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Abstract

This article offers a first analysis of the temporality of anti-aging, which, astonishingly enough, has been missing almost completely from anti-aging and life-prolongation discussions heretofore. While anti-aging experiments have existed throughout history, culminating in the 19th and 20th century, and are still booming today in most industrialized countries, the underlying temporal structures of this man-made tempering with human life experience and life cycle has not yet been the object of any comprehensive investigation. In the beginning, the article in hand will explain the essential differences between archaic and modern scientific conceptualizations and representations of anti-aging techniques and introduce the category of “progenesis” for the premodern approach. This will be followed by a short overview over the history of anti-aging and life-prolongation experiments in the 19th and 20th centuries. The article then discusses parameters, such as “longevity”, “eternity”, “rejuvenation”, “anti-aging”, in order to clarify experimental frameworks in life extension as a basis for the following analysis of the temporality involved. Finally, the paper introduces various concepts of time closely related to experiments on life prolongation such as grafting, blood transfusion and parabiotic techniques ranging from the 19th century up to our times: While the term “heterochrony” can be traced back to the 19th century, its meaning is gaining additional dimensions in the article in hand, and the concepts of “uchronia” and “pseudo-autochrony” are especially developed here for the first time in order to clarify the temporality of anti-aging processes and their biopolitical and philosophical dimensions.

Key Words: Anti-aging, Temporality, Longevity, Heterochrony, European medical history

I . Progenesis

“Mankind has always aspired to gain immortality and enjoy longevity”¹. With such commonplace statements, many popular and academic articles introduce their ideas and findings about human craving for

1 See for example this introductory line of Jean-Pierre Martin’s internet article on rejuvenation: “L’humanité s’est, de tous temps, préoccupée de prolonger la vie” (Martin). Another example is: “The greatest desire of men is for eternal youth.” (Carrel 1935, 170).

eternal life or the prolongation of the human life span. The wish for immortality may indeed have coincided with the dawn of transcendentalism at the beginning of human culture. The desire for longevity, however, can only date from times of relatively safe and convenient life styles when old age became an attractive aim in itself. Although well distinguished, both desires overlap in concepts of “youth” and “vitality”: eternal life is imagined as youthful and longevity is only attractive when it results in a vital and pleasant existence.

This article will confine itself to modern scientific approaches, especially in the 19th and 20th century, in order to closely scrutinize the temporality of anti-aging. Both of the afore mentioned topics, organizing the vaster field of immortality and eternity, and longevity and rejuvenation, have appeared frequently in world literature throughout history since the beginning of writing. However, the argument of this paper will differentiate between modern scientifically based conceptualizations and ancient and archaic approaches. On the one hand this differentiation is based on Michel Foucault’s theory of “genealogy”, as explicated e.g. in *Les mots et les choses*, which states a discursive incompatibility between analogical and analytical models of explanation. On the other hand, and more importantly, this article will show that there are specific conceptualizations of time which are inherent to modern scientific anti-aging theories developed in the 19th and 20th century.

While modern scientific approaches are based on a very specific concept and use of matter – anti-aging therapies interact in a measurable way on chemical and biological levels with the physiological existence of the object body –, ancient approaches, from archaic to medieval times, are not based on such a discreet understanding of materialism. So, while modern scientific approaches do only use surgery and bio-chemical or similar treatment², ancient approaches offer a long range of “substances” and “spiritual interventions” for therapy: from the Christian “holy spirit”, to the “fountain of eternal youth”, to assimilation of vitality through rites and feasts, as e.g. practiced in animist or occult cultures throughout history and all over the world.

As opposed to modern scientific approaches, I am suggesting the term “progenesis” for ancient conceptualizations, because of the seeming randomness and obvious heterogeneity between the remedy and the inflicted body receiving treatment from a modern point of view. Although the choice of the ancient remedy has an essential status in the argumentative structure of the rite, religion or philosophy in question, its primordial relation to a progeneric force or spirit is more important than its relation to the body treated³. In Greek mythology for example, especially in the Orphic tradition, such progenitors were Chronos, Chaos, and Aether. Christianity, on the other hand, offers eternal life through Jesus Christ: “As thou hast given him power over all flesh, that he should give eternal life to as many as thou hast given him. And this is life eternal, that they might know thee the only true God, and Jesus Christ, whom thou hast sent.” (John. 17.

2 For a detailed discussion, see Deepak Chopra (2003) and Susan Merrill Squier (2004).

3 For example, ancient Ayurvedic treatment, and its modern variants, with its progeneric power of *prana*, when contemplated from a spiritual point of view, falls into this category.

2-3)⁴. Other agencies of eternal power in Christianity are e.g. the “eucharist” and the “holy baptism”, the former making use of wine and bread, substantiating blood and flesh of Jesus Christ, and the latter of water. The many Christo-European legends of the “holy grail” are directly derived from this.

Water, too, has always been considered a progeneric force in many religions and cults. The most famous example perhaps is in the *Histories* of Herodotus, who in the 5th century BCE located a magical fountain of youth in Ethiopia with a tribe he named “Macrobian” to whom he attested a legendary life span⁵. Medieval times were obsessed with discovering the “elixir of life”, and came up with many diverse versions from exotic concoctions up to even the “philosopher’s stone” of alchemy which was thought to not only generate gold, but also to purify and perfect, to rejuvenate and immortalize its master.

The most fascinating, and a highly eclectic, version of rejuvenation in Western tradition is certainly Medea’s transformation of Aeson in the *Metamorphoses* of Ovid, a powerful description spreading over several pages. It is eclectic in that it combines elements of animism with religious sacrifice, vegetative power with symbolic death, and ritualistic gestures with oral spells:

[Medea] performed the sacrifice, plunging her knife into the throat of a black-fleeced sheep, and drenching the wide ditches with blood. She poured over it cups of pure honey, and again she poured over it cups of warm milk, uttering words as she did so, calling on the spirits of the earth [...]. Three times with fire, three times with water, three times with sulfur, she purified the old man.

Meanwhile a potent mixture is heating in a bronze cauldron set on the flames, bubbling, and seething, white with turbulent froth. She boils there, roots dug from a Thessalian valley, seeds, flowerheads, and dark juices. She throws in precious stones searched for in the distant east, and sands that the ebbing tide of ocean washes. She adds hoar-frost collected by night under the moon, the wings and flesh of a vile screech-owl, and the slavering foam of a sacrificed were-wolf, that can change its savage features to those of a man. She does not forget the scaly skin of a thin Cinyphian water-snake, the liver of a long-lived stag, the eggs and the head of a crow that has lived for nine human life-times. [...] She stirred it all with a long-dry branch of a fruitful olive, mixing the depths with the surface. Look! The ancient staff turned in the hot cauldron, first grew green again, then in a short time sprouted leaves, and was, suddenly, heavily loaded with olives. And whenever the flames caused froth to spatter from the hollow bronze, and warm drops to fall on the earth, the soil blossomed, and flowers and soft grasses grew.

As soon as she saw this, Medea unsheathed a knife, and cut the old man’s throat, and letting the old blood out, filled the dry veins with the juice. When Aeson had absorbed it, part through his mouth, and part through the wound, the white of his hair and beard quickly vanished, and a dark color took its place.

4 The incredibly long lifespans attributed to the early members of the covenant in the Bible show that aging and longevity were already a topic in Biblical times.

5 The tribe’s name “Macrobian”, of course, meaning “long-living”, a word today also used for a healthy dietary regime: “macrobiotic”.

At a stroke his leanness went, and his pallor and dullness of mind. The deep hollows were filled with rounded flesh, and his limbs expanded. Aeson marveled, recalling that this was his self of forty years ago. (Ovid: *Metamorphoses*, VII:234-293).

This passage, so rife with metaphor and full of competing concepts of vitality, life, rejuvenation and death, shows the enormous and insurmountable difference between these various progeneric approaches to rejuvenation and the sober accounts of modern scientific research in life extension studies, we will now turn to.

II. Experiments on Rejuvenation in Modern Times

The following description of scientific development in the 19th and 20th century is based on primary literature, such as writings by Serge Voronoff (*Étude sur la vieillesse et le rajeunissement par la greffe*) and Elie Metchnikoff (*Nature of Man; Prolongation of Life*), and on the concise academic publication on the scientific history of the beginning of life extension experiments in Europe “Histoire du rajeunissement par la greffe. De Claude Bernard à Serge Voronoff” by Jean-Pierre Martin. It owes to these the insight in medical advances of the times, which will then set the stage for a first close scrutiny of the temporality involved in these “rejuvenating” experiments.

The advancement of endocrinology in the 19th century developed a keen interest into the functions of glands, which then led to speculations and investigations into the relationship of diverse human glands and senescence. Various researchers all over Europe dedicated themselves to this new field: Bernard, Simmonds, Lorand, Brown-Séquard, Steinach, Voronoff, even Metchnikoff, just to name a few, were the dazzling figures in the early search for life prolongation through manipulation of glands. When the German pioneer endocrinologist Morris Simmonds (1855-1925) proposed a connection between the degeneration of the anterior hypophysis, the loss of sexual functions and senescence, various scientists came up with ideas concerning the relationship of glands and vitality. Arnold Lorand in Karlsbad championed the thyroid gland and was highly confident in his development of a dietary treatment using this gland harvested from diverse domesticated animals which he administered through the mouth, later even to human beings. He stressed the superiority of his treatment over experiments, such as Steinach’s, on rejuvenation because he could exclude the dangers and imperfections of surgery. The French physiologist Claude Bernard (1813-1878) focused on the role of the testicle which he thought did not only function in reproduction but also played an important part in the internal production of fluids (Martin). His disciple Charles-Edouard Brown-Séquard developed in 1869 the hypothesis that injections of animal testicles into human blood vessels could increase physical and even intellectual strength. In self-experiments, he injected himself with a testicle mince of dogs and Guinee pigs harvested from the blood vessels of their testicles ligatured before. The ligature was essential in order to stimulate an increase in internal secretion (Voronoff 1926;

Carrel 1935). The Austrian Eugen Steinach (1861-1944), one of the great experimental surgeons of the time, declared that ligatures of testicles led to the production of an internal juice full of life and power. Experiments on animals, binding their sperm ducts showed that they were losing their sperm production and instead developing an interstice. Steinach found that the animals he had operated on in such a way displayed a certain youthfulness, had a more active sexuality and gained weight and muscle strength. But after a certain time, the signs of old age reappeared and the animals died. Steinach remained modest and considered his experiments as a kind of “hormonal reactivation” instead of using the presumptuous term “rejuvenation”. But when in 1920, Robert Lichtestern experimented on human beings and made incisions on the sperm ducts of three old men, the result was a spectacular loss of signs of senescence. And all over Europe, the public celebrated these new inventive “rejuvenating doctors”. But there were also incredulous voices, suspecting charlatanerie. In the end, the glamorous and scandalous Russian experimenter on life prolongation, Sergei Voronoff, shared Steinach’s lot, the rise to fame followed by oblivion.

Sergei Voronoff (1866-1951), a renown surgeon who practiced in Paris, fundamentally disapproved of Brown-Séquard’s approach, because of his use of mince of dead substances, even though he was aiming to get an active and vital effect. Voronoff, who was inspired by myriads of mutilated victims of World War I, on whom he wanted to test his ideas, opted for living substances, an idea which quickly paved the way to the art of surgical grafting, especially of glands and testicles, for which Voronoff then became so famous. Yet his achievements were hampered by the immature knowledge of immunology and surgery of his times. In spite of general clinical improvement in the sewing of blood vessels, the graft of a complete testicular gland remained impossible. In Chicago, Lydston and Lespinasse had failed, when trying to implant testicles for example into the skin, muscle or peritoneum, which quickly led to necrosis or atrophy. Thus, instead of transplanting the whole gland, Voronoff only grafted a part of it as scion and ensured its nutrition and blood circulation. But here, too, after a few weeks, necrosis or atrophy started. In the end, he found a more stable solution by grafting a medium-sized scion. He cut the length of the testicle into 4 to 6 parts of half a centimeter, and inspired by Nature, grafted the scion into the scrotum. After several days, with the help of an artificial aseptic inflammation, there was rapid blood circulation in the newly created blood vessels (Voronoff 1926). In his earlier years of surgical grafting, Voronoff, too, grafted on middle-sized domesticated animals. He transplanted hundreds of testicles from young to old animals in various domesticated species, mainly goats and rams. Ram Number 14 became famous, for it was grafted upon three times in succession, every time displaying renewed rejuvenation. He was also successful in “rejuvenating” bulls in Algeria, where he grafted e.g. on one senile animal which had been rejected by its herd. The grafted bull regained strength and vitality and not only domineered the herd, but also fathered multiple off-springs.

When moving on to grafting on human beings, Voronoff encountered the difficulty of not finding donors who were willing to sacrifice their testicles for grafting on others. Influenced by a successful graft of a monkey thyroid gland on a human child, he implanted on June 12th, 1920 slices of a chimpanzee’s

gland into a human scrotum for the first time. In the next six years Voronoff grafted some 300 glands (Bogdanov 2005: 511; Schultheiss 1997; Lellouch and Segal 2001). At times, he undertook so many transplantations that his demand for chimpanzees and baboons could no longer be satisfied and he had to build his own monkey farm to harvest glands. In England, where vivisection was strictly forbidden, he was forced to work with glands of human corpses. Though all of Voronoff's scions were eventually resorbed through time, positive effects of rejuvenation were discernable for quite a while, usually 3 to 5 years. A second graft was also possible. Photos taken of Voronoff's patients showed indeed a sensational change in appearance and vitality (Voronoff 1926). Worldwide until 1939, some 2000 grafts had been accomplished. And Voronoff became so infamous, that the French coined a new word: "se faire voronoffiser". Yet, with the appearance of synthetic hormones the age of grafting testicles, thyroids, hypophysis, ovaries and pancreas for life prolongation came to an abrupt end (Martin; Heselhaus 2017).

III. Parameters of Anti-Aging

As the short description of experimental research history in the late 19th and early 20th century above has shown, concepts of anti-aging and rejuvenation are multi-layered and complex. This is not only true of the analytical description of the scientific and therapeutic processes, but also of the formulation of results. Today, there is still need for groundlaying work concerning definitions and conceptualizations, especially in relation to time. Even such critical and informative analyses as Merrill Squier's *Liminal Lives* (2004), which give a detailed account of spatial and corporeal metaphor, fall short of a basic investigation into the temporality of anti-aging concepts. In general, one can discern six parameters which help to pinpoint specific research and interests within the vast field of life prolongation studies and help to bring more clarity to the still vague and often even random use of terminology: (1) "Anti-Aging" vs. "Rejuvenation", (2) "Eternity" vs. "Longevity", (3) "Youth" vs. "Vitality", (4) "One-sided" vs. "Reciprocal", (5) "Distant" vs. "Near", and (6) "Collective" vs. "Parasitic".

In the first pair, "Anti-Aging" is today not only a marketing catchword but also a concept belonging to the wider research field of "life extension" in which it refers in a narrower sense to strategies, therapies and products intending to slow down the natural process of aging, as opposed to concepts of "rejuvenation" which aim at a partial or complete reversal of the aging process. Though "anti-aging" therapies may result in a temporary rejuvenation of the body or parts of it, they never imply the complete eventual avoidance of old age. Though aiming at anti-aging, Steinach's and Voronoff's experiments are also close to rejuvenation, in that they tried to turn back the clock of aging and not only stop it at the time of intervention. However, in the end, their "Guinea pigs" always grew old again, putting an end to the moratorium artificially created for them. While "longevity" in the second pair is the common aim of many modern scientific endeavors, "eternity" for the human life span, though still out of scientific reach, has been the goal of a minority of fascinating researchers and philosophers at the beginning of the 20th century. So far, longevity, no matter to

what extent, will eventually always lead to some kind of health and wellness deterioration and death.

Results of experimentation on the prolongation of animal or human life span can be described in terms of “youthfulness” or “vitality”, as represented in the third pair, the former term implying a specific time frame of which the latter is free. In fact, In the 1930s, Alexis Carrel dedicated a long and critical treatise to the meaning of “inward time”, which he defined as individual “physiological time”, as opposed to abstract “chronological time”, and which he thought was discernable and measurable in an individual’s blood plasma (Carrel 1935: 154-182). For Carrel, different phases of the life cycle were more decisive for the conceptualization of time than synchronic existence on the same planet: “Young and old people, although in the same region of space, live in different temporal worlds. We are inexorably separated by age from one another [...] generations are profoundly heterochronic. An old man and his great-grandson are complete strangers” (Carrel 1935: 179-180). This issue becomes even more complicated, when experimenting with rejuvenating grafts, which leads to the interaction of “old” memory and “youthful” fluids in the receiver: Voronoff’s old patients never lost their memory or prior knowledge gained through decades of living while experiencing the “youthful” changes in their bodies after grafting. An intricate problem of the temporality of anti-aging is the question of what is rejuvenated and what will resist or remain unchanged in spite of some processes of rejuvenation. The meaning of the term “heterochronic” introduced here by Carrel in order to describe different time frames of the life cycle, is immensely radicalized when used for the double timing of the encounter taking place in experimental grafting. Grafting and similar therapies for the sake of “rejuvenation” or “anti-aging” can be described as the creation of a new mode of existence: heterochrony within one living being, i.e. the co-existence of “old” and “young”. However, scientific discourse as well as “biomedical imaginary” (Merrill Squire 2004: 14), motivated by the imperative of success, suppressed any narratives of “heterochronic” experience of the patient, as “heterochrony” was considered a clear symptom of experimental failure.

The fourth parameter refers to concrete settings of life extension experiments, especially with respect to the relationship of donor and receiver: All experiments by Steinach and Voronoff, and also by Lorand, are “one-sided” and not “reciprocal”. An experimental animal or human being receives a part of a gland of another being, while the donor animal loses its gland and often even its life. Similarly, the fifth pair, “Distant” and “near”, refers to the concrete spatial relationship of donor and receiver, which is not easy to define in the cases of grafted glands, which have been extracted from their donors and transplanted into the other body of the receiver. Fantastic literature such as Mary Shelley’s *Frankenstein* or Michail Bulgakov’s *Heart of a Dog* show what is at stake, when fluids or other elements of the donor intrude on the receiver treated and change the latter’s characteristics or personality (Haraway 1991).

The last parameter, “collective vs parasitic”, refers to the frame of mind which encapsulates the motivation and gain of the experiment and its participants and investigators. “Parasitic” here stands for the idea of using and abusing other life forms, to literally suck out their life energy by extracting, or harvesting, their glands or testicles, which are transformed into a state of bursting plenitude through ligation before

“consumption” by the receiver. Setting apart the abstract interest in the advancement of scientific knowledge, all experiments done by Steinach, Voronoff and the like were done for the exclusive gain of an egotistic human receiver, who wanted to prolong his own life span. Even if such receivers were set to use their gained longevity to serve mankind, their prolonged state of life was nevertheless achieved at the cost of another living being. The next chapter of this article, however, will demonstrate, how this parameter could be changed and tip to the side of “collective”.

IV. From Heterochrony to Uchronia

The Russian philosopher and scientist Aleksandr Aleksandrovich Bogdanov (1873-1928) followed Voronoff's and Carrel's experiments closely. He believed in the possibility of rejuvenation by blood transfusion⁶ (Groys and Hagemester 2005), like Carrel who had experimented on infusing “young” blood into “old” bodies. In 1926, Bogdanov founded the “Institute for Haematology” in Moscow, the first of its kind, dedicated to the science of blood transfusion and the “fight for vitality” Bogdanov championed. However, Bogdanov's approach to “rejuvenation” and the technique of blood transfusion was markedly different from everything aspired by his predecessors in the western hemisphere: Bogdanov was interested in the reciprocal exchange of blood fluids between a pair of patients. Most of his experiments in the 1920s were organized around paired receivers, one old and the other young, whose blood would then be exchanged among each other. It was Bogdanov's genuine argument in his writings such as “Tektologiya bor'by so starost'yu” (Bogdanov 2003) and *Bor'ba za žiznesposobnost'* (Bogdanov 1927), dedicated to the “fight against old age” and to the “fight for viability”, that both participants would profit from the advantages of the other: On the level of behavior and characteristics, the older receiver was expected to become more vital and energetic, while the younger one was expected to calm down and get wiser. On the level of medical treatment, e.g. the younger person's blood was supposed to refresh the older one's, while the older person's blood was thought to endow the younger one's with his more experienced immunity system acquired through years of successful survival. Similar to Voronoff, Bogdanov, too, at first seemed to be able to claim surprising and convincing results. He himself participated in his experiments, and after several blood transfusions he thought he saw signs of improvement and reduction in the pace of growing old. Bogdanov died, however, while undergoing one of his own blood refreshing experiments, allegedly by catching malaria and tuberculosis bacilli from his partner in the transfusion, a young student, who survived the treatment with refreshed blood from his healthy older partner, Bogdanov himself.

Bogdanov did not only enlarge the scientific and philosophical scope of rejuvenation experiments by pairing receivers in a reciprocal exchange of blood transfusion, he also changed the parameter of “nearness and distance”, allowing two human beings to share their blood and thereby their corporeal existence

6 This historical description of Bogdanov's experiments and philosophy is indebted to this publication by Groys/Hagemester, except for the development of the analysis of temporality, genuine to the article in hand.

and reflect on the heterobiotic experience of their new mode of existence. He also stressed the qualities inherent in the older body and tried to find more scientific proof of this. But most of all, he transformed the ideological motivation of scientific rejuvenation and longevity experimentation from parasitic self-improvement to a social, collective cause for the greater good of mankind.

As a philosopher, Bogdanov also devoted a full-fledged theory in numerous philosophical and scientific writings on the meaning of rejuvenation. In his huge theoretical work and new philosophy of “tectology”, he tried to explain concepts and phenomena such as crisis, catastrophe and systems in a highly complex and ideological framework. His practice of blood transfusion was based on the idea of total “physiological collectivism”, and as such it also departed from earlier theories of progress and survival of the fittest which it aimed to overcome. In his text “Tektologiya bor’by so starost’yu” (Bogdanov 2003), the general idea was that the individual would sacrifice his own advantage for the improvement of the species or collective, like, he argued, Nature sacrifices the individual for the species by enlarging the scope of material, e.g. the use of couples for procreation. His bold theories were not only derived from earlier traditional Russian Christian and Socialist conceptualizations about humanity, but they also seemed to be strongly supported by the manifold scientific experiments on rejuvenation, prolongation of life span and resuscitation in the early 20th century. The fascinating manifest of the Biokosmists, a visionary, avant-garde anarchist group, published in 1922, shows to what length these Russian thinkers were willing to go, namely total and unconditional freedom in time and space: “As essential and real human rights we regard the right to be (immortality, resuscitation, rejuvenation) and the right to freedom of movement in cosmic space (and not the supposed rights declared in the bourgeois revolution of 1789)” (*Biokosmist*, 1922/1). While the then-Anarchists turned Bolsheviks in the course of the Soviet empire, Bogdanov’s ideal had always been to create an “immortal superorganism”, a collective, melting together all the individuals with their differentiations and limitations into one “eternal whole” (Bogdanov 2003). More than simply enlarging the scope of experimentation from one profiting egotistic human being to a pair of reciprocally supportive heterochronic participants, Bogdanov, indeed, aimed at a new utopia for the good of all of mankind, one which was based on and created out of heterochronic time, melted together in order to overcome time and become something, that I think is best termed in allusion to earlier historical utopian endeavors as “uchronia”.

V. Contemporary Heterochronic Parabiosis

In the wide field of grafting and organ transplantation, “heterochronic parabiosis” refers to those surgical experiments, in which two living animals of different age, the “parabionts”, are joined in order to develop together a shared blood circulation system. Although such research and experimental attempts go way back into the 19th century, they became rampant again in the mid-20th century after World War II and are still undertaken in our days by researchers interested in aging processes and stem cell development.

This chapter follows in its historical and scientific outline the publication of Conboy, Conboy and Rando on “Heterochronic Parabiosis” from 2017.

Although Conboy et alii speculate on the existence of medieval parabiotic surgery and quote Paul Bert’s early report on “grafts by approach”, from 1864, which describes the surgical connection of animals for the sake of creating a common physiological and pathological vascular circle (Conboy, Conboy and Rando 2017), the most famous researcher in this field was the Nobel Prize winning Alexis Carrel already mentioned above, who can be considered a forefather of organ transplantation (Chopra 2003: 220). Carrel grafted animal organs on host animals, sometimes different in age and species, in order to find a way to not only treat the ailing host, but also to enable storage for the organ by grafting on healthy animals. The technical term “host” for the receiving animal also shows the difference in interest, compared to therapeutic surgery for human patients developed later. The term “parabiosis” was coined by the German physiologist Ferdinand Sauerbruch (1875-1951) in 1908 when he reported on successful experimental parabiotic pairings together with Heyde. Although their research and experiments were copied and further developed by other scientists at the beginning of the 20th century (Schmidt 1922: 141–156), it was the middle of the century that witnessed a vast increase in “heterochronic parabiotic” experiments with the intention to actually study life span conditions and longevity. Photo documentations show living animal parabionts sewn together at their sides while the experiments report on induced illnesses and starvation to one of the paired animals in order to analyze what was happening in the common systemic blood circle afterwards. While western research justified such animal experiments with investigations into cholesterol metabolism as early as the 1970s – starving animals in order to find out about human obesity –, Soviet scientists continued to investigate the physiology of aging (Conboy, Conboy and Rando 2017). Contemporary 21st-century research according to Conboy et alii focuses on the sustainability and regenerating capability of stem cells. In order to prove that age-related changes in stem cells are primarily influenced by their environment, they too, experiment with animal parabionts of which one is “young” and “healthy” while the other is “old” and “ailing”, terms that even in the 21st century still need specification, since there are no convincing and undisputable definitions of life-cycle phases in mammals (Conboy, Conboy and Rando 2017).

This kind of contemporary parabiotic experimentation is only on the surface similar to the experiments done by the avant-garde Russian researchers in the utopian atmosphere of the young communist Soviet empire. Today’s researchers are not at all interested in the experience of either of the two animals, let alone in the fundamentals of a social “uchronia”. They solely observe the changes in the parabionts’ systemic matrix to gain knowledge on processes of aging and pro-aging and anti-aging factors. These experiments do not reflect in any way a desirable life style to contemporary human beings who would abhor such a compulsory Siamese twin existence, clinging to questionable concepts of a temporal identity and subjective wholeness. These “parabiotic” experiments are therefore most unlikely to be ever performed on human beings.

VI. Anti-Aging Therapies and the Pseudo-Autochronic Subject

Apart from surgical experiments, the rich industrialized nations have witnessed for several decades now an “anti-aging” craze based on chemical, biological as well as synthetic drugs, creams, supplements and nutrition, that is still in an upward spiral of sales. Through the decades, “Anti-Aging” industries have offered a wide range of therapies, such as “Niehans’ Therapy”, “Growth Hormones”, “DHEA” (Dehydroepiandrosteron), “Thymus Therapy”, Anti-Aging cosmetics and the like, none of them really effective under long-term scientific observations, and some even banned because they are considered detrimental to health or present concerns for cross-species genetic contamination (Chopra 2003: 122 and 191-261).

The most interesting case is perhaps the famous Romanian physician and biologist Ana Aslan (1897-1988) and her “Fountain of Youth”. Aslan founded the “Geriatric Institute of Bucharest” in 1952, which was the first of its kind and recognized by the World Health Organization. She also shaped the “Romanian Society for Gerontology and Geriatrics” since 1959. Aslan thought that she had found anti-aging effects in procaine, a synthetic drug created by the German chemists Einhorn and Uhlfelder in 1904. She started to produce anti-aging drugs called “Gerovital H3” and “Aslavital” which she glorified as “Fountain of Youth” in her Romanian institute which had an enormous commercial international success in the latter half of the 20th century (Udelhoven 1984; Lang 2005). Rumor has it, that among her customers and patients were such famous and glamorous personalities as John F. Kennedy, Marlene Dietrich, Kirk Douglas and Salvador Dalí (source: Wikipedia), Nikita Khrushchev, Winston Churchill, Konrad Adenauer, Claudia Cardinale and Sylvester Stallone (source: Mitteldeutscher Rundfunk). Surprisingly the “Aslan Institute” did not only survive the Romanian revolution of 1989, but even today, it is still volatile and widely represented in the internet and in health institutes world wide.

On the surface, this turn to anti-aging products for skin therapy, injection or nutrition, especially Aslan’s “Fountain of Youth”, may seem reminiscent of the archaic progeneric concepts of life prolongation introduced in the beginning of this article. Not only the name “Fountain of Youth”, but also some of the ingredients of many exotic concoctions recall the contents of Medea’s fantastic cauldron, e.g. “semolina flatbread”, “royal jelly”, and “sludge from the Black Sea” (Heselhaus 2017; Chopra 2003). Yet, there is of course the huge difference in intellectual attitude: Today’s beliefs in anti-aging magic potions are not based on a cosmic equilibrium of progeneric powers, but rather motivated by modern laws of nutrition, with an odd pinch of animistic superstition⁷. The newly created products have become so infinitesimal and formless, invisible to the naked eye and incomprehensible to the amateur brain that the treated human subjects lose all sense of heterochrony instilled into their bodies and embrace “rejuvenation”. Whereas the 19th and early 20th century grafting experiments, like the parabiontic experiments on animals, could not so

7 This assessment follows the argument that the modern subject, here the “consumer” of anti-aging products, is disconnected from archaic sensation and reasoning, which it can only “sentimentally” imitate.

easily conceal the nature of the heterogenic matter infused into the patient or host body. It looks as if the Anti-Aging consumers of today are able to shape and decide their own lives, at least for some time, to create or recreate their **own** temporality. What emerges is a pseudo-autochronic subject, “pseudo”, not only because too many of these products are fake and ineffective, but also because the consumers are misinterpreting their own temporal existence, creating an illusion of self determination in time: “autochrony”. Nothing could be further away from the animal experiments on heterochronic parabiosis or, even more, from Soviet-style communist uchronia, creating a utopia of reciprocal heterochronic planetary co-existence. Anti-Aging ideology, as promoted today, is, in fact, exactly what it says it is: “antiagingism”, it has robbed the very old, today also condescendingly dubbed the “geriatric population”, of their societal value, dignity and the acknowledgment of their genuine contribution to humankind.

It was the aim of this paper to emphasize the diversity of historical temporal conceptualizations of anti-aging and life-prolongation techniques and treatments. In a first step, the analysis had to differentiate between archaic and modern conceptualizations called for by the difference in their underlying epistemological frameworks, however without completely discarding the poetic productivity of the fantastic signification strategies of archaic times. It then critically highlighted the imperative of experimental medical sciences and biomedical imaginary for a smooth rejuvenation process in the patient in spite of heterogenic matter and temporal structures involved and the ultimate failure of all experiments. The discussion of alternative conceptualizations such as Carrel’s idea of heterochronic existence and Bogdanov’s philosophy of Soviet-style uchronia called attention to the potential for reinterpretation of the human temporal experience. Finally, the imperative for temporal biopolitical control over the aging body was taken up again in a discussion of popular anti-aging treatment from mid-20th century to our days as an illusion of individual autochrony and the ultimate demise of any positive signification for the aging body.

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