fabel is also part of the electrical circuit. I prefer to interpret this discharge as a unifying contact between all spheres of existence.
conductor of the electrical forces of the earth. Moreover, Fabel and Eisen are also members of the chain; a symbolic *Poetisierung der Wissenschaften*. The spark unites all basic elements, all forces of nature, and all physical levels of the universe. All polarities and separations in nature that existed between the realm of Arctur and the human world are overcome. The presence and participation of Fabel indicates that the power of poetry belongs to the circuit that now unites the universe.


Love and human emotion were previously missing from the magic realm of Arctur. Neither he nor Freya could redeem themselves from the frozen existence until love originating in the human soul (Gemüt) had grown and undergone many transformations, and the poetic principle, the child of imagination and the senses, had traveled through the extremes of existence. The giant, all enfolding chain is closed with a kiss. Love is the final force which

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74A sword of zinc would have been more effective for a purely galvanic reaction. Novalis wants to retain the symbolic significance of iron as the representative element of the earth. It should be noted that J. W. Ritter used iron wire to make his electrical circuits.
flows through the giant circuit of the universe and makes possible to attain the new golden age.

Synthesis des Mittelbaren und Unmittelbaren - des Vollkommenen und Unvollkommenen - Gott und Mensch - Natur (Weltall) und Naturwesen (Individuum) - Geist (Zauberer) und Seele (Künstler).
Als irdische Wesen streben wir nach geistiger Ausbildung - nach Geist überhaupt.
(NS III, 62)

The last cosmic chain has accomplished this synthesis in the guise of a fairy tale. Eros has been able to reach the North only after spiritual preparation and the incorporation of morality in his essential being during the time spent with Sophie. Freya had to send her message to the earth and to activate the growth of Eros before the land of the North could be redeemed. The activities of physical and spiritual forces are constantly interacting through the progress of the tale. Each synthesis of a spiritual forces from the human world with the forces of nature represents a member of the sequence that finally leads to the transformation of the universe.

The underworld has also risen up and is given to Moon as theater for the enjoyment of the people. Enemies of love and peace have become a chess game, while the fates and the sphynx have been petrified and serve as supports for the marriage bed for Eros and Freya.
CHAPTER III

GOTTHILF HEINRICH SCHUBERT;
POPULAR EXPRESSION OF ROMANTIC NATURE PHILOSOPHY

Schubert is one of those peripheral figures in German romanticism whose views of nature and the natural sciences were considerably influenced by the major figures of early romantic movement, such as Novalis, Schelling, and Ritter. In turn his popularized version of the romantic Naturphilosophie influenced the work of several later writers, notably Heinrich von Kleist and E. T. A. Hoffmann1.

In his youth Schubert was fortunate to meet and establish friendships with many important figures in German cultural life. He attended a "Gymnasium" in Weimar where Herder was one of his teachers. Herder was one of the first major influences on Schubert's intellectual development, and his Ideen zu einer Philosophie der Geschichte der Menschheit provided some nuclear ideas for Schubert's later philosophical concepts. Schubert studied medicine and the natural sciences at the university of Jena, where he also

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1Maria Tatar gives a good account of Schubert's life and some of his leading ideas in her Romantic "Naturphilosophie" and Psychology, Ann Arbor: UMI 1984)
became a close friend of the physicist J. W. Ritter. Most of the Jena romantics had left the city by 1801 except for Schelling, who was still reading his lectures on idealist philosophy. In Jena Schubert also formed friendships with Novalis’ brother, Karl von Hardenberg and with Friedrich Gottlob Wetzel. Later Schubert studied with A.G. Werner, the teacher of Novalis in Freiberg. Friendship and professional association with Schelling and with Franz von Baader lasted for a long time. At various times Schubert also knew Heinrich von Kleist, the political economist Adam Müller, and the painter Caspar David Friedrich. During his teaching career he was a colleague of Hegel in Nürnberg, but it is not likely that these two men exchanged ideas on philosophy.

Schelling’s philosophy became the dominant influence in Schubert’s intellectual development. Even Schubert’s first choice for his dissertation was suggested by Schelling’s Bruno, oder über das Göttliche und natürliche Prinzip der Dinge. As Maria Tatar points out (12-13), Schubert’s intention was to prove by methods of analogy and numerology the hypothesis that Kepler’s three laws governing planetary motion, i.e. the mathematical relationships of planets and the sun in the coordinates of time and space, hold true anywhere in nature: in the planetary systems of the universe and in the microcosm of living creatures. Although
Schubert found this topic too complex for a dissertation, his preoccupation with Kepler's laws and numerology is apparent in several chapters of *Abhandlungen* and *Ansichten*. In particular vol.2, part 2 of *Abhandlungen* consists mainly of a discussion of natural laws in terms of various numerical relationships. Many of these relationships refer back to Pythagorean mysticism or to numbers important in mythologies of other cultures, e.g. the number 432 and its significance in Hinduism[^2]. It is important to note that Schelling's philosophy changed after the publication of *Ideen* and *Von der Weltseele*. These important expositions of nature philosophy were intended as a supplementary system to transcendental idealism and attempted to follow the activity of the organizing principle or *Weltseele* in sequences of natural phenomena. These phenomena were seen as an interplay of dynamic forces in contrast to the mechanistic view current during the Enlightenment that explained the universe in terms of Newton's mechanics. After the publication of *System des transzendentalen Idealismus* Schelling moved away from his earlier explanations of nature and formulated his philosophy of identity. According to the philosophy of identity everything has a

[^2]: Schubert became interested in religions and mythologies of many nations. Especially *Ansichten* and *Symbolik* were influenced by material from Creutzer's work on mythology and from Friedrich Schlegel's *Über die Sprache und Weisheit der Indier*. 
common source, and all polar systems tend to return to the original state of equilibrium. When a few years later Schubert decided to expand Schelling's earlier work on Naturphilosophie by providing additional empirical material to illustrate some general ideas expressed in Schelling's work, he followed topics related to the philosophy of identity, searching for the original forces and materials in nature from which all the existing objects and forces have been derived. He changed the focus of romantic nature philosophy from the highly abstract speculations of Schelling to a popular presentation of case histories, and to a simplified discussion of timely scientific questions interpreted in a typically "romantic" fashion. Schubert's language in these works seems excessive at the present time; his poetic images are always very predictable and obvious, and the endowment of chemical substances with human passions and sexual desires borders on the bizarre. Nevertheless, the popularity of Schubert's books indicate that he was able to express the romantic ideas of nature and the sciences in a way that was close to the spirit of the age.

Schubert did a lot of writing in his long life (Tatar, 27-30), and was highly esteemed by his contemporaries. Now his name is practically unknown because significant changes in the cultural climate of Western civilization took place during the 19th century. Schubert's early reputation was
established by three major works concerning the nature philosophy of the romantic period. Abhandlungen einer allgemeinen Geschichte des Lebens (1806/07), Ansichten von der Nachtseite der Naturwissenschaft (1808), and Symbolik des Traumes (1814). The last was closer to a study of dreams and their connection to ancient beliefs and mythologies than to a philosophical study of natural sciences. These works form a core of romantic ideas concerning natural sciences combined with a simplified version of the philosophy of German idealism. Since romanticism became increasingly associated with the unconscious and borderline occult phenomena, the positivist movement in the natural sciences saw Naturphilosophie as irrelevant or even worse, as an aberration of the romantic mind. The rise of materialism and realism as well as the rapid progress of technology brushed aside as irrelevant speculations about the world soul and the spiritual ground of all being. Society and its cultural life was becoming more specialized and fragmented. The great romantic idea of a harmonious relationship between man and nature remained an image of a utopian "golden age".

The first two works, Abhandlungen and Ansichten, show that Schubert was acquainted with many different disciplines of the natural sciences either through his own studies at Jena and with A.G. Werner at Freiberg or through
extensive reading of the scientific literature of the period. In this encyclopedic acquisition of knowledge and in the attempt to organize this knowledge into a unified view of the world, Schubert’s aims are similar to those of Novalis, but there are important differences between the two men. Although Novalis’ *Das allgemeine Brouillon* remained a collection of fragments, these fragments show a far more critical and sophisticated mind. Schubert is repetitive, uncritical of his sources, and gets carried away by the exuberance of his metaphors and analogies. Schubert’s compilation is a mixture of scientific data, popular superstition, and “poeticized” theories of natural processes that were rapidly discredited, very often with good reason, by the rising movement of positivism in the natural sciences. The rapid success of the scientific method, which demanded that every hypothesis must be repeatedly tested experimentally before it can be accepted, excluded most of Naturphilosophie from the natural sciences. Even Ritter’s work, which established the foundations of electrochemistry, was ignored because of his associations with Naturphilosophie. Schubert and other Naturphilosophen were viewed as obstacles to scientific pro-

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3 Schubert studied at the Freiberg academy with A. G. Werner just as Novalis did a few years earlier. As a result Schubert acquired good knowledge of geology as indicated in both *Abhandlungen* and *Ansichten*. 
gression, and served as horrific examples of the dangers of uncontrolled "romantic" speculation. Nevertheless, a study of Schubert’s work is valuable, because it provides a close look at the scientific ideas prevalent at the beginning of the 19th century and the social climate in which these ideas developed. Schubert’s use of anecdotes and popular beliefs to reinforce his arguments show how closely the myths and beliefs of the antiquity were intertwined with the latest scientific discoveries in the minds of educated people of the romantic period. Some examples in Schubert’s writing are very helpful in the interpretation of Novalis’ fairy tale, *Klingsohrs Märchen*, simply because Schubert uses concrete examples familiar to his audience to illustrate abstract ideas. This concreteness also contributed largely to the rejection of Schubert’s work in 19th century science: an abstract idea can be interpreted on many different levels, but an empirical example, which is later shown to be patently false, e.g. production of nitrogen from water vapor, can negate the entire system. It is the purpose of this study to concentrate on those sections of Schubert’s writing that deal mainly with the physical sciences and with the role of these sciences in the formulation of a unified picture of the universe. Specific examples will be discussed if they have possible connections to the work of E. T. A. Hoffmann, especially to
the fairy tales: Der goldne Topf, Meister Ech, and Die Königsbraut.

The Physical World in Schubert's View.

The subtitle of Abhandlungen, "Von einem allgemeinen Grund des Lebens," indicates Schubert's tendency to search for a basic system of natural laws that would apply to phenomena both in organic and inorganic nature. In the first volume Schubert discusses the active forces in the inorganic realm and relates them to the general tendency of all existing things to move towards a higher mode of existence, which in turn means a destruction of their present form. This tendency of all nature towards death and destruction is related to the so called "cosmic moments," which represent the contact or transition points of this trend. Abhandlungen also considers various types of contrasts or polarities in nature and the meaning of these polarities in Naturphilosophie. The existence of a universal basis for all existence and of duality between the manifold active forces in nature was already defined by Schelling in his works on nature philosophy. In the introduction to his Von der Weltseele Schelling writes:
Die Betrachtung der allgemeinen Naturveränderungen sowohl als des Fortgangs und Bestands der organischer Welt führt zwar den Naturforscher auf ein gemeinschaftliches Prinzip, das zwischen anorgischer und organischer Natur fluktuierend die erste Ursache aller Veränderungen in jener und den letzten Grund aller Thätigkeit in dieser enthält, das, weil es überall gegenwärtig ist, nirgends ist, und weil es Alles ist, nichts Bestimmtes oder Besonderes seyn kann, für welches die Sprache eben deswegen keine eigentliche Bezeichnung hat, und dessen Idee die älteste Philosophie (zu welches, nachdem sie ihren Kreislauf vollendet hat, die unsrige allmählich zurückkehrt), nur in dichterischen Vorstellungen uns überliefert ist. (SW I, 415)

It is interesting that Schelling finds that this general principle, which is the world soul, or Weltseele, cannot be anything specific or definite, or that der letzte Grund is not accessible to reason. Schelling realizes that experimental proof is based on the observation of phenomena, which are specific representations of the organizing principle, but are not sufficient to define the principle itself. Since the entire existence in the real world in Schelling's view is a dynamic process, an infinite
product evolving in nature, the production of any finite real objects is only possible if the driving formative impulse, Bildungstrieb, branches out to form dual pairs, which oppose each other and form a dynamic equilibrium. In his quest for the general basis of life Schubert investigates these opposing forces in chemical reactions, among electrical and magnetic phenomena, and in the world of plants and animals. He uses his training and experience as a medical doctor for the investigation of human sexual characteristics and various physiological abnormalities, and derives theories about the role of sexuality in the system of duality in nature. In the second part of Ahndungen the most significant discussion deals with decomposition and decay of various organisms. These processes are associated with phosphorus, both in a chemical and a metaphorical sense, and with carbon as the characteristic element of organic matter. Schubert attempts to find in these products of decomposition a basic substance, perhaps a primary element, from which all organic life forms are generated and to which they return after death. Finally he tries to relate these observations to the ancient theories about the original or primary matter\textsuperscript{4} \textsuperscript{5}.

\textsuperscript{4}See a discussion of pre-Socratic philosophers in ch. II, 141; footnote 41.

\textsuperscript{5} Schelling argues against any such primary substance:"Es gibt also in der Natur überhaupt keinen Urstoff, aus welchem alles geworden wäre – ungefähr wie die Alten die Elemente sich gedacht haben. Der einzige wahre Urstoff sind
In general outline Schubert follows Schelling's model for the different stages of development in nature. The lowest stage is the inorganic realm, the earth and all the substances that constitute it. There are several grades of development: the lowest are the inert solid substances characterized by cohesion and opacity. The next stage is represented by interactions of this inert matter with the dynamic forces of heat, electricity, magnetism, and light, or by mutual interaction in chemical reactions. The organic realm represents a higher stage of development, where materials are arranged to form organisms and endowed with the magic power of life. The lowest stage in the organic realm is represented by plants, then follow animals, and finally as the pinnacle of natural development - man.

Schubert follows this general outline, but he illustrates it with numerous examples from a variety of sources, and imposes his own interpretation on the different stages. These interpretations are determined by two leading ideas: that there is a common basis for the existence of all things and living organisms, and that all things and all organisms strive towards their own destruction and death, which then represents a transition to the next higher stage. Earth and all solid matter associated

die einfachen Aktionen." (SW I, 34)
with it belong, according to Schubert, to the lowest stage in this system. These materials are bound to the earth by the forces of gravity, die Schwere, which oppose the positive striving towards weightlessness and insubstantiality.

Die Schwere ist uns daher von dieser Seite in der Körperwelt ein Zeichen von Unvollkommenheit, die Leichtigkeit dagegen verkündet uns einen Zustand höheren Vollendung, welcher das Einzelne endlich seinem Ganzen gleich setzt. Der schwere Körper stellt den allgemeinen Grund des Daseyns unvollkommener in sich dar, ... während der leichte ... die Ursache des Daseyns immer vollkommener in sich darstellt. (AGL I, 36-7)

Among the different inorganic materials, Schubert assigns a rather ambiguous role to metals:

Die Metalle und Körper, welche gleich ihnen, der Erdmasse noch am meisten untergeordnet sind, weil sie am wenigsten vollendet sind, werden als die empfindlichsten Leiter für Wärme, Elektricität, und ähnliche Einflüsse erfunden, denn sie vermögen am wenigsten Organe der höheren Einwirkung seyn. (AGL I, 42-3)

This valuation is quite different from that of Novalis, who placed metals among the advanced forms of solid matter because of their conductivity and ability to generate electric current, e.g. Fabel needs the help of Gold and Zinc when it is time to begin the processes of galvanic awakening.

Schubert considers transparent materials as more advanced because their transparency is seen as a sign of receptivity to the positive force of light. Among the liq-
uids a special role is reserved for water as one of the basic elements of the Greek system, but the most advanced substances of the material world are found in the atmosphere.

So ist auch im Anorganischen, das Reich des allgemeinen Todes, die Luft, in welche endlich fast alle übergehen, zugleich das Reich der Liebe, das herrliche Brautbett der Stoffe. (AGL I, 50)

Another example in the characteristic Schubert style:

Es erhalten die anorgischen Dinge für kurze Zeit ihrer Begattung die Flügel, und wie bey Insekten geschieht auch bey ihnen der Übergang in diesen Blüthenmoment des Lebens, durch scheinbaren Tod, durch Vernichtung der besondren Form. (AGL I, 51)

The connection of life and death that unites the opposites of existence appears in many variations in romantic poetry. Death as the end of life in the real world and a transition to a higher level of existence is a dominant theme in Novalis' Hymnen an die Nacht; it recurs in the fragments and in Heinrich von Ofterdingen. Schubert takes up this topic and attempts to investigate it from a scientific point of view. He relates experimental observations in the laboratory and in nature to metaphors of poetic truth and to speculations of a romantic philosopher of nature. Therefore, right after a preliminary chapter in Ahndungen, which deals with myths of creation, and with the birth of the earth, the sun and the universe, Schubert turns to the dialectical opposite of creation: the desire
of all existing things and all living organisms for their own destruction.


Schubert sees a close relationship between the desire for the union of polar opposites, which appears as an instinctive drive towards sexual union in the realm of plants and animals and as a trend of many inorganic substances to unite with their opposite, or Gegensätze. The rapture of this union, however, is followed by a period of weakness:

Diese Vereinigung aber, vermag nach des geistreichen Winterls Beobachtungen, die kräftigsten Substanzen am entschiedensten zu schwächen, und wie die Thiere und Pflanzen durch die Begattung, und durch ähnliche höchste Augenblicke ihres Lebens ohnmächtig werden; so verlieren die größeren Stoffe eben durch die Ver-

Schubert obtained most of his information on chemical reactions from the articles of J.J. Winterl that he reviewed for Allg. med. Annalen. Novalis, who seems to have a much better grasp of chemistry, never mentions Winterl in his notebooks, but frequently refers to French chemists. It is likely that Schubert avoids references to French chemists due to the anti-French sentiment generated by Napoleonic wars. Winterl is also mentioned in the second preface to Schelling's Weltseele. Obviously Schelling too had a high opinion of Winterl's work.
bindungen, die sie am innigsten verlangen, ihre vorigen Kräfte und Eigenschaften gänzlich, und wie Blüthen oder Insekten, sterben sie sogleich nach der Begattung. (ACL, p.21)

In order to extend this love/death metaphor to the inorganic realm of minerals and chemical compounds, Schubert endows these substances with human desires and emotions, i.e. he assumes that the latent life force in these substances expresses itself in a way analogous to that in living organisms. This is particularly pronounced in discussions of acid-base reactions, which, of course, represent very clearly the interactions of substances considered as polar opposites. Schubert interprets this chemical reaction as the "death" of both the acid and the base. Winterl uses the term Abstumefung, which implies that the original substances are still there and only have lost their strength or chemical reactivity. According to the modern view the same basic elements are still there, but they have formed new stable compounds with different properties. Winterl proposed that characteristics of all acids are due to the presence of a special substance, Andronie. This assumption follows the thinking characteristic of 18th century science that certain properties of substances are

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7 It is typical of these reactions that chemically active reagents combine, commonly in a water solution, and form relatively neutral salts and frequently also additional water. (e.g. NaOH(base) + HCl(acid) = NaCl (salt) + H2O ).
due to the presence of "imponderable" fluids, such as "phlogiston" and "caloric." Schubert later assails these mystical substances (AGL I, 282), yet he uses the concept of Andronie in the construction of analogies between chemical reactions and other natural phenomena. The following quote, which is complete nonsense in terms of basic modern chemistry, serves as an example:

Diese Andronie ist ein so beträchtlicher Bestandtheil der Atmosphäre, daß man diese als eine Verbindung der Wassersäure und der Andronie, welche mit Wassersäure übersättigt ist, betrachten kann. Der übersättigende Anteil der Wassersäure ist es, welcher jene Verbindungen eingeht, welche zu allem Leben fast unentbehrlich sind; das was zurückbleibt, der Stoff, scheint eine mit Wassersäure eben genau gesättigte Andronie. (AGL I, 115)

Andronie ist der geflügelte Zustand welchen alle festen Stoffe ... erreichen können. Andronie ist die luftformige Erde selber. (AGL I, 255)

Schubert has borrowed several strange chemical concepts from Winterl, which for the most part are not important for this study. The principle of Andronie, however, is later related to the concept of das Männliche as the dominant, more spiritual side of the existing duality in the world, and is an important part of Schubert's model of nature. Likewise reactions between acids and bases constitute a major part of Schubert's interpretation of chemical changes. He argues that strong acids or bases require little of the polar opposite substance to complete the
reaction; however, once these crude substances have undergone repeated "neutralizing reactions", or Abstumpfung, they become more reactive:

Haben sie dagegen durch vorhergegangne Verbindung einen Theil ihrer Stärke, und hiermit zugleich einen Theil ihrer größern Bedürfnisse abgelegt, so begehren sie nun nicht mehr jene größeren Gegensätze, welche ihnen den Bund der gleichartigen Masse gewährten, sie streben mehr nach der Vermählung jener, welche sich schon zum Theil von ihren Stoff befreyt haben, welche gleich ihnen schon mehr fähig sind ein Ganzes darzustellen. (AGL I, 80)

Schubert never mentions what substances and what experimental conditions are used to achieve this Abstumpfung, so that it is difficult to guess what chemical reaction inspired his speculations, and what were the crude substances that were no longer needed. In Schubert's representation of the material world these neutralizing reactions are important as an indication of a general upward tendency.

Ja die Entkräftung der Säuren und Grundlagen durch Neutralization und ähnliche mächtige Einflüsse, ist nichts anders als die Entwicklung des Gegensatizes, eines vollkommenen Geschlechtsunterschieds in ihnen selber, durch welchen sie erst des vollkommensten Strebens, des höchsten Genusses ihrer Natur fähig werden. (AGL I, 61)

This highest enjoyment, which can be achieved by any material substance, is then a transition to the gaseous state, a transition to the atmosphere.
The Atmosphere

Schubert follows his mentor Schelling in representing the atmosphere as the highest level of the inorganic world. All material substances are supposed to undergo various transformations until they all reach the gaseous state. This means that all mineral compounds, which make up the matter of earth must be reduced to atmospheric gases. Only then will the physical world be completely spiritualized and able to approach the universal ground of being.

Denn die Banden, welche die Körper an die Erde, an die allgemeine Basis fesselt, sind nichts anders, als die scheinbare Stärke, die Gewalt der individuellen Natur. Je mächtiger die Besonderkeit, die bestimmte Individualität des Stoffes ist, desto minder ist er eines selbstständigen Daseyns fähig, desto mehr bedarf er die Erdmasse; ...
Es empfangen aber erst bey dem Absterben der Individualität, die Stoffe die Fähigkeit des vollkommenen Daseyns in sich, und endlich werden sie in der Gluth des eigenen Lebens, der ganzen Erde gleich, werden von dieser frey, werden Luft. (AGL I, 67)

The ideal state for matter is then a complete reduction to a few atmospheric gases, a loss of individuality, or a Dionysian rapture for atoms and molecules. Schubert actually knows very little about these atmospheric gases. Oxygen is already recognized as the element that combines
with many substances during combustion. For a long time scientists believed that oxygen was responsible for the formation of acids because a number of oxides, e.g. those of nitrogen and sulfur, combine with water to form strong acids.

Schubert follows Winterl's proposition that oxygen should be viewed as an acid, Wassersäure, while hydrogen forms its opposite, or Wasserbasis. Winterl and Schubert believe that water is an elementary substance, which can assume different forms with different properties. Therefore, oxygen as the life-giving element belongs to the positive force and to the male principle. Unfortunately for Schubert's theory it was later proved that acidity of a solution is determined by its hydrogen ion concentration, and the relationship of oxygen and the acid principle is not valid. Schubert is rather confused about the properties and nature of nitrogen and carbon dioxide and even mentions that nitrogen can be produced from heated water vapor.

If Schubert praises atmosphere as an Elysium der Stoffe, then it is not only for its relative freedom from gravity and for its insubstantiality; atmosphere is also

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* Ritter had decomposed water by electrolysis and collected the resulting hydrogen and oxygen, but could not believe that this basic substance could be decomposed. Ref. "Quantitative Wasserelektrolyse und Metallabscheidung," in Entdeckungen zur Elektrochemie, Bioelektrochemie und Photochemie, Leipzig: Akad. Verlag, 1986, 55-63.
the sensory organ for the whole world, the communications medium between the earth and the stars.

Die Atmosphäre ist, so weit es ein Einzelnes vermag, eben so eine vollendete Welt als die Erde selber (als dieser einzelne Planet betrachtet), sie steht eben so im Bund mit anderen Weltkörpern, und ist in den Kreislauf des allgemeinen Lebens eben so innig aufgenommen, als der Planet, dem sie angehört. (AGL I, 95)

Schubert considers these planetary influences first of all as changes in weather phenomena. Then he follows astrological configurations in considering influences these planets exert on the earth, such as conjunctions, trines, or oppositions. Schubert does not quite believe in astrology; he thinks that a lot superstition has accumulated with the passage of time around the configurations of planets and their influences on the earth and its inhabitants, yet he is influenced by this "wisdom of the ancients."

Und wären auch alle jene Erfahrungen früheren Zeiten, für welche ich schon frühe an Ehrfurcht gelernt habe, noch immer unerwiesen, so ist es desto mehr durch tägliche Erfahrung bestätigt, daß wir alle Einwirkung der Sonne, des Lichts der andern Gestirne, durch die Atmosphäre erhalten, daß sie die Mutter ist, welche von der Sonne berührt, den niederer Regionen Wärme giebt. In ihr wirken die magnetischen und elektrischen Kräfte, der Schall, ja alle Veränderungen, welche um uns geschehen, empfangen wir durch sie. (AGL I,108-107)

Atmosphere thus becomes a sensory organ and a medium through which the earth creatures communicate with the sun, the planets and with the stars. This complex role is partly
attributed to the atmosphere as the region of the highest fluidity. This property gives it a high valuation in Schubert's universe, partly because light as the highest form of dynamic energy travels through the atmosphere unimpeded. Schubert always seems to hover between two views of the world: one is that of an enlightened and rational scientist, the other that of a dreamer and a believer in the mysterious wisdom of the ancients. Novalis was able to synthesize the manifold layers of knowledge, tradition and intuition through the art of poetry. Schubert forms sequences and analogies, but is never quite successful in finding the magical central link, which would give a deeper meaning to the whole system.

Plant Life

For Schubert plant life illustrates a state in nature, which although bound to earth is constantly striving for a communication with the atmosphere and with the sun. All forms of plant life, even those on lower levels of development, such as lichens and mosses, are objectivations of the same principle, an all-powerful life force that guides all transformations in the life of a species as well as the growth of an individual plant. Differences between different groups of plants are determined by the degree of
perfection that these plants have so far achieved. The culmination of a plant's existence is the flower:

In diesen endlich entfaltet sich der selbstständige Gegensatz am vollkommendsten, und zugleich beginnt mit seiner höchsten Entwicklung der höchste Augenblick des Pflanzenlebens, der höchste Genuss derselben. Zugleich erhebt sich auch die Pflanze in ihren Blüthen am meisten vom Boden, sie entfaltet ihren Fittig, und schwebt schon fast frei in den Lüften. (AGL I, 73-74)

Schubert sees the flower as the perfect embodiment of polarity in the plant world, and, in terms of romantic nature philosophy, as the most appropriate metaphor for the universal striving towards fulfilment in love and death. The ideal plant blooms ecstatically and dies. Certain flowers open only for a day e.g. the daylily, or for a single night, e.g. some species of cactus. In most cases other blossoms follow until the plant has secured enough seed material for the coming season.

Schubert does not make clear, which plant species corresponds to this idealization. He apparently disregards perennials and trees that grow and produce many flowers and seeds year after year without any apparent loss of their vitality.

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8 In *Meister Eoh* Hoffmann equates George Pepusch in his fairy tale incarnation, *Distel Zeherit*, with another thorny plant, *Cactus grandiflorus*, that blooms only for one night.
From a biological point of view Schubert's discussion of apparent polarities, or Gegensätze, in the reproductive parts of plants is reasonably accurate considering contemporary knowledge about plants. Schubert does not quite understand the reproduction of primitive plants, e.g. lichens, mosses, and ferns, where reproduction begins with spores and involves intermediate life forms. The more advanced, and common, plants were studied in considerable detail by the end of the 18th century. Schubert's analysis of the different components of a typical flower leads to the conclusion that both male and female parts of the flower are formed from the same basic structures. These deductions are in general agreement with Goethe's concept of plant morphology. Polarity that develops as the original identity is lost becomes a formative impulse, which propels nature's products at a certain stage of development to form sexual characteristics.

Wenn man aber mit aufmerksamerem Blicke erkennt, daß es derselbe Gegensatz sey, welcher sich zuerst, in den beiden Blattseiten äußert, und welcher sich hernach in den beyden Geschlechtern ausspricht, ... wenn man den Sinn jener tiefen Entwicklung der Pflanzenmetamorphose vollkommen gefasst hat, welche von Göthe schon vor vielen Jahren auf eine Weise gegeben hat, die nur diesem großen einzigen Genius möglich war; so wird man es minder unbegreiflich finden, daß die Organe des verschiedenen Geschlechts bey den vollkommenen Pflanzen dieselben Theile sind, deren eine Hälfte nur, wie durch eine innere Gewalt, in Innern der Pflanze festgehalten, die andern aber von der Nähe des höheren Einflusses zu selbstständigen schöneren Leben hervorgerufen werden. Diese leben im unmittelbaren Genüß
This rather lengthy quote illustrates that Schubert correctly recognized that in plants the same tissues are modified to form the plant's reproductive organs. According to these observations the male and female organs, which constitute polar opposites in plants, have essentially the same origins. Yet the latter part of the quote shows a pronounced sexist bias that is characteristic of Schubert's interpretation of duality in nature. The two opposite polar parts or organs are never considered equal; one is always subordinate to the other, either less perfect or less able to communicate with the higher forces. Schubert thinks that the pollen bearing anthers, which are more exposed to air and light, are "more advanced" than the female parts, pistil and ovary, which are enclosed in the core of the flower. He ignores the role of these organs in the reproduction and propagation of the species and subordinates every development to his idea that the highest moment a plant can aspire to is an intimate communication with the higher forces streaming through the atmosphere. Schubert even speculates that seeds of highly developed
plants are nothing but thickened pollen sacks, and, therefore, formed from the male parts of the flower.

Die Saamen vollkommenerer Pflanzen scheinen demnach nichts anderes als ein oder mehrere Staubbeutel, welche zu einem verschiedenartig gestalteten Körper zusammengewachsen (verdichtet) sind. (AGL I, 180-1)

In these speculations Schubert moves away from the nature philosophy of Schelling, who fully recognized the preservation of the species as a dominant force in nature: "Das Individuum muß Mittel, die Gattung Zweck der Natur scheinen." (SW I, 51)

Later in his introduction to the chapter on plants in Ansichten Schubert compares the plant world to a giant kitchen for mankind. Yet the production of these useful food materials does not obey rules that were prevalent in the inorganic realm.

Jene chemischen Gesetze nach denen in den Gebiete der unorganischen Natur etwa die Säuren und Salze entstehen oder die beiden polaren Formen des Wassers sich verbinden, sind hier aufgelöst; ein mächtiger Herrscher und Gesetzgeber tritt auf; er gebietet den Elementen des kohlensauren Wassers und sie werden hier zu Wein, dort zu Oel. Wer ist dieser Herrscher? - Es ist die Seele, die in der Pflanze lebt; sie ist es, ein selbstständig innenwohnender Funke des Schöpfers, welcher den chaotischen Stoff zu neuen Schöpfungen treibt ... (ANN, 130)

In this world order it is the role of plants to produce foodstuffs for the consumption of animals and human
beings; it is even implied that this role leads to a fulfillment of plant life at a specific stage of development and a preparation for a higher form of existence. Being part of the organic world means being endowed with a soul, being shaped by various life forces, even influences from the sun and from the stars.

Wäre die Pflanze nicht beseelt, dann wäre sie auch nicht organisch und könnte nicht ihres Gleichen erzeugen; wöhnnte in ihr nicht dieses herrschendes Etwas, das über dem Gesetze der gemeinen Attraktionen und chemischen Verwandschaften steht, sie könnte nicht das Wasser in Wein verwandeln. Wir betrachten indes vorerst hier das Gewächsreich von einer einzelnen Seite, von jener seiner planetarischen und siderischen Beziehungen. (ANN, 130)

These relationships do not belong solely to the earth but are dominated by the strong influences of the sun:

Dagegen zeigt sich in der organischen Welt die Erde auf einmal, wie von einem neuen fremden Walten, von dem Einflusse der Sonne ergriffen. Schon die Vegetation gehört nicht mehr der Erde allein, sondern dem Einflusse eines höheren Weltganzen an, der sich nun mittels der Atmosphäre nicht mehr bloß der ganzen Erde, sondern dem einzelnen Daseyn unmittelbar mittheilt. ...
So wird in der ganzen Pflanzenwelt überall derselbe höhere Einfluß der Sonne in allen seinen besonderen Gestalten, in allen seinen Modificationen durch Raum und Zeit ausgesprochen. (ANN, 132)

As a part of the great being, plants also relate to geometric figures and to mathematical sequences in nature. Different families of plants exhibit different symmetry groups in their structure and growth patterns; e.g. fruit
trees, some berries and roses show a five-fold symmetry, while lilies and tulips have symmetries expressed by the numbers three and six. Schubert is particularly interested in the mysticism of numbers, the teachings of Pythagoras, and the ideas of Johannes Kepler. He believes that the numbers three and six belong to the oldest numbers in nature, "die ältesten Naturzahlen," therefore lily plants must belong to some of the earliest plant forms, possibly those associated with the primordial "golden age\textsuperscript{10}." (ANN, 134-5)

Erst die Blüthen empfangen bei den meisten Pflanzen die Eigenschaft des Schlummerns und die Empfindlichkeit gegen Berührungen. Erst in der Zeit des Blühens tritt jene merkwürdige Sympathie mit dem Thiereiche, vornehmlich mit dem Reiche der Insecten ein, welche, wenn sie den Blumenstaub der einsam stehenden männlichen Blüthen gesammelt haben, diesen den fern stehenden weiblichen überbringen und hierdurch die Befruchtung bewirken. (ANN, 136)

In this way there exists a certain sympathy between plants and insects, and plants and other organic life forms. There are moments when plants appear to be filled with a spirit of the higher stages of life. Invariably these are moments of flowering that bring these tendencies to a climax.

\textsuperscript{10}Plants, and in particular their flowers, already show some characteristics of higher life forms, e.g. sensitivity to touch (Ritter's experiments with Mimosa pudica), tendency to sleep, movement towards the sun or motion initiating seed dispersal.
In his observation of plant forms Schubert finally concludes that there are many interconnected lines of development among plants as they progress from primitive organisms to intricate systems.

Und vielleicht nicht von einer, sondern von vielen Seiten nähert sich das Pflanzenreich seinen höchsten Formen und entfernt sich nachher auf der anderen Seite wieder ebensoweit von denselben. ... So müssen wir schon im Pflanzenreich bei einer genauer Betrachtung seiner Formen die Meinung von der in nur einer ununterbrochener Richtung fortgehender Ausbildung von unvollendeten Formen zu immer vollkommener aufgeben, und wir werden dasselbe nachher auch im Thierreiche thun müssen. (ANN, 142)

In Ansichten, Schubert returns to the topic of love-death symbolism associated with plants in Abhandlungen, but in Ansichten this idea is expressed more emphatically:

Gerade in dem höchsten Moment des Blühens, welcher auch zugleich der des Verwelkens und des Todes ist, zeigt sich im Pflanzengeschlechte eine Vorahnung des höheren thierischen Daseyns. Es erwacht auf einmal eine vollkommene Naturkraft, die als Empfindlichkeit und Bewegung sich äußert, und welche bisher nie an der Pflanze hervorgetreten war. ... Es werden in solchen Momenten das Organ und die bisher tief im Innern verborgenen Kräfte eines vollkommener Lebens aufgeweckt und belebt. (ANN, 145)

Yet Schubert's preconception that male parts of any flower are more highly developed led him again to erroneous conclusions: he assumes, by analogy to the animal realm, that separate male and female flowers indicate a higher stage of development, an opinion that has been disproved a
long time ago. For Schubert palm trees represent one of the highest life forms in the plant world because they have separate male and female blossoms. Another reason why the palm is so highly regarded by Schubert is the presence of fossilized palm trees in many deposits even in northern regions:

Baumartige Fernkräuter, hohe Palmenbäume werden als ehemals einheimische Gewächse nicht allein in Deutschland und besonders in den Rheingebieten, sondern bis hinauf an den nördlichen Polarkreis gefunden... Die ganze Natur der nördlichen Welt hat seitdem eine veränderte Gestalt angenommen.
(ANN, 123-4)

Presence of fossilized palm trees and ferns in these regions reinforces the argument that these plants belong to the highest in the plant world. If they were growing in the distant past, then they were present during the original state of harmony, in the mythical Atlantis. This view opposes the modern view of evolution that living organisms developed increasingly complex structures in their competition with rival life forms.

Discussions of plants and the role of plants in romantic nature philosophy occur frequently in Schubert's work. Flowers in particular are regarded not so much for their actual structure and purpose as for their symbolic quality as the metaphor for the idealized love/death, an existence that is sublimated in a moment of transition to a higher form of life.
Animal Life

The inorganic realm with its phenomena of chemical and physical nature takes up a considerable part of Schubert's argument concerning the common ground of all existence in Abhandlungen. In both Abhandlungen and Ansichten examples of the plant world are also frequently used to illustrate Schubert's ideas about polar opposites. The flower, which is usually lifted above earth towards the sun, is repeatedly used as the perfect example of the rapture and intoxication of love-death. It is interesting that the animal realm, which after all is placed higher in Schubert's natural world order, is not used very often in general discussion, nor does it provide metaphors for his ideas. Perhaps Schubert does not consider the animal world as sufficiently poetic and romantic, or he cannot find such obvious polarities in the living organisms of animals as the contrast between acids and bases. In Schubert's system of nature animals are first of all characterized by movement. It was already mentioned above that plants also exhibit rudimentary movement, but remain firmly tied to earth. Animals move around in their natural habitat on earth or in water, and birds or insects can even leave the earth and soar in the air, the highest and most spiritual region of earthly existence.
Erst das Thier wird von dem Boden frei und selbstständig beweglich, während die Pflanze gleichsam nur noch ein Theil des Bodens ist, in welchem sie wurzelt. (ANN, 175)

Schubert is fascinated by insects, by their stages of transformation from one life form into another. The final metamorphosis produces a beetle or even a butterfly, a wonderful example of a short life which leads to its culmination in mating and then death. The butterfly is also frequently mentioned as Psycho, an image of the soul.

Schubert realizes that primitive plant and animal forms are quite similar. As animals generally feed on vegetable matter, he proposes that plants were formed first as a preliminary organic stage. Then came animals, who can feed either on plants - herbivores, or on each other - carnivores. Finally the organic world reached its highest point with the creation of human race. The lowest animal forms are little more than self-propagating digestive systems. In the discussion of molluscs Schubert emphasizes that these animals seem to have lost all sense organs, but in contrast their digestive organs are well developed.

Dagegen zeigen sich die Eingeweide, welche mit dem Systeme der Sinne und des Empfindens in einem beständigen Gegensatze stehen, und welche dann am lebendigsten wirken, wenn jene unhähiger oder ohnmächtiger sind, auf eine Weise entfaltet, wie in keinem der früheren Geschlechter. So erreicht diese erste Thierreihe ihren höchsten Gipfel an Wesen, welche allen Eindrücken der Außenwelt, dem Lichte und
den Tönen, verschlossen sind, und der Geist der Natur scheint sich, er müdet von dem ersten Tagewerke, in sich selber zu vertiefen, betrachtend und zum neuen Werke sich bereitend. (ANN, 154)

The next sequence for Schubert begins with the fish. Here a brain and a rudimentary nervous system make their appearance.

The formation of opposites (Gegensätze) in animals is shown as the gradual development of limbs and organs, which mainly follow the twofold symmetry; fish belong to a low level of development, because their bodies are solid shapes without much differentiation. Bodies of mammals show development not only from head to tail (North-South axis for Schubert), but also on the right and left sides of the body (East-West axis). Man finally becomes more liberated from the forces of the earth when he stands up, and his head and the sense organs directed towards the sun and the stars.

Eventually the sequences of animal species are divided into herbivores and carnivores, each of them feeding on organisms on a lower evolutionary stage.¹¹

Endlich ist auch in den höheren Klassen wieder der eine Theil an die Pflanzen, ein anderer an thierische

¹¹ At this time evolution did not have the meaning it acquired when Charles Darwin proposed his theory of evolution. Some classes of animals belonged to a higher level of development than the others. Each animal evolved from conception to the level of its class. Adaptation to the environment and survival of the fittest was not considered at all. Therefore, Schubert makes various value judgments about animals that are based on human standards.
Schubert's philosophy of nature the forces of polarity in the human race are represented by manifestations of the masculine and feminine principles, which govern the individual development of sexual organs and other parts of the body. These principles also determine the level of spiritual development accessible to each of these polar counterparts.

Sexuality and Polarity

As a medical doctor Schubert had an opportunity to explore the development of sexual organs and their abnormalities. He devotes an entire chapter in the first part of *Abhandlungen* to the differences between the sexes and to medical cases that represent either incomplete or abnormal development of sexual organs. Partly he uses his own medical studies and experience, partly he relies on various descriptions from medical journals and other sources. It is not the purpose of my study to discuss
sample cases from Schubert’s book. The general results of this investigation and the conclusions that Schubert draws from these data serve to form an unusually sexist view of natural phenomena in romantic nature philosophy. Many of Schubert’s observations are certainly true; he observes that in the organic world sexual organs gradually increase in complexity from one species to another. These organs representing polar opposites are never found without their counterparts, i.e. the masculine cannot exist without the feminine and vice versa. One of the most important results is the conclusion that both feminine and masculine sexual organs have been formed from the same basic structures. It would seem natural to conclude that the masculine and feminine forces in nature are equivalent and equally important for the reproduction of the species. Schubert, however, concludes that differences in the development of sexual organs are due to more or less (mehr oder minder), (AGL I 248) complete adaptation to the ideal. In Schubert’s view the masculine principle must always pass through a feminine stage, and that for any specific pair the masculine part is always closer to the ideal.

Endlich muss Alles, was sich dem männlichen, positiven Zustand nähert, entweder einst selber in gewissem Grad weiblich gewesen seyn, und erst durch den vollkommensten negativen Zustand den Uebergang in den positiven gefunden haben, oder es muss mit ihm eine vollkommen weibliche Substanz in Beziehung gestanden haben. (AGL I, 243)
Once Schubert proceeds with this argument, he divides the human anatomy in equal parts and assigns a muscular system to the feminine and a nervous system to the masculine, digestive organs to the feminine and the brain to the masculine, etc.

Endlich ist im Organischen das eigentlich weibliche immer mehr mit der Erde, oder mit der Körpermasse ver- bunden, das Männliche ist freyer aus dieser Verbindung ausgetreten...
Die weiblichen Theile im Thierreich sind, wie wir vor- her sahen, dieselben Organe als die männlichen, nur liegen sie inniger mit der gesamten Masse des Körpers verwachsen, noch im Innern des Leibes, während die Männlichen, einen Grad weiter ausgebildet, freyer aus der Verbindung mit der Masse hervorgekommen sind, und zu selbstständigerem Leben gelangten. (AGL, I 245)

The masculine principle is always associated with freedom, with more perfect formation, and with all the positive forces in nature, although even Schubert has to admit that in the cases of electricity and magnetism these relationships are sometimes reversed. At times the argument nears the improbable and ridiculous, e.g. when Schubert asserts that in case of birth defects only female babies show imperfections of the head and brains. Brains and the nervous system belong to the masculine polarity, therefore boys should not have defective brains or sense organs. The goal of perfect development for Schubert is always a sublimation into the atmosphere or at least a free communica-
tion with the atmosphere and with the realm of the stars. The incompatibility of this goal with actual life on earth never seems to bother him. The duality expressed in the relationship of Natur und Geist is transferred to the relationship of the earth to the solar system and the stars and, by inference, to the relationship of the masculine to the feminine.

So ist durchgängig das, was wir gewöhnlich Gegensatz nennen, mit dem Einen Pol in einem innigeren Verein mit der Erde, und das Wesen dieses Pols scheint das Streben nach Gemeinschaft mit derselben zu seyn, während der andre Pol, in demselben Verhältnis, und in demselben Maaß, zur Befreyung von der Erde, und zu selbstständigm Seyn gelangt...
Wirklich finden wir überall in dem einen Pol den Gegensatz vollkommen entwickelt... finden wir im Organischen das Männliche schon in seinem Bau sich vollkommen entgegengesetzt. (AGL I, 247-8)

The masculine element is glorified as the positive and spiritual pole in nature and in human existence.

Mit einem Wort, das was Selbständiges, was Bild des Ganzen, und hierdurch vollkommenes Organ des allmächtigen Geistes alles Lebens ist, nennen wir, wo es äußerlich als Geschlecht auftritt: Männlich; im Inneren der Dinge ist es bald Nervensystem, bald irgend ein höheres Organ welches den Dingen die Empfänglichkeit für das allgemeine Leben verleiht. Das Positive im Elektrischen, das Saure im Chemischen, das Sensible im Organischen, endlich das Männliche, alle sind Dasselbe in verschiedenen Gestalten. (AGL I 251)

The masculine principle is thus associated with every-thing that is considered positive in the inorganic realm. If one refers to chemistry, the nature of water provides an
illustration of this concept. Schubert sees water as a perfect example of the fluid substances, which are always associated with life forces in romantic nature philosophy. Water is seen as a microcosm that embodies chemical polarities.

In dem Gegensatz des Wassers spiegeln sich die Verhältnisse, nicht bloß des elektrischen, sondern Alles Gegensatzes auf Erden. Wie die Wasserbasis von der Wassersäure nur dadurch unterschieden ist, daß jene den höchsten Gipfel der Vollendung dieser besonderen Form, diese aber die Verwandlung in eine höhere bedeutet, so daß jene nicht anders als flüchtig gewordenes Wasser, diese aber ein höheres Geschlecht der Dinge ist; so unterscheiden sich die beyden Geschlechte der Wesen überall. Das Eine Basische, bedeutet nur die höchste Uebung der besondern Form des irdischen Daseyns, in dem Kreiss der körperlichen Umgebungen, das andre Geschlecht scheint das Ziel zu seyn, welches durch diese Uebung erreicht wird. (AGL, I 266)

In this natural order everything is neatly divided in dual phenomena which are assigned to the masculine or feminine element. Schubert justifies this natural order by postulating that all physical forces and organic life forms are objectivations of the living spirit, die Weltgeele. This spirit is the basis of existence, Grund des Daseyns, which gradually expresses itself in higher and higher life.

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12It is significant that the acid principle in chemistry, for it cannot be called an element or a compound according to the modern usage, is named Andronic, (from Greek andros= man).
forms. Each of these forms strives towards a fulfillment of its existence and towards a freedom from material ties.

Vielleicht bedarf es nicht erst der Erinnerung, daß das Positive, Männliche an den Dingen das sey, was von dem Weltgeist erfüllt, das Schaffende sey, während das Negative, Weibliche ihm nur Materiale - Schöpfung ist. (AGL I, 274)

In this context the relationship of masculine to feminine is analogous to the relationship of a Fichtean ego to the non-ego of the object world. The feminine principle and by implication women are bound to the earth and can never aspire to the heights, to which their male counterparts freely ascend. Schubert's natural order confirms the social order of the rising bourgeois middle class. This position places Schubert much closer to the Biedermeier era than to the romantic period. Romantic freedom, according to him, is the ideal that only men can achieve.

This free, independent existence is equated to a rising above the earth both metaphysically and literally. Since this implies a physical impossibility, for even the atmosphere is bound to the earth by gravity, then a transition to this free existence must be preceded by death in the real world. This is also Schubert's conclusion, and he repeatedly celebrates love/death as the highest moment of existence.
Death, Decay and Primary Matter

Death as the highest moment of existence is for Schubert not merely a metaphysical concept. In the second part of _Abhandlungen_ he devotes a long chapter to decompositor and decay as the aftermath of death. Schubert views life and death as another pair of polar opposites. Death is the common end of all types of existence; therefore he sees the approach of death and all the physical and chemical phenomena affecting physical remains after death as very important in the cycle of nature. Life is a union of the spiritual and the physical:

_Wir sind, was wir sind, in jedem Moment unsers ewigen Daseyns ganz: weder Geist noch Materie allein, sondern beides, und wie der ewige Geist der Welt nie ohne diese, wie das Licht nie ohne Helle; so wird das Belebende in uns nie ohne sein Material gefunden._ (AGL, II-1, p.5)

Schubert finds that there is a limited time span during which the processes of dying may be interrupted and a return to life is possible. In the case of inorganic substances, where "life" is indicated by the activity of physical and chemical forces, this transition period is very long. Among organic life forms this period is longer for most primitive plants and animals, including apparent death in some transitional stages. The transition time is much shorter for complex animals and human beings. Schubert
is interested in various states where an organism is close to death and yet still living. He reports stories of people who have been close to death and remember this state as a dream of a passive, blissful existence full of light. In this aspect his reports agree with the near-death research of recent years. The connection of body and soul is not easily broken.

So endet mit dem Aufhören der letzten Lebensäußerungen das Bündnis zwischen dem Geistigen in uns und seiner Hülle noch nicht, und es muß zugestanden werden, daß wenigstens vor vollkommen eintretender Faulnis eine gewisse Beziehung der Seele auf den Leib unterhalten werde. (AGL, II-1, 15)

The general aim of death is the neutralization of responses to the outside material world, extinction of will and physical activity. Death is the termination of life's polarity.

Das Untergeordnete hört auf, dem Streben des vorhin überlegenen Gegensatzes mit derselben Leichtigkeit zu gehorchen, weil jene Übereinstimmung selber verschwindet und es schweigt endlich, wenn das natürliche Verhältnis der sich gleich gewordenen Pole des Lebens aufgehoben, auch die letzte, schwächste Wirkung nach Außen, und das Leben selber. (AGL, II-1, 19)

Schubert also cannot resist the suggestion that a good and morally upright life will lead to a pleasant conclusion and a peaceful parting from this world. As an example he mentions pious elders who expire full of inner joy (AGL,
24). In cases of high spiritual exaltation life reaches its highest moment:

Der letzte Augenblick, wo endlich das höchste Streben des geistigen Vermögens in uns an dem Leibe vollführt wird, wo dasselbe gänzlich gelingt, pflegt dann oft noch von einem hellen Aufflammen des höheren Lebens erleuchtet zu seyn, und dieses erreicht, wenn sein Werk zuletzt unaufhaltsam schnell gelingt, als dann sein Maximum. (AGL, II-1, 23)

Once Schubert proceeds to the description of the decomposition and putrefaction processes, he assigns the first stages of it to the production of phosphorus. Phosphorus for Schubert is generally not the chemical element but a certain substance. The presence of phosphorus is characterized by a play of colors, release of malodorous gases and luminescent vapors.

Zuerst nennen wir das Spiel der bunten Farben, und erkennen an, daß alle bunte Farben vom Phosphor herrüren. Wir sehen die bunten Farben überall den sterbenden Körpern ihren nahen Untergang, wie den Lebendigen die nahe Zeit der Liebe verkündigen. (AGL II-1, 88)

Sometimes the production of "phosphor" is so fast that it is accompanied by spontaneous combustion of the dead bodies.

Wo die Verwesung am schnellsten und heftigsten geschieht, zeigt sie sich als wahrhaftes Verbrennen, welches mit Blitze Schnelle den ganzen Körper ergreift and zerstört. (AGL, II-1, 88)
Am schnellsten, aber auch gewaltsamsten geschiet die Bereitung des Phosphors im Feuer, durch Verbrennen.
Die Überreste einer schneller Verwesung sind ein Schleim, welches an Phosphor sehr reich ist. (AGL II-1, 74)

Phosphorus is also related to electric phenomena, in particular when glow and sparks of electric discharges are observed, which are frequently accompanied by the smell of "phosphor." Schubert also mentions the presence of phosphorus in metals. As usual Schubert's knowledge of chemistry is sketchy, and descriptions of the observed phenomena inconsistent. It is difficult to tell when he actually describes the element phosphorus and its compounds or assumes that the presence of phosphorus manifests itself as a bright color or a strong odor. Schubert also finds analogies to this preparation of phosphor during the decomposition of dead bodies in the volcanic action where nature itself prepares phosphorus on a large scale. Finally phosphorus is also defined as the cause of noxious miasmas which emanate from burial places and cause infectious diseases. This interpretation of diseases and their spreading among the population was common in Schubert's time since the action of disease-causing bacteria was unknown. A vaporous miasma hovering near crypts and grave-yards contributed to the "gothic" atmosphere of the romantic horror story as a malevolent presence of death and disease. There was some justification for this idea since bodies of people who died during the epidemics, which were frequent at the
time, carried the bacteria of disease. It is not surprising that phosphorus is identified with these poisonous emanations since phosphorus itself and several simple phosphorus compounds are poisonous. In the context of Schubert's hypothesis, phosphorus in its various manifestations is the element of color, odor, and fire. He acknowledges that the second stage of decomposition is characterized by the presence of carbon, nitrogen, ammonia, and hydrogen. He generally has no idea of the complexity of the organic compounds involved in decomposition because organic chemistry at that time was still primitive. It was generally believed that the so called organic compounds were produced by living organisms and could not be synthesized in laboratory. We now know that these organic compounds are predominantly hydrocarbons that contain smaller percentages of nitrogen and phosphorus. All of these elements are important in organic life processes: nitrogen as an essential building block of the amino-acids and proteins, phosphorus compounds in the biochemistry of muscular activity.

Schubert's primary interest was not really the chemistry of decomposition. He believed that the basis of life, Grund des Lebens, is born out of death and decay, and that there exists a unique substance, which connects the processes of

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\(^{13}\)Friedrich Wöhler synthesizes urea, a simple organic compound in 1828.
life to those of decay.

Ueberhaupt ist der wunderbare Stoff (Phosphor), dessen Geschichte wir hier geben, in der ganzen organischen und anorgischen Natur, das einziger Zeugende, und in der Stunde der Liebe so wie in der Stunde des Todes erscheint uns seine heilige Fackel. Wir wissen in organismen Leben keinen Prozeß, welcher mit dem der Verwesung so übereinstimmt, ja mit ihm so eins wäre, als der der Zeugung. (AGL II-1, 95)

Once Schubert arrives at phosphorus as the universal factor in this equation of love and death, he assumes that phosphorus is present as the element of light and color everywhere in nature, wherever a chemical or sexual union takes place.

In Pflanzenreich begleitet die Begattung der Phosphor nicht minder häufig als wirkliches Licht.... Wo aber der Phosphor als Brautfackel auch nicht immer leuchtend erscheint, sehen wir doch seine Nähe in dem bunten farbigen Gewand der Blumen, und der Befruchtungswerkzeuge des Pflanzenreichs bis zu dem Geschlecht der Moose und Flechten hinab, in den glühenden bunten Farben, welche die Insekten während der Begattung schmücken, und in den hellen Glanz derselben; bis hinab zu den Metallen, wo die Zeit der Vermählung mit den Säuren und zugleich die der Vernichtung der Individualität mit bunten Farben bezeichnet ist. (AGL II-1, 97)

Schubert assigns the second stage of decomposition to the presence of carbon. Although it is certain that carbon is present in all of these chemical processes, for Schubert its presence is mainly indicated by the dark color of some products of decomposition. Again he chooses a characteristic of one substance, in this case the dark color of car-
bon, and assumes that this dark color also characterizes carbon compounds. Many of the final decomposition products are described by Schubert as fatty substances and oils, which contain large amounts of phosphorus.

Es ist der Kohlenstoff, welchen wir hier in den Oel- und Talgmassen vorwaltet sehen, dasselbe Brennbare, was am Anfange der Verwesung als Phosphor entweicht. (AGL II-1, 119)
Es erscheint dieselbe Materie anfangs als Phosphor, hernach als Oel oder Fett. (AGL II-1, 121)

Carbon then becomes a companion to phosphorus in the decomposition process. The final stage of this process is a transformation into volatile gases that escape into the atmosphere, where they are open to the influences of the sun and the stars.

As was pointed out above Schubert’s purpose is to find the substance that would provide a connection between the processes of creation and decomposition. This basic substance or material origin of all creation had already been proposed in antiquity.

Einige ältere Chemiker, welchen die Wahrheit wenigstens nicht ferner stand als unsren Zeiten, haben oft von einer prima materia, in welche zuletzt Alles versänke und aus welcher Alles entstünde, geredet. Es scheint die Sage von einer solcher Grundmaterie von sehr hohem Alter, und unsere ältesten Chemiker schreiben sie dem gemeinschaftlichen Aufgang aller Wissenschaften, dem Orient, ursprünglich zu. (AGL II-1, 130)
Schubert shows a deep reverence for the knowledge of the ancients in all of his writings on the philosophy of nature. Like Novalis, who defers to the wisdom of the ancient world by locating philosophical conversations about nature at the temple in Sais, he believes in a harmonious and wise antiquity. We also must remember that all university studies of this period were dominated by the classics. In particular the achievements of the ancient Greeks were held up as a paradigm to be emulated in German culture. It is natural for Schubert to search for a confirmation of his theories among the writings of the ancient Greeks and more recent alchemists of Middle Ages. Schubert states that the ancients have described this *prima materia* as slimy, fatty earth that ferments when mixed with water, changes colors, and releases combustible, poisonous gases. Finally it appears as a transparent substance shining in all the colors of rainbow. The parallels to Schubert's definition of phosphorus are obvious.

Die erste Materie der Alten, welche ein gemeinschaftliches Auflösungsmittel aller Metalle, und der meisten andern Körper ist, und das Wasser schnell zu Faulniß bringt, ist dieselbe, welche als Andronie mit Säuren verbunden, ein so gewaltiges und unwiderstehliches Auflösungsmittel ist, ... (AGL II-1, 132)

It is apparent from this quote that Schubert tries to relate *prima materia* of the ancients with the acid principle, defined as *Andronie* by Winterl, and with the principle
of light and color, which in his hypothesis is represented by phosphorus. Since he also mentions the universal solvent, this basic substance is also related to the magic Alkahest, described by Paracelsus and mentioned by Novalis in Lehrlinge zu Sais. If, according to Schubert’s sources, all substances go through a stage of this primary matter in every chemical reaction, then it is also the necessary intermediate stage in the processes of procreation and death. Thus the metaphor of love/death acquires the universal significance of transfiguration and rebirth on a higher plane of existence. The spiritual union of the lovers after death remains a significant topos long after the end of the romantic period in Germany and becomes the central theme in the operas of Richard Wagner. Schubert’s intentions are similar to those of Novalis, who also tried to synthesize all forms of knowledge into a system of harmonious unity, which then becomes the basis of romantic philosophy. From the perspective of modern times, however, Novalis’ view of idealist philosophy can still provide valuable insights in the relationships of individual and nature, while the majority of Schubert’s conclusions cannot be taken seriously. Most of his arguments are based on empirical data, which were derived from poorly defined experiments. Schubert’s own scientific knowledge is best in the fields of medicine, botany, and geology. Even in these
fields his wide range of reading betrays him when he quotes stories of improbable events comparable to the favorite topics of the modern day tabloid press. In the sense of social history just this lack of discrimination makes Schubert's works interesting. He portrays the scene of the natural sciences at the beginning of 19th century with considerable accuracy. He not only simplifies and popularizes the most recent scientific discoveries of the time, but also repeats all the apocryphal stories and anecdotes which illustrate popular thinking about diverse natural phenomena. Schubert also had a considerable influence on the writings of Heinrich von Kleist and E.T.A. Hoffmann. Hoffmann was equally interested in strange phenomena and curious tales. These occurrences found their expression in Hoffmann's tales of magic and of horror. Schubert's description of Phosphor certainly contributes to the nature myth of Der goldene Topf and to the magic characteristics of Archivarius Lindhorst. Many images in Hoffmann's stories and fairy tales were derived from Schubert's books. They reflect Schubert's organization of nature and his value system for various species of plants and animals.
CHAPTER IV

THE FAIRY TALES OF E.T.A. HOFFMANN

E.T.A. Hoffmann belongs to the period of late romanticism in German literature. The literary movement itself and its philosophical basis changed considerably in the fifteen to twenty years since the time of the Jena romantics. The country went through the Napoleonic wars and subsequent conservative reconstruction. Poets of this romantic sunset still looked to nature for an echo of their feelings, but they did it without considering the philosophical implications of the duality of spirit and nature that dominated Schelling's nature philosophy. The duality that they experienced was the split between the individual and society, or the personal subjective conflict between rational mind and emotions. Schelling, who built an entire philosophical system for the interpretation of nature and all its dynamic phenomena and then contrasted the entire system with the development of consciousness in System des transzendentalen Idealismus, turned away from the empirical aspects of natural sciences and concentrated on the problems of the arts, humanities, and religion. He still lectured and wrote about philosophy of nature, but
his interpretation of nature became more speculative, in line with the direction of his identity philosophy, as the supplements to individual chapters in the second edition of Ideen indicate. H.G. Schubert, who attempted to establish the basis of life along the lines of Schelling's philosophy in his first book Ahndungen, produced a mixture of observations from physical and biological sciences, untested anecdotes, and speculation. In Schubert's nature philosophy science turned away from the exact physical sciences that were deemed as too mechanical and in essence opposed to the romantic spirit. This turn against mechanical and mathematical methods of science explains the dominance of life sciences and medicine in the scientific writings associated with the romantic movement in the early 19th century.
Interest in the inner life of an individual and the concept of an unconscious existence before the development of consciousness led to exploration of abnormal mental states. Much of this tendency appeared in Schubert's writings; he began by studying abnormalities in human bodies and then became interested in hypnosis, somnambulism, and dreams. Hypnosis, under the name of animal magnetism, attracted much attention in romantic circles. As an extention of the magnetic forces that permeate inorganic materials, animal magnetism was seen as the key to dynamic forces in the human soul. The alignment of magnetic force lines in living
organisms supposedly influenced their physical and mental health. It was believed that specially gifted individuals could influence these magnetic forces and use them in either positive or negative ways: to heal people or to gain complete spiritual control over their minds. Schubert was not the only source that Hoffmann consulted on the topic of animal magnetism. These methods of hypnosis were introduced by Anton Mesmer and attracted a lot of attention in the late 18th century and early 19th century. 

Hoffmann read Schubert's works with great interest. He was also familiar with the writings of contemporary medical investigators, who used hypnosis in their medical practice. Hoffmann seems ambivalent about magnetic healing; at least he remains sceptical about some of these "magnetic" phenomena. (SB, 268). In the conversations of Serapiensbrüder emerges the opinion that "magnetic" sleep, when induced by a careful and well-trained medical practitioner, can be helpful in many difficult medical cases. Otherwise magnetic treatment may be ineffective or even dangerous.


In some of his stories, e.g. Der Magnetiseur and Der unheimliche Gast, Hoffmann describes the extraordinary power that these "magnetic" personalities exert over susceptible human beings. These stories show nothing positive about these phenomena from the "night side" of the natural sciences; Hoffmann, the jurist, is only too well acquainted with misuses of power, whether they derive from political and social conditions, or from the control of the human psyche. These dark forces continue to fascinate Hoffmann as he explores the conflicts and obsessions of human soul.\footnote{Monika Schmitz-Emans in her article "Naturspekulation als 'Vorwand' poetischer Gestaltung", Mitteilungen der E.T.A. Hoffmann-Gesellschaft 34, 1988, pp. 67-83 points out that although Hoffmann borrows material from Schubert's \textit{Ansichten} and \textit{Symbolik}, his views of the phenomena discussed in these books do not always agree with Schubert and Schelling: Während sich bei Schubert die magnetischen Phänomene im Sinne Mesmers als Belege für die harmonische Einbettung des Einzelnen ins Ganze der Natur darstellen, widerspricht Hoffmann der These von der universalen Verknüpfung des Ichs mit dem "Anderen" zwar nicht, deutet diese Verknüpfung aber als Fesselung. (80)}}
come almost directly from Schubert. But Hoffmann also adds his own observations and details to these myths. Both men were voracious readers, who collected an immense wealth of miscellaneous information from books, newspapers, and current events. Schubert's fusion of nature and myth can be viewed as a special kind of *Poetisierung der Wissenschaften* suggested by Novalis, or even a form of mythology, but Schubert's interpretation of nature constitutes a movement towards the wisdom of the past, towards alchemy, astrology, and mythology. Novalis was interested in all of these topics and attempted to incorporate them into his synthetic view of universe, at least as metaphors for the lost language of nature, but he was always open to the latest empirical discoveries in the sciences and eager to contemplate the implications of these discoveries for nature philosophy and the future of humanity. Hoffmann, who was neither a philosopher nor a scientist, used this world of dynamic forces as outlined by Schubert in his *Ansichten* and *Symbolik*, and animated it with elementary spirits to create a poetic realm of the fairy tale.

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4A frequent source for Hoffmann, when he describes elementary spirits in nature is Abbé Villars de Montfaucon, *Le comte de Gabalis ou Entrailles des sciences secrètes*, Paris, 1670. this book was translated into German as *Graf von Gabalis oder Gespräche über die verborgenen Wissenschaften*, Berlin, 1762. (from notes to FNS, p. 790).
Music as Nature’s Language

Characteristic for the romantic artist is the preoccupation with nature’s language. The individual ways to learn Nature’s secrets and to read her hieroglyphic code were discussed in Novalis’ *Lehrlinge zu Sais*. In *Kreisleriana* Hoffmann plays the devil’s advocate and rhetorically questions the basic assumptions of romantic philosophy and the enthusiasm of romantic lovers of the arts. He singles out music as the forgotten Sanscrit of nature.

Manche von diesen unglücklichen Schwärmen sind zu spät aus ihrem Irrtum erwacht und darüber wirklich in einen Wahnsinn verfallen, welches man aus ihren Äußerungen über die Kunst sehr leicht abnehmen kann. Sie meinen nählich, die Kunst ließe dem Menschen sein höheres Prinzip ahnen und führe ihn aus dem törichten Tun und Treiben des gemeinen Lebens in den Isistempel, wo die Natur in heiligen, nie gehört ten und doch verständlichen Lauten mit ihm spräche. Von der Musik hegen diese Wahnsinnigen nun vollends die wunderlichsten Meinungen; sie nennen sie die romantischste aller Künste, da ihr Vorwurf nur das Unendliche sei; die geheimnisvolle, in Tönen ausgesprochene Sanscritta der Natur, die die Brust des Menschen mit unendlichen Sehnsucht erfülle, und nur in ihr verstehe er das hohe Lied der – Bäume, der Blumen, der Tiere, der Steine, der Gewässer! – (FNS, 39)

References to the first fragment of *Lehrlinge zu Sais*, the temple of Isis and *Sanscritta der Natur* are obvious. The difference between the two authors is connected to their personal interests: Novalis wanted to bring together
as many forms of reading nature’s secrets as possible, although for him these hieroglyphs are mainly visual; while Hoffmann found all of these secrets in the arts and especially in music. Music for Hoffmann is the most romantic of all the arts and the language of the spirit world.

Ist nicht die Musik die geheimnisvolle Sprache eines fernen Geisterreichs, deren wunderbare Akzente in unserm Innern widerklingen, und ein höheres intensives Leben erwecken? (SB, 83)

The original lost harmony of the world is suggested by music as the most universal of the arts that does not need a translation. If language was subjected to the confusion of the tongues at the tower of Babel, and words have lost their original magic power, then for Hoffmann this power is still present in music. Music accompanies Hoffmann’s characters in his fairy tales. They are defined by music just as music defines characters in a romantic opera; the presence of Serpentina in Der goldne Topf is accompanied by the sound of silver bells, the witch, Liese Rauerin, appears together with dissonances and distortion of music. In Klein Zaches Meister Alpanus, the good magician, appears to the student Balthazar in the woods accompanied by the sounds of a harmonica.\(^5\)

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\(^5\)Whenever Hoffmann describes the sounds of a harmonica in a fairy tale scene, he is talking about the glass harmonica that actually produces strange, otherworldly sounds. The instrument consists of a large number of glasses partly filled with water. The instrumentalist strokes these glasses to produce sound. Mozart wrote
The Fairy Tale as Opera Buffa.

In Hoffmann's tales a fantastic imaginary world is in constant conflict with the real world. The realm of the fantastic confuses people who ignore the existence of this world of magic. These conflicts, combined with a lively imagination and a taste for the fantastic, provide the action that shifts instantaneously between the concrete world limited by time and space and the imaginary realm where poetry dissolves these limits. Music as the true language of nature is extended to fairy tale as a musical composition. In the discussion of Der Dichter und der Komponist Hoffmann proposes an outline of appropriate subject matter for opera buffa. He uses the same contrast of the ordinary and fantastic in his fairy tales. It is interesting that like Novalis he also assigns an important part to the element of chance.

Hier ist es nun das Fantastische, das zum Teil aus dem abenteuerlichen Schwunge einzelner Charactere, zum Teil aus dem bizarren Spiel des Zufalls entsteht, und das keck in das Alltagsleben hineinfährt, und alles zu oberst und unterst dreht. ...
- Denke dir eine ehrbare Gesellschaft von Vettern und Mühmen mit dem schmachtenden Töchterlein, und einige Studenten dazu, die die Augen der Cousine besingen, und vor den Fenstern auf der Gitarre spielen. Unter

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several compositions for this unusual instrument.
This concept of the fairy tale as a mixture of the elements from the real world and the magic of the spirit world is close to that of Novalis. He also felt that the fairy tale gave the poet freedom to suggest ideas and events that are beyond the limits of the senses and rational thought.


Hoffmann's sharp observations of his fellow men and their peculiarities in the everyday world add an ironic contrast to the world of nature spirits and magicians that would otherwise become too insubstantial. Hoffmann valued Novalis, Tieck and the other romantics, but he added his own characterization and an ironic distance to the romantic fairy tale.
Der goldne Topf: Poetic Transition to Atlantis

Poets are people who see nature as a medium, where the magic of a higher existence is suddenly revealed. The poet's imagination builds bridges between nature and the world of men. Novalis had already perceived the presence of the spirit world around us:

Die Geisterwelt ist uns in der That schon aufgeschlossen — Sie ist immer offenbar — Würden wir plötzlich so elastisch, als es nötig wäre, so sähen wir uns mitten unter ihr... (NS III, 301-2)

In Der goldne Topf the student Anselmus gradually realizes the presence of this magical world. This presence of the spirit world is not a sudden revelation; Anselmus must learn to believe in the existence of nature spirits and their magic. At first he complains about his clumsiness in every task he undertakes. While sitting and smoking under the elder tree he sees only a pleasant landscape with no special attributes.

Dicht vor ihm plätscherten und rauschten die goldgelben Wellen des schönen Elbstroms, hinter demselben streckte das herrliche Dresden kühn und stolz seine lichten Türme empor in den duftigen Himmelsgrund, der sich hinabsenkte auf die blumigen Wiesen und frisch grünen Wälder, und aus tiefer Dämmerung gaben die zackichten Gebirge Kunde vom fernen Böhmerlande. (FNS, 180-1)

So far Anselmus has failed in all of his attempts to become an ordinary citizen. Even this holiday has been
spoiled by his unfortunate step in the apple woman's basket. Anselmus is related to the inept novice from *Lehrlinge zu Saig*, but his misfortune is living in early 19th century Dresden. His complaints and self-accusations are interrupted by strange sounds in the elder tree. Under this tree, which in German folk belief is connected to magic and witchcraft, the fantastic and poetic element enters Anselmus' life.

Hier wurde der Student Anselmus in seinem Selbstgespräche durch ein sonderbares Rieseln und Rascheln unterbrochen, das sich neben ihm im Grase erhob, bald aber in die Zweige und Blätter des Holunderbaumes hinaufglitt, der sich über seinem Haupte wölbte. Bald war es als schüttle der Abendwind die Blätter, bald, als kos'ten Vögelein in den Zweigen, die kleinen Fittige im mutwilligen Hin- und Herflattern rührend. - Da fing es an zu flüstern und zu lispeln, und es war, als ertönten die Blüten wie aufgehängene Kristallglöckchen. (FNS,182)

These whispered sounds gradually form partly understood words. Anselmus looks up in the tree and sees three golden green snakes, who play in the branches of the tree. Anselmus still doubts this experience, but the magic vision becomes more distinct and he himself becomes a part of it.

"Das ist die Abendsonne, die so in dem Holunderbusch spielt", dachte der Student Anselmus, aber da ertönten die Glocken wieder, und Anselmus sah, wie eine Schlange ihr Köpfchen nach ihm herabstreckte. Durch alle Glieder fuhr es ihm wie ein elektrischer Schlag, er erbebte im Innersten - er starrte hinauf, und ein Paar herrliche dunkelblaue Augen blickten ihn an mit
unaussprechlicher Sehnsucht, so daß ein nie gekanntes Gefühl der höchsten Seligkeit und des tiefsten Schmerzes seine Brust zersprengen wollte. Und wie er voll heißen Verlangens immer in die holdseligen Augen schaute, da ertönten stärker in lieblichen Akkorden die Kristallglocken, und die funkelnden Smaragde fielen auf ihn herab und umspannten ihn, in tausend Flammenchen um ihn herflackernd und spielend mit schimmernden Goldfaden. (FNS, 183)

Nature here is at first just a pleasant background for Anselmus’ thoughts. Gradually his sense perceptions of the scene change, and strange whispering sounds are transformed in half-understood words, until he sees the origin of these sounds: three green gold snakes playing in the branches of the tree. The eyes of one of the little snakes act on him like an electric shock, and Anselmus’ emotions are strongly inflamed by the magic of this experience. Nature’s voices now tell him that he could understand neither the scent of flowers, nor the soft evening breezes, nor the glow of the sun, until his perceptions were changed by love. All of these experiences are part of nature’s language, but this language only reveals itself to lovers.

Der Holunderbusch rührte sich und sprach: “Du lagst in meinem Schatten, mein Duft umfloß dich, aber du verstündest mich nicht. Der Duft ist meine Sprache, wenn ihn die Liebe entzündet.” (FNS, 183)

In Anselmus’ experience under the elder tree his special receptivity to nature is a synaesthetic fusion of sense impressions that are transformed by poetry and music
until the hidden spiritual world of nature becomes as real as the elder tree. The three little snakes are spirits of nature that foster the creative transformation of sense perceptions. It is the same love for nature that Novalis expressed as a relationship of ich und Du. Love to one of the little snakes, Serpentina, enters Anselmus's soul and imprints him with the desire for the poetic kingdom of Atlantis. That this poetic excitement cannot be repeated by merely returning to the place of this singular magic experience is indicated later, when Anselmus comes back to the elder tree to recapture the old magic and to find Serpentina. He finds the tree and the surrounding landscape mute and unresponsive to his desires.

Experiences with the magic of nature, and with the spirit world that constitutes an existence on a different level than the everyday world, confront Anselmus again in the house of Archivarius Lindhorst, who is also the spirit prince Salamander. Here Anselmus finds a magic garden.

Anselmus schritt getrost hinter dem Archivarius her; sie kamen aus dem Korridor in einen Saal oder vielmehr ein herrliches Gewächshaus, denn von beiden Seiten bis an die Decke hinauf standen allerlei seltene wunderbare Blumen, ja große Bäume mit sonderbar gestalteten Blättern und Blüten. Ein magisches blendendes Licht verbreitete sich überall, ohne daß man bemerken konnte, wo es herkam, da durchaus kein Fenster zu sehen war. Sowie der Student Anselmus in die Büsche und Bäume hineinblickte, schienen lange Gänge sich in weiter Ferne auszudehnen. - Im tiefen Dunkel dicker Zypressenstauden schimmerten Marmorbecken, aus denen sich wunderliche Figuren erhoben, Kristallstrahlen
hervorspritzend, die plätschernd niederfielen in leuchtende Lilienkelche; seltsame Stimmen rauschten und säuselten durch den Wald der wunderbaren Gewächse, und herrliche Düfte strömten auf und nieder. (FNS, 212-13)

Sense impressions in Lindhorst’s house are similar to the experiences under the elder tree, but here the garden, or the greenhouse, consists of unusual exotic trees and flowers. In Lindhorst’s realm the poetic imagination projects a garden without the usual restrictions of space and form. Sometimes Anselmus thinks that flowers, birds, and insects are interchangeable colorful shapes, i.e. they are continuously changing in his imagination. In this enchanted garden everything belongs partly to the empirical world and partly to the poetic kingdom of Atlantis. At the end of the tale Lindhorst shows the author Anselmus’ life in Atlantis, and this idealized landscape seems like a magical extension of Lindhorst’s garden. Colors, scents and music combine to illustrate the magical ambiance of Lindhorst’s house. For Hoffmann the presence of fairy tale world is suggested by pleasant stimuli of all the senses that appear in a dream-like state and converge in music.

Nicht sowohl im Traume, als im Zustande des Delirierens, der dem Einschlafen hervorgeht, vorzüglich wenn ich viel Musik gehört habe, finde ich eine Übereinkunft der Farben, Töne, und Düfte. Es kommt mir vor, als wenn alle auf die gleiche geheimnisvolle Weise durch den Lichtstrahl erzeugt würden, und dann sich zu einem wundervollen Konzerte vereinigen. (FNS, 50)
A different aspect of Atlantis appears in the palm room in Lindhorst's house.

Aus den azurblauen Wänden traten die goldbronzenen Stämme hoher Palmbäume hervor, welche ihre kolossalen, wie funkelnde Smaragde glänzenden Blätter oben zur Decke wölbten; in der Mitte des Zimmers ruhte auf drei aus dunkler Bronze gegossenen ägyptischen Löwen eine Popyrplatte, auf welcher ein einfacher goldener Topf stand, von dem, als er ihn erblickte, Anselmus nun gar nicht mehr die Augen wegwenden konnte. (FNS, 214)

The poetic land of Atlantis was already mentioned in Novalis' *Heinrich von Ofterdingen* as a mythical land of poetry and love. In *Der goldne Topf* Lindhorst's palm room has metal trees encrusted with gems like the enchanted city in *Klingsohrs Märchen*, but Hoffmann chiefly follows the ideas of Schubert, who connects Atlantis with the lost harmony of existence and with the earliest beginnings of mankind. For Schubert Atlantis represents the oldest relationship between the human race and nature. He places this ancient land of myth in the polar regions of the North.

Hierauf sehen wir uns, jenseits der Kluft vieler Jahrtausende, nahe am Pol, in dem Wunderlande Atlantis, wo die Glut der noch jugendlichen Erde einen beständigen Frühling und dort, wo jetzt das Land von beständigem Eise starret, hohe Palmenwälder erzeugt.

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8Atlantis then is located somewhere in the polar regions. Arctur's realm in *Klingsohrs Märchen* is also in the north, but the location is not on the same level as the earth, but somewhere above it.
Es wohnt hier mit den Thieren des Südens jenes der Erde geweihte Urvolk, ... Noch in der ersten heiligen Harmonie mit der Natur, ohne eigenen Willen, erfüllt von dem göttlichen Instinkt der Weissagung und Dichtkunst, sehen wir unser noch junges Geschlecht unter dem Scepter des Uranus froh. (ANN, 2–3)

Hoffmann uses this image of Atlantis and identifies it with the spiritual and imaginary realm of artistic existence. Only poetry and music provide the means of approach to the new Atlantis. A harmonious relationship between men and the spirits of nature exists only in the realm of the arts. Schubert’s studies of geology with A.G. Werner provide other material for the visualization of this primeval land. In Ansichten Schubert discusses the historical development of the earth’s crust. Granite and gneiss are the oldest forms of minerals, but among them are also found enclosed veins of rock crystal. Therefore, crystal has a close relationship with the primeval matter of the new earth, and also belongs to the mystical Atlantis. Moreover, the regular structure of crystal suggests the order of the universe7.

Man hat den Krystall mit Recht einen verkörperten Lichtstrahl genannt, denn wie das Entflammen, ist der Augenblick der Gestaltung den Substanzen die Offen-

7These theories about the geological history of the earth are discussed in the 7th lecture of Schubert’s Ansichten pp 95–112. His speculations about the earliest life on earth concentrated around the poles are based on fossil findings of ferns and palm trees in northern regions. These data are given in lecture 8, pp. 113–127.
barung des Universums, es ist das Krystallisieren ein Erkennen jenes allgemeinen Rhythmus, in welchem das sichtbare Universum in allen seinen Theilen steht. (Schubert, AGL I, 219)

The palm trees in Lindhorst's house and the crystal bells that are always heard in the presence of Serpentina are a reminder of the original Atlantis⁸. Porphyry belongs to very old stone formations, and its rich color suggests Schubert's association of colors with the presence of phosphorus. Egyptian lions indicate associations with the ancient wisdom of Egypt, with Mozart's Zauberflöte, one of Hoffmann's favorite operas⁹, and with the temple of Isis in Novalis' Lehrlinge zu Sais.

The influence of Schubert's nature philosophy is strong in Hoffmann's early work, and especially in Der goldne Topf, where nature and poetry play a decisive role in Anselmus' erratic way to self-discovery. Polarity or duality in nature and the interplay of opposing forces as the basis of existence is one of the leading thoughts in Schelling's nature philosophy. Schubert, who follows Schelling's nature philosophy as it evolved after 1800, discusses the idea of polarity in his Abhandlungen in considerable detail. Polarity of forces is clearly defined in

⁸Schubert placed palm trees at the top of his system of plants as the most advanced of all trees. (ANN, 123-4; 135)
⁹Hoffmann conducted rehearsals of Mozart's Zauberflöte while he wrote Der goldne Topf.
the inorganic world, but in plants and animals contrasts are formed by greater or smaller participation of a certain principle. In Symbolik Schubert concludes that both positive and negative forces in nature and in the spiritual world have essentially the same origin, but after differentiation and division they begin to oppose each other. These opinions mirror Schelling's philosophy of identity. Hoffmann illustrates this battle of opposing nature forces as the colorful duel between Lindhorst and the old witch. Schubert's concept of duality in nature and the spiritual world is outlined in Symbolik.

In der ganzen uns umgebenden Sinnenwelt zeigt sich, ebenso wie in der geistigen, der stete Kampf zweier Prinzipien, welche ursprünglich einander befreundet, eins das andere voraussetzend, bey einem gegebenen Punkte sich feindlich einander entzünden. Der Kampf zwischen beyden läßt sich durch die verschiedensten Entwicklungsstufen - Klassen und Geschlechter (ein Abbild eben so vieler Weltalter, Epochen, größerer und kleinerer Zeitabschnitte) verfolgen, bis dahin, wo zuletzt das zerstörende Prinzip von dem ihm entgegengesetzten besiegt wird, und wo sich gleichsam perspectivisch, wie in weiter Ferne und von immer mehr verlöschenden Umrissen, eine Periode der Vollendung, frey vom Kampfe, und ein Reich des Friedens darstellt. (Schubert, Symbolik, 37)

In Der goldne Topf Lindhorst and Liese Rauerin represent these two principles in empirical Dresden, but the conflict had started much earlier in the realm of nature myth that Lindhorst relates at the beginning of the third vigil. In general agreement with Schubert's value judge-
ments, the sequence of positive principles is represented by the sun: the young Phosphorus, Salamander, and finally Lindhorst as the human incarnation of the spirit prince Salamander. These figures are associated with light and fire, spiritual qualities in Schubert’s interpretation of nature forces\textsuperscript{10}.

The figure of Phosphorus represents different qualities in Schubert’s nature philosophy. First of all in Greek mythology Phosphorus (literally the bearer of light) can be both the morning or the evening star, therefore Phosphorus brings either the light of the day or extinguishes it at night. In the second part of \textit{Abhandlungen} Schubert connects phosphorus with death and decomposition and with the remaining matter that will regenerate life. Schubert also associates phosphorus with colors and odors in nature\textsuperscript{11}. Following this concept Schubert’s phosphorus is not the chemical element, but a principle uniting both life and death. The young Phosphorus in Hoffmann’s nature myth has the same qualities; he warns the fire lily, who loves him:

\begin{quote}
Die Sehnsucht, die jetzt dein ganzes Wesen wohltätig erwärmt, wird in hundert Strahlen zerspaltet, dich
\end{quote}


\textsuperscript{11}A detailed discussion of Schubert’s concept of phosphorus is given in chapter III.
Phosphorus' kiss kills the fire lily, but this death is also a beginning of consciousness in nature, for now the thought is born. A dragon appears out of the depths of the earth and captures the lily for himself. His power poisons the air and kills all flowers. The fight between the opposing nature forces begins at this stage, and Phosphorus wins.

Phosphorus' armor unites the elements of color and light, and the sound of this armor rejuvenates the flowers. It was believed at this time that sound can generate magnetic forces in metals, e.g. at the beginning of Klingsohr's

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12 Schubert proposed that plants that follow either threefold or sixfold symmetry belong to the highest class of flowers. Schubert's argument was not based on any model of evolution, but derived from the symbolism of flowers and numerology. The number three stands for the spiritual powers of the universe, and two represents duality. Combination of these two principles or their Potenzierung yields the number six.
Märchen the old hero Eisen beats his shield three times and begins the process of magnetic activation. In this case the dragon causes his own downfall by activating the armor of Phosphorus through the sound, and by liberating the forces of life. The nature myth continues later when the fire spirit Salamander falls in love with the green snake, who sleeps in the lily flower. The embrace of the spirit of fire destroys the green snake, and the anger and despair of the fire spirit devastate the land. Salamander is punished, sent down to the earth spirits, and finally appears among men as Archivarius Lindhorst.

The opposing series of nature spirits is formed by the earth, the dragon, and Liese Rauerin, who is a descendant of a feather from the dragon and an ordinary turnip. She is the personification of the negative principle because her power is associated with the knowledge of poisonous plants and black magic.

Alle die feindlichen Prinzipie, die in schädlichen Kräutern und giftigen Tieren wohnen, sammelt sie und erregt, sie mischend in günstiger Konstellation, manchen bösen Spuk, der des Menschen Sinne mit Grauen und Entsetzen befängt und ihn der Macht jenen Dämonen, die der Drache im Kampfe unterliegend erzeugte, unterwirft. (FNS, 231)

Lindhorst has to battle the old witch for the golden pot, and for the wisdom of the old pergaments, or the realm of poetry will be poisoned by the negative forces. In this
fantastic battle Lindhorst throws fire lilies from his dressing gown at the witch, who protects herself with old pergaments from Lindhorst’s library, and by throwing soil from the golden pot at him. Meanwhile Lindhorst’s assistant, the grey cockatoo, fights with the black tomcat, who is the familiar of the witch. Finally Lindhorst reveals his salamander nature:

Aber nun fuhren wie aus dem Innern des Archivarius flackernde zischende Strahlen auf die Alte. "Hei, hei! drauf und dran – Sieg dem Salamander!" dröhnte die Stimme des Archivarius durch das Zimmer, und hundert Blitze schlängelten sich in feurigen Kreisen um die kreischende Alte. (FNS, 244)

Battles between different representatives of the spirit world occur in many of Hoffmann’s fairy tales. In Klein Zaches there is a conflict between the magician Prosper Alpanus and the fairy Rosabelverde. Both demonstrate their powers during an afternoon tea party, but this contest does not destroy the fairy, who is not a representative of a negative force, but only a misguided female spirit. Her mistake is to grant protective magic to the miserable Zaches, whose being and actions are so different from the illusion of this magic that he becomes a negative force. Meister Alpanus and the fairy Rosabelverde are not diametrically opposed forces, although their past histories are quite different. Rosabelverde is a nature spirit, and Alpanus comes from the ancient lands of wisdom.
in the East. In Der Nußknacker und der Mäusekönig children's toys under the leadership of the Nutcracker battle the invading armies of mice. Dapsul von Zabelthau fights with the vegetable spirits in Die Königsbraut using kitchen utensils, but his magic cooking arts are not able to banish the carrot king.

Lindhorst's victory over the witch is also the liberation of Anselmus from the crystal bottle where he was confined after his temporary loss of faith in the realm of fantasy and imagination.

Ein Blitz zuckte durch das Innere des Anselmus, der herrliche Dreiklang der Kristallglocken ertönte stärker und mächtiger, als er ihn je vernommen – seine Fibern und Nerven erbebten – aber immer noch anschwellend dröhnte der Akkord durch das Zimmer, das Glas, welches den Anselmus umschlossen, zersprang und er stürzte in die Arme der holden lieblichen Serpentina. (FNS, 245)

Anselmus is liberated by the sound of the crystal bells, literally set free by music\textsuperscript{13}.

All the time Serpentina told Anselmus that he could reach Atlantis only if he had enough faith in this realm of art and enough love for her to leave behind the encumbrances of the narrow existence of everyday life. Glauben

\textsuperscript{13}Hoffmann here uses a scientific observation. If the sound frequency can find a resonance in a glass object, the resulting amplification of sound shatters the glass. In popular imagination this phenomenon is usually associated with a sustained high tone of an opera singer.
und Liebe are the words that embody the path to Atlantis. It could not be just a coincidence that Novalis' fragments dedicated to the Prussian king and queen had this title. The context in each case is entirely different: Novalis deals with an idealized patriarchal monarchy where the rulers act as an example for their subjects, while Hoffmann deals with the conditions that allow a poet to reach his subjective goals. Yet Novalis would also use these words to encourage those who lose their way in their quest for a reflection of the ideal in this world.

*Der goldne Topf* reflects many borrowings from Schubert’s *Ansichten*. Gradually there develops a distance between Schubert and Hoffmann. Motifs from Schubert’s *Ansichten* and *Symbolik* are still found in Hoffmann’s later stories and fairy tales, but ironic observations of the political and social scene overshadow the basic elements of romantic nature philosophy. This gradual distancing has much to do with the personalities and beliefs of the two men. Schubert is highly idealistic, religious, and rather naive in his view of natural phenomena and human nature. Although his view of nature is based on the principle of dynamic duality following Schelling, Schubert consistently

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14 Maria Tatar points out that Hoffmann read *Ansichten* between the drafts of this fairy tale. (Tatar, 220). Schubert’s view of nature changed Hoffmann’s conception of Anselmus and his adventures.
seeks the positive aspect of every problem. The "night side" of the sciences is for Schubert a mystical connection with higher levels of existence. All of the psychological and para-psychological phenomena are interpreted positively and the negative aspects are glossed over. Hoffmann is an idealist committed to the arts, but he is also a sceptic with a sharp eye for the danger that nocturnal sciences, especially the so-called animal magnetism, pose for susceptible natures. His professional life as a judge certainly exposed Hoffmann to negative sides of human nature.

Die Königsbraut: Return to the Real World

Die Königsbraut is one of the late fairy tales of E.T.A. Hoffmann. As in most of Hoffmann's fairy tales, the cardinal theme of the tale is the hero's path to self-discovery brought about by various encounters with the real world and the world of magic although in this case the reversal of values is highly ironic. While in Der goldne Topf Anselmus must choose between an ordinary life as a lawyer and an existence in the realm of poetry in Atlantis, in Die Königsbraut Amandus von Nebelstern returns to ordinary life from his extravagant and shallow preoccupation with poetry. Amandus appears late in the tale that circles around Annchen von Zabelthau, the chosen bride of
the vegetable gnome and carrot king Daucus Carota, and saves her from this grotesque fate. The tale follows a discussion by the Serapion’s brethren about their experiences at an “aesthetic” tea party. Ottmar describes some deliberately silly poems that he read at one literary party to expose the shallow enthusiasm of the participants. Vinzenz, who tells the tale of the carrot king’s bride, adds that Ottmar’s story provides a good introduction to his tale.

Denn irren müßte ich mich sehr, wenn solch ein überschwenglicher Poet nicht ein Hauptheld sein sollte in meinem Märchen, das ich nun ohne weiteres beginnen und nicht nachlassen will, bis das letzte Wort, das ebenso schwer zu schaffen als das erste, glücklich heraus ist. (SB, 944-5)

In this fairy tale, which describes the bizarre experiences of a bumbling astrologer and his practical daughter, Hoffmann again uses themes from Schubert’s romantic nature philosophy and combines them with folk beliefs about elementary spirits that live in nature. The direction that Hoffmann’s characters take in this tale are opposite to the trends that form the basis of Schubert’s concept of nature. Schubert’s interests were devoted to the aspirations of all things and all creatures to achieve a higher level of existence. Following Schelling and Schubert the highest calling in this life for the romantic hero is that of the artist or poet, who is able to suggest the
infinite in the finite and the ideal in the real. Amandus thinks he is a poet, but his poetry only suggests his foolish ineptitude and total lack of poetic sensibility.

The characters in *Die Königsbraut* are ordinary people with somewhat limited abilities, who find themselves in circumstances that confuse and threaten them. Only a fortunate series of accidents returns them to their normal existence in the cozy *Gemütlichkeit* of rural Germany.

The dangers to their peaceful existence in this tale are characterized by *Überschwänglichkeit*. This extravagance is found first of all in nature, in the excessively high fertility of the summer, which manifests itself in Ännchen’s vegetable garden. The relationship of Dapsul and Ännchen von Zabelthau is compared to a natural polar opposition, since Dapsul devotes all his time to the study of the insubstantial realms above the ground, and Ännchen deals with the everyday needs of an earthbound existence.

=Während nun Herr Dapsul von Zabelthau sich in seine astrologischen Beobachtungen und in andere mystische Dinge vertiefte, führte Fräulein Ännchen, da die alte Großtante gestorben, die Wirtschaft auf das beste, so daß wenn Dapsul dem Himmlischen nachträchtete, Ännchen mit Fleiß und Geschick das Irdische besorgte. (SB, 948-49) =

Dapsul von Zabelthau is a caricature of the magician figures that frequently appear in Hoffmann’s tales. He has the appropriate education for practicing the arts of magic,
since his teacher had been devoted to the occult sciences
and willed his entire library of arcana to Dapsul. After
travels in India and Egypt, the original sources of magic
and occult sciences, Dapsul returns home and isolates him-
self from the living world in his tower. There he can fol-
low the paths of the stars and planets, set up horoscopes,
and commune with the spirits of the air. According to
Schubert the atmosphere surrounding the earth is the medium
of communication with the sun, the planets, and the stars.
In part it is the region of death and metamorphosis for
many inorganic substances, which, after a series of chemi-
cal reactions, change to gaseous state and mingle with the
gases of the atmosphere; in part it also represents the
most intimate union of fluid substances as they move to the
world of the spirits. Dapsul von Zabelthau is neither the
exalted human being nor the powerful magician that he
should be if Hoffmann had faithfully followed Schubert's
highly idealized model of the atmosphere. Dapsul longs for
a closer contact with the spirits of the air, and a com-
munion with the sidereal forces, but his tower is not very
high, and the constant need for food still connects him
with the earth and its products. The unexpected confronta-
tion with the earth's spirits as animated vegetables shows
that his magic powers are very limited.

Amandus von Nebelstern, Ännchens intended, is away at
his university for the major part of the strange events at
Dapsulheim. At the university he has been influenced by superficial ideas about poetry and its significance in romantic philosophy. The narrator describes Amandus' involvement with poetry as follows:

Amandus war sonst ein heiterer unbefangener Jüngling, auf der Universität geriet er aber, Gott weiß wem in die Hände, der ihm nicht nur einbildete, er sei ein ungeheures poetisches Genie, sondern ihn auch verleitete, sich auf die Überschwenglichkeit zu legen. Das gelang ihm auch so gut, daß er sich in kurzer Zeit hinweggeschwungen hatte über alles, was schneide Prosaiker Verstand und Vernunft nennen, und noch dazu irrigerweise behaupten, daß beides mit der regesten Fantasie sehr wohl bestehen könne. (SB, 949)

Amandus' voice is introduced in the fairy tale in letters and poems dedicated to Annchen. These letters show the nature of a vain and pompous young man, who is preoccupied, or even hypnotized, by the excessive flow of words that constitute his poetry. For example:

Die Lieb ist Blumenduft, ein Sein ohn Unterlaß,
O Jüngling wasch den Pelz, doch mach ihn ja nicht naß!

Sagst du, im Winter weht frostiger Wind?
Warm sind doch Mäntel, wie Mäntel nun sind!

Amandus is very proud of these lines and adds:

Welche göttliche, erhabene, überschwengliche Maximen!

Und wie einfach, wie anspruchlos, wie körnicht ausgedrückt\(^1\) (SP, 976)

\(^{1}\) Notes to SB, p. 1119 indicate that these verses were intended as the literary output of the cat Murr. Obviously Amandus' ideals and poetic aspirations are not higher than those of the literary cat.
Her father's preoccupation with the secrets of the stars and Amandus' involvement with his poetry has deprived Annchen of any significant human contact. Normally devoted to the practical problems of her housekeeping, she has formed emotional ties to her vegetable garden. This excessive attention to gardening can be considered as a deliberately exaggerated aspect of Schubert's nature philosophy. In Schubert's world the female element is always associated with the plant kingdom, and the idealized woman is seen as a beautiful flower. Hoffmann places his realistic, and by no means idealized heroine in a common vegetable garden that responds to her devotion in an unexpected way.

In his Ansichten G.H. Schubert devotes the 8th lecture to the realm of plants and its practical purpose on earth. He compares it to an enormous kitchen that provides food for all living creatures. Even the carnivores depend on plants, since the animals they prey on grow and multiply due to the nourishment and energy they derive from plants. The cook, who works in this wonderful kitchen, requires only the most elementary ingredients, water, air, and inorganic substances to prepare many different foods.

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Sie haben es nun errathen was für eine Küche und was für ein Koch es sey, die wir besuchen wollen. Die Küche ist das Pflanzenreich, der Koch ist die vegetative Lebenskraft, welche all den buntfarbigen Blumen und Früchten der Gewächse ihre anmutige Gestalt und die Lieblichkeit des Geschmackes verleiht. (ANN, 129)

Vielen Thieren zwar dienen andere Thiere zur Nahrung, diese aber, die der Fleischfresser genießt, leben von Pflanzen, und die Thieren der Kräutergreifenden sind ungleich größer; die Pflanze dagegen, damit sie für alle diese Hungernden den Tisch versorge, bedarf keiner andern Vorarbeiten und keiner schon für die Thiere eßbar gewordener Stoffe, sondern sie nimmt das Wasser und die Kohle und kocht aus ihnen in reinlichen Gefäßen den Zucker des Obstes, den feurigen Wein, das milde Oel und das kräftig nährende Mehl. (ANN, 130)

The cook in Schubert's representation is the vegetative force that is present in every living organism. Each individual plant, therefore, is endowed by the creator with a soul that manifests itself as this force, "ein selbstständig inwührender Funke des Schöpfers, welcher den chaotischen Stoff zu neuen Schöpfungen treibt." There is an immediate connection to Schelling's concept of a world soul that is present everywhere in the universe. Hoffmann is interested neither in the chemical processes that produce nutritious materials in the plant kingdom nor in the philosophical implications of a vegetative force that guides these processes. His fairy tale deals with the conflict between human beings and elementary nature spirits appearing as animated inhabitants of an ordinary kitchen garden. Annchen is the cook and the natural force that
organizes this small realm. She cares for all living creatures in her household. Dapsul von Zabelthau uses cooking as a magic art when he leaves his tower to subdue the carrot subjects of Daucus Carota. He fails as a cook, just as he failed in all of his previous attempts to thwart the plans of the vegetable king.

Schubert speaks of the entire realm of plants as an entity that has a definite place in a dynamic but well-organized universe. Hoffmann portrays one particularly fruitful kitchen garden that reflects the everyday relationships between people and plants in a microcosm. This kitchen garden represents nature that is already civilized and organized to serve human needs. At the peak of maturity these neatly arranged rows of vegetables resemble an ornate parade ground. This regimented, excessively ordered nature is subjected to the same kind of absolutist rule as any German principality. Hoffmann seems to ask: "What happens if nature not only has a soul, but also imitates human social behavior in forming feudal societies?" When Schubert states that all plants acquire some elements of animal life at their peak of existence, which is the time of flowering and propagation, he defines these elements as limited motion, response to light, and communication with insects and with the atmosphere. All of these elements indicate a projected transition to the animal kingdom. In Hoffmann's
world of the fairy tale this striving for a higher level of existence is expressed in actions that reflect human society in a distorted mirror. These elementary spirits not only strive for a higher level of existence, they also desire a sexual union with humans. Here Hoffmann extends the concept of romantic nature philosophy that a loving relationship should unite man and nature into the realm of the grotesque. Schubert's depiction of polar forces in nature and their desire for a permanent union in sexual and emotional terms frequently borders on the overblown and bizarre. Hoffmann exaggerates this anthropomorphic view of sexuality in nature and combines it with mythology and folk beliefs. Dapsul, who has the closest connection with Schubert's views in this fairy tale, explains nature spirits to his daughter:

- Erfahre mein holdes mit Unwissenheit beglücktes Kind, daß die tiefe Erde, die Luft, das Wasser, das Feuer erfüllt ist mit geistigen Wesen höherer und doch wieder beschränkter Natur als die Menschen. Es scheint unnötig, dir, mein Dümmchen, die besondere Natur der Gnomen, Salamander, Sylphen und Undinen zu erklären, du würdest es nicht fassen können. Um dir die Gefahr anzudeuten, in der du vielleicht schwebst, ist es genug, dir zu sagen, daß diese Geister nach der Verbindung mit Menschen trachten, und da sie wohl wissen, daß die Menschen in der Regel solch eine Verbindung sehr scheuen, so bedienen sich die erwähnten Geister allerlei listige Mittel um den Menschen, dem sie ihre Gunst geschenkt, zu verlocken. (SB, 958)

Seduction by nature spirits is a popular motif in folk tales and indicate deep seated fear of nature and its
forces. In Hoffmann's tale *Die Königsbraut*, the danger of this kind of union is combined with a criticism of a society that develops grotesque forms of social conduct and reinforces false values. The figure of Daucus as a member of nobility exposes the follies of his class. When the carrot king actually comes to court Annchen, both father and daughter are tempted by this connection. Dapsul is impressed by Daucus' pretended connection to highly learned gnomes, and Annchen in her innocent vanity relishes the idea of being a queen. At first astrological signs are favorable, and the extraordinary fertility of the vegetable garden is in complete agreement with stellar configurations.

"Was die Gemüse betrifft, meine liebe Tochter, so weiß ich längst, daß die diesjährige Zusammenwirkung der Gestirne solchen Früchten besonders günstig ist und der irdische Mensch wird Kohl und Radiese und Kopfsalat genießen, damit der Erdstoff sich mehre und er das Feuer des Weltgeistes aushalte wie ein gut gekneteter Topf. (SB, 952)

Signs of danger appear in the horoscope that Dapsul has prepared for Amandus von Nebelstern.

Die Konstellationen sind sonst alle ziemlich günstig. Er hat den Jupiter im aufsteigenden Knoten, den die

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17Hoffmann composed an opera *Undine* with the text by his friend Friedrich Baron de la Motte Fouqué, that deals with the tragic love between a prince and a water spirit.
Venus im Gesechstsehein\textsuperscript{18} ansieht. Nur schneidet die Bahn des Sirius durch und gerade auf dem Durchschneidungspunkt steht eine große Gefahr, aus der er seine Braut rettet. Die Gefahr selbst ist unergründlich, da ein fremdartiges Wesen dazwischentritt, das jeder astrologischer Wissenschaft Trotz zu bieten scheint. (SB, 352)

Dapsul is not able to interpret this danger just as the nature scientists and astrologers, L\øvenhoek and Swammerdam, in Meister Floh are not able to interpret the horoscope of Peregrinus Tyß. This failure indicates that Dapsul as an astrologer has many shortcomings and human failings.

When Annchen has placed the magic ring from the carrot field on her finger, Dapsul attempts to negate the magic properties of this ring by magnetic treatment, but his occult knowledge again is inadequate. The finding of the ring is a significant contact with the world of earth spirits that precipitates the events of the tale.

As Dapsul himself had pointed out, these elementary spirits tend to use all kinds of deceitful means to tempt human beings. Annchen is tempted by the richness of her bridegroom's wonderful vegetable garden and by her future status as die Königsbraut among her neighbors. Dapsul is seduced by the carrot king's alias, Porphyrio von Ockerodastes, that connects him to a distinguished family of

\textsuperscript{18}This is an astrological term meaning that the two planets are separated by a sixth or sextile of zodiac. Zodiac circle has twelve segments. Anything separated by a third or a sixth is considered favorable.
elementary spirits, and by his interest in astrology and the secret arts of Kabbalah. Even more tempting is Porphyrio's promise to facilitate Dapsul's courtship of a sylph, a superior nature spirit who lives in the air. When Ännchen still refuses to marry her strange and very ugly suitor, Dapsul attempts to change her mind by praising the huge head of the gnome.


These lines are a parody of Schubert's views of the importance of the human head and its size in contrast to lower animals (AGL, 85). Dapsul von Zabelthau is an ironic figure of the fairy tale magician. He has neither the elementary force of Archivarius Lindhorst, nor the playful mastery of magic of Prosper Alpanus, who were both magicians with life histories going back to mythological time. Swammerdam and Leuwenhoek were also living beyond their normal life span and used physical phenomena for their narrow aims. Dapsul does not have any of these super-
natural powers, and although his battle with the ominous forces of the vegetable kingdom is just as colorful as Lindhorst's fight with the witch Rauerin, it does not have the same range and significance. Dapsul is limited everywhere by the constraints of an ordinary existence. Lindhorst's garden could suggest Atlantis to the poetic sensibilities of Anselmus; for all its abundance the garden in the golden tent of Daucus Carota remains a kitchen garden, and his vegetable courtiers serve only as extras in a theatrical pageant.

It was pointed out earlier that Hoffmann, the opera composer, indicates the true nature of his characters and their actions by the description of music that accompanies them. The music at the appearance of the vegetable procession is compared to loud noises that children make at Christmas time; there is something undeveloped and incomplete in this music. The performers themselves resemble a parade of toy soldiers. Poetic meter is used as a rhythmic display of acrobatics, that indicates the perversion of poetry in this underground realm.

Darauf klatschte der Baron (Daucus in disguise) in die Händchen und alsbald ging die gellende lärrende Kindermusik los, und über hundert kleine Herrlein, die den Kutschen und den Pferden entstiegen, tanzten wie erst der Kurrier zum Teil auf den Köpfen, dann wieder auf den Füßen, in den zierlichsten Trochäen, Spondäen, Jamben, Pyrrichien, Anapästen, Tribischen, Bachien, Antibachien, Choriamben und Daktylen, daß es eine Lust war. (SB, 964)
These animated figures from the realm of vegetables form a wonderful pageant and at the same time suggest the presence of something alien to human nature. All living beings in nature may have a soul, but the soul of a common vegetable may not be equal to a human soul. For Annchen intimate contact with the world of the plants also means a transition to a different life cycle, where a brief flowering and abundance in the garden is followed by a period of death and decay. On another level the temptation to enter a superficial court society where her simplicity and housewifely talents are out of place is a threat to Annchen’s identity.

The golden silk tent of the carrot king encloses a magic garden that surpasses anything that Annchen has seen. The enchantment of the garden is used to entice the practical Annchen, who is very proud of her kitchen garden.

Mit einem lauten: "Ach!" blieb Fräulein Annchen wie in den Boden gewurzelt stehen, als die Vorhänge des Einganges aufrollten und sich ihr die Aussicht eines unabsehbaren Gemüsegartens erschloß von solcher Herrlichkeit, wie sie auch in den schönsten Träumen von blühendem Kohl und Kraut, keinen jemals erblickt. Da grünte und blühte alles, was nur Kraut und Kohl und Rübe und Salat und Erbse und Bohne heißen mag, in funkelndem Schimmer und solcher Pracht, daß es gar nicht zu sagen. (SB, 973)

In this magical garden is assembled the entire retinue of vegetables:
Um diesen Thron waren die Großen des Reichs versammelt, die Salatprinzen mit den Bohnenprinzessinnen, die Gurkenherzöge mit dem Melonenfürsten an ihrer Spitze, die Kohlkopfminister, die Zwiebel- und Rüben generals, die Federkohldamen etc. alle in den glänzendsten Kleider ihres Ranges und Standes. Und dazwischen liefen wohl an hundert allerliebste Lavendel- und Fenchelpagen umher und verbreiteten süße Gerüche. (SB, 973)

Once Dapsul realizes that his daughter is engaged to the vegetable king, who belongs to a lower class of gnomes, he shows Ännchen the night side of the resplendent vegetable kingdom:

Hilf Himmel! was erblicke sie statt des schönen Gemüsegartens, statt der Karottengarde, der Plümagarden, der Lavendelpagen, der Salatprinzen und alles dessen was ihr so wunderbar herrlich erschienen war? - In einen tiefen Pfuhl sah sie hinab, der mit einem farblosen ekelhaften Schlamm gefüllt schien. Und in diesem Schlamm regte und bewegte sich allerlei häßliches Volk aus dem Schoß der Erde. Dicke Regenwürmer ringelten sich langsam durcheinander, während käferartige Tiere ihre kurzen Beine ausstreckend schwerfällig fort krochen. Auf ihrem Rücken trugen sie große Zwiebeln, die hatten aber häßliche menschliche Gesichter und grinsten und schilden sich an mit trüben gelben Augen und suchten sich mit den kleinen Krallen, die ihnen dicht an die Ohren gewachsen waren, bei den langen krummen Nasen zu packen und hinunterziehen in den Schlamm, während lange nackte Schnecken in ekelhaften Trägheit sich durcheinanderwältzten und ihre langen Hörner emporsteckten aus der Tiefe. (SB, 983-4)

This contrast between the muddy field and its slimy inhabitants and the pomp and ceremony of the great court assembly indicates that Hoffmann used figures from the kitchen garden to illustrate the dark side of court
society. While Schubert saw death and decay as a return to the original primal matter and a preparation for a new spiritual life, Hoffmann shows that there are many organisms and forces in nature that are threatening and repellent to human sensibilities. In Meister Floh he describes insects magnified by the lenses of Loewenhoek's invention that cause panic among the viewers. Here the creatures that live among the plants in the soil and remain there after the harvest cause revulsion. These aspects of nature are used in the guise of a fairy tale to expose the equally repellent forces in human society, where brief ceremonial displays provide a glittering facade diverting attention from the slimy creatures, who live in the shadows.

When Dapsul's valiant attempt to save Annchen from the marriage to the vegetable king fails, the poet hero Amandus von Nebelstern comes to the rescue. In a letter to Annchen Amandus had already promised to save his bride with the weapons of the poet. He follows the romantic spirit in defining these weapons.

- Des Dichters Schwer ist das Wort, der Gesang. Ich will meinen Nebenbuhlern auf den Leib fahren mit tyrällischen Schlachtliedern, ihn niederstoßen mit spitzen Epigrammen, ihn niederhauen mit Dithyramben voll Liebeswut – das sind die Waffen des echten wahren Dichters, die immerdar siegreich ihn sicherstellen gegen jeden Angriff, und so gewaffnet und gewappnet werde ich erscheinen und mir deine Hand erkämpfen o Anna! (SB, 977)
These promises are quite in line with Amandus' exalted views of his own abilities. Yet, when Daucus Carota offers him a position as a court poet, Amandus forgets all about the poetic duel for Annchen's hand. The temptation by the earth spirit finds the weakness of the pompous poet.

Performing his duties as the court poet Amandus eventually conquers his rival Daucus Carota with the weapons of his painfully bad poetry. His rescue of Annchen is a delicious parody of the Orphic power of song. In romantic philosophy this power is allotted the highest role in all human endeavors. The spirit of poetry in the figure of Fabel brings together separate parts of existence in *Klingsohrs Märchen* and energizes both nature and humanity to build the new golden age. The poet is the mediator between the real world and the ideal, the prophet of the coming golden age. Against these lofty ideals Hoffmann sets the bad, pretentious poetry produced by a young man, who follows the fashion of the time and writes poetry without understanding either the essence of poetic expression or himself. In *Die Königsbraut* Hoffmann plays with the idea that bad poetry might be the necessary weapon to combat the pretensions of the vegetable king, who is powerful but not quite human. As we saw earlier in *Der goldne Topf* Lindhorst defends the golden pot and Atlantis in a duel with Liese Rauerin, who is a daughter of a dragon feather and a
turnip. She even changes into a turnip after losing the battle with the prince of Salamanders. In this battle she represents the negative principle. As another root vegetable Daucus Carota also belongs to this negative underground realm. Distant Atlantis is the land of true poetry, and Daucus Carota might not be affected by truly great poetry, because this realm is foreign to his existence. The gymnastics that Daucus' attendants perform to poetic meter and the loud music that accompanies his grand entrances indicate that poetry is a mere parade exercise in his realm. In the narrow confines of Annchen's kitchen garden Amandus' endless and awful performance as the new court poet gradually saps the strength of his royal rival, who leaves his bride and disappears in the earth.

The happy ending of this fairy tale is similar to the traditional ending of a comedy or an opera buffa, where conflicts are resolved, all danger to the young lovers is averted and everybody is supposed to live happily ever after. That this happy ending is the result of the destructive power of atrocious poetry and an accidental hit on the head with a spade indicates that in this tale Hoffmann played with protagonists who belong neither entirely to a primitive earthly existence of vegetables nor to the heights of artistic intoxication. Their errors are exposed and equilibrium is restored.
Meister Floh: Synthesis of Real and Ideal

Meister Floh is Hoffmann's last fairy tale. Like Der goldne Topf it is still a story of a young man's erratic way to self-discovery and to his appropriate position in life. Peregrinus Tyß is a pilgrim in search of something indefinite that would change his life, but somehow his search has been interrupted. He has the childlike soul that was so important for Anselmus in his quest for Serpentina and the golden pot, but in Peregrinus this quality has become a wall that isolates him from the world and from life. When Peregrinus returns to Frankfurt after his parents' death, he withdraws from active life, assumes the role of a dutiful child, and, at the age of thirty-six, spends his time with childish toys and games. His entire life is ordered around ritual performances of celebrating the same holidays that were important in his childhood: his parents' birthdays, his own baptism, and especially Christmas. Peregrinus finds that his natural tendencies are incompatible with real life. Therefore, childhood becomes a refuge, and he reenacts his memories of that time over and over again. His charitable distribution of the food prepared for these holidays and the presents that he has bought for himself to the poor people of the city is necessitated by this ritual performance, not by true generosity.
Suddenly on a Christmas Eve Dörtje Elwerdink and Meister Floh enter his life, and along with them many strange characters, who belong partly to his present life in Frankfurt and partly to the realm of fairy tale magic. Peregrinus is aware neither of the constellation of circumstances that projects him into the world of magic nor of his past history in a mythical nature realm. The fairy tale shifts between different levels of perception until Peregrinus discovers love and himself. One aspect is the change of perception provided by optical lenses that allow us to see distant heavenly bodies or minute organisms in a tiny drop of water. Hoffmann compares the exploration of minute creatures and objects that can be seen only under a microscope to similar explorations of people’s hidden thoughts. Meister Floh comes from the microscopic world and becomes a special guide to the naive Peregrinus, who must break out of his repetitive cycle of childhood experiences and become an adult. The optical images used in this growing process indicate the importance of extended sense perceptions during this period of change and also the necessity of returning to human dimensions in real life.

The fairy tale magic also surrounds a beautiful young girl, Dörtje Elwerdink, and an old friend of Peregrinus,
George Pepusch\textsuperscript{18}. They both seem to have special connections to each other and to Peregrinus that go back to an earlier mythical existence. These relationships are gradually revealed as the story unfolds. Practically all characters in this tale have different levels of existence. They participate in the fairy tale world set in the Orient and have distinct bourgeois roles in Frankfurt. These Schubertian nature myths are contrasted with the pseudo-scientific activities of two Dutch natural scientists, Leuwenhoek and Swammerdam\textsuperscript{20}, who fight for the control of Meister Floh and the little Dörtje, who is actually Princess Gamaeh.

Princess Gamaeh has a very complicated history. She had lost consciousness after a long kiss from the Prince of Leeches and been carried away by Genius Thetel to Samarkand. Leuwenhoek tells George Pepusch how the two microscopists found the princess again.

\textit{Mein Kollege hatte durch einen wissenschaftlichen Freund aus Samarkand die schönsten und seltensten Tul-}

\textsuperscript{18} George Pepusch was named after a composer and writer (1667-1752). He composed The Beggars Opera, text by John Gay, which later provided the plot for Brecht's \textit{Dreigroschenoper}.

\textsuperscript{20} Antony van Leeuwenhoek (1632-1723) was a Dutch zoologist, who developed better microscopes and accurately described blood corpuscles.

Jan Swammerdam (1637-1680), had observed blood corpuscles before Leeuwenhoek, but had not published his results. Best known for his compendium on the anatomy of insects, \textit{Biblia Naturae}. 
pen und so vollkommen frisch erhalten, als seien sie
eben vom Stengel geschnitten. Es war ihm vorzüglich um
die mikroskopische Untersuchung der innern Teile und
zwar des Blumenstaubes zu tun. Er zergliederte deshalb
eine schöne lila und gelb gefärbte Tulpe, und ent-
deckte mitten in dem Kelch ein kleines fremdartiges
Körnlein, welches ihm auffiel in ganz besonderer
Weise. (SW, 705)

Some elements in this discussion come definitely from
Schubert’s Abhandlungen. Schubert states there (AGL I, 180-1)
that pollen already contains the complete germ of the new
organism of the plant, and the female parts of the plant
only provide a place where this minute organism can unfold.
Tulips have a natural association with Holland; they also
have a six-fold symmetry that for Schubert was a sign of
completeness and advanced development. The two scientists
want to explore this tulip under the microscope, and in the
process they find something magical: princess Gamaheh among
the pollen grains of the tulip. They decide to bring her
back to life using their scientific skills. In Novalis’
Klingsohrs Märchen the sleeping princess Freya was awakened
through a complex galvanic process; Hoffmann’s micro-
scopists use the science of optics and a manipulation of
images to reconstruct princess Gamaheh. Leuwenhoek explains
how the tiny pollen grain was transformed into Dörtje
Elwerdink.

Da Ihr, Freund Pepusch, sehr wenig, eigentlich gar
nichts von unserer Kunst verstehet, so würde es höchst
überflüssig sein, Euch die verschiedenen Operationen

In contrast to Novalis' fairy tale, where the awakening of Freya by Eros signifies the beginning of a new life free from the influences of time and death, Hoffmann's scientists attempt to work against the laws of nature for selfish purposes. They want to create a living organism out of the tiny pollen grain. Following their logic, they enlarge the minute image to the size of a normal girl and project her image on the wall. This is the same process that we use to project our holiday slides, or, as an even better approximation to life, to project moving images from photographic film. Their experiment is not entirely successful, since the princess' blood stops circulating at the spot where the Prince of Leeches kissed her. Leuwenhoek

²¹The sun microscope mentioned here uses sun as its light source. Strong artificial light sources were not available in Hoffmann's lifetime.
says that a small black point appeared at this spot and the princess was revived. He does not tell Pepusch that this black spot was Meister Floh, who kissed the princess. In Klingschors Märchen Eros kissed the princess to complete the process of awakening. Here as a parody of the traditional fairy tale it is Meister Floh, who provides the erotic stimulus on a microscopic scale. This kiss is not sufficiently powerful to restore the princess to life permanently, rather its effects are also microscopic like Meister Floh himself. The princess now becomes Dörtje Elwerdink, who requires repeated flea bites in order to live. For this reason she uses all her seductive powers to find Meister Floh after he has taken refuge with Peregrinus. The scientists are only interested in the possession of the princess and of Meister Floh, i.e. they are only interested in exploiting nature and the secrets of the microscopic world. Control of Meister Floh means control over the labor performed by the fleas in Loewenhoek’s flea circus. They are forced to perform unnatural feats for the amusement of the people; another perversion of nature. The princess they have created is an optical projection, an unnatural being, and Hoffmann gives a few hints about her slightly sinister nature in several places. During the first meeting of Peregrinus and Dörtje on Christmas Eve the narrator notes:
Later the microscopist Leuwenhoek explains to Peregrinus that he alone, as the reincarnation of the fairy tale king Sekakis, has the talisman that can restore Dörtje to life as the true princess Gamaheh.

Although Leuwenhoek has prepared Peregrinus' horoscope, he cannot explain what must occur before Peregrinus discovers his talisman. This magic event is Peregrinus' genuine love for Röschens Lämmerhirt. The two Dutch scientists cannot explain this part of the horoscope because they themselves live on as shadows beyond the grave. Their emotions are limited to hate and to the drive for power. Before Peregrinus discovers his true love and
his own true identity, he is strongly attracted to Dörtje but he also senses something uncanny in her presence. In this progression from the capricious Dörtje to the loving Rüschen Peregrinus has learned to distinguish between true love and a passing intoxication. His attraction to Dörtje is comparable to an adolescent’s attraction to the virtual image of a movie star.

Die Kleine, wiederum in das fabelhafte verführerische Gewand von Silberzindel gekleidet, war eben so anmutig, ebenso ganz Liebreiz als sonst; Peregrinus fühlte sich durchströmt von der elektrischen Wärme ihres Leibes und doch wehten ihn dazwischen eiskalte unheimliche Schauer an, wie Todeshauch. Zum erstenmal glaubte er tief in den Augen der Kleinen etwas seltsam Lebloses, Starres zu gewahren und der Ton ihrer Stimme, ja selbst das Rauschen des wunderlichen Silberzindels, schien ein fremdartiges Wesen zu verraten, dem nimmermehr zu trauen. (SW, 794-5)

That Hoffmann was preoccupied with optics and the resulting extension of visual perceptions concerning very large and very small objects is clearly demonstrated by numerous references in his works to lenses, glasses, and various optical instruments. This extension of the normal visual range is transformed in the realm of magic to operations beyond the limits of vision, as in the enlargement of the image of princess Ganaheh, or the reading of people’s

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22 This attraction is connected to Peregrinus’ belated sexual awakening. The figures of the fairy tale represent different aspects of love. These aspects are discussed by Gisela Vitt-Maucher, 157-80.
thoughts through the magical lens of Meister Floh. Another recurring motif in Hoffmann’s works is the automat, or the machine that duplicates some attributes of a human being. The mechanical doll Olympia from the story *Der Sandmann* is the best example of this artificial creation\(^{23}\).

Both Leuwenhoek and Swammerdam use their lenses as weapons and even as instruments of torture. Peregrinus finds Leuwenhoek in his house attempting to force Dörtje out of Swammerdam’s room.

Ein Mann stand in der Mitte des Flurs und sah durch ein seltsam geformtes Glas unverwandten Blickes nach Herrn Swammers Stubentüre. Auf dieser Türe spielten aber sonnenhelle Kreise in Regenbogenfarben, fuhren zusammen in einen feurig glühenden Punkt der durch die Türe zu dringen schien. Sowie dies geschehen, vernahm man ein dumpfes Ächzen von Schmerzenslauten unterbrochen, das aus dem Zimmer zu kommen schien.

Zu seinem Entsetzen glaubte Herr Peregrinus Gamahehs Stimme zu erkennen.
"Was wollen Sie? was treiben Sie hier?" So fuhr Peregrinus auf den Mann los, der wirklich Teufelskünste zu treiben schien, indem stets rascher, stets feuriger die Regenbogenkreise spielten, stets glühender der Punkt hineinfuhr, stets schmerzlicher die Jammerlaute aus dem Zimmer ertönten. (SW, 744)

The real Leuwenhoek contributed to the investigation of the properties of lenses and to the scientific development of optics. He was also a natural scientist who set out

\(^{23}\) The rapid increase of scientific discoveries at the beginning of the 19th century prompted many literary speculations about artificial creation of life. Probably the best known literary example of an artificially constructed human being during this period is Mary Shelley’s Frankenstein’s monster (1818).
to explore objects that were too small to be investigated by ordinary means. In Meister Elop Hoffmann shows Leuwenhoek and his fellow natural scientist Swammerdam as spooky specters caught up in the mechanics of their own discoveries. Novalis viewed scientific discoveries in an essentially positive way: if the scientist preserved a close emotional relationship with nature and was able to find the poetic links between different phenomena, then this interaction benefitted both scientist and nature. In Meister Elop Hoffmann shows what happens when a scientist treats other life forms as objects and chooses to exploit his discoveries as a means to gain power and control of others. Throughout the history of the human race new discoveries have been used for war and destruction. Leuwenhoek’s “devilish arts” follow this pattern. He simply attempts to focus a beam of light on Swammer’s door as indicated by the circles of the rainbow produced by the lens and by the glowing focus of the concentrated beam. In the 18th century it was fashionable to conduct experiments with optical lenses and projection of images. Chemists even used lenses to focus sunlight on closed glass vessels to ignite flammable mixtures. Leuwenhoek’s focused beam is used to burn and cause pain. Since Dörtje is only a projected image, a focused beam of light can destroy her. In a similar fashion Leuwenhoek and Swammerdam even engage in a duel using tele-
scopes; now the lenses of their weapons enlarge and focus their malevolent glances instead of light beams.

Swammerdam zog dies gewahrend ein kleines Fernglas aus der Tasche, schob es lang aus und ging dem Feinde zu Leibe indem er laut rief: "Zieh Verdammter, wenn Du Courage hast!"
(SW, 746)

In this duel telescopes are used to emphasize the grotesque nature of the microscopists' quarrel. Their malevolent glances are magnified by means of telescopic lenses to increase their power. They become flying objects in this fantastic duel. When George Pepusch separates the two combatants at the beginning of another fight he must actually box with these looks.

George Pepusch warf sich zwischen die Kämpfenden und indem er einen mörderischen Blick Leuwenhoeks, der den Gegner zu Boden gestreckt haben würde, geschickt mit

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24Wulf Segebrecht argues that Streichen should be replaced by Blicken, an image that fits better in the general context. Gisela Vitt-Maucher agrees with this argument; Ch. 8, note 49.
der linken Faust weggeschlug, drückte er mit der rechten
die Waffe, womit der Swammerdam sich ebenblickfertig
ausgelegt hatte, hinab, so daß sie den Leuwenhoek
nicht verwunden konnte. (SW, 783)

This duel of the microscopists, like the other battles
in Hoffmann’s fairy tales, is a lively, humorous caricature
of the competition in nature and society that frequently
leads to ridiculous extremes. Leuwenhoek and Swammerdam
were astrologers in the fairy tale realm long ago; they can
read the paths of the stars and set up Peregrinus’ horo-
scope, but they are not able to interpret it. The talisman
that dominates Peregrinus chart is a symbol of love, an
emotion entirely foreign to these two scientists. For this
reason all their experiments with optical instruments are a
futile play that never could discover the secret of life.
That is the judgement of Peregrinus in his incarnation as
the King Sekakis when he has discovered the power of the
magic carbuncle in his breast.

Aber ihr arme Betörten, unglücklicher Swammerdam,
beklagenswerter Leuwenhoek, euer ganzes Leben war ein
unaufhörlicher ununterbrochener Irrtum. Ihr trachtet
die Natur zu erforschen, ohne die Bedeutung ihres
innersten Wesens zu ahnen.
Ihr wagtet es, einzudringen in ihre Werkstatt und ihre
geheimnisvolle Arbeit belauschen zu wollen, während,
daß es euch gelingen werde, ungestraft die furchtbaren
Geheimnisse jener Untiefen, die dem menschlichen Auge
unerforschlich, zu erschauen. Euer Herz blieb tot und
starr, niemals hat die wahrhaftige Liebe euer Wesen
entzündet, niemals haben die Blumen, die bunten
leichtgeflügelten Insekten, zu euch gesprochen mit
sußen Worten. Ihr glaubtet die hohen heiligen Wunder
der Natur in frommer Bewunderung und Andacht anzu-
This paragraph expresses Hoffmann's own attitude towards science and scientific experiment. The two microscopists were acting like curious children in their exploration of living organisms in the microscopic world. Their transgression is the absence of love and lack of compassion for the creatures they view through their lenses. This reaction is aimed not only towards the sciences, but also against the prevalent ideas of the Enlightenment. Hoffmann warns of the dangers of extreme rationalism and of technical misuse of scientific discoveries if the rational plans for exploitation of nature are not controlled by moral principles. There are also echoes from Lehrlinge zu Saig, where Novalis compares poets and scientists and their interactions with nature.

Naturforscher and Dichter haben durch eine Sprache sich immer wie ein Volk gezeigt. Was jene im Ganzen sammelten und in großen geordneten Massen aufstellten, haben diese für menschliche Herzen zur täglichen Nahrung und Notdurft verarbeitet, und jene unermeßliche Natur zu mannigfaltigen, kleinen, gefälligen Naturen zersplittert und gebildet. Wenn diese mehr das Flüssige und Flüchtige mit leichtem Sinn verfolgten, suchten jene mit scharfen Messerschnitten den innern Bau und die Verhältnisse der Glieder zu erschauen. Unter ihren Händen starb die freundliche Natur, und ließ nur tote, zuckende Reste zurück,...(RS I, 84)
Hoffmann follows the general trend of Novalis' thoughts about nature and its relationship with the human race. He states that there are certain limits in scientific explorations, that should not be crossed. These limits are determined by reverence for life in all of its manifestations. Exploitation of nature's secrets without any regard for the consequences endangers nature and reciprocally humanity itself. These dangers increase once the human dimensions are left behind in the exploration of the microscopic world, which had been the life effort of Leuwenhoek and Swammerdam. It is much easier to view nature and its organisms as mere objects in the microscope. There is much beauty in the realm of minute creatures, but many of them inspire fear and horror if they are enlarged to human dimensions, e.g. Pepusch's experience at Leuwenhoek's flea circus, when Leuwenhoek projects images from his microscope in the room.

Alles lebte darin, ein ekelhaftes Gewirr der schaurigsthen Kreaturen erfüllte den ganzen Raum. Das Geschlecht der Pucerons, der Käfer, der Spinnen, der Schlammtiere bis zum Übermaß vergrößert streckte seine Rüssel aus, schritt daher auf hohen haarichten Beinen, und die greulichen Ameisenräuber faßten, zerquetschten mit ihren zackichten Zangen die Schnacken, die sich wehrten und um sich schlugen mit langen Flügeln, und dazwischen wandten sich Essigschlangen, Kleisteraale, hundertarmichte Polypen durcheinander und aus allen Zwischenräumen kuckten Infusionstiere mit verzerrten menschlichen Gesichtern. (SW, 700)
Hoffmann realized that this aspect of the horrible in the appearance of tiny insects when magnified to human scale is based on fear of the bizarre and unusual. Insects magnified to human or superhuman scale are still favorite subjects for horror movies. Leuwenhoek and Swammerdam in Hoffmann’s portrayal also belong to the creatures of a horror movie, mad scientists following their arcane experiments living on as shadows long after their natural life span.

Peregrinus learns much more from Meister Floh, who is just an insect but has more wisdom and insight than the scientists. He is a mediator between the human and the microscopic world. His personality is an ambiguous combination of wisdom of the microscopic fairy tale world and irritation that fleas cause in real life. His special lens, which had caused so much enmity between Leuwenhoek and Swammerdam, teaches Peregrinus the difference between people’s words and thoughts. This lens can penetrate through the eye and optical nerve into the brain itself:

Hinter der Hornhaut von Herrn Swammers Augen gewährte er seltsame Nerven und Äste, deren wunderlich ver-

\[25\] According to Schubert birds and insects live in the atmosphere and are able to communicate with the higher forces coming from the heavenly bodies. Meister Floh belongs to that race of insects, which lives in the closest association with humanity.

\[26\] The race of fleas, according to Meister Floh has the freedom to roam, and this freedom usually has erotic connotation. Vitt-Haucher, 160.
kreuzten Gang er bis tief ins Gehirn zu verfolgen und zu erkennen vermochte, daß es Swammers Gedanken waren. (SW, 733)

When Peregrinus observes the sleeping Gamaeh he sees the thoughts of dream:

So wie immer erblickte Peregrinus hinter der Hornhaut der Augen das seltsame Geflecht der Nerven und Adern, die bis in das tiefe Gehirn gingen. Aber durch dies Geflecht schlangen sich hell blinkende Silberfaden, wohl hundertmal dünner als die Faden des dünntesten Spinngewebes und eben diese Faden, die endlos zu sein schienen, da sie sich hinausrankten aus dem Gehirn in ein selbst dem mikroskopischem Auge unentdeckbares Etwas, verwirrten, vielleicht Gedanken sublimerer Art, die andern von leichter zu erfassenden Gattung. Peregrinus gewahrte bunt durcheinander Blumen die sich zu Menschen gestalteten, dann wieder Menschen die in die Erde zerflossen und dann als Steine, Metalle hervorblinckten. Und dazwischen bewegten sich allerlei seltsame Tiere, die sich unzähllichemal verwandelten und wunderbare Sprachen redeten. Keine Erscheinung paßte zu der andern und in der bangen Klage brustzerreiβender Wehmut, die durch die Luft ertönte, schien sich die Dissonanz der Erscheinungen auszusprechen. Doch eben diese Dissonanz verherrlichte nur noch mehr die tiefe Grundharmonie die siegend hervorbrach, und alles was entzweit geschiene vereinigte zu ewiger namenloser Lust. (SW, 749)

Here Hoffmann returns to themes of romantic nature philosophy. The anatomical structure of nerves and blood vessels in Gamaeh's brain is interwoven with a tissue of silvery filaments. Images of dreams reflect the past history of Gamaeh as the beautiful tulip and the history of figures surrounding her. These dream figures are changing from flowers to human beings and again to stones and metals that are buried in the earth in a cycle of metamorphosis
and rebirth. The seemingly chaotic movement and transformations of the dream images suggest the distant past as an age of the fairy tale, when all of nature's creations spoke the same language. The transparency of these images is similar to Novalis' evocations of the lost age of harmony in *Lehrlinge zu Sais*. There is also a close relationship to the visionary dreams of Heinrich von Ofterdingen and to the performance that Eros watches in the dream world of the moon in *Klingsöhrs Märchen*. Peregrinus' ability to read the symbolic language of dreams indicates his special receptivity to spiritual elements. In dreams the capricious and selfish Dörtje returns to her existence as princess Gamaheh. Dreams provide the medium where the real world and the spiritual world are intertwined as the silver threads around the brain cells of the sleeping Dörtje. Dreams reveal that change and increased diversity in a nature subjected to the forces of duality cause discord in the symphony of nature. But even these dissonances of the manifold transformations contribute to the basic harmony of creation. For Hoffmann this harmony is always expressed in music.

This unique opportunity to perceive the language of dreams is not repeated in Peregrinus' experience with the miraculous lens. He learns to observe the contrast between people's words and their thoughts and to interpret the com-
mon polite phrases that are constantly used to cover unpleasant truth. Peregrinus becomes used to this
duplicity, but he is genuinely puzzled by the thoughts of young poets and refined ladies, who claim to have deep insight in philosophical and social questions.

Kam es dem Peregrinus wunderbar vor, daß die Silber-
fasen aus Gamahehs Gehirn herausrannten in ein unentdeckbares Etwas, so erstaunte er nicht weniger darüber was er im Gehirn der erwähnten Leute wahrnahm. Er sah zwar das seltsame Geflecht von Adern und Nerven, bemerkte aber zugleich, daß diese, gerade wenn die Leute über Kunst und Wissenschaft, über die Tendenzen des höhern Lebens überhaupt ganz ausnehmend sprachen, gar nicht eindrangten in die Tiefe des Gehirns, sondern wieder zurückwuchsen, so daß von deutlicher Erkennung der Gedanken gar nicht die Rede sein konnte. ... Meister Floh meinte, daß das, was Peregrinus für Gedanken halte gar keine wären sondern nur Worte die sich vergeblich mühten Gedanken zu weden. (SW, 758-9)

Hoffmann’s dislike for literary teas and other cultural social gatherings is well known. (SB, 942-5) His perception of empty posturing and trite conversations was sharply satirical and provided the necessary contrast to the romantic longings of his poet heroes. Meister Floh and his magical lens enable Peregrinus to distinguish the difference between appearance and reality, between thought and pretense. The optical lenses of Leuwenhoek and Swammerdam only extend the physical range of vision without similarly extending psychological insight and understanding.

The symbolism of love/death is a recurrent theme in Schubert’s work. He sees in the moments of creation and
subsequent death the anticipation of an existence on a higher level. For plants it means an approach to life in the animal kingdom. Plants have a special significance in Schubert's world since they represent a group of organisms that are constantly striving for communication with the atmosphere and with the sun. A flower turned towards the sun is a symbol of this general tendency.

In diesen endlich entfaltet sich der selbstständige Gegensatz am vollkommendsten, und zugleich beginnt mit seiner höchsten Entwicklung der höchste Augenblick des Pflanzenlebens, der höchste Genuss derselben. Zugleich erhebt sich auch die Pflanze in ihren Blüthen am meisten vom Boden, sie entfaltet ihren Fittig, und schwebt schon fast frei in den Lüften (AGL I, 73-74)

In Meister Floh both George Pepusch and Dörtje Elwer-dink existed as flowers in the distant past. Dörtje is also the Princess Gamaheh, a daughter of the Queen of Flowers and the King Sekakis. In her flower form she is a tulip. At first George has only an indistinct memory of an existence when he knew Dörtje in another form. As Leuwenhoek relates to George the history of princess Gamaheh, George realizes that he himself had a significant role in this history as the thistle Zeherit.

"Vernehmt, was Ihr längst erkennen müßtet, wäre es, außer dem was die Glasschleiferei betrifft, mit Euer Wissenschaft nicht so schlecht bestellt, vernehmt, daß ich selbst die Distel Zeherit bin, welche dort stand, wo die Prinzessin Gamaheh ihr Haupt niedergelegt hatte, und von der Ihr gänzlich zu schweigen für gut gefunden habt."
"Pepusch", rief der Flohändiger, "seid Ihr bei Sinnigen? Die Distel Zeherit blüht im fernen Indien und zwar in dem schönen von hohen Bergen umschlossenen Tale, wo sich zuweilen die weisesten Magier der Erde zu versammeln pflegen. Der Archivarius Lindhorst kann Euch darüber am besten belehren." (SW, 707)

The land of the fairy tale is the distant Orient: Famagusta, Samarkand and India are the places where the protagonists of the tale have met in their fairy tale existence. Unlike Peregrinus George Pepusch is conscious of this earlier existence and passionately seeks the love of Gamaheh in the person of the capricious Dörtje. He blames the interference of Genius Thetel and the microscopists for the plight of the princess. They have interrupted the natural cycle of death and rebirth in the life of flowers.

Bloß der Genius Thetel, der sich in die Dinge mischte, die ihn nichts angingen, ist daran schuld, daß die Prinzessin so lange im Blumenschlaf liegen mußte; die Distel Zeherit erwachte viel früher. Denn beider Tod war nur die Betäubung des Blumenschlafes, aus der sie ins Leben zurückkehren durften, wiewohl in anderer Gestalt. (SW, 708)

They cannot find each other, because their fate is linked to that of Peregrinus. When Peregrinus’ love for Röschchen leads him to an understanding of his true self and of the power of love, George and Dörtje also discover their true personalities.

Peregrinus erkannte sich selbst, er fühlte, daß der zum Leben entzündete Karfunkel glühe in seiner eigenen Brust. (SW, 809)
In a dream state Peregrinus sees himself as the King Sekakis, who is judging all the participants in the tale. Those who have no love in their hearts are punished or destroyed. Gamaheh and Zeherit are given a new life, where they can follow their destiny as flowers.


In the same dream Peregrinus is united with Röschen, whose name indicates that she is certainly the reincarnation of the rose, the Queen of the Flowers, whom King Sekakis loved in the realm of fairy tale.

Doch o Wunder, in demselben Augenblick lag auch Röschen in hoher unbeschreiblicher Anmut holder Jungfräulichkeit prangend, überstrahlt von dem Glanz der reinsten Liebe, wie ein Cherub des Himmels, an Peregrinus' Busen. (SW, 812)

This discovery of the true self in a dream is reminiscent of the reunion of Hyazinth and Rosenblütchen in
Novalis' *Lehrlinge zu Sais*, where the secret of the veiled goddess is revealed as a union in love.

Es dünkte ihm alles so bekannt und doch in nie gesehener Herrlichkeit, da schwand auch der letzte irdische Anflug, wie in Luft verzehrt, und er stand vor der himmlischer Jungfrau, da hob er den leichten glänzenden Schleier, und Rosenblütchen sank in seine Arme. (NS 1, 95)

Both Dörtje and George disappear on their wedding night. At midnight the scent of blooming Cactus Grandiflorus penetrates Peregrinus’ house and the entire garden.


At the end of the fairy tale the conflicts and misunderstandings are resolved. Peregrinus is finally able to discover the nature of the magical carbuncle that he was not able to find in his fairy tale existence as King Sekakis. Love for Röschen is the event that allows the magical carbuncle to become a radiant source of light and
to illuminate Peregrinus' purpose in life. Unlike Anselmus
Peregrinus does not leave real life for an existence in
poetical Atlantis. The magic of the fairy tale has become
part of his soul, and he is able to unite the real and the
spiritual in this life. The magical carbuncle itself is a
reference to Novalis' Atlantis tale, where the young poet
also finds a magical stone.

For George and Dörtje their death as flowers
represents a culmination of their present existence. Their
love is a mystical union with the universe that signifies
death in the real world and a transition to another form of
life.

The fate of these two pairs of lovers seems to follow
the dual path that Schubert suggested in Ansichten.

Es scheint, daß in jenem Wesen zwei verschiedene und
öfters entgegengesetzte Naturen sich berühren: das
jetzige Daseyn, das sich in allen seinen Bestrebungen
vollkommen ausspricht und sich völlig zu vollenden
vermag, und außer diesem noch in bald deutlichen, bald
minder deutlichen Spuren ein Streben, welches in dem
jetzigen Daseyn ohne Erfüllung bleiben muß, wohl aber
in einem künftigen seine Ergänzung finden wird.
(ANÜ, 188)

Peregrinus and Röschen belong to the present existence
enriched by mythical past. They will fulfill their
destinies in a loving and harmonious relationship. George
and Dörtje are destined to sink in the sleep of the flowers
and fulfill the destiny that was violently interrupted by
the Prince of Leeches.
Hoffmann suggests a possibility of reincarnation for this pair of lovers. After all Pepusch went through many reincarnations before he found his Princess Gamaheh. Although Schubert often uses the love/death of flowers as a metaphor for one of life's cosmic moments, i.e. a contact with a higher level of existence, it does not mean that Hoffmann values love that finds its culmination in death higher than the realized love of Peregrinus and Röschen. Peregrinus discovers the magic jewel in his heart, and the radiance of this stone ignited by love illuminates both Dörtje and George.

It is frequently asserted that Der goldne Topf is the best of all fairy tales that Hoffmann wrote during his relatively short career as a writer. It portrays the oscillation between the ordinary life in Dresden and the magic of the fairy tale better than many of the later tales. This tale still follows the romantic tradition established by the Jena romantics concerning the relationship between nature and man and continued in a somewhat

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27 H. A. Korff suggests that the love/death of George and Dörtje should not be regarded higher than the realized love of Peregrinus and Röschen. (Korff IV, 630-1)

28 At this time there was a lively interest in Eastern philosophy and religion. Many people believed that the original source of ancient wisdom was found in India. Fr. Schlegel's book Über die Sprache und Weisheit der Inden (1808) attracted considerable attention among the romantics.
modified fashion by G. H. Schubert. Schubert's presentation of the romantic nature philosophy has many faults, yet it expresses in poetic language many of the ideas that were earlier developed by Schelling, Novalis and the Schlegel brothers. If Novalis devotes most of his literary and philosophical work to the formation of a synthesis between various diverse, and sometimes diametrically opposite, elements in nature and human existence, then Schubert following Schelling places more stress on the principle of duality that is at the basis of any dynamic activity in nature or in human society. This principle of duality finds its literary expression in Hoffmann's fairy tales. Der goldne Topf demonstrates it very clearly, since at this time Hoffmann was very strongly influenced by Schubert's writings, especially Ansichten, and his concept of nature and of spirits that are present everywhere in nature is very close to that of Schubert. Hoffmann considers nature essentially from the aesthetic point of view. Therefore, his heroes are poets, musicians, and artists who attempt to find a relationship between the subjective inner world and the outside world of objects. Each of these romantic heroes finds a different solution during a learning process that combines experiences in the empirical world and the realm of imagination.

Gradual change in Hoffmann's view of nature parallels the appearance of many grotesque figures in his tales that
reflect the faults of society in the mirror of irony and satire. In *Der goldne Topf* the poet hero Anselmus meets mythical nature spirits and falls in love with the daughter of a prince of the fire spirits. Anselmus learns the language of love from nature, from the whispers of leaves, the wind, and from the sun. Anselmus' love and faith in the existence of Atlantis transform the nature spirit Serpentina into a beautiful young woman. The power of poetry creates a bond between man and nature that in itself is the essence of Atlantis. In his later fairy tales Hoffmann no longer thinks that an existence in Atlantis is possible, and his nature spirits are more threatening. Some of his young heroes find a way to exist in the real world, like Balthasar in *Klein Zaches* and Peregrinus in *Meister Floh*, others find a fulfilment of their existence in a love/death like George Pepusch and Dörte Elwerdink in *Meister Floh*. Therefore, an existence in the real world is possible if poetry, fairy tale magic and the power of love mitigate the annoyances of everyday life. Peregrinus discovers that love is the most powerful force of life. The love/death of George and Dörte is a direct borrowing from Schubert, and implies a return to the unconscious origin in nature, that later became identified with the Dionysian realm in Nietzsche's *Geburt der Tragödie*. The forces that make life possible are essentially the same that in Novalis' *Kling-
sohre Märchen combined to transform the existing universe. Due to his own fragmented personality Hoffmann cannot achieve a fusion between the real and ideal, but in these late tales he finds a compromise with reality when Balthasar and Peregrinus retreat to a subjective world enriched by the arts.

These three fairy tales: Der goldne Topf, Die Königsbraut, and Meister Floh form almost a dialectical triad of Hoffmann's Bildungsmärchen. The hero Anselmus in Der goldne Topf is placed between two aspects of the world with opposite and mutually excluding aims. Anselmus may follow the advice of Paulmann, marry his daughter Veronica and become a Hofrat. Heerbrand, the counterpart of Anselmus, actually achieves all of these aims that Anselmus had at the beginning of the tale. Anselmus, however, hears the magic language of nature, falls in love with the nature spirit Serpentina, and is initiated in the myths of nature and poetry by Lindhorst, who is either an excentric Archivarius or the Prince of Salamanders. After the battle of the nature spirits Anselmus finds his way to the spiritual and ideal existence in Atlantis.

In contrast Die Königsbraut represents a parody of the poet hero’s education. Amandus is completely lost between the high ideals of poetic existence and his inability to produce anything poetic. His beloved is
threatened by a grotesque gnome. Amandus' heroic defense of his beloved, however, is easily diverted by skillful flattery. Annchen is similarly tempted by the surface splendor of the vegetable court. The happy ending, achieved through the powers of atrocious poetry, is no longer a life in the distant Atlantis, but a return to the simple life in the country.

In Meister Floh Peregrinus first learns to experience the sexual infatuation personified by Dörtje, and to discover the difference between surface perceptions and the underlying truth. The science of optics is contrasted with the magic lens that Meister Floh gives to Peregrinus. The science of optics changes the range of vision, but does not automatically provide insight. Only the power of love and the radiating light from the magic carbuncle make possible a synthesis between real and ideal.

Connections between Novalis and Hoffmann

Hoffmann refers repeatedly to Novalis and his Heinrich von Ofterdingen and Lehrlinge zu Sais in Fantasie- und Nachtstücke, (e.g. FNS, 316). Some of the figures that appear only in faint outlines in Lehrlinge zu Sais acquire distinct personalities and complicated life stories in Hoffmann's tales. The clumsy and inept apprentice mentioned
by Novalis in the first fragment of Lehrlinge zu Sais
surely suggests Hoffmann's Anselmus in Der goldne Topf and
Peregrinus in Meister Floh. Peregrinus also has to an
exaggerated extent the childlike qualities that Novalis
discusses in these fragments. His discovery of the magical
carbuncle, Karfunkelstein, is just as important as the
magical stone found by Novalis' inept apprentice that con-
nects all series used in representations of nature. Each
in his own individual way they both discover a certain form
of the philosopher's stone, the embodiment of true wisdom.
Novalis made a sharp distinction between wisdom and narrow
rational learning. This negative aspect of reason became
personified in the figure of Schreiber in Klingsohrs
Märchen. In Hoffmann's work comparable figures are associ-
ated with the inventors of machines that imitate living
organisms, such as Spallanzani in Der Sandmann, and with
professors of science, who produce a lot of empty talk but
little insight, e.g. Mosch Terpin in Klein Zachs, and with
the malevolent teacher, Magister Tinte in Das fremde Kind.
Similar negative characters are the two long dead Dutch
microscopists, Loewenhoek and Swammerdam, who are magically
transferred to early 19th century Frankfurt in Meister Floh.
Predominantly positive aspects of nature's forces appear as
magicians: Archivarius Lindhorst, in Der goldne Topf, who
is also a nature spirit Salamander, and Meister Alpanus in
Klein Zaches, who acts as a benevolent uncle to the poet hero Balthasar. These magicians are not entirely positive, and have some dark or ambiguous aspects, e.g. the anger of the fire spirit Salamander destroys the spirit kingdom, and Alpanus plays with the rational student Fabian, who does not believe in magic.

In Hoffmann’s tales the dark negative figures often frustrate the efforts of poets, artists, and musicians. They fight against fantasy and imagination or against the spirit of life itself either in nature or human society. Hoffmann’s view of nature must be constructed from the descriptions of nature, from the relationship of nature to the fairy tale world of the miraculous, and from the characteristics of those figures who exhibit a special affinity with nature. In Hoffmann’s world these figures are usually young poets and mysterious magicians. Scientists, in Hoffmann’s view, are the descendants of Novalis’ Schreiber, representing the rational, utilitarian mindset of the Enlightenment. The same rationalism also characterizes government officials and their political aims. In Klein Zaches the prime minister, Andres, advises Prince Paphnutius how to achieve enlightenment for his tiny kingdom:

Ehe wir mit der Aufklärung fortschreiten, d.h. ehe wir die Wälder umhauen, den Strom schiffbar machen, Kartoffel anbauen, die Dorfschulen verbessern, Akazien und Pappeln anpflanzen, die Jugend ihre Morgen- und Abendlied zweiseitmmig absingen, Chausseen anlegen und
die Kuhpocken einimpfen lassen, ist es nötig, alle Leute von gefährlichen Gesinnungen, die keiner Vernunft Gehör geben und das Volk durch lauter Albernheiten verführen, aus dem Staate zu verbannen. (SW, 16)

The presence of fairies in the state constitutes a danger for the enlightened prince and his servants because they represent an element of fantasy in nature, which is not subject to the rules of reason. This element implies a relationship with nature based on human emotions and prevents a reification and exploitation of nature. If the people believe in fairies, then their thoughts are on the wrong track; they have dangerous opinions, or Gesinnungen. Most fairies should be banished from an enlightened state to their land, Dschinnistan, because:

Sie treiben ein gefährliches Gewerbe mit dem Wunderbaren und scheuen auch nicht, unter dem Namen Poesie, ein heimliches Gift zu verbreiten, das die Leute ganz unfähig macht zum Dienste in der Aufklärung. (SW, 17)

There are definite parallels with the actions of Schreiber in Klingsohrs Märchen, who wants to get Fabel in his power after Eros and Ginnistan have left on their travels. Schreiber is glad that the fates of the underworld will force little Fabel to do some useful work. Hoffmann’s rational prime minister, a Schreiber figure in the guise of a politician, follows the same plan.

Nicht alle Feen, gnädigster Herr! wollen wir fortschicken nach Dschinnistan, sondern einige im
In contrast to Novalis, who shows the utilitarian attitudes of Schreiber in a few sentences, Hoffmann elaborates the conflict between the administrators of the enlightened state, who want to exploit nature and to control their subjects, and the fairies, who represent poetry and magic. In Klingsohrs Märchen Novalis' intention is to show the way to a higher state of existence for nature and humanity; Schreiber works against these goals and disappears in the underground realm of the fates. In his fairy tale characters Hoffmann shows through the lens of humor destructive elements in life and society that act against the aspirations of people, who search for magic and poetry. It is not surprising that the best known professor of natural sciences in this enlightened state is Mosch Terpin.
Finsternis hauptsächlich von Mangel an Licht herrühre. (SW, 22)

This professor of natural sciences has a great talent for stating the obvious and for reducing the obvious to an organized system of platitudes. He has the talent for classifying and analyzing small fragments of natural phenomena, but very little regard for the totality of nature as an equilibrium between diverse dynamic forces. Hoffmann's sharp, satiric observations of various officials and popular savants emerge in these vignettes from the life in German states during the repressive period after Napoleon's defeat. He sees scientists and state officials as men with selfish ambitions and human weaknesses, both equally opposed to the poetic spirit.

At the end of the romantic period scientists became suspect among romantic poets, who saw in the increasingly materialistic direction of science and technology a threat to the emotional side of human character. Many experiments were carried out simply out of curiosity or out of greed. University learning was frequently a mere memorization of data from Mosch Terpin's file boxes. It is not surprising that the figure of the mad scientist arose during the last years of romanticism. Scientists became emotionless technocrats instead of seers and magicians.
CHAPTER V

NATURE PHILOSOPHY DURING THE ROMANTIC PERIOD
AND ITS SIGNIFICANCE NOW

The relationship between nature philosophy and the physical sciences changed rapidly during the romantic period. Just as rapid was the change of leading ideas in romantic literature. Early romanticism still had a close relationship with the Enlightenment and shared with the Enlightenment scientists and philosophers the desire to interpret the world in terms of reason. Schelling's nature philosophy was built on a combination of ideas from Western cultural history. Many influences came from Greek philosophers starting with the pre-Socratics and continuing through the teachings of Plato and Aristotle. Fichte, Schelling, and Novalis dealt with ideas that had their roots in the Enlightenment. Schelling attempted to fuse the logic of the Enlightenment and the critical philosophy of Kant with the metaphysical ideas of the ancient Greeks. Both Schelling and Novalis tried to expand the horizons of philosophy to include elements that were disregarded during
the Age of Reason. Schelling constructed a nature philosophy to balance the subjectivism of transcendental Idealism; Novalis conceived a poetic transformation of the sciences as a way to establish contacts between different areas of human experience. The Enlightenment had an essentially positive outlook on the future of the human race. It asserted that all problems could be solved by reason. The early romantics were not satisfied that reason alone could bring a better future, but they were equally convinced that a poetic union of the forces of the soul could guide the humanity to a new "golden age." The romantic fairy tale became a form of new mythology that explained the world in poetic images. Like Novalis' Fabel this fairy tale connects different stages of being, opposes narrow rationalism, and imbues nature with new life.

This enthusiasm for a transformation of the world did not last long. Political and social changes modified the positive outlook of early romantics and gradually brought about a cultural pessimism that diminished the possibility of progressive change. The only real freedom was that of artistic creation, and the romantics concentrated on expanding the realm of aesthetics. Schelling saw in the unconscious creative powers of nature the work of the same hidden forces that were revealed in artistic creation. The unconscious powers of human soul disclosed the dark side of
existence that began to appear in the work of romantic writers. They suffered from an inability to bridge the gap between the world of the ideals and the everyday existence that seemed to negate their hopes. The romantic view of the world became more subjective and emotional, no longer connected to abstract ideals. In the period after 1800 romantic writers no longer saw scientific development as a positive process. In the sciences their interest shifted to medicine, psychology and the "dark" sciences that explore the area between psychology and the occult. The new mythology now constructed images that arise from the unconscious depths of the soul. This change towards the problems of the unconscious found its impetus in Schelling's philosophy and became popular through the writings of G.H. Schubert. In his nature philosophy even the inorganic substances were endowed with human emotions. Schubert implied that the spiritual elements in nature desire an escape from the material bonds of the earth as atmospheric gases that commune with the influences of the stars. This tendency suggested a devaluation of the real world, and a desire for a mystical union with the metaphysical aspects of being. Somnambulism, hypnosis, and dreams were other ways to find a contact with more spiritual stages of existence.

The work of E.T.A. Hoffmann illustrates the inner fragmentation and preoccupation with the dark forces of the
soul. He recognized the dangers of hypnotic suggestion and
the trivialization of para-psychological phenomena in
seances held for entertainment of the curious. Nature for
Hoffmann was an ambiguous entity, animated by the presence
of many different spirits; some benevolent, others mis-
chievous or destructive. The animated nature in Hoffmann's
fairy tales assumed grotesque forms and threatened human
beings. The vegetable king Daucus Carota, who is nothing
but a giant carrot, wants to marry Annchen von Zabelthau
and to take her down to his underground realm; he threatens
to diminish her humanity. Poetry, beauty, and music are the
positive forces in Hoffmann's world, and they are always
threatened by vanity, hypocrisy, and sheer stupidity. The
image of the scientist is identified with these negative
forces. They are either inefficient and foolish like Mosch
Terpin in *Klein Zaches*, or technical zombies like Leuwen-
hoek and Swammerdam in *Meister Floh*. In spite of these
negative associations Hoffmann is fascinated by machines
and optical instruments. He sees in these developments of
technology a threat to human existence. This threat is not
scientific discovery itself, but exploitation of scientific
methods and scientific knowledge by the negative forces in
society. Novalis suggested *Poetisierung der Wissenschaften*
as a new and powerful link between man and nature, while
Hoffmann saw in the forces of poetry, love, and imagination
the only possible opposition to narrow rationalism. The magic of poetry and music for Hoffmann no longer was able to bridge the abyss between the real and the ideal, but at least it could provide a temporary refuge in the mystical Atlantis.

The empirical sciences meanwhile made a rapid progress using quantitative methods to prove new theories, and this success meant that the elaborate framework of Schelling's nature philosophy was of no interest to the practical scientist. As the scientific movement turned against the romantics valuable insights provided by the nature philosophy were discarded along with its erroneous predictions. Ritter's work on electrochemistry was neglected for almost a century because of his association with romantic nature philosophy. Even now Ritter's name is practically unknown outside Germany. The great synthesis hoped for by the early romantics: Novalis, the Schlegel brothers, Schelling, and Hölderlin was never realized, and the world continued on its way toward increasing fragmentation and alienation. Some of this fragmentation was probably unavoidable, but the separation of the physical sciences from poetry and philosophy also placed them outside the realm of ethical values.

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Novalis commented in a letter to Friedrich Schlegel in 1798 that Schelling's ideas on nature philosophy seem to become obsolete in a short time. (NS IV, 272)
When we look at the romantic nature philosophy in the light of modern science, then it is apparent that some of the general ideas of it are still valid today, although the interpretations of many natural phenomena are entirely different. In the present day cosmology the universe is essentially dynamic. The Big Bang theory assumes that the universe originated when an extremely concentrated point of mass, or energy, exploded and expanded in all directions. This universe, which is still expanding, contains the same kind of matter and the same forces everywhere. Concept of duality is valid for atomic and molecular phenomena. It is ironic that Schelling did not believe in the existence of atoms and now atomic physics provides some of the best examples for the essential duality in nature. Atoms are not the solid balls of classical physics, but are built up from electrons, protons, and neutrons. All of these subatomic particles are concentrated bundles of energy that can be regarded either as particles or as waves. This duality of interpretation is characteristic of quantum mechanics that

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2Coveney and Highfield indicate the difficulty of physics in dealing with the Big Bang:

Fundamental doubts are also raised by the embarrassing presence in the mathematics of singularities, where the description of space, time and matter breaks down. The best known singularity is the so-called Big Bang, the super-dense fireball of creation widely believed to have spawned the universe. At this singularity, where vast energies are condensed in a single point, observable quantities in the theory blow up into infinities and hence become meaningless. (Coveney and Highfield, *The Arrow of Time*, 31.)
defines the limits of experimental accuracy as an interaction between the observer and the observed phenomenon. This limitation is known as Heisenberg's Uncertainty Principle. Novalis would see this interaction as a kind of reciprocal Berührung between observer and nature. Ritter was correct in stating that galvanism, i.e. electricity exists everywhere in nature. The invisible forces that so intrigued people of the romantic period are mainly manifestations of electro-magnetic phenomena. Even light, the positive principle in Schelling's dialectical system, is only a small part of the spectrum of electromagnetic radiation. The ultimate proof that nature is an equilibrium of opposing forces is the conversion of matter into pure energy according to Einstein's famous equation: $E = mc^2$.

Schelling did not have a clear concept of light and its interaction with matter. If we assume that light as the spiritual principle is equal with energy, then some of Schelling's arguments are still valid. Novalis' observation that some processes in nature are discontinuous applies to many atomic and molecular phenomena. Atoms and molecules undergo discontinuous transitions to higher energy states when excited by some form of energy, e.g. light radiation or beams of charged particles. Light is emitted when the atom or molecule makes a transition from an excited energy level to a lower one. This emitted light constitutes a spectrum that is the "signature" of this transition.
Schelling postulated a symmetrical relationship between electricity and magnetism, but his deductions were too simple because reliable experimental data were not available. The correct relationship between these invisible forces was found by the Danish physicist Oersted in 1820, but a complete mathematical expression for these interactions was not formed until James Clerk Maxwell produced his equations.

Interesting connections to romantic nature philosophy appear in the recent investigations of nonlinear processes in chemistry, biology, and physics. These systems demonstrate an interplay between chance and necessity that is not consistent with the laws of classical physics. Classical physics is essentially deterministic and ignores the direction of time. In the words of Ilya Prigogine:  

Science initiated a successful dialogue with nature. On the other hand, the first outcome of this dialogue was the discovery of a silent world. This is the paradox of classical science. It revealed to men a dead, passive nature, a nature that behaves as an automaton which, once programmed, continues to follow the rules inscribed in this program. In this sense the dialogue with nature isolated man from nature instead of bringing him closer to it. A triumph of human reason turned into a sad truth. It seemed that science databased everything it touched. (Prigogine, 8)  

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Ilya Prigogine, who received the Nobel Prize in 1977 for his work on nonlinear systems, is a noted chemist who suggests that physical reality is characterized by change and disorder.
This problem of Newtonian physics, the isolation of man from nature, is exactly the same problem that romantic nature philosophy wanted to solve. The present day science is facing a similar crisis since rapid technological progress has created a host of problems that threaten nature and human existence. The old interpretations of nature are no longer adequate. Physics and philosophy must find ways to unite the principles and laws of science with the human perceptions of reality, possibly as a poetic transformation of the sciences. Prigogine contrasts the concept of laws with that of events that constitute a duality in the perception of reality.

Laws were associated to a continuous unfolding, to intelligibility, to deterministic predictions and ultimately to the very negation of time. Events imply an element of arbitrariness as they involve discontinuities, probabilities and irreversible evolution. We have to face the fact that we live in a dual universe, whose description involves both laws and events, certitudes and probabilities\(^4\).

Discontinuities and probabilities belong to the realm of the accidental or *Zufall* that was so important in Novalis’ view of the world. Discontinuity allows the existence of origins, of transformations and the possibility of miraculous. Prigogine, as a scientist and a philosopher

\(^4\)Ilya Prigogine, in the foreword to *Arrow of Time* by Peter Coveney and Roger Highfield, p. 18.
calls for new relationships between man and nature and between man and man (Prigogine, 312). Science and poetry have similar goals; they both want to go beyond the world of appearances to reach a world of timeless values. So far the Western civilization has offered a choice between a mechanical universe as defined by science or a metaphysical world of ideals reflected in poetry. The nature philosophy of the romantic period was the last attempt to overcome this duality.

The same dissatisfaction with the present state of the world appears in humanities. In a foreword to a study of Novalis by Géza von Molnár Jochen Schulte-Sasse inquires: "Do we need a revival of transcendental philosophy?" The question is whether art would be able to prevent ideologi- cal atrophy that threatens Western culture. While Prigogine stresses the isolation of science from the everyday life, von Molnár states that art has also lost its "immediate referential ground in the actual and pragmatic contexts within which human beings conduct their lives." (von Molnár, 193). In his opinion modern critical theories have failed to solve this problem. Von Molnár's study of Novalis indicates that the transcendentalist philosophy might produce solutions to modern problems in uniting divided spheres of existence.

Both Prigogine and von Molnár are concerned with the unification of different fields of human activity, and both
voice the same dissatisfaction with the isolation of science
and poetry, respectively, from other human concerns. The
romantic goal of connecting different areas of being seems
to be even more distant than it was two hundred years ago.
Still their striving to protect the aesthetic and ethical
values from the petrifying reason and to establish a loving
relationship with nature through poetic imagination points
a way towards a possible new receptivity to nature and its
future preservation.
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