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Interactions between Medicine and the Arts

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Painting. Section showing “Hygieia”, goddess of

health, ceiling panel for the Grand Festival Hall of the

University of Vienna, 4.3 × 3 m, oil on canvas, around

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Summary: Since ancient times, medicine has been understood not only as a science but also as an art—being regarded as a combination of the natural sciences and the humanities in contexts that range from the understanding of illness, to opening therapy goals, to the doctor-patient relationship. Therapeutic power was seen as an attribute of the arts and a way of dealing with disease. In the modern era, emphasis increasingly shifted to the natural sciences and technology—with impressive successes in diagnostics and therapy, in extending life, and in improving the quality of life. However, during the modern period, many of the anthropological and biological associations of medicine were diminished or lost. Today’s scientific medicine faces the challenge of connecting man’s psycho-physical and social-cultural natures with the natural sciences and technology. Medical humanities, the umbrella term for a field that encompasses interactions of medicine and the arts, has already undergone a steep transition from being considered an educational exercise in “humanizing” clinical practitioners. No longer content to serve as a “feeder service” for clinical practice, medical humanities allow practitioners becoming increasingly engaged in the complexities of clinical science, aiming to work alongside medical colleagues—especially those who seek to answer difficult questions in clinical practice. Hence, “therapy as art” or “art as therapy” is not an issue of alternative or fringe medicine, but a question of providing complements to science-based medicine to benefit the sick and the dying. Rather than being contradictory, the paired terms go hand in hand.

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Editorial

Arts as a power in “humanizing” doctors

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It is the first time that this journal has dedicated a special issue to the medical humanities, a field that has developed at the interface between medicine and disciplines categorized as the humanities, the social sciences, and—the topic of this issue—the arts. Interactions between medicine and the arts are understood as medicine in the arts and the arts in medicine. How medicine is reflected in visual/applied arts, music, literature, and vice versa has the potential to launch an essential movement in treating illnesses. One should also consider, in this context, that hospitals and medical consulting rooms are becoming increasingly global spaces in which cross-cultural patients have different religious influences, ways of dealing with death, and attitudes toward the separation of body and soul. Thus, subjective disease concepts need to be kept in mind, and the inclusion of medical humanities in medical study and practice merits serious consideration.

The rationale for using arts and medicine in medical education and practice is three-fold [1]: (i) reading the stories or viewing pictures or comics of patients and—vice versa—writing (or even drawing or painting) of doctors about their experiences gives them in training the tools they need to better understand their patients; (ii) discussing and reflecting on literature, paintings or music brings the doctor’s biases and assumptions into focus, heightening awareness; (iii) reading literature, viewing paintings or listening to music requires critical thinking and empathetic awareness about moral issues in medicine.

At least two main messages can be taken home from the 17 journal articles contributed on this topic:

The first concerns the humanist aesthetics of mind-body dualism. This theory, which stems from the thought of René Descartes, implies that “mind” and “body” not only differ in meaning but also refer to different kinds of entities. The arts are able to facilitate the harmonization of these entities. Arts, if honest and without propaganda, can change people and, as a consequence, influence their illnesses as well. For that reason, novels and poems can convey insights into the etiology and pathology of many medical conditions long before they have been established on a scientific basis. Sigmund Freud also suggested that psychoanalysis drew attention to phenomena that had long before been “discovered” by poets and writers in their literary works. Examples include the description of transference love in F. Scott Fitzgerald’s novel “Tender is the Night” (Giampieri-Deutsch’s contribution); Shakespeare’s “King Lear”, the first literary character with dementia; and E.T.A. Hoffmann’s “The Nutcracker and the King of Mice”, in which symptoms

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of pedophilia are anticipated. The latter story, famously, is the literary basis of Tchaikovsky's musical suite composed for "The Nutcracker" ballet.

The second message is drawn from the use of such terms as "evidence-based medicine" and "precision medicine," neither of which represents a type of medicine that considers the patient as a person, with his/her own feelings, thoughts, and living conditions. According to Engelhardt's keynote contribution, medical humanities can fill this gap. According to the views of evidence-based medicine, any treatment of a disease has to be proven by clinical trials. Only clinical outcomes data, such as reduction in mortality, modifying the consequences or reducing the recurrence of a disease being treated, are considered as evidence. Surrogate parameters, such as lowering the serum cholesterol or blood sugar levels, do not apply. Evidence-based medicine is the periodically updated gold standard for curing an illness, but not for curing the sick person, the patient, as an individual. Similarly, following the model of precision medicine, diagnostic testing is employed in selecting appropriate therapies based on a patient's genetic makeup. The tools used include molecular diagnostics, imaging, and analytics. However, for truly comprehensive treatment, a doctor not only needs to consider the scientific point of view (i. e., evidence-based and/or precision medicine), but also the patient's perception that his or her experienced symptoms may not always correlate well with measured organ function (see Macnaughton's keynote contribution on the symptom of breathlessness). A doctor ideally needs to break down this apparent conflict, and medical humanities in particular—understanding the interaction between medicine and the arts—certainly could help: stimulating empathic behavior in physicians and medical students as well as sharpening their clinical observation skills.

A quotation from Goethe's "Faust" (Verse 4917, *Faust II*) might be representative of this dilemma by which a physician is often confronted:

Mephistopheles.

*"Daran erkenn ich den gelehrten Herrn!
Was ihr nicht tastet, liegt euch meilenfern,
Was ihr nicht faßt, das fehlt euch ganz und gar,
Was ihr nicht rechnet, glaubt ihr, sei nicht wahr,
Was ihr nicht wägt, hat für euch kein Gewicht,
Was ihr nicht münzt, das, meint ihr, gelte nicht."*¹

¹ English poetry translation by Anthony S. Kline (<https://www.poetryintranslation.com/klineasfaust.php>): "By this I recognize a most learned lord!—What you can't feel lies miles abroad.—What you can't grasp, you think, is done with too.—What you don't count on can't be true.—What you can't weigh won't weigh, of old.—What you don't coin: that can't be gold." (30 March 2020).

Keynote I

Medical humanities or therapy as art—art as therapy

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I. Context

From ancient times until today, there has been great diversity—both mutual and fundamental—in the relationships between medicine and literature. Whether in diagnostics, therapy, or the doctor-patient relationship, medicine connects science (*scientia*) and art (*ars*). A Hippocratic aphorism from the 5th century BC is of timeless relevance: "ars longa" (art is long), "vita brevis" (life is short), "occasio fugax" (opportunity is fugitive), "experimentum fallax" (experience is fallacious), "iudicium difficile" (decision is difficult). [1].

Since ancient times, healing powers have been attributed to all the arts, especially literature. Reading and writing should provide valuable contributions to medicine and to the way doctors and patients deal with illness and death. Art and medicine are interrelated and influence each other while, at the same time, representing independent fields that differ in their language, descriptions, terms and theories, and their dependence on space and time [2–7].

The connection between medicine and the arts has different dimensions, raising questions about the nature of medicine and the arts. In spite of undoubted successes, today's scientific medicine faces an anthropological and socio-cultural challenge: the task of integrating the psycho-physical and social-cultural nature of human beings with the natural sciences and technology. This is not about alternative medicine, but about alternatives or supplements to medicine. By combining natural sciences, humanities, arts, and life—in other words, subjectivity and objectivity—Medical Humanities extends, in a double way, the Cartesian dualism of body (*res extensa*) and soul (*res cogitans*) to individual subjectivity (= soul) and general subjectivity (= culture), and individual objectivity (= body) and general objectivity (= biology).

Against this background, the connection between the concept of health and that of illness, the goal of therapy, and the doctor-patient relationship deserves particular attention. If illness is understood as a defective machine, then therapy means repair, and the doctor-patient relationship is the relationship between an engineer and his machine. However, if illness is understood as the suffering of a person with consciousness, language, and social contacts, the aim and mode of medical treatment must be personalized and communicative.

The World Health Organization (WHO)'s 1946 definition of health has attained representative validity: "Health is a state of total physical, social, and mental wellbeing and not merely the absence of disease and in-

firmity" [8]. The fact that health and illness are extended to social and mental domains supports this definition. Its anthropological deficiency lies, however, in the strict opposition between health and illness as well as its exaggerated appreciation of health. Better or in addition—not alternatively—it should say: Human health is also the ability to live with illness, disability, and death. Medicine then becomes the seemingly paradoxical attempt to heal what, ultimately, cannot be healed, and to do it again and again with delight and only partial success.

The normative equation of "healthy=positive" and "sick=negative" is one-sided, not convincing, and has never been advocated consistently. In medieval times there was the phrase: "pernicious health" ("sanitas perniciosa")—"salubrious disease" ("infirmetas salubris") [9]. In the Renaissance, philosopher and politician Michel de Montaigne (1533–1592) also spoke of "salubrious disease" ("maladies salutaires") [10]. In the Romantic period, the poet and naturalist Novalis (1772–1801) was convinced that "illnesses, particularly long-lasting ones, are years of apprenticeship in the art of life and the shaping of the mind" [11].

The social-cultural context is fundamental to the relationship between arts and medicine. Medicine is an independent reality; but medicine, like all the arts, mirrors society and culture. If the arts and literature were to lose their influence on medicine, their illustrations and images, their values and symbols could no longer play a role in stimulation, consolation, or as healing powers.

II. Therapy as art

According to ancient Greek beliefs, Apollo was the god of the arts as well as the art of healing. Apollo caused diseases that he could heal again. Apollo also supported artists in a non-material way by infusing them with restlessness, which is expressed in their lives and creativity. Medicine, being both science and art, is defined as doing guided by experience and knowledge. Despite the prominence of science and technology in modern medicine, the development of medicine from ancient through medieval to modern times has retained its *original phenomenon*. As emphasized by the physician Viktor von Weizsäcker (1886–1957), medicine unites "objective correspondence" (=illness and medicine) with "personal correspondence" (=people in need and people as helpers). Effective medical treatment may entail "transjective understanding," which transcends distinctions between subjective and objective: i. e., understanding how someone understands himself and not how he is understood by the doctor or others [12]. In his "General Psychopathology" (1st edition 1913, 9th edition 1973), the psychiatrist and philosopher Karl Jaspers (1883–1969) conceptualized the methodological dualism of scientific explanation and humanistic understanding, a duality that is basically valid for medicine and especially psychiatry.

Rather than between non-human animals or machines medicine involves contact and communication between people. Art plays or can play a role in all fields or

at all levels. The therapeutic task of medicine brings with its characteristic differences both in relation to the natural sciences and to the humanities. Medical Humanities remains biology-bound, not understanding health and illness only as psychical phenomena. Medical Humanities necessitates dialogue between nature and culture, not a one-sided orientation towards the objective (physique) or the subjective (psyche).

Proven by empiricism is a central tenet of modern medicine, which psychosomatics and anthropological medicine, acupuncture and homeopathy should ignore no more easily than all types of art therapy. Today's corresponding keyword is *evidence-based medicine*. Typically forgotten or overlooked, however, is the double meaning of evidence: The term can signify an empirical-statistical proof and also immediate insight. Medical therapy cannot disregard any evidence of efficacy, which, however, may produce different results. Subjective statements by doctors and patients can be objectified, and doctor-patient relationships can be described and analyzed on a scientific basis. From the perspective of Medical Humanities, the medical concepts of science must be guided not only by mechanics and physics. Medicine as a discipline is grounded in empirical science, and its therapeutic task—to which diagnostics also refers—makes it an action science. But medicine is also a humane discipline, related to humans and not to non-technical or lifeless artefacts.

The separation between the natural sciences and the humanities, which has deepened since the 19th century, originated in the Renaissance. In this separation current criticisms and tensions are rooted, which only will find a solution or achieve a balance by overcoming this separation.

One event of cultural-historical and symbolic importance is Francesco Petrarca's (1304–1374) legendary ascent of Mont Ventoux in Provence on April 26, 1336. At the top of this mountain, Petrarch confronts the admonishing word of Augustine (354–530) in his "Confessions" (around 400 years AD): "And men go to admire the high mountains, the vast floods of the sea, the huge streams of the river, the circumference of the ocean and the revolutions of the stars—and desert themselves." Petrarch closed his eyes, ashamed of the beauties of nature, and henceforth devoted himself to studying the altitude of man (*altitudo hominis*) [13], i. e. the inherent values of mankind. This separation is also established by Charles P. Snow (1905–1980) in his much-discussed lecture and book "The Two Cultures and the Scientific Revolution" (1959): "Literary intellectuals at on pole—at the other scientists, and as the most representative, the physical scientists. Between the two a gulf of mutual incomprehension—sometimes (particularly among the young) hostility and dislike, but most of all lack of understanding" [14]. In reality, however, there are not two, but four cultures: The culture of natural sciences, humanities, the arts, and life. The goal of Medical Humanities is to eliminate or mitigate their opposition or conflicts in the field of medicine as well.

The arts can be addressed in medicine early in medical education. The physician Thomas Sydenham (1624–1689) is said not to have given a scientific text to Richard Blackmore (1654–1729), a medical student requesting reading material, but, instead, recommended the novel “Don Quixote” (1605/15) by Miguel de Cervantes (1547–1616). However, the student reacted too seriously to this recommendation: He became a poet, and was lost to medicine.

Communication between doctor and patient, above all, is not just science but also art. Several dimensions can be distinguished: (1) empathy and a friendly atmosphere, (2) authenticity and self-criticism, (3) verbal and non-verbal skills, (4) factual and situational knowledge, (5) knowledge of human nature, (6) cultural education, (7) imagination, and (8) paying attention to the patient’s language. Empathy not only projects the patient’s feelings, but also his thoughts and desires, differs from sympathy and antipathy, must result in a partial but not a complete identification with the patient and, finally, should relate to a patient’s actual (= present), past (= retrospective), and future (= prospective) situations. In principle, there are four types of social relationships of the sick: (1) the healthy to the sick, (2) the sick to the healthy, (3) the sick to another sick, and (4) the healthy to another healthy with regard to sick and illness.

Overcoming disease and establishing health may be compared to an act of creativity. Aesthetics and therapy are connected in particular ways with surgery, especially plastic surgery. Organ transplantation is not just body alteration but body metamorphosis, raising various questions: Do personality, identity, and continuity change with reception of a foreign organ? Are different types of changes associated with different transplanted organs—whether kidney, liver, heart, or hands? What alterations occur if transplanted organs are rejected as foreign tissue and require explantation?

Medical publications, lectures, and discussions can also have literary value. The so-called teaching poem of the past used the connection between science and art in classroom lessons. In the widely read poem “Syphilis sive de morbo gallico” (1530), by doctor and writer Girolamo Fracastoro (1477–1533), Apollo, the god of muses and the art of healing, is held responsible for the plague.

In medicine, art is also manifested in the names of diseases. A line can be drawn from Oedipus-, Electra-, and Cassandra-complexes to the Munchausen-, Rapunzel-, and Oblomov-syndromes. The Rapunzel syndrome denotes the swallowing of hairs (trichophagia) and formation of gastric hairballs (trichobezoar). The Oblomov syndrome refers to the novel “Oblomov” (1859) by Russian writer Ivan A. Goncharov (1812–1891), in which a person is described as losing all interests and sinking into a puzzling hallucinatory state of paralysis—a syndrome differing from depression, but not unlike it.

III. Art as therapy

Since ancient times, a therapeutic function has been ascribed to the arts. The term ‘bibliotherapy’ was coined early in the 20th century, but the concept is an old one. Aristotle (384–322 BC) anticipated a cathartic effect for those attending the performance of tragedies, due to confronting terror (φόβος) and pity (ἐλεος). Similarly, writing letters should help not only the recipient, but also the writer (*scribendo solari*). David playing his harp supported Saul during his times of melancholy (1 Samuel 16:23). Painting and the viewing of pictures should also be salutary.

The arts differ in their applicability to various medical domains—diagnosis, therapy, prevention, rehabilitation, doctor-patient relationship, hospital, therapeutic milieu—all are domains in which arts can be effective. However, despite numerous strong individual studies, a comparative or historical-systematic study of various types of arts therapy is still awaited.

By their very nature, different diseases have distinctive influences on the production and, conversely, the reception of art works. Yet, even more important than the etiology and patho-phenomenology of diseases is their anthropology. Anthropology in medicine deals with six types of relationships: to the body, to space, to time, to the social environment, to oneself, and to the world. The impact of the arts should be examined not in general, but specifically in each of these areas. As cultural responses to illness and therapy, to patients and doctors or therapists, art and literature simultaneously surpass any treatment in its biological sense, reveal an earthly timelessness or *immanent transcendence*, as one might say, contributing to medicine as *Humanities*: humane and for human beings.

The various forms of therapy also carry implications for art therapy: somatic, psychological, conservative, operative, drug, and dietary processes each involves a particular approach to or way of dealing with the arts. This specificity also applies to various diagnostic and therapeutic situations or special medical institutions. Practice, inpatient clinic, rehabilitation center, sanatorium, admission, discharge, time before or after surgery—each entails specific options and limits.

The condition of being ill is influenced by the characteristics and types of disease. Rheumatism, multiple sclerosis, cancer, skin diseases, loss of sight or hearing, depression, post-traumatic stress disorder, amputation, organ transplantation, all have a characteristic influence on the body, space and time relationships, social relationships, self-relationships and world relationships of the patient, influences which art therapy has to respect.

As pointed out by the psychiatrist Hubertus Tellenbach (1914–1994), melancholy brings about a special relationship to time and space, namely “remanence” as “staying behind oneself” (change of the time mode) and “includence” as “being locked or locking oneself” (change of the space mode) [15]. Art works are able to counteract these changes in time and space perception.

Other diseases are associated with other modifications of the aforementioned anthropological sextet of diseases or being sick.

Literary texts mean world gain and are stimulating impulses for the thinking, feeling and wanting of the sick person, who is usually put into a passive and restricted state by his illness.

Literary texts can enrich the life and worldview, stimulating thinking, feeling and willing of a patient who, due to illness, often is put in a passive and restricted state. Literature can free up spaces for plans, thoughts, and desires that neither have to agree with the immediate reality nor are required to justify themselves to meet the expectations of a neighborhood, friends, or relatives. Like any form of therapy, bibliotherapy is not devoid of possible side effects or dangers: Literature can also lead to self-deception and escapism, reinforce neurotic tendencies, and give rise to the creation of illusory worlds.

After all, there is no doubt that art therapy essentially depends on the personality and interests of the patient. The sick person—not least during his hospital stay—may even be won over to previously unknown or neglected cultural opportunities and activities. Illness offers an opportunity for culture.

The process of communicating the artwork is essential. Distributing catalogues and favored pictures, books, or pieces of music cannot suffice: Art works cannot be prescribed and taken like medication, and watching and counseling are crucial. The effects of art on the sick must be monitored in order to balance them, to go deeper and, finally, to recommend other art works. Ideally, art therapists should have three areas of expertise: knowledge of the anthropology of disease and healing, knowledge of the arts and their influences, and psychological skills—especially empathy and communication.

Arts, especially literature, can undoubtedly contribute to diagnostics and therapy but, clearly, are not an alternative to established medical procedures and cannot replace surgery or drug therapy. Yet, art and literature are going far beyond therapy, which is essential to the concept of Medical Humanities as well. Franz Kafka (1883–1924) expressed this view: “A book must be the ax for the frozen sea inside us” [16].

The world of medicine constitutes a central literary topic. Its description and interpretation can meaningfully be differentiated into eight dimensions: (1) pathophenomenology, (2) etiology, (3) diagnostics and therapy, (4) subjectivity of the patient, (5) image of the physician, (6) medical institution, (7) social reactions, (8) symbolism. Three perspectives are prominent in the dialogue between medicine and literature: (a) literary function of medicine, (b) medical function of literature, and (c) function of literature for a general understanding of medicine (the genuine function of literary medicine).

Health and illness are as basic to human life as birth and death: Both refer to nature and culture, involve biology and spirit, simultaneously represent descriptive as well as normative terms, are descriptions and judgments. The meaning of health and illness is found not

only through life science and medical perspectives, but is also widely characterized by the arts and literature, by philosophy and theology. Those disciplines, in addition to the patient’s subjectivity, remind medicine of its anthropological character, of the mental and social dimensions of health and illness, of therapy and hospital.

IV. Perspectives

“Therapy as Art—Art as Therapy” is a multi-faceted topic, closely linked to the essence and roles of both medicine and art. Through representations and interpretations, the arts as a whole remind one of the holistic nature of human life, and relativize common or one-sided assessments of health and illness such as traditional role models of doctors and patients. Recovering from illness and disability can be more impressive than living in unbroken health. Doctors can also become sick, patients on the other hand can support medical diagnostics and therapy.

Art and literature influence public and general awareness and shape people’s attitudes and behavior, improving and humanizing them; but they may also suggest mistaken ideas and raise illusionary hopes. Many images and concepts of suffering and healing, of people in need and people as helpers, stem from works of art and literature—hence, these works document and determine the level of a culture, and provide guidance for individuals as well as society and the state. Karl Jaspers was deeply convinced of the high value of description and interpretation of medicine in literature: “It is not mere chance therefore that poets have used symbols and figures of madness for the essence of human life in its highest and most horrible possibilities, in its greatness and decline. Thus, Cervantes in *Don Quixote*, Ibsen in *Peer Gynt*, Dostoevsky in *The Idiot*, Shakespeare in *Lear* and *Hamlet*” [17].

Reality, art, and medicine, although differing in many ways are, at the same time, interconnected in a special way. Medicine is not only science but is art a well; it should be understood as a culture of healing and recognized as such. Medical Humanities represents this connection between the natural sciences, the humanities, and the arts: Illness is always understood as a physical, psychological, social, and mental phenomenon, as—in other words or a with a new concept—‘spiritual-socio-psycho-somatics’. The doctor is not only engineer or scientist, but—taking into account the necessary professional distance and balance—a personal and communicative companion of the patient.

Personalized medicine should not only mean biological and genetic individuality, but should consider the patient as a person with feelings, thoughts, and living conditions. *Evidence-based medicine* cannot be limited to empirical-statistical evidence, but must also include immediate insights. *Precision medicine* should not only mean objective accuracy, but must include subjective accuracy of the doctor as well as the patient. Medicine as Medical Humanities is human and humane—for the benefit and dignity of suffering, sick, and dying men and women.

Keynote II

Critical medical humanities in action: symptom and sensation in breathlessness

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Some of the material is published elsewhere [18]. Much of the work of this paper was funded through the *Life of Breath* project funded by the Wellcome Trust 2015–2020, grant number: 103339/Z/13/Z; 103340/Z/13/Z. Ethical permission for work with Breathe Easy group participants was granted by Durham University's Department of Anthropology Ethics Committee. Furthermore, this paper draws upon work undertaken by members of the *Life of Breath* project team: Havi Carel, Krzysztof Bierski, Kate Binnie, Jordan Collver, James Dodd, David Fuller, Alice Malpass, Coreen McGuire, Sarah McLusky, Rebecca Oxley, Kyle Pattinson, Mary Robson, Arthur Rose, Andrew Russell, Corinne Saunders, Jade Westerman and Sian Williams. I am very grateful to them all for the generosity of their input which made this interdisciplinary project a success.

Introduction

It was a huge honor for me to open the International Conference, “Medical Humanities—Interactions between Medicine and the Arts”, in Vienna in October 2019. My introductory presentation proposed a more ambitious role for medical humanities than has historically been the case and intended to provide a challenge and stimulus for further development of the field. In this short article I will set out that new agenda for medical humanities and make a case for its importance. I will illustrate how such an approach might work with reference to my project, the *Life of Breath*, which is a five year, Wellcome Trust-funded project investigating the experience of breathlessness and intended to show how medical humanities research might influence clinical management.²

Critical medical humanities: a new concept

At Durham we have led on the development of a new concept of medical humanities which we call “critical medical humanities” [19] to distinguish it from the original concept which focused on clinical (mostly medical) ed-

ucation. This approach to medical humanities emerged in the 1970s in the USA as a result of a growing concern about “depersonalization”, the “centrality of molecular biology” and the “teaching of mechanistic medicine” in medical schools [20]. The suggestion was that with increasing technology and more in-depth biomolecular knowledge, students were losing a sense of how wider human lives influenced health and illness. The result was the establishment of programs in medical humanities in US medical schools, and also in the UK, that broadly conformed to the two educational narratives later outlined by Howard Brody [21].

It became clear, however, in the early 2000s that this approach was not breaking through in part because neither sought to or succeeded in getting engaged in changing biomedical culture nor have played any part in challenging epistemological divisions or power structures within biomedicine. This is important because there are clear shifts in the challenges for health in the 21st Century that recognize the need to see health in medicine within wider critical frameworks and contexts and that therefore call for a more interdisciplinary approach to research and understanding [22].

In response to this, writing in the 2015 special issue of the journal *Medical Humanities*, my colleagues Will Viney, Felicity Callard and Angela Woods open out a new concept of this field that seeks not to define medical humanities but rather “to consider what it is capable of doing”. They ask [23]: “Can the medical humanities intervene more explicitly in ontological questions—in particular, of aetiology, pathogenesis, intervention and cure—rather than, as has commonly been the case, leaving such questions largely to the domains of the life sciences and biomedicine?”

This approach to medical humanities, which we call “critical medical humanities”, is characterized by a belief that the important task is not one of educating the practitioner but of shaping the evidence base in order to contribute to improvements in health. This conception maintains that to address the health challenges of the 21st century and beyond requires an expanded vision of what is allowed within the rather narrow confines of the health care evidence base. That evidence base needs to include knowledge from the arts, humanities and social sciences as well as seeking understanding through their methods. We will not achieve that working in isolation from biomedical understanding—we need to get engaged [23]:

“So that ... a framework in which the ‘perspectives’ of the humanities are pitted against those of the ‘science’ or ‘social sciences’ ... give[s] way to a much richer and more entangled investigation of bio-psycho-social-physical events that underpin the life, and death, of any organism”.

In the Research Institute I lead in Durham and in other Centers in the UK, Europe and the US, this is the character of medical humanities that is now emerging strongly. Its key features are interdisciplinary research that is in engaged with themes of critical interest to health, med-

² The *Life of Breath* is a five-year interdisciplinary project led by the author and Professor Havi Carel of the University of Bristol and funded by the Wellcome Trust (2015–2020, grant number: 103339/Z/13/Z; 103340/Z/13/Z) to explore the phenomenological, cultural, historical and clinical understandings of breathlessness. Ethical permission for work with Breathe Easy group participants was granted by Durham University's Department of Anthropology Ethics Committee.

icine, healthcare and biomedical research. In concordance with that vision, the research mission of the Institute for Medial Humanities at Durham is to transform research in health through the study of human experience.

This is a very exciting moment in the field of medical humanities, but it is also a moment where we have to prove our claims to making a difference in health through this approach. But how do we do this in practice? How do we engage and make it meaningful? What are the challenges and pitfalls involved in this?

Life of breath: engaging clinical science

The *Life of Breath* research project illustrates this critical medical humanities approach. It is a five-year project funded by the Wellcome Trust that aims to investigate the cultural, experiential, and historical origins of our understanding of breathing and breathlessness and to bring that into dialogue with clinical understanding. Its ultimate aim is to make a difference to the lives of breathless people through taking seriously our claim that this dialogue is critically important to ensure that what clinicians do to help patients actually addresses what is wrong.

Interdisciplinarity

Our approach to this project was from the outset profoundly interdisciplinary. Our research group, which is called ‘Breathing Space’ (BS), meets regularly across the two sites of the project bringing together everyone involved, including philosophers, clinicians, a medical historian, literary scholars, anthropologists, clinical scientists and artists, and experts by experience (those with breathlessness). The process of generating research questions within BS is critical, because the success of interdisciplinary engagement is dependent upon thinking differently about a subject through the collusion of new insights and methods in a collaborative space [24]. Themes and research questions have therefore been emergent. One important theme has been that of investigating the difference between experience and sensation in relation to breathlessness and how this informs neuroscientific investigation.

Clinical relevance

This emergent theme speaks to the important issue of clinical relevance. If our aim in critical medical humanities is to generate research that will lead to real changes in health care practice we have to engage with clinicians and clinical science. In order to do that, it is our responsibility to explain why anyone working in health care practice or research would want to engage with us. From the outset of *Life of Breath*, therefore, I wanted to find out what it was that clinicians felt was difficult about their management of breathlessness and where they might be needing new insights and evidence.

Breathlessness is important symptom in a number of common and chronic diseases, most commonly chronic obstructive pulmonary disease (COPD) which is strongly associated with smoking. Currently the WHO rank COPD as the fourth most common cause of death in developed countries and it is estimated to become the 3rd by 2030 [20]. As chronic breathlessness frequently results from incurable, often long-term progressive conditions, the symptom often persists despite maximal treatment of the condition. Palliative care physicians such as Miriam Johnson and colleagues have termed such breathlessness “refractory”, and the attitude of clinicians and patients themselves towards it is one of “nothing more can be done”, with all that implies in terms of hopelessness, and lack of attention to the problem by either party [25]. Patients may no longer report increasing distress to their doctors and clinicians may fail to ask about the problem as they feel unable to help.

Breathlessness is, therefore, a potentially very fruitful symptom for a medical humanities approach. It is important in global health terms and clinicians are struggling to manage patients effectively. It also presents clinicians with a conundrum: that measured breathlessness (through spirometry in the clinic) does not often equate with the actual experience: a problem known as “symptom discordance”. Physicians are struggling with this problem and are at the very early stages of seeking answers. A major focus in clinical research has therefore been on trying to understand the sensation of breathlessness through neuroscientific investigation.

Clinical engagement—neuroscience

This takes me back to our emerging theme of investigating the difference between experience and sensation in relation to breathlessness and how this informs neuroscientific investigation. Addressing this involves important insights that the humanities and social science can provide. In order to bring those insights into play it was important for us first to explore the nature of clinical understanding.

In 1999 the American Thoracic Society published an influential definition of breathlessness as “a subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity” [26]. What struck me about this from a medical humanities perspective was the merging of “experience” and “sensation”. It seems apparent in this definition that experience is regarded as consisting purely of sensory experience. The ATS further modified their definition in their 2012 update referring to emerging evidence that describes three distinct sensory experiences associated with breathlessness (air hunger, tightness and the work of breathing) and that such sensations can vary in unpleasantness and in their “emotional and behavioral significance” [27].

For me this concentrated, clinical focus on sensory mechanisms seemed to carry with it the potential to miss what else might be understood by and inform the full pa-

tient experience of breathlessness. One of the fascinating things about breathing is that it is under both voluntary and involuntary control, and this means there is a complex set of mechanisms that come into play, including the involvement of the brain stem to override voluntary breath-holding. But it also enables us to examine potential relationships between affect (emotions) and breathlessness, and the arts and humanities have expertise to offer here.

Lansing, Gracely, and Banzett in an important paper in 2009 propose a multidimensional model of breathlessness taking its lead from pain studies [28]. They describe the three sensory qualities and link them to distinct physiological mechanisms. They draw a distinction between sensory intensity (i.e. how breathless do you feel) and affective intensity (i.e. how unpleasant does that breathlessness feel, or how upsetting is it). A further distinction is also made between two time-distinct stages in this sensory process: the immediate experience of unpleasantness and a later stage of cognitive evaluation and emotional response. This later stage mirrors the model of chronic pain where (as with chronic breathlessness) it is recognized that negative emotions such as depression, anxiety and fear are common consequences.

From a medical humanities perspective it is possible to discern a number of problems with this model. First, there is the language: the humanities and social sciences are sensitive to the nuances, variations and implications of language in a way that medical science does not tend to be. In this case, the basis the authors use to connect people's sensory experience to physiological mechanisms is by offering word descriptors of breathlessness sensations to subjects and asking them to choose the best fit, rather than allowing a range of possible descriptors to emerge unbidden from their respondents, as might happen in qualitative research [18]. Research in our *Life of Breath* "Breath Lab", which brought together researchers in the project with clinicians, people with breathlessness and their families and carers, revealed that some of the clinical language was not understood. Patients in particular found the words used for "pulmonary rehabilitation (PR)" off-putting because "pulmonary" did not mean much to them, and "rehabilitation" had connotations of drug rehab [29]. This is important, as PR is the main evidence-based management on offer for such patients.

Second, there is a lack of acknowledgement of how a life lived with breathlessness impacts upon perception of the sensation in the moment. What is striking about Lansing's model is that the emotional response is described as deriving *from* the sensation of breathlessness. But what is abundantly clear from a range of studies, including our own emerging research, is that people's experience of their chronic breathlessness profoundly colors how the sensation is perceived [18]. The problem with the laboratory-based approach is that this experimental work is largely carried out on normal subjects whose bodies and minds have not been subjected to years of chronic breathlessness and the effects that may have on physiology and

neural mechanisms. As our neuroscientist collaborator Pattison and colleagues acknowledge [30]:

"Replicating the emotional component of dyspnea in a laboratory environment is difficult as laboratory dyspnea does not cause the existential fears dyspnea sufferers encounter in daily life, hence patient studies will be necessary in order fully to comprehend all aspects of dyspnea".

And those patient studies are challenging for people whose condition does not enable them to spend time lying flat in the enclosed tunnel of an fMRI scanner. MRI by the constraints of its physical demands is not suited to imaging people with chronic breathlessness.

Medical humanities, therefore, has a role in terms of critique of the clinical approach but can also point to a number of potential productive ways to work with the clinical scientists.

Interdisciplinary insights: dynamism of the brain and body in response to experience

What our interdisciplinary discussions, especially involving anthropologists and research with people with breathlessness, reveal is that lived experience is a dynamic thing and human beings need to be conceptualized as in constant conversation with their social and environmental surroundings. Anthropologist Tim Ingold strongly asserts this dynamism in his book *Biosocial Becomings* [31]. He reflects on the kind of "impasse" created by regarding human beings in the traditional medical machine-like way initiated at the Enlightenment, and suggests we think differently, "to think of ourselves not as *beings* but as *becomings*—that is not as discrete and pre-formed entities but as trajectories of movement and growth". It is in this space of thinking about the nature of human being that creative engagement with clinical science can occur and we can see connections between experience, sensory bodily awareness and an approach to neuroscience that takes this dynamism into account.

In their 2013 paper, "Understanding dyspnea as a complex individual experience", our collaborator Kyle Pattison and colleagues note the importance of the emotions as powerful moderators of the perception of breathlessness [30]. This is further confirmed by the American Thoracic Society who quote research that shows the "high prevalence of anxiety and depression in patients with chronic breathlessness" [27] and that this is also related to the problem of poor interoceptive awareness [32]. Interoception is the sensation of the internal workings of the body, such as heart beat, digestion and breathing, and it seems clear that it is suppressed in chronic breathlessness. This idea may lie at the heart of the problem of symptom discordance in breathlessness. Through the idea of a mind/brain in dynamic interaction with the ever-changing world we connect neuroscience with the philosophical social science of Ingold and others indicating the power of human *becomings* (not *beings*) to change and adapt to new circumstances confounding sometimes the power of clinical technology, reliant as it

is on its static modes of measurement, to uncover symptom experience.

I think that this insight, rather than making clinicians despair because of the inconstancy of the lived body in response to clinical measurement, should provide hope about new possibilities to support those with chronic breathlessness.

New approaches: dance

A key challenge in managing chronic breathlessness is poor uptake of the major evidence-based treatment: pulmonary rehabilitation [29]. Our medical humanities approach has provided insights into why that might be, including problems of language and culture, but key to this is the evidence that interoceptive awareness is reduced in people with chronic breathlessness.

These insights are now taking us in the direction of exploring the possibility of dance movement for people with chronic breathlessness. We are now working in collaboration with our experts by experience partners (who are the participants) and a dance teacher to deliver this dance program in the community. During this pilot we have been collecting both qualitative and quantitative information about participants including information about their interoceptive awareness to try to test out our hypothesis that engagement with dance movement improves interoception, and may therefore improve perception of breathlessness and avoid inaccurate assessment of symptoms. So far, it is clear that the group are very much enjoying themselves, that the group dynamic is supporting them through difficult times with their conditions; and initial assessments of strength and balance and very positive [33].

Conclusion

Work on the *Life of Breath* illustrates the potential for a critical medical humanities approach that is determined to engage and collaborate across disciplines and methods with the aim of influencing clinical science and making a difference to people's health. It is important that this process is a two-way street: each step taken must make sense not only to humanities scholars but also the clinicians. In this interdisciplinary and collaborative context, we both have the opportunity mutually to correct misconceptions and to influence ideas, develop new ones and plan collaborative research. This new approach to medical humanities opens out a practical approach that enables humanities and social science scholars to be actively engaged in constituting the clinical evidence base as well as enlivening our own home disciplines.

Medicine and Visual/Applied Arts

Arts and medicine: on the potentials of transdisciplinary encounters

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There are many points of contact and intersection between medicine and art, many points of departure for fruitful cooperation that can be enlightening for both fields of endeavor. Part one (I) of this contribution will briefly outline various aspects of this interrelationship, with particular emphasis on:

- the role played by creative processes, aesthetic practices, and aesthetic objects, in an effort to find a reorientation and ways to cope with suffering and daily life;
- art in its function as a “transitory body”;
- forms of cross-disciplinary cooperation, as well as the relevance and potential of this boundary-opening joint exploration of approaches to problems and questions related to research.

Part two (II) will present the research project “Stitches and Sutures,” which deals with representing the perception of the body. The author of the project asks herself how subjective sensations can be made visible and artistically explores her own sensory disturbances caused by multiple sclerosis.

I. On the potential of artistic processes with regard to medical and therapeutic tasks

Cooperation involving scientific and artistic perspectives and methods is meaningful on various levels. The current spectrum of diverse interfaces includes, to name only a few examples: image-generating processes for the purpose of presenting medical facts in visual form to support communication with experts or laypersons; artistic expertise brought in for the purpose of designing clinical areas to support recovery processes; the targeted use of artistic processes for diverse forms of therapy.

In artistic works, physical and psychological dispositions, as well as psychodynamic processes and mental images, can be made visual in condensed form. Artistic works possess communicative potential: With regard to therapeutic decision-making, for example, these works can reveal possible points of contact, possible synapses. For the trained observer, this opens the possibility of perceiving creatively articulate individuals from multiple perspectives:

- the perspective of their specific make-up, background, and the various contingencies that affect them;
- the perspective of the problems, crises, and illnesses with which they have to cope;

- the perspective of the resources that they—perhaps without realizing it—have at their disposal.

Along with this possibility, however, goes the obligation for the observer to constantly maintain a critical self-regard and to reflect on the systemic and disciplinary context in which he or she works, to avoid reaching oversimplified or false conclusions.

Like the art of healing and psychotherapeutic activity, personality development is fundamentally connected with creativity. The doctor who helps people to gather their strengths in order to restore not just the healthy functioning of their body (*restitutio in sano*) but their original healthy condition (*restitutio ad integrum*) [34] must, on the basis of his knowledge and skill, be able to act creatively. Similarly, mental development is impossible without the ability to become creative. Creativity is an attitude and an activity in which perception, imagination, memory, and artistic activity fuse. It allows new ideas or insights to take form. Personality development requires this “structure-forming internalization” [35].

Furthermore, creativity requires direct encounter. Whether in art or in science, direct encounter with the object of interest, the person, or the field of knowledge is essential: Creativity is influenced by the degree or depth of this encounter. However, despite possible overlaps, art and science use different processes and methods in approaching a subject. These differences can potentially be fruitful and productive for both areas; for example, in various forms of therapy and art therapy in particular.

Art therapy centers on an intra-psychic process of form construction and design that affects the senses as well as psychomotor processes. These processes are reflected in the artistic dynamics of form of an aesthetic medium [36]. The aesthetic object becomes a “transitory body” [37] that provides an image of inner and outer life circumstances and renders them processable. By applying this artistic approach, the therapeutic process aims at *rearranging* patterns of perception, thought, and behavior into a constellation that makes it possible to cope with everyday life.

At the same time, in this therapeutic process, attention is consistently focused on the person's resources, which are reflected in the aesthetic process and in the object itself. These resources thereby become manifest. “Placing the aesthetic object in the therapeutic framework, in a protected, non-judgmental context, makes it possible for a genuinely visual language to emerge” [37]. In the field of artistic production, this visual language is labeled “Outsider Art,” as exemplified in the artistic work produced by the Gugging Artists³. However, the direction of intensity in the artistic process differs, depending on whether it is within or outside the therapeutic context.

In the context of therapy, this intensity must be maintained in the therapeutic situation itself. Here, the gradual development of a visual language leads to the creation of a “potential place” in which an individual's own experience

and a first objectification can coexist. In the therapeutic relationship, the patient, little by little, comes to recognize himself or herself in the images generated; the artistic process unfolding within secure boundaries stimulates and nurtures the joy of experimentation and the discovery of new forms of expression and action. Clear, dynamically structured frameworks enable patients to perceive the interrelationship therapy-object-patient-group, a perception that is also protected by these structured frameworks and can thus be given shape.

Over the past 15 years, an equally diverse and enriching form of collaboration has emerged in the field of research, namely, vigorous collaboration between the field of art and design and the fields of medicine and social science. The incorporation of artistic processes and perspectives provides new impulses for a broader understanding of medical facts in such contexts as: precise and empathetic communication; therapy; enhancement of self-healing capacities; as well as new support tools in the context of treatment.

In this regard, it is worth drawing attention to the examples of at least three projects:

- Firstly, the Peek project “D.A.S.—Dementia. Art. Science”, which, by tapping the potentials of art and design, aims at meeting the challenges to our society posed by dementia;⁴
- Secondly, the FFG project “INTERACCT”—a project that aims at designing and developing an e-health platform and supportive tools especially focusing on juvenile patients with chronic diseases in aftercare;⁵
- Thirdly, the Peek project “Features: Vienna Face Project/Laboratory of the Senses”, which aims at increasing sensitivity to facial paralysis in children—a project in which experts from the fields of sociology, plastic surgery, and art collaborate.⁶

The latter example allows, at this point, a transition to part two (II) of this contribution, in which the artist Barbara Graf will present her current research project, “Stitches and Sutures,” which gives deeper insight into the artistic research process itself. First, however, a definition of *artistic research* might be in order.

In the words of Henk Borgdorff [38], a key person in this field, art practice qualifies as research when its purpose is to broaden our knowledge and understanding through an original investigation. This means that, in artistic research, insights are gained and knowledge is generated in artistic practices that are reflexive. The combination of artistic, practical approaches with prescientific modes of action and thinking, as well as scientifically oriented methods, leads to other and new forms of knowledge; these can be both rational and pre-rational, as well as both subjective and general. Theory and practice, sub-

³ https://www.museumgugging.at/de/gugging-kunst/die-kuenstler-aus-gugging/kuenstler_innen (30 March 2020).

⁴ <https://www.dementiaartssociety.com/> (30 March 2020).

⁵ <http://www.interacct.at/project/default.aspx> (30 March 2020).

⁶ <http://www.corporealities.org/features-2010-2014/> (30 March 2020).

jectivity and objectivity, scientific methods and art are not considered as oppositions, nor as dichotomies; rather, they are to be approached openly and negotiated in the work and thought processes.

The following presentation of the first research phase of the PhD project, “Stitches and Sutures,” should make the potentials of artistic research strikingly apparent.

II. From bodily manifestations to the representation of physical sensations, Barbara Graf

In my artistic research, I am concerned with the body. In my earlier work, I focused on anatomical structures, both inner and outer aspects of the body. Body identity and bodily expression were my primary interests. My current investigation centers on what is experienced physically. My aim throughout is to comprehend what is taking place in my body and to understand myself by understanding my body (Fig. 1).

„Vertebral Column Garment (Anatomical Garment V)“, dated 1996, describes a movement from the inside to

Fig. 1 Barbara Graf, „Vertebral Column Garment“, 1996, cotton, 175 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 2 Barbara Graf, „Contours – Installation“, 2005, cotton, 170 × 200 × 120 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 3 Barbara Graf, „Hand Breast Layers“, 2008, cotton, life-size (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 4 Barbara Graf, „Cloth 6“, 2013, photograph (© Barbara Graf, Vienna. Reprint by courtesy.)

the outside. The solid inner skeleton becomes a protective textile outer covering (Fig. 2).

In the installation “Contours”, dated 2005, we are no longer dealing with a compact outer covering but with a body that breaks up into parts. A figure detaches itself from a canvas-like surface. Leaving a gap behind, it expands into space (Fig. 3).

In the “Hand Breast Layers (Anatomical Garment XVI)”, multiple layers create a kind of relief, extending the person’s body in space. Embroidered topographies of the body cover the body and can be folded back or turned like pages. This shifts the body’s spatial limits. Manipulating the body’s covering becomes a form of palpation, a means of reassuring oneself with respect to one’s body (Fig. 4).

For the past fifteen years, I have been working on artistic research projects concerned with the field of medicine. From 2009 to 2013, in the project “Surgical Wrappings”⁷, my colleague, Christina Lammer, and I explored various

⁷ Supported by the Vienna Science and Technology Fund (WWTF) and based at the University of Applied Arts Vienna and the *Medical University of Vienna*; project leader Christina Lammer.

Fig. 5 Barbara Graf, „Cloth 5“, 2013, photograph (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 6 Barbara Graf, „Drawing 193“, 2017, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

aspects of surgical activity. One of our goals was to examine surgical wrapping cloths—which both separate patient from surgeon and form a transition from one to the other—and to develop a vocabulary for the hand gestures in a surgical context. These are hands that have a fine touch and at the same time hands that carry out deep interventions. I created textile works that reflect a vision of the operating field as being a picture and represent hand movements involved in surgical operations (Fig. 5). For this purpose, I used surgical drapes and medical gauze.

In staged photographs, my attention shifts from the body in the operating room to my own body. Indeed, my body could also be another body, one that serves as an example.

In my current work connected with my artistic PhD⁸, my goal is not so much to represent ways in which the body expresses itself as it is to make the life of the body visual. How can perceptions of the body be made visual? My research is based on personal experience. At the heart of my artistic investigation are the sensory disturbances I experience as a result of multiple sclerosis (MS). Sen-

Fig. 7 Barbara Graf, „Drawing 189“, 2017, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 8 Barbara Graf, „Drawing 190“, 2017, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

sory disturbances are among frequent complaints made in connection with the chronic disease MS. They are invisible, irritating, disturbing, and can even be debilitating. Some of these symptoms create the impression of a sensory stimulus triggered by an external object (Fig. 6).

For example, one sensation is that my feet are covered with something resembling socks. I perceive many of these sensations as having a textile character. At first, I suspected that my professional work was providing me with the vocabulary I was using here. However, accounts given by persons affected by MS show that the sensory impressions caused by this nervous disorder are frequently compared to the structures of textile fabrics or to pieces of clothing. This suggests that basic perceptual experiences involving the sense of touch make themselves immediately available when the need arises to describe these sensations. Often, people also describe the feeling of having painfully constrictive bandages wrapped around parts of their bodies (Fig. 7).

The sensation of being touched without anything material actually touching me makes me ask myself whether I perceive what I am feeling as being my own body or something foreign to my body (Fig. 8).

⁸ Artistic Research PhD: “Stitches and Sutures” in progress since 2018 at the University of Applied Arts Vienna.

Fig. 9 Barbara Graf, „Drawing 212“, 2019, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 11 Barbara Graf, „Drawing 200“, 2019, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 10 Barbara Graf, „Drawing 203“, 2019, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 12 Barbara Graf, „Drawing 208“, 2019, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Phenomena occur that seem convincingly real, such as the feeling of balls of textile material gathered under the soles of my feet (Fig. 9). Does sketching these irritating sensations make it easier for me to accept them as being part of my body?

The paresthesia can also distort perception of the body's physical expansion. In a drawing that shows the feeling of “largeness,” I attempt to represent what I feel are the dimensions of my body in relation to the body that I actually see. Discordance between the body that one feels and the body's visible outer aspect is a phenomenon that is caused not only by illness; but illness makes it more striking (Fig. 10).

When I attempt to draw feelings of tension, do I sense the body's spatial limits? Or do I sense the places where my perceived sensations extend beyond my actual body? We perceive our body distinctly when something forces itself upon us, when something exceptional takes place; we perceive it by experiencing disturbances and pain but, of course, also by experiencing alterations and events of a pleasant nature.

In the drawings, I try to represent sensory input just as I perceive it. However, a simple, almost seismographic record is not possible, because if I consider perception to

be sensory recognition, then stored experience is necessarily a part of the process (Fig. 11).

And how does drawing affect my physical perception? The sensation that a delicate, almost immaterial membrane is touching my knees evolves, as I draw it, into that of a fabric laying itself over my body (Fig. 12). So is the drawing that results in exaggeration? Or does the way I have drawn it help me perceive the strange phenomenon more distinctly?

In an effort to concentrate more on the specific nature of these disturbances, I try, in a drawing of the soles of my feet, to represent only what I find striking and to leave aside anything that does not seem essential. Why, then, does the drawing nevertheless show what are recognizably my feet? Does this have to do with a kind of visual foreknowledge? Or do I actually feel the structures in this topographic configuration? Aside from what I feel at the moment of perception, what guides me in this effort is the inner image that I have of my body, an image that consists of the body I have experienced spatially and the body I have perceived visually (Fig. 13). Perhaps that is an explanation.

Drawing my whole body exclusively on the basis of sensations inflicted on me by the disturbances of my

Fig. 13 Barbara Graf, „Drawing 210“, 2019, pencil on paper, 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

Fig. 14 Barbara Graf, „Drawings“, 2017–19, pencil on paper, each 29.7 × 42 cm (© Barbara Graf, Vienna. Reprint by courtesy.)

nervous system makes my undertaking even more explicit. Perhaps this kind of representation comes closer to expressing what I actually feel as being my body; nevertheless, it lends itself less to being generally comprehensible. Is this introspective work an attempt to understand the “disturbed” perception I have of my body and, by transferring what I feel to the body that I draw, to take distance from it? In some cases, the paresthesia is very subtle; in other cases, much more intense or painful. In all cases, it is evidence of the chronic illness (Fig. 14). Can representing it ward off my fear or be a means of providing an outer locus for what is threatening me? As if, by representing it, I had control over something without actually being able to change it?

It is inherently difficult to convey what one experiences subjectively. The wording commonly used in descriptions of the specific nature of sensory disturbances is based on accounts given by persons affected by the disease. Over and above fundamental questions related to the very possibility of representing body perception, a catalog of drawings of these symptoms could serve as a supplement to verbal descriptions that already exist. Insights gained by means of graphic representation reveal other aspects

of the disease and could potentially stimulate discourse with other affected persons as well as with various disciplines—especially those that are therapeutic.

Artistic processes and artistic research, by reason of the great variety of their experimental, sensuous, and descriptive methods and practices, can, therefore, lead to a broader understanding of illness *as well*. Moreover, they possess a potential that is, to a certain extent, emancipatory. This potential allows new contexts for action to be opened up; in addition, thanks to the boundary-crossing impetus provided by artistic processes and artistic research, completely original links to the scientific and technical disciplines can be created. In this process, theory and practice, subjectivity and objectivity, art and science are no longer to be perceived as dichotomies. It is precisely from the combination of artistic practices—along with prescientific modes of thought and action—and scientifically oriented methods that a great innovative force is generated.

Vienna as the cradle of art therapy: a look back at the 1920s

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Looking at the relationship between *visual art* and *medicine* it soon becomes clear that it is a relationship that takes many forms and has a long history. The desire to make visual records of diseases and illnesses is evidently as old as art itself. Surviving artefacts from some of the earliest human civilizations include numerous images of sick people and the measures taken to alleviate their suffering [39]. Our fascination for this subject is old and its motivic bandwidth correspondingly broad. Although it may be difficult to organize and classify the countless images of disease and illness that have accumulated over the millennia, we can at least identify a few themes that have come up time and again and have thus drawn the attention of art historical scholarship.

Of course, the main theme in this iconography of illness is the visualization of illness itself, that is, the depiction of sick people, or, more specifically, of bodies which evidence the visible traces of sickness. Stone tablets from ancient Egypt depict polio sufferers and the crutches they used as indispensable walking aids. Extant pre-Columbian art, particularly that of the Peruvian Moche civilization, includes sculptures showing people with facial paralysis, leishmaniasis and nasal or oral mutilations. In Europe, too, there is widespread evidence that the visual representation of physical illness was a significant source of interest. One could cite Raphael's *Transfiguration* in the Vatican Museum in Rome as a typical example of this tendency: the lower half of the image features a boy suffering an epileptic seizure.

But representations of the sick are just one aspect in this iconography of illness, albeit the most spectacular one. Another is the evident desire to depict the people who cure illnesses: the doctors. Here, too, there are examples from every age and from all around the world, though such depictions were especially popular in seventeenth-century Holland, where often dubious methods of doctors and quacks provided plenty of scope for satire. But the intrinsic interest of such imagery goes well beyond merely formal and aesthetic concerns; it actually provides us with insights into the social history of medicine and the status of the medical profession. Moreover, such images often point to very specific historical circumstances which, if we read them correctly, can sometimes seem incredibly modern and up-to-date. For instance: archaeologists and historians have been able to show that the number of doctors per capita in Pompeii was actually higher than that in modern-day Turkey; that their medical instruments—bone saws, forceps and so on—were of such high quality that they were exported throughout the Roman Empire and used in places such as Mainz and Trier; finally, that general healthcare provision in ancient Rome was precarious because doctors were expected to cut costs. This much we know from an edict of Emperor Antoninus Pius (reign 138–161 AD), according to which the number of publicly funded positions for local doctors was to be reduced. In other words, cuts to public health budgets were being made as early as the second century AD [40].

Besides the iconography of the sick and representations of the medical profession there is one more area that is of particular interest to art historians; namely art therapy, which will be my focus in what follows. This field also has a long history, particularly in the iconography of therapeutic methods. But systematic research on the subject soon brings us to a rather paradoxical position. On the one hand art therapy is currently very popular. One could even say it has now arrived at the heart of modern society. To substantiate this claim we need only look at the homepage of the Austrian Association of Art Therapists (*Österreichischer Berufsverband für Kunsttherapie*), which lists some three thousand members in Austria.⁹ That is comparatively high; in Switzerland it is more like five hundred. On the other hand, we still know very little about the history of art therapy, however widespread it might happen to be today. True, there are more than a few German-speaking scholars who have spent years addressing this knowledge deficit. Among them are Karl-Heinz Menzen (an editor of the journal *Kunst & Therapie*, which existed from 1982 to 2005), Flora von Spreti, Karin Dannecker and, in Vienna, primarily Barbara Putz-Plecko and the recently deceased Peter Gorsen. But despite their best efforts our knowledge of the history of art therapy remains fragmentary. Essentially, we still know very little about it.

The purpose of science must be to reduce these gaps in our knowledge so as to increase awareness, particularly of the beginnings of art therapy. This is absolutely crucial because every field of activity, whether scientific or artistic, needs to know about its origins if it is to develop a critical attitude to what it does in the present.

We shall begin with the early history of art therapy in Vienna, which is an obvious starting point in some respects. After all, Vienna was the native city of ‘the major art therapy pioneer’ Edith Kramer, who was able to leave Austria just in time in 1938 and went on to become the doyenne of her discipline in the USA after the war [41]. We now know a great deal about Kramer. There are a couple of informative works about her personal and professional life, and she will no doubt find a prominent place in the as-yet unwritten history of the origins of art therapy [42, 43].

But that history goes well beyond Kramer. She would be a starting point for further questions and investigations, and that research would have to consider the environment in which she operated, the historical, political and artistic parameters that shaped her work, the traditions she was able to subscribe to and those she could not; that is, the predecessors and threads of tradition from which she distanced and detached herself.

Delineating this context is not all that difficult to begin with. Kramer herself often mentioned the people who influenced her development. Among them, perhaps unsurprisingly, is Sigmund Freud, whose theories—chiefly that of sublimation—she was able to subscribe to. Another influential figure was the painter and designer Friedl Dicker-Brandeis, under whom Kramer studied and whom she supported as a teaching assistant in art classes for traumatized children whose families had fled from Nazi Germany to Prague. Another influence was Franz Čížek, an art pedagogue who ran the so-called Youth Art Classes (*Jugendkunstklasse*) in Vienna, a position from which he pioneered nothing less than a fundamentally new conception of art teaching. With the support of Otto Glöckel, the longstanding president of the Municipal Schools Council, Čížek sought to bring out the innate but often hidden creative potential of the children he taught, and in a variety of ways. Under Čížek’s nurturing direction, every possible form of artistic expression was exercised: the children in his classes made music, sang and played sports together. Most importantly, though, they worked with as many different materials as possible. This involved more than just drawing and painting; the children were encouraged to experiment with clay, plaster, textiles and glass beads; they cut shapes from colored papers to make collages; they sawed, carved and hammered. And all this, it seems, involved using the whole body, which was quite new at the time: the children were allowed to get up, walk around and interact with one another “using all their senses”, as one contemporary put it [44].

Ideas like these were integral to municipal education policy in Vienna during the interwar years, which was when they were theorized for the first time, though

⁹ <https://berufsverbandkunsttherapie.com/mitglieder/> (30 March 2020).

they had been put into practice in isolated cases even earlier. We find the same links between pedagogical and therapeutic purposes in nineteenth-century Vienna. The main example of this was the Levana Institute for Health and Education (*Heilpflege- und Erziehungsanstalt Levana*) in Baden, just south of Vienna. Directed by author Jeanne Marie von Gayette and reform pedagogues Jan-Daniel Georgens and Heinrich Marianus Deinhardt from 1856, this institution for children with mental illnesses is noteworthy for various reasons, not least because it was the first place to employ the term ‘therapeutic pedagogy’ (*Heilpädagogik*). The Levana Institute may only have lasted ten years, but it was a huge success; there was significant demand for places and an increasing number of parents sent their sick children there. Indeed, the directors were compelled to look for larger premises due to lack of space, which explains the move from Baden to Schloss Liesing. Thankfully we are quite well informed about the activities of the Levana Institute, which published its own in-house journals. Looking through these publications we learn that the directors pursued a very wide-ranging and essentially holistic concept of therapy. One thing they regarded as particularly important was regular exposure to the natural environment, which is why the institute was always located on premises with large gardens—something we can certainly appreciate today given the current discourse on ‘healing architecture’. Also, the directors were clearly convinced that craft activities and visual art could expedite the healing process.

“For our part we want to create a twofold training school: one for gardening and one for certain groups of creative work; namely for wood turning and pot throwing, for clay sculpting and wood carving. [...] Here we note that progression through the classes must proceed incrementally, according to the particular ability shown by each pupil in this or that task, and that, where aptitude allows, the transition from craft to art is to be facilitated by our teaching staff [45].”

We do not yet know whether people such as Edith Kramer were aware of the Levana Institute in the interwar years. What we do know is that ideas that were developed in the nineteenth century, however sporadically, were widely discussed later on, after the First World War, and became one of the foundations of education and health policy in the changed political conditions in Vienna. And the crucial thing here is that these fields—art, education, health—were not divided and compartmentalized but connected to one another. Indeed, there were several places in ‘Red Vienna’ where art was being opened up in various directions at once and linked to pedagogical and therapeutic methods. This interdisciplinary tendency, a desire to probe and transcend disciplinary boundaries, is a consistent feature of the self-conception of the scientific community in Vienna. One could cite several other examples, most prominently the Vienna Psychological Institute (*Wiener Psychologisches Institut*), where Karl Bühler regularly lectured from 1928 and where the psychology of art first became an area of study

[46]. These lectures were well attended, often by art historians, and many students from eastern Europe and the USA were enlisted—proof positive, if it were needed, of the international orientation of the Vienna Psychological Institute.

This internationalism was also typical of the figures I have mentioned above. Čížek’s work was reviewed with particular interest by foreign scholars [47]. As for Dicker-Brandeis, she was part of an open network of central-European artists who kept well abreast not only of art and design but also of new developments in medicine. Research has shown that she was familiar with the writings of Viktor von Weizsäcker [48]. Still, it is hardly surprising that such artists followed Weizsäcker, the founder of medical anthropology and pioneer of psychosomatic medicine, for his work very often comes back to a subject that was of particular interest to sculptors and designers; namely the importance of haptics, the “sense of touch” (*Tastwahrnehmung*) or “haptic form” (*Tastgestalt*), as Weizsäcker called it [49]. Indeed, during the 1920s there was much discussion of tactile qualities in art and perception, and since the doctors had evidently started to show interest in such things, it was really only a matter of time before that discourse took on an explicitly therapeutic dimension. So too in the Austrian capital.

In 1923, on the Hohe Warte in Vienna, artist Viktor Löwenfeld and art historian Ludwig Münz started working with blind children at the Israeli Institute for the Blind (*Israelitisches Blindeninstitut*), which had been in existence since the 1870s. They encouraged them to make clay figures in their lessons. The purpose of these classes was to study the expressive capabilities of the children and to investigate how blind and partially sighted people conceive of forms and spaces. To determine this the children were asked “to express their feelings, the things that preoccupy [and] concern [them]” [50]. Although Münz and Löwenfeld’s work has never been analyzed in much detail, we can be certain that their experiments were of crucial significance to the emerging field of art therapy, and so it will come as no surprise that Edith Kramer only ever spoke of Löwenfeld with the greatest of admiration.

To summarize the above, then: having run through the beginnings of art therapy in interwar Vienna there are a few striking peculiarities. First, there was clearly a definite transdisciplinary tendency. Despite the historical backdrop of an acutely perceived and general sense of crisis, people started to expand and transcend the boundaries of their disciplines. Second, this happened alongside a clearly internationalizing tendency and in opposition to a narrow national understanding of the scientific community. Third, the scientific conventions of the day also shifted; the new field of art therapy (though the term was never actually used until the 1940s) was no longer dominated by men; increasingly, women were given a say. At the very least it is striking that the proportion of women in art therapy, unlike most other areas of cultural and scientific life at the time, was very high.

All this needs to be borne in mind. When we talk about the structures and aspirations of the medical humanities today, we would do well not to forget their prehistory. For it teaches us that art does not exist purely for the sake of aesthetic pleasure; it serves other purposes, too. Or, in the words of Austrian sculptor Karl Prantl [51], “Art is therapy. I don’t know what more to say. Perhaps that’s enough.”

Multisensory medical humanities: artists’ books and illness experience

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Portions of this essay have been previously published elsewhere [52].

The artist’s book is a versatile medium that combines text, image and various methods of production, for example photography, painting, drawing, stitching, collage and others. What differentiates it from conventional books is that it integrates its themes or aesthetic concerns with its formal means of realization and engages readers physically through its tactility and materiality. Being able to look closely and handle artists’ books makes them uniquely accessible compared to other art objects (for instance, an untouchable painting or print hanging on a gallery wall). Johanna Drucker, one of the most passionate advocates of the artist’s book, has suggested that the appeal of this medium for artists is its “intimate authority” [52]. In my own research on lived experiences of illness, I have found this concept productive to put in dialogue with illness narrative scholarship (Fig. 15).

In the first “wave” of the medical humanities, authoritative expressions of illness by patients are often synonymous with narrative. These are inadequate when representing experiences that seem to resist representation or elude closure, such as chronic pain or mental distress. My

own contribution to recent debates in the field surrounding the functions and limits of narrative [53, 54] has been to broaden approaches to illness narrative study. Turning to art forms that move beyond merely verbal modes of expression by engaging the senses, in “Illness as Many Narratives: Arts, Medicine and Culture”, I examined photography, artists’ books, performance art, film, theatre, animation and digital media. Through that research I emphasized the aesthetic and imaginative elements of illness communication that are often neglected in illness narrative study, while arguing for a more inclusive medical humanities canon that encompasses not only “high” literature and art, but also more experimental and mixed-media modes [55]. My specific research on artists’ books, on which this essay focuses, attends to the distinctive strategies through which this multisensory medium can help artists/people living with illness to craft an “intimate authority”. This authority moves beyond narrative legitimacy and is not reduced to merely a form of struggle against the medical gaze. More importantly, it allows the maker to represent lived experiences of illness in more palpable ways than verbal or written accounts.

In the 1970s, artists’ books proliferated in the context of the cultural revolution of the 1960s that was rebelling against the elitism of the art world. Not situated within professional networks of publishing or the art gallery space, these books circulated freely in small editions thanks to inexpensive methods of print production that were available, cementing the idea of the book as a “democratic multiple” [56]. Among them were some books that addressed experiences of trauma, illness and death. They consisted of photos, medical records, diary entries, and personal objects, and used unusual bindings and textures. Examples include: Matthew Geller’s “Difficulty Swallowing” (1981) about the death from leukemia of the artist’s partner; Scott McCarney’s “Memory Loss” (1988), inspired by a traumatic brain injury suffered by the artist’s brother; Joan Lyons’s “The Gynecologist” (1989), which criticizes the authority of patriarchal medical culture; and Susan King’s “Treading the Maze: An Artist’s Book of Daze” (1993) that charts the artist’s experience of breast cancer.

However, even though these books confronted directly the experience of diagnosis and treatment, and had the capacity to spark wider debate about the changing meanings of health and illness, there was little direct engagement with medical humanities literary/cultural frameworks in the 1970s and 1980s. Such engagement is now possible because the methodologies of the medical humanities in its second, more critical “wave”, have taken a “visual turn” [57, 58]. The visual, as “an embodied perceptual experience that also involves the other senses”, such as touch, has been “welcomed as one possible alternative to narrative’s longstanding dominance” in this field [58]. The study of a highly expressive and innovative medium of bringing art to a wider public, such as the artist’s book, therefore has the potential to contribute to visual medical humanities that attends to the affective, communicative and radical pedagogical possibilities of visual and material culture.

Fig. 15 Display of artists’ books, British Academy Summer Showcase, London, June 2019 (© Stella Bolaki. Reprint by courtesy.)

A variety of art forms are continuing to inform art therapy, medical education and the medical/health humanities. However, artists' books have been rarely explored in relation to these fields and as distinct types of illness narrative. Historians of medicine and medical humanities scholars have concentrated on more established art forms such as painting and sculpture when mapping the histories of art and medicine. However, when we look to the past, we see that Renaissance anatomical textbooks were the products of close collaborations between anatomists, artists and printmakers. Their rich imagery and theological context anticipate contemporary artists' books that depict bodies and illness beyond strictly clinical frameworks [59]. In particular, flap books, a form of anatomy books that engage the senses, draw on many of the formal techniques used by artists' books. Casebooks used by early modern medical practitioners in England have been recently researched as artefacts of the medical encounter [60], and attention has been given to medical paratexts, ranging from the medieval to the modern period [61]. However, this scholarship has not been connected to the form and function of artists' books in contemporary culture or to their role in redressing the lack of patients' voices in the visual culture of medicine. Even the burgeoning area of "graphic medicine" has so far concentrated on graphic narratives/comic books rather than considering some of the aesthetic and political affinities that these more popular genres share with artists' books.

In the following sections I will elaborate on the distinctive characteristics and communicative power of artists' books by drawing on examples from an ongoing research and public engagement project that I have been leading at the University of Kent. The project hosted one interdisciplinary symposium in the United Kingdom on artists' books and the medical humanities in 2016 and another in the United States on storytelling and the healing arts in 2018, co-sponsored by the Maine Women Writers Collection, University of New England. I also curated an exhibition of contemporary artists' books entitled *Prescriptions* with book artist Egidija Ciricaite (Beane Art Museum, Canterbury, UK, 22 April–25 September 2016). Some of the *Prescriptions* books were included in a display that was part of the British Academy's 2019 Summer Showcase in London. In addition, we organized several book-making workshops as part of the project, aimed at patients, health professionals, artists and members of the public. Through this project we created a new collection of around 70 books, which was acquired by the Special Collections of the University of Kent's Library (Templeman Library). This collection has been fully catalogued and has enriched various taught programs taken by our medical humanities and creative writing students at Kent. I will discuss examples of books exhibited and made by our workshop participants as part of this re-

search project to illustrate my reflections below on the potential of artists' books for the medical humanities.¹⁰

How readers experience the artist's book is a question that remains central to their study. Breon Mitchell characterizes the reading of an artist's book as "a performance"; the "ideal" reader is someone who "plays" the book, "actualizing" the various elements the artist has built into it, as if it were a "musical score" [62]. But this question of how readers interact with such an intimate medium gets complicated with books that focus on illness. As book artist/cancer patient Martha Hall has written, "people may not want to touch the topics I explore in my books. Yet the books invite handling, touching, interaction" [63]. Expanding understandings of the visual by involving the other senses, the artist's book mediates embodied experiences of illness more directly than literary narratives. In integrating their themes with their physical means of production, artists' books not only incorporate the patient/artist's own perspective, but show how an experience, especially those that are difficult to articulate in words, can be made visible or tangible. The advantage of artists' books over literary narratives of illness then is that they invite a participatory touch that makes them interactive and sensuous forms of exchange. This has important implications for representations of illness experience and medical humanities pedagogy.

Through their expressive richness and versatility artists' books can enhance the ways in which we think about, and experience, our bodies. The book as a form and idea has rich cultural, spiritual and metaphorical associations, including with the body. Words like skin, spine and joints may refer to both the body of the book and the human body. Books used to be bound with vellum, and there are even cases where human flesh has been used, such as the pocketbook that is bound in the skin of 19th-century murderer William Burke that visitors can see in The Surgeons' Hall Museum, in Edinburgh. Drawing on these associations, many of the works that were included in the exhibition *Prescriptions* use the book and its elements as a metaphor for the body or as metaphors for particular kinds of illness. For example, an open, yet "frozen" book corporealizes a rare condition of the nervous system in Ashley Fitzgerald's altered book "G.B.S." (the title standing for Guillain-Barré Syndrome). Through its form, including its static pages, the book captures the artist's bodily experience better than any narrative. Similarly, Lizanne van Essen's sculptural book "Osteoporosis" exhibits the characteristic holey appearance of osteoporotic bone to display rather than inform about this condition [64].¹¹

Inspired by books like these, I collaborated with American artist Darian Goldin Stahl with whom I organized

¹⁰ More information about the 'Artists' Books and Medical Humanities' project can be found at: <https://research.kent.ac.uk/artistsbooks/> (30 March 2020).

¹¹ Images of most artists' books discussed in this essay can be viewed from our exhibition catalogue *Prescriptions*, <https://research.kent.ac.uk/artistsbooks/catalogue-preview/> (30 March 2020), an Index contains all book titles.

Fig. 16 Image from „Book as Body“ workshop led by Darian Goldin Stahl, Canterbury, March 2019 (© Emma Bainbridge. Reprint by courtesy.)

a series of hands-on workshops that Stahl has named “Book as Body” workshops (Fig. 16). As a book artist and medical humanities researcher, Stahl is interested in guiding medical professionals (as well as other participants) to use the artist’s book format as a bodily proxy, that is, to employ it to sensorially materialize a symptom or experience outside of the body so that it may become a shareable and tacit form of communication.¹²

One of the “Book and Body” workshop participants transformed his book in a very imaginative way to depict the pressure felt within his body. As Stahl has written about this book [65]:

“For this sculptural book, balloons (representing his mind) are being contained and kept in check by paper and thread (his body)–but just barely. Taking inspiration from the harmonious, geometric, and primary colored paintings of Mondrian, this participant turns that order on its head to evoke the chaotic opposition between his mind and body. Although the lopsided pages bend under the pressure of the balloons, there is nevertheless a compositional balance in his book’s tension, because he is ‘still trying to find some sort of order within that chaos.’”¹³

“Illness as journey” is a dominant way of representing illness experience, but non-linear or open-ended narratives are better suited to some experiences, such as chronic illness. Anne Parfitt’s “Diary of an Illness” which featured in the *Prescriptions* exhibition captures this difference in a palpable way. Her concertina book consists of repeated black and white sequential drawings of an ornamental bottle, each drawing “an imitation of the previous, yet never identical ... mirroring the indistinguishable yet unique nature of each moment” [64]. In retaining sequence, one of the main structural features of the book form, but refusing closure, works like Parfitt’s expand awareness of the complexity of illness experiences that resist established forms of narration. The focus on the

ever-present or enduring nature of illness experience, as Parfitt waits for diagnosis and treatment, also reveals that patients rarely perceive the temporality of illness in the same way as their physicians.

Clinicians, scholars and members of the public have privileged particular types of evidence and ways of presenting or sharing knowledge about health. These include third person reports, medical data, and illness representations that emphasize linearity, coherence and closure. Such emphasis generates “epistemic injustice” [66] and leads to stigma, silence and sometimes poor treatment. It also ignores the aesthetic achievements of illness narratives, in other words creative responses to illness that are not reduced to representing a clinical encounter. Artists’ books counter epistemic injustice through their “intimate authority”, even when they address the invisibility of being a patient. For example, for her book “Unknown”, also part of a live performance, Carole Cluer considered the number of people diagnosed with breast cancer in the same year as her (45, 704 in 2004). Her book consists of pages and pages of identical looking hand-drawn gold-threaded grids of blue dots (based on the measurements grids and tattoos used when one has radiotherapy), each dot representing one person, anonymous like her. “Unknown” makes us feel beyond what we can merely see; as we turn the pages of her book, we experience viscerally the artist’s attempt to connect with other cancer patients through this creative aesthetic intervention. A similar book that relies on repetition is “Prescriptions”: a set of embossed white prints inside a white box that represents the amount of pills Lizzie Brewer took during five years of cancer treatment. There is no personal narrative, and the choice of white color throughout conveys the clinical world inhabited by the artist. However, through the tactile reading it invites, the book still manages to draw us in to witness not only the artist’s vulnerability but also the agency involved in making that particular work.

Dominant metaphors in medical education, such as the ‘body as machine’, perpetuate the dehumanizing and objectifying aspects of medical care [67]. Artists’ books can disperse the medical gaze by opening up the idea of the body as traditionally understood by medicine. They can help reignite a sense of “wonder” and mystery when it comes to confronting our bodies’ materiality that reveals its importance “in other ways than as the contested or reductive objects of the biomedical gaze” [68]. One example from the *Prescriptions* exhibition is Véronique Chance’s “In the Absence of Running”. Removed from its original context of technically advanced medical visualization, the oversized image Chance created by putting together her knee scans taken during surgery (and later turned into a flip book) resemble a wondrous lunar landscape. Similarly, “On Innards”, a collaboration between Amanda Couch, Andrew Hladky, Mindy Lee and Richard Nash, cleverly embodies through its multitude of folds, the intestines. The book is held together by a mesenteric binding, which when unwound allows the book to be fully experienced by the reader. Another example is Julie Brixey-Williams’s “Rosebud”, an original book-

¹² For the workshop methodology, watch the following video by Darian Goldin Stahl: <https://research.kent.ac.uk/artistsbooks/darian-goldin-stahl-book-as-body-workshop/> (30 March 2020).

¹³ An image of this book can be seen at: <https://medicalhealth-humanities.com/2019/05/01/the-artists-book-as-body/> (30 March 2020).

work that reimagines the breathing patterns of a subject under general anesthetic as a series of flow-loop waveforms. These calligraphic traces were created by an anesthetic machine as the artist performed an extended reading of the fairy tale “The Sleeping Beauty” (whose words are printed on the book’s voluminous ribbon). Finally, the body is mapped differently in Lise Melhorn-Boe’s meander book “Body Map” that consists of square pages, each with a section of the artist’s photographed body. Hand-printed text on top of the photos contains personal references (written directly on each part of the body) and researched information about environmental hazards (written around the body). In all these ways, artists’ books can “re-enchant” [69] illness narratives as they invest in alternative images that fall outside strictly clinical frameworks.

It is clear through these examples that rather than merely serving an illustrative role, the visual and other formal aspects of artists’ books have a defamiliarizing function that can be very productive, especially for medical professionals who are traditionally resistant to ambiguity. The value of visual culture for the medical humanities is however not merely instrumental, that is, educational or humanizing. With regards to her artist’s book “On Innards” that establishes connections across fields such as gastroenterology, virology, cultural theory, poetic practice and yoga, Couch has written: digestion “stems from the word ‘digest’, which can both refer to an arrangement of written work; and to the processing or making sense of knowledge and experience, as well as to break down and absorb food” [64]. Similarly, Brixey-Williams’ “Rosebud” (2004) that emerged from the artist’s residency at The Association of Anesthetists of Great Britain and Ireland is an example of an interdisciplinary experiment that attests to the “shared set of interests” [58] between the histories of medicine and art.

In addition to becoming a metaphor for the kind of gentle care a patient may want, the slow movement that artists’ books often require during handling create “a space for a contemplative experience” [64]. This ritualistic and meditative dimension of artists’ books was explored in “No Mind” by Gaby Berglund Cardenas that contains 1.65-meter-long ink calligraphy script repeating the words “no mind”, a Zen expression equivalent to being present. “Like Weather” by Amanda Watson-Will, a flag book that highlights the changeable nature of our moods by drawing on the Buddhist idea of the mind as a cloudy sky, also developed from the use of mindfulness as technique. In the specific context of healthcare, where routine and impersonal interactions frequently turn professionals into automatons, a space, often silent, where awareness and presence can be restored, is essential. Even though this gap is being addressed through an emphasis on reflection, as some medical humanities critics have noted [70], reflection tends to become synonymous with narrative or with writing within medical education. In contrast, making or reading artists’ books can facilitate an alternative kind of reflection that engages both body and mind [64].

Finally, as a multisensory space the artist’s book can renew modern healthcare’s faith in human touch. One of our workshop participants who educates nursing students constructed a book of pages, each with an outline of an identical human hand, cut from different materials. The final few pages are stamped with progressively fading ink prints of her own hand. “Hands”, she told us, “are such an important part of nursing care” [64]. The final pages of her book are emblematic of current nursing trends which put technology between carer and patient, thus reducing physical contact to a bare minimum. Such lack of physical contact has potentially serious implications: for example, there is concern that health professionals such as surgeons don’t acquire sufficient dexterity skills in a digital world, and that crafts and arts might help redress this phenomenon [71]. But it also illuminates how technology, as many of the books that were included in the *Prescriptions* exhibition powerfully show, has dramatically changed how health professionals interact with their patients.

In conclusion, as experimental and multimodal forms, artists’ books encourage us to reflect on, and experience in practice, the importance of not merely what we read but also *how* we read. I hope this essay’s examples and accompanying reflections have illustrated the value of a multisensory medical humanities for patients and health professionals, as well as for how we conceptualize knowledge more broadly, especially in an increasingly digital world. I am planning to develop this research in the future in relation to specific healthcare contexts, enhancing the communal and participatory elements of the project through additional workshops and exhibitions. My aim is not only to study the history of artists’ books and medicine for scholarly goals, but also to examine how this innovative art form can support people living with illness in their struggle for recognition and legitimacy by making their experiences more palpable and shareable.

Medicine and Music

Music therapy in neonatology—an introduction to clinical practice and research

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Introduction

Due to highly promising research findings in the field, music therapy in neonatology has gained worldwide recognition during the last two decades. It has proven to be especially effective in neonatal care—both in babies and

parents [72–79]. We will present a brief overview of the clinical application of music therapy in neonatology, including an overview of current research in the field. In addition, we will describe a study taking place in the Department of Neonatology of the Medical University of Vienna/Vienna General Hospital. This randomized controlled trial (RCT) comparing music therapy intervention with treatment as usual is a cooperation between the University of Music and Performing Arts Vienna and the Medical University of Vienna.

Music therapy in Austria

Ten years ago, in 2009, the Austrian Music Therapy Act came into effect. According to this law, music therapy (MT) by Austrian law is defined as an “independent, scientific, artistic, creative and expressive form of therapy.” Currently (i.e., November 2019), 424 music therapists are registered on the Austrian Federal list of music therapists.¹⁴ Approximately one in four music therapy work places (23.2%) are located in hospitals [80]. While music therapy with children and adolescents having developmental or behavioral problems represents the largest sector of the field (22.5%), music therapeutic work in neonatology (0.5%) is still expanding.

Music therapy in Neonatology

In cases of premature birth, the challenges for the child and his family are numerous—the difficult intensive care situation (e.g., lack of intimacy, noisy environment); invasive, painful interventions; and isolation of the incubator to be endured. Mothers and fathers (each in their own way) are often traumatized by the overwhelming experiences, are constantly worried about their child’s survival, and have difficulties establishing a relationship with their newborn. Many parents, afraid of the fragility of the child, experience their own isolation and alienation outside of the incubator. This may have potential long-term consequences for the relationship between mother, father, and child: The fears between them remain unprocessed and limit the child’s developmental space.

Basic principles that guide the therapeutic approach

The child’s sense of hearing is usually mature, even if a child is born prematurely. This ability, together with their special responsiveness to musical stimuli [81], the sense of touch, and the child’s search for contact, form the neurophysiological basis for therapeutic interventions. The following principles—based on personal experiences and (music-)therapeutic approaches [82–86]—form a scaffold for the music therapy work described in this overview:

- Immediately after birth, babies show an interest in auditory stimuli. The sonic level offers the opportunity to come into direct pre-verbal contact with the child.
- Musical parameters of infant-directed speech, infant-directed singing (humming), and music in the form of lullabies, for example, are a traditional and global part of communicating with newborns [87].
- The therapist’s voice establishes a direct connection to the child, enabling basal communication and first experiences of infantile self-efficacy [82].
- The child’s general state of health is inseparably linked to its condition. Physical and emotional well-being form a unity.
- For involving the parents, it is important for a music therapist to “hit the right tone.” The parents’ own musical experiences can point the way to finding a relaxed form of communication [88].

Aims of music therapy in Neonatology

As a non-invasive form of therapy for newborns, premature babies, and their parents, the music therapist focuses on the following:

Short-term aims with these babies and their families are relaxation, stress reduction, support of the child’s self-regulation, stabilization of vital signs and sleep behavior, and improved stimulus processing; *short-term aims* concerning the parents are coping, bonding, and empowerment. *Long-term goals* can be defined as: a) developmental support of the premature child, b) support of the abruptly interrupted attachment process between parents and child, and c) individual support of maternal (and paternal) coping with the perinatal traumatization.

Music therapy methods and techniques

The music therapy takes place 2–3 times a week next to the child’s bed (incubator, neonatal warming system), ideally takes 20–30 minutes, if possible with the participation of the mother, but also of the father and/or other close relatives (siblings, grandparents). The initial contact offer is made via sound: vocal and/or instrumental; using her or his voice, the therapist is mainly humming. Instruments used are typically therapeutic string instruments, played by plucking the strings [87]. The music therapist tries to respond directly to the child’s expressions: its gestures and facial expressions, breath, and vocal utterances can be integrated into the music and thus carefully modified.

If a child reacts positively, it gets further support of self-regulation, and the musical offer is gently extended, e.g., shaping individual notes into a melody (see case vignette below). If a child shows signs of rejection, it will receive a prompt reaction in the form of a break. A further attempt with a modified intervention will possibly follow, or sometimes the session will be cancelled for this time. If possible, the mothers (and fathers) are included in the session, and receive support and reinforcement for getting involved by observation, by personal vocal

¹⁴ www.musiktherapeutenliste.at (30 March 2020).

Fig. 17 An insight into the music therapy in the NICU with an infant born preterm (© Leslie Schrage-Leitner. Reprint by courtesy.)

expression, or by basic communication with their baby. If mother or father needs to have a verbal exchange and counseling, there is also room for this. Fig. 17 offers insight into music therapy in the NICU with an infant born preterm.

Case vignette

B., born in the 27th week of gestation, is lying in the incubator due to instability (respiration, thermoregulation); the child's parents are present, observing intently, and involved. The music therapist perceives the high arousal of the child, which is evident from the clenched fists, stressed facial expressions, and motor restlessness, and can be read on the monitor in the form of increased respiratory and heart rates, and fluctuating oxygen saturation.

The music therapist begins to very softly hum single notes. The child pauses, turns to the "source of noise," and relaxes a little. The music therapist interprets this reaction as a sign of approval and shapes the individual notes into a melody. In this moment, the child turns away, and the tension rises again. The music therapist takes this reaction as a sign of irritation, withdraws a little, and invites the child's father to turn to his child and hum for him. After a brief moment of uncertainty, the father joins in. The child relaxes, drops his hands, closes his eyes, and falls asleep with a deep sigh.

In this vignette we can see how the father loses his inhibition to actively communicate with his child: The father-child bonding process is encouraged. Furthermore, the father can observe the positive consequences of his involvement, as his child relaxes and falls asleep. This positive experience supports the father's coping and empowerment.

In addition to medical therapies, music therapy offers relationship in a tense atmosphere. The medium of laid-back musical communication supports the self-regulation of the immature newborn and facilitates—in extension to the verbal level—the encounter between parent

and child, the opening to one another, and the parental perception of their child's resources. This process can be initiated and supported at a time when the difficulties confronting the child's parents often cannot yet be verbalized, verbally processed, and/or integrated. Based on the strengthened individual resources, the formation of the parent-child relationship can be promoted. Space for development and growth will be opened and expanded.

Research

According to a recent literature overview of music therapy and other music-based interventions in pediatric health care [89], the highest quality of evidence for positive effects of music therapy is available in the fields of autism spectrum disorder and neonatal care. The main findings of this overview reveal that music therapy and other music-based interventions in neonatal care lead to a reduction in heart and respiratory rate, improve the infant's sleep and food intake, and reduce the anxiety of mothers. In addition, it has been found that the length of stay in NICU can be significantly reduced through music therapy interventions.

In summary, there is growing evidence from RCTs and meta-analyses that music therapy in infants born preterm has significant, clinically relevant positive effects on arousal, general state of health, and well-being of the baby as well as on psychological outcomes (e.g. anxiety) of the mothers. However, more well-designed and high-quality research—such as taking account of short- and long-term effects of music interventions on brain function and development—are needed [90].

"Music therapy as an accompanying intervention in inpatient preterms at risk" (PhD project)

As a cooperative project between the University of Music and Performing Arts Vienna and the Medical University of Vienna/General Hospital Vienna, the first author is currently carrying out a study within the scope of her doctoral research within the Division of Neonatology at the University Children's Hospital Vienna, Medical University of Vienna/Vienna General Hospital. This study aims to investigate the effects of music therapy as a supportive measure on a) the general condition of the child during inpatient stay, b) the contact between parent(s) and child, c) the development of the babies after 12 months, and d) changes in parental condition during the inpatient stay of their child.

In a prospective Randomized Controlled Trial (RCT), 120 preterm neonates (<32 weeks of gestation) are divided 1:1 into neonates receiving music therapy plus standard treatment and a control group receiving only standard treatment. If possible the mother, but also the father, could be present. Beginning during the first 21 day after birth (this time span constitutes a small fraction of the neonates' overall hospital stay), the treatment continues for the entire hospital stay, with two 30-minute music therapy units applied weekly.

The child's behavior is observed and documented before and after the intervention, based on observational criteria. In addition, the child's vital functions (heart rate, oxygen saturation) are documented. When the mother (also the father) is present, the parent-child interaction is observed, supported as needed, and subsequently documented (qualitative research). Developmental control (with corrected 12 months) and comparison of the experimental and control groups is carried out at their follow-up examinations in the context of neonatal follow-up by the Outpatient Department of the Vienna General Hospital (quantitative research).

The following areas are investigated with the specified assessment tools:

- a) Outcome data from children born before the 32nd week of pregnancy are routinely examined, documented, and evaluated as part of the Newborn Aftercare Program of the Vienna General Hospital. The entire assessment includes a standardized review of neurological and cognitive development. Of particular concern is the cognitive assessment of our cohort at the age of one year based on the "Bayley Scales of Infant Development", third edition (BSID III).
- b) Parental condition is assessed during inpatient treatment by means of questionnaires (pre-post design)¹⁵, and are incorporated into the music therapy study. These questionnaires must be completed by the parents within the first two weeks of their child's hospital stay (pre-) and within two weeks before discharge (post-).

The following preliminary results have been obtained:

To date, 23 follow-up examinations have been carried out. Due to the small sample size, quantitative results have to be handled with care. Measuring the vital signs of all 23 children in a total of 192 music therapy sessions revealed significant improvements in oxygen saturation and heart rate regulation. All 23 mothers in the music therapy group (the fathers of only two of the children were constantly present and taking part) intensified the contact with their child and were encouraged to have vocal interactions with him. Nineteen mothers and one father began to hum with their babies, seeing their child responding to it and enjoying it, which increased their willingness and motivation to communicate with their baby. The children were able to relax through the music-based interventions and showed positive reactions to their parent's activities (for example, turning their eyes towards the parent, relaxing, smiling). In three of the premature children, the nurses reported prolonged sleep directly after music therapy.

Of the women, 20 out of 23 took the offer for therapeutic discussion several times. Typical discussion topics were the strain of unexpected events, the great concern for the child's life, and the difficulty of doing the right

thing in the current situation (for example, dealing with the child's siblings at home).

Conclusion

From my personal experience (LSL), among hundreds of children, there was not one that could not be touched and regulated by music-based interventions, none that was totally unable to come into contact through sound.

To help ensure the quality of music therapy in NICU, and also to prevent the unprofessional use of "music stimulation" in neonatology, the "*Fachkreis Musiktherapie Neonatologie*", a group of music therapists from German-speaking countries, has compiled its many years of expertise. In the form of a framework, they worked out general requirements, indications, and contra-indications as well as therapeutic goals and methods, to share their experiences with interested professionals and music therapists-to-be in this important and growing area of work [86].

"Every illness is a musical problem, healing a musical resolution." (Novalis)

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Novalis: A starting point

Novalis (Georg Philipp Friedrich Freiherr von Hardenberg (1772–1801, poet and philosopher) was a visionary, but his important message remains widely unheard in our days. His statement: "Every illness is a musical problem, healing a musical resolution," contains enough compelling force to create another medicine, another society. Has it happened? Instead of setting music at the top of the list in the field of medicine, we still face a society that mostly lacks any insights into the benefits of serious music therapy. Normal people, as well as medical experts, often do not know how music therapy really works and therefore fall prey to profiteers: Buying a "therapy CD" at any health food store does not guarantee feeling better after listening—often it may have the opposite effect. There are many different "-ists" in medicine nowa-

¹⁵ Dür M, Brückner V, Fuiko R et al. Fragebogen zur Betätigungsbalance bei pflegenden Angehörigen, 2019.

days, but there is still not a single “music-medicine”-ist on this planet. Our society and medical system are still waiting for this subject area and specialization—what must happen to improve this unsatisfactory situation?

Novalis: Poetry

First, please let us face the music! Since we really want to make multi-sensory understanding possible, we have linked this paper with short clips¹⁶ in order to acoustically illustrate our explanations. You can find all the videos there; or just follow the upcoming links step by step while continuing to read this paper.

People often start to confuse the term “music” with the general term “song” [91], which becomes a problem in the medical sciences, too. Instrumental music is almost absent from the fields of Pop, Rock, Country, Hip-Hop, or R&B. As a result, students of music therapy—as well as other younger people who are used to streaming, “playlists,” and popular music styles—tend to apply the term “song” to every type of music, whether it be a song or a sonata, a fugue or a symphony.

Of course, music and language are deeply interwoven in many different ways. “Sunny,”¹⁷ for example, is a jazz song written by Bobby Hebb in 1963. He wrote the song after the assassination of John F. Kennedy and also in the wake of a personal tragedy: Hebb’s older brother Harold had been killed in a fight outside a nightclub. The lyrics and the theme word “sunny” show Hebb opting for a sunny outlook on life rather than a depressed or dark view. Returning to our original starting point of Novalis, we want to think more here about the “rules” of poetry: especially its metrical structure, or *versification*.

Ludwig van Beethoven (we are celebrating his 250th birthday in 2020) had a lifelong obsessive interest in prosody—the “rules” that guide the combination of language with music when composers plan to write a vocal score. Beyond vocal applications, he also implemented these rules in instrumental music. For example, the *dactyl* is like a finger, having one long syllable followed by two short syllables. We see this in the second movement of Beethoven’s 7th symphony¹⁸, which is based on a “dactylic tetrameter” (Fig. 18); when you become aware of the accents of the music, you can hear this easily. Do you need more examples? Beatles fans could think of the lyrics: “**Pic**—ture your—**self**—in—a—**boat**—on—a—**riv**—er—with” (double-dactyl, accents given in bold) used in their song “Lucy in the Sky with Diamonds” or say the trochaic “**Peter, Peter, pumpkin-eater**.”

Versification takes place in many languages, but we want to highlight some examples from a very different language: Finnish.

Fig. 18 Dactylic Tetrameter“, the basis of the 2nd movement of Beethoven’s 7th symphony (from https://imslp.org/wiki/Main_Page, the freely accessible musical score library, accessed on 30 March 2020. Content is available under the Creative Commons Attribution-ShareAlike 4.0 License.)

The Finnish national epic *Kalevala*, like much old Finnish poetry (e.g., “Kalevipoeg” as well as Balto-Finnic—Estonian, Finnish, Karelian, etc.—folk poetry), not only inspired the great Finnish composer Sibelius but is written in a variation of trochaic tetrameter that has been called the “Kalevala meter.” Its main rules are: Syllables fall into three types—strong, weak, and neutral. A long syllable (one that contains a long vowel, or a diphthong, or ends in a consonant) with a main stress is metrically strong, and a short syllable with a main stress is metrically weak. All syllables without a main stress are metrically neutral. A strong syllable can only occur in the rising part of the second, third, and fourth foot of a line: Veli/**ku**lta,/**ve**ikko/seni (“*Brother dear, little brother*”); accents are indicated in bold, and all examples are from the *Kalevala*. A weak syllable can only occur in the falling part of these feet: Miele/ni **mi**/nun **te**/kevi (“*I have a mind to*”). Neutral syllables can occur at any position. The first foot has a freer structure, allowing strong syllables in a falling position and weak syllables in a rising position: Niit’ **en**/nen i/soni/lauloi (“*My father used to sing them*”) and: **ve**sois/ta ve/tele/miä (“*Others taken from the saplings*”). The Kalevala meter is very old and is thought to have originated during the Proto-Finnic period. Can we still find it today? Ever heard that Donna Hightower’s most successful record, “This world today is a mess”¹⁹ (which she co-wrote) is based on a trochaic rhythm following the pattern “Ne—*ver*—do—to oth—*ers* what—*they*—do—to (you)”?

The ancient rules of versification—i.e., ancient rules of rhythm and meter, two central musical parameters—still “rule” today! To find our way back to Beethoven’s epoch, we’ll give a final example, this time in German: An *iamb* (or *iambus*) is a metrical foot used in various types of poetry. Originally the term referred to one of the feet of the quantitative meter of classical Greek prosody: a short syllable followed by a long syllable (as in the word “above”). This terminology became part of the description of accentual-syllabic verse in English, where it refers to a foot comprising an unstressed syllable followed by a stressed syllable (as in “a-**bove**”). “*Wanderers Nachtlied*” (“*Wanderer’s Nightsong*”)²⁰ is the title of a poem by Johann Wolfgang von Goethe, written in 1776, and is among Goethe’s most famous works. The poem was set to music by Franz Schubert.

¹⁶ vimeo.com/user/77123650/folder/1141439 (30 March 2020).

¹⁷ vimeo.com/healthtunes/review/372552581/5638414b81?sort=lastUserActionEventDate&direction=desc (30 March 2020).

¹⁸ vimeo.com/healthtunes/review/372551598/14a2d456a1?sort=lastUserActionEventDate&direction=desc (30 March 2020).

¹⁹ vimeo.com/healthtunes/review/372552224/9e32c3f18d?sort=lastUserActionEventDate&direction=desc (30 March 2020).

²⁰ vimeo.com/healthtunes/review/372553342/6e6c9da262?sort=lastUserActionEventDate&direction=desc (30 March 2020).

Some of its rhymes follow the iambic pattern: “Ü—ber all—en Gipfeln—ist—Ruh. In all—en Wipf—eln spür—est—Du kaum einen Hauch.”

To one familiar with the background of versification, it becomes evident that Novalis, a poet and philosopher who had to deal with many different aspects of language daily, gained deep insight into music as well as the interconnections of music, language, and physiology: Their common core is—breathing!²¹ That is also why he once stated: “Poetry is the great art of constructing transcendental health. The poet is the transcendental doctor.”

Novalis: Philosophy

To repeat: Music and language are well connected, but please don’t talk only about “songs.” Don’t forget that purely instrumental music offers, in addition, countless possibilities for music therapy that transcend the limitations of knowing a specific language. People are fascinated to learn about “phrasing”—the hidden rules of breathing in instrumental music.

Seldom has any composer created more “transcendental poetry,” more “philosophy,” and more breathing within his scores than Novalis’ contemporary, Wolfgang Amadeus Mozart. Based on the assumption that music breathes and Mozart’s music represents the phrasing (in other words, the musical breathing) in an ideal way, the score of his Piano Concerto KV 449 makes this breathing appreciable and apparent. On top of that, breathing patterns become the focus of attention for the musicians as well as the audience. Based upon such a collective, sensorily perceptible “ventilography,” the coupling of music and physiology takes shape.

Back in 2008, in the course of the “St. Florian Bruckner Days,”²² one of us (KFL) conducted a very special investigation into the interaction between musicians, the audience, and a musical masterpiece: He performed Mozart’s Piano Concerto No. 3 in E-flat major, KV 449,²³ together with string players who were members of the Vienna Philharmonic Orchestra. Before the performance, 20 healthy and willing members of the audience, as well as the 11 musicians including the piano soloist/conductor, were wired with a heart rate variability (HRV) recording system (Schiller: Medilog® AR12). During the performance, this device recorded the HRV and breathing patterns of all the participants. A synchronized high-definition video/audio recording was made at the same time. Later, an overlay of all these data onto the musical score was done by hand, using music notation software (FINALE 2011) and the GIMP 2.0 graphics program. In parallel with the medical/technical analysis, a formal musical

analysis of the score created insights into the style and structure of the composition.

The results of this study [92] increased our understanding of two archetypes of breathing and breath technique by professional musicians: The first (“driving”) archetype serves the technical playing and interpretational requirements and, with them, the compositional structure of the movements; the second (“driven”) can be considered an expression of the adaptive experience of the mutual music making. It became clear that such correlations only become visible when there is a detailed consideration of the musical text and a corresponding graphic appraisal that takes into account the music theoretic analysis. In addition, the correlations elude statistical capture because, in relation to the very same “musical stimulus,” they tend to exhibit highly significant but contrary patterns.

For a better understanding of these essential elements, we will discuss selected highlights from this study’s results. Unfortunately, almost no other studies published in the last decade [93] were able to add more insight to this phenomenon—a concrete sign that the field of music-medicine is highly underrated and under-researched! This is becoming especially evident during the “Beethoven year 2020”: Everyone is talking about the First Viennese School (consisting of Joseph Haydn, Wolfgang Amadeus Mozart, and Ludwig van Beethoven), but society still ignores the medical potential of this cultural treasure as well as its implication for medical humanities.

Breathing behaviour in professional musicians propels musical creation, performance, and experience, which in turn are propelled by the musical structure itself. These archetypes also enable various levels of synchronicity and coordination between the performers, the audience, and the musical structure. This threefold communication is manifested in a statement by Joseph Haydn who, as a guest of Count Esterhazy, wrote that “my Count was happy with all my work, I was applauded, I could experiment as the conductor of an orchestra, I could observe what creates an impression and what weakens it, and thus improve, add, take away, dare. I was cut off from the world, nobody could confuse and torment me, and so I had to become original.” In a direct comparison between the musical structure and the breathing activity, typical patterns appear to be in accordance with a direct “bilateral interaction” between music and physiology.

The example of two viola players playing at one desk demonstrates that their breathing correlates with the activity of the instrument (and responds to its requirements). This physical response related to the instrument can also be subject to interference from other musicians and forms a “foreign stimulus” (with regard to resonance and synchronization).

Musicians also possess profound knowledge regarding the central role of the musical upbeat, which acts as a clear and well-defined inspiration(!). Due to their education process, musicians can use their inspiration as an aid to mastering metrical difficulties (so-called “counting music with the body”). Typi-

²¹ vimeo.com/healthtunes/review/381053058/cd3197754d?sort=lastUserActionEventDate&direction=desc (30 March 2020).

²² www.brucknertage.at (30 March 2020).

²³ vimeo.com/healthtunes/review/372553706/e36f1aaea6?sort=lastUserActionEventDate&direction=desc (30 March 2020).

cal breathing is on display in the following example²⁴ of the second violins (bars 46/47, treble clef). This upbeat represents a “dialogue”/responsorial event in the sense of question and answer breathing (see bars 42, 44, and 46.) There is another “question and answer” situation in the “breathing dialogue” between the solo piano and the upper strings in bars 41–44 (upper piano staff, treble clef; lower staff, bass clef; strings: both staves are treble clef). The accented notes for producing the grace notes are clearly discernible.

At bar 44, the players at the leader’s desk change their breathing from active breathing (“driving”) shaped by the music to passive breathing (“driven”) while, at the same time, their breathing line adapts to the events in the solo piano part. Thus far, the “synchronization” between elements that appear in the score and the patterns of breathing correlated with them represents instrumental professionalism on the part of the performers and is therefore neither surprising nor accidental. This illustrates how closely physiological parameters are connected with musical elements and musical structure. We want to point out that this is also of significance for shaping the composition, as well as for the effectiveness of Mozart’s music in the field of music therapy.²⁵

In the area of instrumentation, questions of fundamental significance are: How much breath does a specific instrument need in order to execute tone groups; and how much time, for example, may slurs require as a result, in relation to the stipulated sound volume and register. A brief aside: In the summer of 1784, Mozart interrupted the score at precisely this point, namely at bar 41, in order to study Joseph Haydn’s new string voicing technique as exemplified in Haydn’s string quartets. This interruption lasted a full four months; then Mozart resumed his composition. This moment is visible in the score in the demi-semiquavers of the violas. These bars, therefore, might arguably include the composer’s predominant influence (Joseph Haydn) and depict “a volcanic eruption of transcendence.” In other words, this strange oscillating moment in the composition, free of any significant melodic characteristic, forms a significant moment in Mozart’s personal musical development. Physiological data made it clear that this outstanding moment still “moved” the musicians, and even the audience, in 2008!

Novalis: Romanticism

Synchronization of the breathing activity of listeners often presents itself as “integer valour” (whole-bar-breathing), in accordance with the findings of Haas et al. [94], which can be attributed to the basic compositional structure of Mozart’s piano concerto and the musical shaping. In the course of breathing in the “pulse” of the composition, there is a corresponding increase in listeners’

HRV involving increased activity or excitability of the vagus nerve. In relation to the special position of bar 41 as described above, significant alterations in the HRV arise which, in accordance with musical analysis, correlate directly with musical expectations and the formal and structural course of the movement.

According to Haas, human respiration is ennobled as the “royal pathway to the autonomic nervous system (ANS)” —the ANS being not only an “inflammatory pathway” [95]. Haas’ groundbreaking paper, a milestone in 1986, revealed how listening to the second movement of Ludwig van Beethoven’s Symphony No. 7 can improve respiratory patterns.

The interaction of music and the human organism covers the interaction between two “biological systems,” the system of the human body and the system of human music. The phrasing of a musical piece can produce a distinct impact on a listener’s lung activity: Instrumental music “sings” the tale of humans, too.

If music constitutes a structured gear in the transmission of autonomic rhythms, music can support biological resynchronization. This medico-musical rhythmic interaction, in which disturbed pathophysiological processes can benefit from restructuring by musical drive, is called “entrainment” by modern researchers. Boost learning with music: “That is Entrainment” is a song written by the Northern Irish singer-songwriter van Morrison and included on his 2008 album, *Keep It Simple*. Morrison describes the meaning of the word *entrainment* and the music on the album: “Entrainment is when you connect with the music ... Entrainment is key to what I am getting at in the music ... It is kind of when someone is in the present moment—right here—with no past or future.”

It’s characteristic of biological rhythms for similar effects to occur in similar sequences rather than identical effects in identical sequences. This recalls another famous quotation, from a classic work of Chinese pulse diagnostics, *Mai Jing* (“The Pulse Classic”) by Wang Shue (physician, 265–317 after Christ): “If the pattern of the heartbeat becomes as regular as the tapping of a woodpecker or the dripping of rain from the roof, the patient will be dead in four days.” Biorhythms and musical structures are inseparably related. As chronobiology and chronomedicine teach us, all biorhythms in a healthy organism resonate in harmony. Diseases, on the other hand, have pathophysiological effects that cause “biorhythmic chaos.” In order to animate HRV in a synesthetic way, we suggest listening to another example by Mozart: the “Roses Aria” from *Le Nozze di Figaro*. Please listen to the rigid, computer-generated MIDI file²⁶ first and, after this, an arrangement by Friedrich Gulda played by himself.²⁷

²⁴ vimeo.com/healthtunes/review/374085966/cec8ba41ec?sort=latestUserActionEventDate&direction=desc (30 March 2020).

²⁵ vimeo.com/healthtunes/review/372581329/920686a225?sort=latestUserActionEventDate&direction=desc (30 March 2020).

²⁶ vimeo.com/healthtunes/review/372550090/ffa43200aa?sort=latestUserActionEventDate&direction=desc (30 March 2020).

²⁷ vimeo.com/healthtunes/review/372550830/64b6b3a6e9?sort=latestUserActionEventDate&direction=desc (30 March 2020).

Conclusion

Medicine and the arts have walked hand in hand through millennia of human culture. Mozart's drug still exerts its healing effect after more than two centuries. Using Novalis as a starting point, we wanted to offer a brief commentary in 2020—the 250th year since Beethoven's birth—that would also generate increased interest in the interactions of physiology and music, the importance of music therapy, and the immeasurable importance of music for our society. In this paper, several highlights and examples of well-known findings serve as a tantalizing “appetizer”—while the musical heritage of centuries invites scientists to a rich musical buffet. Not every piece of music is a “song,” so we need to step back and ask: “What will it take to improve medicine's acceptance and appreciation of music therapy?” But first, recognizing that biorhythms and musical structures *are* inseparably related, let's take a few moments to just face the music and dance!²⁸

Tempering the mind: humanist conceptions of music and mental health

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“The Arts are not drugs. They are not guaranteed to act when taken. Something as mysterious and capricious as the creative impulse has to be released before they can act.” — E. M. Forster

Introduction

Music has close connections to our emotions and memories. Precisely for this reason, it can lift us out of the deepest states of melancholia, depression and madness, sometimes even when nothing else can. But, according to the famous British neurologist and humanist Oliver Sacks (1933–2015), the power of music goes much further, because music occupies more areas of our brain than language does. His “Musicophilia” (2007) is built on the axiom that humans are a musical species [96]. The compassionate tales in the book of patients trying to adapt to different neurological conditions have fundamentally changed the way we think of the influence of music on the human brain. But why are so many of his readers, including highly educated doctors and scientists, prepared to believe his stories about the power of music, for example, the miraculous tale about a man who is struck by lightning and suddenly inspired to become a pianist at the age of forty-two? Moreover, why is music therapy so popular, while the scientific evidence of its effectiveness is scarce? This article argues that the mod-

ern belief in the healing and ethical power of music is the product of a long tradition of humanist views on the subject. Indeed, among the deep-rooted but hardly explainable beliefs in our Western culture is the idea that music has deep connections to our emotional life, and that it is capable of making us healthier and morally stronger people. But at the same time, this view presents us with a puzzle and sometimes strains our credulity. Could music really have been thought, we wonder, to form and control the character and behavior of the individual, not to mention his state of health, and indeed the health of society as well, as has been argued, for example by Plato in his “Republic”?

Music, mental health and happiness have indeed been the focus of many philosophical theories and debates throughout history. Since health and well-being have been among the most important concerns and quests of human beings throughout history, they are contested concepts, that is, experts in different disciplines and people in different cultures and period of history have different views on the natures, values, and best practices of music therapy and music education. In “The Routledge Companion to Music, Mind and Well-being” (2018) my co-editors and I argued that common medical terms and concepts are not absolute but contingent: health-disease, normal-abnormal, diagnosis-treatment are all terms with historical, cultural and normative dimensions [97]. Moreover, we highlighted in the book that in our time with a tendency to science worship, that is, an over-reverential attitude towards modern science, it is very important to stress that science is not the only valid form of intellectual endeavor and not the only way of understanding music's connections to our health and well-being. If we want to take music therapy seriously, we argued, it must be seen as a value-laden practice guided by the values of its practitioners and users. Indeed, in addition to details of individual physiology and medical condition, concepts of music, health and well-being that are related to time, place, culture, age, gender, social status, ethnicity, and self-efficacy must be taken into account if one aims at curing a person's illness or improving someone's health and happiness by music. In line with this view, rather than discussing the scientific evidence for Oliver Sack's claim about the beneficial influence of music on depression, this article investigates the historical conceptions that determined his view to a large extent, and that have the potential of refining our modern conceptions of music therapy.

The historical roots of Oliver Sack's belief in music as an antidepressant

Sacks' ideas about the healing and ethical power of music are firmly based on the Western tradition of the “philosophy of life”, in which philosophy has a strong connection to issues of health and well-being. Indeed, many philosophers from antiquity until far into the 17th century conceived philosophy as a way of life, that is, as a personal philosophy, whose focus was on resolving exist-

²⁸ vimeo.com/healthtunes/review/373594423/884ea9808c?sort=latestUserActionEventDate&direction=desc (30 March 2020).

tential questions about the human condition and on formulating a view of the art of the good life [98, 99]. Some of the most important philosophers of the Western tradition communicated their ideas and teachings not only through their theoretical writings, but also through creating inspiring ways of life in the pursuit of self-knowledge and ways to further the health and happiness of themselves and their fellow humans.

In the ancient Greek world music was integrated with ceremonies, celebrations, entertainments, feasts, rituals, education, and therapy. In the context of the musical practice of their time, Plato and Aristotle argued that music had a unique ethical and healing power: music was capable of imitating and arousing specific passions (or, emotions) in listeners, so much so that the state should limit the use of modes and rhythms to those that had a positive ethical influence. Thus, Plato argued in his “Republic” (book III) that the Lydian mode should be avoided because it makes people “drunk, and soft and idle” and certain rhythms are dangerous because they encourage “meanness and promiscuity or derangement”. In contrast, Aristotle was more positive about music’s effects in his “Politics” (1340a), where he explained that it is possible to “experience change in our soul” when we hear certain “rhythms and melodies that are close imitations of gentleness, courage and moderation” [100, 101]. Moreover, in his “Poetics” (1449b 21–28), Aristotle founded the theory of catharsis, that is, the purification or purgation of the emotions (especially pity and fear) primarily through art. The use of the term is derived from the medical term *katharsis* (Greek: “purgation” or “purification”). Aristotle stated that the purpose of tragedy is to arouse terror and pity and thereby effect the catharsis of these emotions.

The exact meaning of catharsis has been the subject of critical debate over the centuries that started already in the Renaissance, where it was used in the context of music therapy. The famous scholar, physician and *musicus* Girolamo Cardano (1501–1576), for example, sought to revive the wonderful music of the ancients with its ethical and healing power as part of his search for the art of living well. He saw melancholy, an early modern kind of depression, as one of the main dangers for the health and happiness of humans, especially of intelligent persons [102, 103]. In his book “On Subtlety”, Cardano starts his discussion of therapy for melancholy with a diagnosis of the illness [104] (translation by Fierz [105] slightly modified):

“Among those with very warm and moist bodies, intelligent people have the worst disposition, unless they devote themselves to the study of philosophy. One of the effects of diligent study is melancholy. It is caused by the decomposition of the fatty fluid [black bile] due to excessive study and waking. If intelligent people will nonetheless persist in their evil and malicious ways, all one can say is that they are behaving true to their nature, and that for them the study of philosophy has been to no avail”.

Cardano portrays here a naturalistic and realistic picture of a sixteenth-century melancholic scholar, who in

the process of deep thinking, consumes a great part of his spirits (energy), as a result of which his blood becomes thicker and full of noxious fatty fluids. This would ultimately disturb the balance between the four humors, or bodily fluids, and consequently hamper the circulation of spirits and the soul. Behind this view, was an ideal of human nature in which the soul circulated unhampered by disturbing emotions or mental and physical weaknesses through the body in imitation of the planetary spheres. As a simple, but effective remedy subsequently he recommends his melancholic patients to fill up their supply of spirit in the following way [104] (translation by Fierz [105] slightly modified):

“Due to their intellectual activities, intelligent men are less enslaved to Venus, because study dissipates the animal spirits and redirects them away from the heart to the brain, that is, in the opposite direction of the genital organs. For this reason, these men beget weak children who bear no resemblance to them. They will greatly benefit from associating with beautiful women, reading love stories, and putting up pictures of beautiful maidens in their bedroom”.

The solution for melancholy presented here is simple: contact with all exciting, stimulating, and suggestive things stirs the emotions, which in turn leads to an increase of the pulse, a better blood circulation and, as a consequence a sense of increased well-being. Moreover, as a more refined and effective form of therapy, Cardano recommends catharsis through the imitation of strong emotion in music. To illustrate his point, he gives a specific example [106]:

“A mood of compassion proceeds in music in slow and serious notes by dropping downward suddenly from a high range. This imitates the manner of those who weep; for at first they wail in a very high and clear voice, and then they end by dropping into a very low and rather muffled groan.”

The musical imitation of this kind of physical manifestations of the emotions seen in a person was supposed to have a very powerful cathartic effect on the listener. Indeed, Cardano was very positive about the possibilities of self-regulation, that is, attempts to control emotional reactions, by listening to or making music. He wrote, for example, a “Lament” for the death of his son to come to terms with his grief [107]. In so doing, he applied Aristotle’s theory of catharsis in musical practice, and theorized about a process of releasing strong emotions through a musical activity or experience in a way that could help the grieving, melancholic or depressed listener to understand or come to term with harmful and painful emotions.

Oliver Sacks’s revival of the ancient doctrine that music can form and control the character and health of a person

Till the end of the last century, in mainstream medicine there was almost no place for practices associated with the concept of philosophy as the life-long contemplation and practice of “artful living”. Subjective views about vir-

tuous and healthy living for oneself, for the health and happiness of others, and for society as a whole were banned from regular medicine and were often labelled in a pejorative way as ‘alternative medicine’. However, recently they have made a come-back, which is reflected in the emerging field of the “medical humanities” and in Oliver Sacks’s attempt to combine a philosophy of life and music with neurology. In his “Musicophilia”, he demonstrates that what physicians and patients assume and believe about music’s healing power substantially affects not only what music therapists envision and seek to do rightly for others but also the effects of these interventions. Moreover, music for health and well-being is always discussed, imagined and applied in his book in relation to human beings considered holistically as persons, not simply as diseased individuals. In so doing, he opens up an enormous potential for improving the quality of human life through music.

At first sight, Sacks seems miles removed from the world of Cardano. In contrast with his predecessor, in his “Musicophilia” he examines the powers of music through the individual experiences of patients, musicians, and everyday people and uses the modern science of neurology to explain the phenomena he describes. But just like Cardano, Sacks takes the Platonic doctrine of the power of music to change and control the human mind as point of departure of his overall argument [96]:

“For virtually all of us, music has great power, whether or not we seek it out or think of ourselves as particularly ‘musical’. This propensity to music, this ‘musicophilia’, shows itself in infancy, is manifest and central in every culture, and probably goes back to the very beginnings of our species. It may be developed or shaped by the cultures we live in, by the circumstances of life, or by the particular gifts or weaknesses we have as individuals but it lies so deep in human nature that one is tempted to think of it as innate ...”

In this belief, Sack’s book is clearly influenced by the same stories of the marvelous power of music that haunted Cardano. From this normative point of departure, Sacks describes how music can animate people with Parkinson’s disease who cannot otherwise move, give words to stroke patients who cannot otherwise speak, and calm and organize people whose memories are ravaged by Alzheimer’s or amnesia. These are all quite plausible stories about the power of music, but the story of a man who is struck by lightning and suddenly inspired to become a pianist at the age of forty-two, in my view, cannot otherwise be interpreted than as a modern musical miracle that has nothing to do with science or neurology. Moreover, Sacks is deeply influenced by the creative music therapy of Paul Nordoff and Clive Robbins, who were influenced at their turn by the ideas of Rudolf Steiner and the anthroposophic movement in humanistic psychology [108]. From these influences emerged Sack’s idea that within every human being an innate responsiveness to music can be found, but he often presents this belief as a fact pertaining to mainstream neuroscience and neuroanatomy to grant his stories a kind of scientific authority.

In an autobiographic passage in chapter 25 titled “Music, Madness, and Melancholia” Sacks gives an explanation of why music can lift us out of depression that is remarkably similar to Cardano’s account of a musical catharsis [96]:

I [Sacks] was passionately fond of my mother’s sister ... Her death left a sudden huge hole in my life, but, for some reason, I had difficulty mourning. I went about my work, my daily life, functioning in a mechanical way, but inside I was in a state of anhedonia, numbly unresponsive to all pleasure—equally, sadness. One evening I went to a concert, hoping against hope that the music might revive me. [When I listened to] Jan Dismus Zelenka’s ‘The Lamentations of Jeremiah’, I found my eyes wet with tears. My emotions, frozen for weeks, were flowing once again. Zelenka’s Lamentations had broken the dam, letting feeling flow where it had been obstructed, immobilized inside me”.

Just like Cardano before him, who wrote a “Lament” to come to terms with the death of his son, Sacks argues here that the imitation in music of the physical manifestations of the emotions seen in a sad person, can have a very powerful cathartic effect on the listener. But even though the positive effect of sad music is a cornerstone of our Western musical tradition, in modern scientific research into the effects of music on the brain the acceptable scientific methodology prevents scholars to research and employ this kind of complex and value-laden concepts [109].

Sacks found further evidence for his view of music as an antidepressant in the stories told by numerous patients. A young man with bipolar disorder, for example, wrote him: “If I sat at a piano, I could start to play, to improvise, and to tune into my mood. ... If my mood was depressed, I was able to bring my mood up. It is as if I am able to use music in the same way that some people use therapy or medications to stabilize their moods ...” [96]. The use of music as means to temper the mind, referred to in this letter, is also a cornerstone of our Western musical tradition that often features on an unconscious level of the modern minds of scientists, music therapists and patients alike. In my view, in his *Musicophilia* Sacks could have highlighted this tradition even more to stress that his view is much more in line with certain historical concepts of music’s power than with modern scientific research on the influence of music on the brain and the nerves.

Conclusion

In modern research, many beneficial effects of music on a person are conceptualized in terms of hormonal central nervous changes. Since music can change activity in brain structures that function abnormally in patients suffering from depression it seems plausible to assume that music can be used to stimulate and regulate activity in these structures either by listening to or by making music, and thus ameliorate symptoms of depression. However, up till now the scientific evidence for effective-

ness of music therapy on depression is surprisingly weak [110]. In ‘Music, Brain, and Health: Exploring Biological Foundations of Music’s Health Effects,’ Eckart Altenmüller and Goffried Schlaug argue that this is the case mainly because of the lack of high-quality prospective randomized controlled studies [111, 112]. In sharp contrast, based on the analysis presented above I would argue that this is a form of scientism. Nowadays, it is often felt that natural sciences such as physics, chemistry, biology, but also medicine, neuro-science and neuro-anatomy are in a more advanced state than social sciences and the humanities; the former can formulate precise laws with great predictive power, while the latter usually cannot. However, one could also argue that the methods of natural science are not necessarily appropriate for studying social practices such as music therapy. Precisely because controlled experiments usually cannot be done, I would like to conclude that finding precise laws with predictive power should not be the main benchmark of success in music therapy. In line with Sacks, I believe that music therapy practices can best be understood if we include the viewpoint of the actor(s) responsible for them. If we consider human beings holistically as persons with their own musical histories, not simply as diseased individuals, music’s potential for improving the quality of human life is indeed infinite.

The value of a critical humanities perspective on music and medicine

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We live in an age in which thinking on the arts in general is increasingly influenced by theories and concepts drawn from medical science, and, partly in consequence, also in age of renewed attention to the role of the arts in therapy. Music in particular has been the topic of intense neuroscientific interest over the past thirty years, partly because of the directly physical impact of music and the influence of brain scan technology [113, 114]. Related fields such as the psychophysiology, psychoneuroimmunology and psychoendocrinology have also taken a growing interest in music. Together they are creating a paradigm of understanding musical experience that seems to be quickly growing in authority. This paper seeks to show that the Medical Humanities have a great deal to offer in terms of showing the historical roots of such biomedical approaches and incorporating their achievements into our views of the arts, and also in recognizing the possible limits of such methodologies. As such, it is aligned with the Critical Medical Humanities of scholars such as Viney, Woods and Callard that rejects the restrictions involved in seeing the emerging discipline of Medical Humanities simply as a handmaiden to clinical medicine [115]. While teaching insights from the humanities to future doctors is clearly of great value, Critical Medical

Humanities can go beyond the clinical encounter to consider the wider meaning and impact of medical thinking.

The most obvious connection between music and medicine is of course music therapy, but the effect of medical models of the body on our views of music has been much broader than that. For instance, there is the issue of music not as a cure but as a cause of disease. This might seem surprising, but a discourse on the subject of music as a trigger for degeneration, brainwashing and even death has often been considerably larger than that on music therapy, especially during much of the nineteenth century [116]. While this discourse generally relates to fairly transparent political and cultural agendas, if one takes the claims of music’s medical impact seriously, then such ideas are not intrinsically illogical. Beyond a few often-repeated Humanist anecdotes, the idea of music causing illness had little traction until the late eighteenth century, but from discussions of the perils of playing the glass armonica in the 1790s to the controversies around Richard Wagner and Nazi policies of *entartete Musik*, the moral-medical debate on music as a threat to health via the nerves reflected a wide range of social anxieties, particularly in relation to young women [117]. Nor is such a way of thinking about music and medicine merely a historical curiosity. Indeed, it seems that the Internet has led to a Golden Age of theories about the power of music to control people and make them ill, albeit often phrased in terms of hormones rather than nerves.

At a deeper level, it is clear that essentially medical conceptions of music as a form of brain stimulation have had, and continue to have, a profound effect on musical aesthetics and general conceptions of how musical experience works. It could be argued that, of all the arts, music is the most intimately connected to the body. In essence unencumbered by “content” in terms of words or concepts, it can have an apparently unmediated impact on the human body, measurably affecting its physiology. That has led many observers over the past few hundred years to portray it as fundamentally a physical business—with as much in common with electricity or cooking as with other arts such as painting or literature. For this reason, medical understandings of its powers have often had considerable influence. In order to address some of these issues, this paper will outline some of the *longue durée* history of music and medicine, in part as a corrective to the historical myopia sometimes evident in scientific discussions of the topic. It will demonstrate that the history of music and medicine is not a simple story of the unfolding of scientific rationality, but a disputed field in which cultural and ideological factors have always played a key role, involving arguments about the role of the physical in the experience of musical listening that have by no means necessarily been resolved.

Medical views of the role of music can be traced back to Antiquity, but, ancient Greece’s most potent inheritance in this regard was not a focus on the impact of music on the body but a Pythagorean and Neo-Platonic conception of it in terms of ratio and the harmony of the spheres. From the seventeenth century, though, mu-

sic gradually came to be the subject of measurement and less a symbol of mathematical order. By the time of the Enlightenment, a materialist model of music's impact relating to the stimulation of the nervous system had become influential. In particular, the idea of sensibility (*Empfindung*), drawn directly from physiology, put medical thinking on the nerves front and center in ideas of how music worked. The likes of the Swiss aesthete Johann Georg Sulzer advocated an aesthetic of feeling (in both a physical/medical and emotional sense), in which music was viewed as a matter of "blows" experienced by the "nervous system" [118]. With observers like Sulzer one thus sees something not unlike twenty-first-century neuroaesthetics. The impact of this was arguably also reflected in composition, since conceiving of aesthetics in terms of the nervous system became part of the basis of a musical style based on *Empfindsamkeit*, emphasizing spontaneous, changing emotion and melody in the *galant* style, rather than counterpoint or the sense of a priori cosmological structures and objective correspondences.

This medical model of music as nerve stimulant was by no means universally accepted, however. The eighteenth century saw a real debate about the limits of nervous anatomy and physiology as explanations for musical experience not so different from some of the critique of so-called neuromania today. Already in 1749, the English physician Richard Brocklesby wrote with skepticism about a purely materialist explanation of music's effects, stating that [119], "I must beg leave to dissent from that opinion, which ascribes its operation merely to a mechanical undulatory pulsation of the air, on the extremities of the nerves". Later the German doctor Johann Joseph Kausch developed such ideas further in his 1782 *Psychologische Abhandlung über den Einfluß der Töne und ins besondere der Musik auf die Seele*, where he roundly attacked adherents of what he called the "mechanical" model of music's effects such as Sulzer for neglecting the role of the mind via the imagination in their support of a nerve stimulation model of musical experience [120].

It was against this background that the Idealist musical aesthetics emerged around 1800. The decline of the old musical metaphysics of cosmic harmony in the face of a materialist conception of musical stimulation, by leaving music without a function and making it concept-free, paradoxically set the stage for this new aesthetic of the transcendental subject and the free play of abstract forms. Immanuel Kant tended to discuss music in physiological terms, but, drawing on his broader theories, observers like Christian Friedrich Michaelis explicitly rejected the notion that music could be reduced to mechanical movements in the nerves [121]. The ideology of "Absolute Music," implying a view of music in terms of the autonomous musical work, the disinterested appreciation of form and interiority, which developed from this view in the work of the writers such as A.B. Marx and Eduard Hanslick, was thus in part a dialectical consequence of the stimulation model [122]. Absolute Music, with its basic rejection of physiological explanations

for music's effects, was not the result of any scientific discovery. Indeed, it was relatively easily incorporated into fairly Positivist views of music later in the nineteenth century. Rather, its emergence can be ascribed to much broader cultural shifts towards bourgeois art religion, Romanticism and Idealist philosophy, as well as to disappointment with the perceived failure of physiological aesthetics.

In many ways, that ideology of Absolute Music, interested in music's impact on the "soul" rather than the brain, remained dominant until relatively recently, especially among students of Classical music. The recent re-emergence of biomedical paradigms in discussions of musical experience has arguably been just as dependent on cultural factors as its decline was two hundred years ago. As well as the neuroscience of music, the last couple of decades have, not coincidentally, been marked by the development of another development in thinking on music also focused to a great extent on the body—the so-called New Musicology. It has rejected Absolute Music's denial of the body in music in favor of perspectives from Feminism and Critical Theory, directly connected to the social transformations since the 1960s and the wider crisis in traditional bourgeois high culture [123]. These changes, along with the technological advances behind MRI scans and the like, were perhaps also necessary for the current influence of neuroscientific approaches.

Moving beyond history to look at the undoubted achievements and possible limitations of the medically informed neuroscience of music, Medical Humanities can draw on other disciplines than history to inform the debate. Because of the influence of the idea of music as brain stimulation, the Critical Neuroscience developed by people such as Suparna Choudhury and Jan Slaby in Berlin is of particular significance [124]. Their approach has questioned "neuromania," raising vital issues about the possible epistemological problems involved in surmising states of mind from fMRI scans [125, 126]. Behind much of the passion in debates on Critical Neuroscience, including on music, is the so-called "Hard Problem" of consciousness and the mind-body debate. Advocates of a fundamentally materialist brain-based conception of musical listening often appear to suspect critics of casting doubt on the mind-brain identity theory, of attempting to add essentially superstitious explanations of its impact to respectable scientific approaches.

Applying a Critical Neuroscience approach does not mean decrying the achievements of so-called "neuromusic" or its materialist basis, but it does require an assertion the necessity of conceptual clarity. For instance, it seems to me that too often the term "music" itself is used without discretion as if it were a known reified object that could be applied in "doses," instead of being a highly culturally determined *activity*—whether in terms of listening or performing. As many musicologists have argued in the last twenty years, it might be helpful to think of "musicking" rather than "music" [127]. Likewise, the assumption that music is a question of emotional impact (a point by no means accepted by many aestheticians)

requires an understanding of the historically contingent ideas of what an “emotion” is and how they are categorized—a rich seam in recent historiography [128]. Even more problematic is the idea of “Classical music,” which often seems to get used as if it were a Natural Kind and not a fairly arbitrary and historically determined concept of comparatively recent vintage. An aggravation of that category error is the habit of using “Mozart” as if his music had a specific clinical character, something that one sees especially in popularizers of neurological approaches to music, notably in the case of the so-called “Mozart Effect” relating to the supposed power of that particular composer’s music to improve cognitive capacity. The idea started with an article in “Nature” in connection with adults, but soon led to a wave of public interest and commercial exploitation in relation to making children more intelligent by playing Mozart’s music [129]. This included the creation and marketing of devices such as the Babypod, a speaker system designed to be inserted in the vagina of pregnant women. Leaving aside the fact that Mozart’s music has many different musical aspects depending on the piece concerned and the context it is heard, the cultural determinants of such an attitude towards the composer as a quasi-magical child genius and his music as associated with the habitus of the European elite are obvious.

More generally, the biomedical approach to music generally conceives of music’s emotional effects as a matter of reward circuits in the brain, driven in part by what brain scans can tell us. However, while music is certainly connected to emotion and the brain, any approach that cannot distinguish the impact of music from that of eating chocolate or having sex is surely missing out on a lot, as sophisticated neuroscientists have acknowledged. Disciplines such as sociology, anthropology and psychology are invaluable to overcome such limitations, reflecting the fact that music is not just what happens inside our brains, but always something occurring in a context of social and cultural meanings between people. This is particular relevant in discussions of neuroaesthetics put forward by people like Semir Zeki [130]. As Bevil Conway and Alexander Rehding have noted, neuroaesthetics seems caught between two traps. Some versions search for neurological correlations to a supposedly “objective” idea of beauty that often has clear roots in the western tradition, while others assume a subjective view of musical experience as physical pleasure, which leaves aesthetics merely as a branch of the physiology of corporeal enjoyment [131].

Bearing all this in mind, what can the Critical Medical Humanities contribute to discussions of music therapy? In a world where scientific respectability and institutional support and funding are increasingly tied to being able to identify biological markers and quantifiable impact, music therapy has sometimes looked a little exposed, since its benefits (which I do not doubt) have often been represented in terms of self-reported feelings of wellbeing. In response, some such as Michael Thaut in Toronto have advocated so-called Neurologic Music Therapy,

looking for a demonstrable physiological basis for the practice and focused on neurological diseases—in line with broader trends towards a biomedical conception of music [132]. Such an attitude to music and medicine has obvious advantages, but does perhaps run the risk of undermining the use of music therapy in “softer” contexts where quantifiable biological effects might be harder to establish. On the other hand, medical discussion of such softer contexts itself requires a more critical edge. While one is sympathetic to the practice and to research in the area, some of what is written about music and medicine takes the form of boosterism. It is surely not the task of Medical Humanities implicitly to take for granted Humanistic understandings of art’s power to ennoble the mind and cure the body. Even if one believes this in one’s private life, it scarcely amounts to science or *Kritik*. Often this boosterism takes the form of allusions to the Humanities—respectable journals doing serious work still sometimes use the language of the “magic” of music and rather vague references to Apollo and Plato. A better approach surely would draw on the Humanities not for allusions but for critical methods of thinking about the arts, the body and human flourishing.

In conclusion, it is clear that musical experience offers a particularly interesting case of the interaction of medical discourses with culture, partly because of its character as both directly physical and culturally determined. Discussion of music and the brain has become the location of a highly significant but often unacknowledged interaction between cultural practices and epistemologies of scientific knowledge. This requires the attention of a Critical Medical Humanities approach, not to reject the real achievements of the medical/scientific approach or to defend some kind of quasi-religious conception of music and the soul, but to give the increasingly dominant neuromusic approach historical depth, conceptual clarity and social-cultural context. The humanities’ contribution must go beyond providing snappy quotations for biomedical takes on music and provide a basis for dealing with the profound ideological and cultural assumptions that surround contemporary thinking on music, health and the body.

Medicine and Literature/Media

Literature’s view on humans’ dissolution of boundary

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Introduction

The focus of this paper is the interdependence of literature and life science. Novelists of the 21st century in-

creasingly address the biological boundary crossing of their protagonists. The literary adaptation of medico-technical phenomena, and the overcoming of the human condition as a consequence thereof, will be central, based on Andreas Eschbach's 2003 novel *"Der letzte seiner Art"* [133]. Duane Fitzgerald, the protagonist, receives expensively implanted prostheses that supply him with superhuman powers in order to succeed as an elite soldier. Due to incompatibilities between the human-machine interactions, however, he fails to go into action, hence, reducing him to the rank of an anti-hero.

Interventions of biotechnological enhancement that are no longer predicated on a medical indication share a common aspect: dissolution of boundaries. Next to the genealogical history of artificial man in general, developments of medicalization and wish-fulfilling medicine need contextualization. Only on rare occasions do protagonists not have to deal with serious repercussions. Using the example of protagonist Fitzgerald, application of "The International Classification of Functioning, Disability and Health" (ICF) ought to highlight possible harmful impacts of biotechnology on corporeality. Literature provides hypothetical answers to the question: What might happen if humans' dissolution of boundary were surmountable? Literature thereby encourages the readership to reflect on how the option of biotechnological solutions offered by modern medicine impacts human existence.

Genealogical strains of the artificial man—the human body and the machine

Since every definition of the body is a product of its historical context, a changing cultural construction [134], it is important to take a closer look at the historical and cultural context of the man machine. First, it is important to present the genealogical history related to artificial man; these range from creation myths to mechanistic and electronic versions.

This long historic-cultural tradition goes back to the Greek myth of *Prometheus* whose work as a potter relates to the *Promethean* creation of humankind. It reaches to Jewish folklore with reference to *Golem* narratives—the creation of man from clay. The biological history comprises the fable of the alchemically created *homunculus*, Victor Frankenstein's nameless creature, as well as genetically modified citizens as portrayed in the 1932 dystopian novel, "Brave New World", by Aldous Huxley. Compared to the earlier versions, the biological rendering comprises more threatening components that are already looming today: for example, possibilities encompassed by molecular and transplantation medicine. The third category would be the mechanical—specifically, the technological development reaching from automata to computer-controlled artificial intelligence. The self-understanding of the human being in this case is greatly reduced, since computer-assisted devices adopt the human's authority based on integrated circuits [135].

Being a cyborg, Andreas Eschbach's protagonist, Duane Fitzgerald, belongs to the third, although there is of-

ten no distinct boundary between biological and technological category. According to Romina Seefried, "the demarcation line between naturally-human and artificially-synthetic is not always definitely definable" [136].

It is part of the human condition to understand technological compensations as conquerors of somatic deficiencies. Mankind has been linked to and dependent on tool use, since the very beginning. An important stage in terms of man-machine history of thought is the applied anatomy of the human being (not the monkey or other mammals). It is due to Andreas Vesalius (1514–1564), that—according to Aram Vartanian—"the modern mind ... became familiarized with the image of the human body as a neat and exact assemblage of related structures" [135]. With his richly illustrated anatomical atlas *"De humani corporis fabrica"* (1543), Vesalius portrays the entire human body as an item of scientific knowledge. He opened the doors for anatomical research on the human body and its inner morphology. Also worth mentioning in this context is William Harvey's (1578–1657) discovery of circulation of the blood (around 1616), which reminded his contemporaries of the interiors of hydraulic automata (trick fountains were also famous around this time). In his famous 1926 image-poster, "Man as Industrial Palace," the German-Jewish physician Fritz Kahn (1888–1968) depicts the epic achievement of the functional human body with human organs performing tasks ascribed to machinery. Machine-like, the human body is portrayed as a sequence of production processes made visible by a cut from head to intestine [137]. It is not an anatomical drawing like that of Vesalius, but rather a sequence of rooms, pipes, and assembly lines. Nor does this man-machine function on its own terms: In all of its chambers, little humans operate the electronic processes and chemical reactions in the body by means of control panels.

Dissolution of boundary in biomedicine

It is necessary to address the dissolution of boundaries in biomedicine in order to better understand how authors approach issues like cyborgs and human-machine interactions in their texts.

There has been a change in medicine from treatment of the sick to regulation of the well [138]. Scientific book titles like "Overcoming Corporeality or Dissolution of Boundaries in Medicine" indicate that social expectations of biomedical interventions transcend the common measures of cure and prevention. This expansion has already reached the healthy human being who is interested in optimizing his bodily constitution. Enhancement is the maxim here. In this context, sociologist Willy Viehöver and philosopher Peter Wehling speak about a direct optimization policy that consciously exceeds the potential of cure and recovery [139]. They label four different phenomena of boundary dissolution in biomedicine. The first is a "boundary diversification" called medicalization. It describes a process by which nonmedical problems become defined and treated as

medical problems [140]. Attention deficit hyperactivity disorder (ADHD), anxiety, menstruation, birth control, and aging are some examples of this phenomenon. The second one is a “boundary shift”, in which healthy people are considered to be ill. As an example of this development, Viehöver and Wehling mention timidity, which is increasingly seen as a mental disorder requiring treatment. “Boundary blurring”, the third phenomenon, applies when certain people are simultaneously healthy and ill. This is accompanied by techniques of predictive genetic diagnostics that can predict the risk of future illness by detecting a genetic predisposition. An example would be Huntington’s disease. The fourth phenomenon, called “boundary crossing”, entails deployment of medical practices and resources for healthy people, who would be described as neither ill nor impaired. The ongoing boom in the field of cosmetic surgery and the advertisements for performance-enhancing substances are proof of this last phenomenon, which also includes initiatives of wish-fulfilling medicine [139].

Eschbach’s cyborg soldier Fitzgerald is clearly affected by the fourth phenomenon, anticipating upcoming developments in transplantation medicine and prosthetic substitution. The genealogical history of artificial man, as well as the developments regarding dissolution of boundaries in biomedicine, may serve an author as a form of cultural memory as well as a basic framework for his or her plot. They also provide recognition value for the readership.

Protagonist duane fitzgerald—prostheses as trope for harmful technology

In the manner of the “Six Million Dollar Man”, Steve Austin, human body parts of Eschbach’s protagonist Fitzgerald are being replaced by electro-mechanical devices: a mechanical load amplifier for the muscles, bones made of highly compressed titanium alloys, electronic sense organs to sense ultraviolet and infrared light, X-rays, viruses, and chemical warfare agents. Although these expensively implanted prostheses theoretically supply him with an enhanced power potential, incompatibilities of the human-machine interactions reduce the supposedly elite soldier, Fitzgerald, not only to the rank of an anti-hero but also to an early-retirement. The book’s fictional military project, “Steel Man,” failed altogether. Many soldiers died during severe operations or later due to malfunctioning of their new devices. These cyborg-human-machine hybrids were never called into action.

Cultural theorist Anne Balsamo argues that “machines assume organic functions and the body is materially redesigned through the use of new technologies of corporeality” [141]. What she characterizes here can be explained by the medical term “prosthesis”, which is etymologically derived from the Greek and translates as “addition.” This linguistic denotation has an ample scope, referring to the impact of being not merely a replacement but a form of augmentation. According to cultural anthropologist Sarah Jain, “prosthesis falters between two

renditions of meaning; a prosthesis can fill a gap, but it can also diminish the body” [142]. In the latter instance, the focus is on the depersonalization of the human being.

Eschbach’s scenario elucidates how this technology can have harmful repercussions with respect to visualizing one’s own vulnerability. To talk about the “wounding attributes of prostheses” is hence not far-fetched.

“I woke up on Saturday morning—sightless and paralyzed on one side. I have been blind quite a few times and I have been paralyzed on one side as well, but lately both occur simultaneously, and this is gradually starting to bother me. I lay on my right side, the face partly buried in the pillow. All I could move was my head, the left arm and a few muscles, all of whom were of no use for me” [133].

Prostheses that aim at perfection enable humankind to be less at the mercy of the realities of life [143]. But, ironically, the measure that perfects the body can also be understood as a measure that causes damage. The tropes of enablement and disablement rarely collaborate as closely as within the context of prosthetics [144].

“The International Classification of Functioning, Disability and Health” (commonly known as ICF) is a framework for describing and organizing information on functioning and disability. It provides a standard gauge and a conceptual basis for defining and measuring health and disability” [145].

This classification is an appropriate frame of reference for locating Duane Fitzgerald in his technologically-altered body. His body challenges the dichotomy between the superior, superhuman soldier and the inferior, disabled anti-hero who(se body) fails to live up to its altered potential: the bodily norms and expectations dictated by the military. Fitzgerald’s narrative of becoming disabled as a result of prostheses challenges the boundaries of the human body and, therefore, the circumstances of the human condition.

In the ICF framework, the first aspect of disability is *impairments*, problems in body function and structure such as significant deviation or loss [145]. Applied to Fitzgerald, the phenomenon of phantom pain is worth discussing here. Phantoms are missing body parts. Although in his case they were replaced, the mechanical prostheses cause involuntary rejection reactions within Fitzgerald’s body. These reactions can be understood as the cyborg’s “Achilles’ heel”, causing his vulnerability and his inability to go into action [146]. This is related to the issue of immunity—understood here as adaptation processes that are unavoidable in terms of survival—and of sensitivities that, due to habituation, morph into apathy. This biological facility no longer works in Fitzgerald, causing his severe impairments.

The second aspect of disability is “activity limitations”, difficulties an individual may have in executing activities [145]. Applied to Fitzgerald, those are overall complications in the adaptation process closely connected to his impairments. They are manifested in heavy restrictions regarding his food intake. Furthermore, the measure of functionality and continuity of his high-tech components bears no relation to his otherwise ageing

body. In addition, he experiences long regeneration periods after activation of his biotechnological devices (for example his mechanical load amplifiers). Symptoms of fatigue, blindness, even paralysis occur at frequent intervals—these also encompass aspects of impairment. All these limitations restrict his autonomy to a significant extent.

The third aspect of disability—termed “participation restrictions”—addresses problems an individual may experience in his involvement in life situations [145]. Applied to Fitzgerald, very little involvement is left due to contextual factors: For example, he needs to be in hiding so as not to jeopardize the military project—which is being continued. He is lonely, a social outcast. He is also dependent on postal deliveries that are essential for his survival. Because of his mechanical gastric system, he can only tolerate specialized meals, massively restricting his daily routines.

Due to his recalcitrant physique and his incompatibility reactions, Fitzgerald is no longer in charge of his life. His body does not conform to his conscious intentions. Instead, it is obstinate and unauthorized, which prevents him from being in charge. Hence, environmental factors (physical, social, and attitudinal) function more as barriers than as facilitators [145].

Conclusion

“Progress and related notions such as improvement, growth, development, productivity, evolution, and advancement are temporal concepts describing rapid change, a forward thrust in how people and communities move, think, communicate, build, and make and use things in the world. Those who don’t move forward are left behind. Stasis or stability in the pace of change is decay or failure. ... Labor under late capitalism expands from shaping things [producing food, producing products] to shaping people [producing people as products]. ... The promises of progress deny the existential dilemma that we must act in ignorance of the outcomes of our actions. The paradox inherent in the arc of modern human intentionality ... is that the link between action and outcome is never secure” [147].

The dissolution of boundary determines cultural and scientific discourses with increasing frequency. Here, the human body is the center of attention. The boundary marks between man and machine, nature and culture, body and mind are shifting or even dissolving—constantly changeable [148]. The boundary dissolution in biomedicine is one indication that it is not a human strength to acknowledge internal and external boundaries; rather, exploring options for how to overcome boundaries (not only in medical terms) is fundamentally human. The attractions of freedom and independence play a huge part in this. Yet, it would be dangerous if boundaries were no longer recognized. Living in the “here and now,” we have to ask ourselves if this boundlessness is too overwhelming for us and the world we live in. Ultimately, it will not come without repercussions, as is often portrayed in lit-

erature. Thus, literature not only serves as an illustration, but also as a tool for a productive and interdisciplinary discourse—exactly what the Medical Humanities stand for. The protagonist Duane Fitzgerald exemplifies literature’s seismographic power to imagine and criticize the reckless objectification and contempt for individuals who have lost their status as being legal persons [149]. According to Rosemarie Garland-Thomson, it may happen quite fast that the “limits of human experience and knowledge mute our capacity to imagine the harm done to [physically] edited future persons” [147].

Unsettling care in Michel Malherbe and Tahar Ben Jelloun

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In the “Edinburgh Companion to the Critical Medical Humanities,” Angela Woods and Anne Whitehead call for a critical reorientation of the first-wave Medical Humanities—a field which since the late 1960s has been primarily concerned with producing more humane and empathetic physicians through the inclusion of humanities courses in medical curricula. A central aspect of their vision is to move beyond the assumption that “all affect and feeling are to be found in the arts and humanities, and all hard-nosed pragmatism in the biomedical sciences”. Instead they propose that we need to acknowledge that “the arts and humanities might speak of affective distance, and even of a lack of care” [150]. This article fleshes out one way to understand this “lack of care” by reading two contemporary French-language narratives about dementia care against the work of the historian and feminist scholar Michelle Murphy, who has called for a politics of “unsettling care” [151].

Focusing on “*Alzheimer: La vie, la mort, la reconnaissance*” (2015) by the French philosopher Michel Malherbe [152] and “*Sur ma mère*” (2008), a text by the Franco-Moroccan writer Tahar Ben Jelloun [153], I propose that these autobiographical narratives by family caregivers are powerful critiques of an idealized vision of care. The texts under consideration here highlight that caregivers of family members with dementia may testify to caring *about* them, but find it impossible to care *for* them. Yet they do so by departing from well-known care scripts, as part of which dementia caregivers frequently describe the burden of caring for family members [154] and instead take up what Lucy Burke has identified as

“the correlation between caring, dementia and abuse in a range of novels and life narratives written in the wake of the current *Alzheimer’s epidemic*” [155]. However, in emphasizing that these texts explore the affective dimension of violence in care, this article is less concerned with exploring the specificity of dementia care—even if, as Burke has pointed out, dementia constitutes “a key element in the transformation of the meaning of care” [155]. Rather, I seek to highlight that French contemporary literature enables us to think critically about care generally and can, thereby, contribute to the methodological reorientation of the Medical Humanities.

Malherbe and Ben Jelloun describe seemingly ordinary acts of violence and everyday abuse that are accepted as constituting part of caring relationships. Their texts, thereby, offer methodological and social critiques of care—even if they choose to do so in subjective, autobiographical voices. I, therefore, propose that these documents have a more prominent role to play in “care ethics”, the philosophical field which has been concerned with conceptualizing the normative significance of caregiving. Malherbe’s and Ben Jelloun’s texts constitute evidence of the lived experience of caregiving, as part of which they prioritize darker meanings and practices of care. They reflect on how these are inscribed in the very structure of language and alert us to the fact that specific cultural contexts even promote violence in care. Reading autobiographical texts by family caregivers within the perspective that these texts seek to bring about structural change by allowing us to think critically about the linguistic and cultural conditions that frame care enables us consider the role these texts may play in healthcare education outside of the framework of empathy-promotion. If we are to take seriously the critical reorientation of the field, I argue, the inclusion of humanities courses in healthcare education and beyond may seem all the more important—not because the humanities can cater to predetermined ends and transmit valuable skills to healthcare professionals, but precisely because they allow us to unsettle the very concepts and ideals that frame such ends and skills.

1. “Unsettling care”

Drawing on the work of feminist scholars Donna Haraway, Sarah Ahmed and Maria Puig de la Bellacasa, Michelle Murphy highlights that if we conflate care merely with feelings such as affection and attachment, we effectively override the “moments of alienation”, “the moments of unease”, the “discomfort, worry, anger, pain, disconnection and living in non-alignment” in matters of care. Reiterating Sarah Ahmed’s call for an “unhappiness archive” [156], she highlights the “importance of grappling with the non-innocent histories in which the politics of care already circulates” [151].

This call to engage with these more difficult meanings of care can be traced back to the very origins of care and caring. The Latin word *cura* has both positive and negative connotations—etymologically it is associated with

meanings that include worries, troubles and burden as much as the provision of welfare for and devotion to another. In a foundational article about care, caring and care ethics, bioethicist Warren Reich has alerted us to the fact that going back to antiquity there is a basic tension in the way the meaning of care has shaped philosophical and practical discourses around it. This he exemplifies by setting up the conflicting meanings assigned to care by Virgil and Seneca. For Seneca, care is solicitude and attentiveness to another human being, an attribute that places humans on the level of Gods. Virgil, instead, placed the “ultrices curae”, the vengeful cares, at the entrance to the underworld, thereby personifying care as burdensome, demanding and difficult [157].

As a field, care ethics which takes its roots in Carol Gilligan’s 1982 “In a Different Voice: Psychological Theory and Women’s Development” [158] has explored the role of vulnerability, dependence and interpersonal relationships in human life and within society at large. It has also specifically focused on the meaning of caring and care in the medical context. More recently, it has questioned whether a focus on care and caring can offer guidance in dealing with violence [159]. Overall however, care ethics as a field has based itself on the Senecan interpretation of care, in the sense that its key assumption is that human interdependence and caring relationships are morally valuable. Given that literary texts are often concerned with exploring human dependency and relationships, there is an obvious affinity with care ethics, even if these links have not yet been comprehensively and explicitly studied. Yet, I propose that literary texts have a particularly important role to play for care ethics because they are defined by an engagement with the ambiguous meanings of care. They offer, as my following examples of Malherbe and Ben Jelloun seek to highlight, reflections on how the linguistic and cultural conditions that frame care unsettle an overtly positive image and conceptualization of care.

2. Linguistic violence of care

In 2015, Michel Malherbe, philosophy professor at the Université de Nantes, authored a book entitled “*Alzheimers: La vie, la mort, la reconnaissance*”, in which he chronicles his wife’s declining state due to dementia. The text is split into two intertwined narratives, a first narrative strand questions how philosophy can be a guidance to challenges he is facing when caring for his wife. These theoretical deliberations are punctuated by autobiographical descriptions of visits to his wife’s dementia care home and their repetitive and limited interactions. The structure of the book is a testimony to the inherent duality of care: Malherbe highlights the moral dimensions of care in his philosophical deliberations. The parallel personal account, which disrupts these detached musing, gives voice to the burden, challenges and anxieties that caretaking constitutes for him.

There are, however, several intersections between the two narratives strands, namely when the personal expe-

rience is directly linked to Malherbe's explorations of the ontology and ethics of care. One such instance occurs when Malherbe discusses the institutional language of care, focusing specifically on terms such as the frequently employed term "accompagnement" or "person-centered care." He observes:

"We should talk with more caution about accompanying the patient. Because, in this case, the accompaniment is done in the third person. (...) 'Person-centered' care widens the gap even further and carries the same unfeeling violence. (...) This ambiguity of care is constitutive. (...) From the 'you' remains the 'she'. (...) 'It's the disease, we say to ourselves in order to apologize, you have to do the right thing.' But, we have thereby moved on to the third person, a person whose existence now depends on causes and effects. And you become curious about her condition if you are not careful. We say or think, in her very presence: 'she is fine, she tires quickly, she no longer moves her legs.'" [152]

Malherbe alerts us to the fact that the very language we use in order to speak about the affective and humane qualities of care is fraught with conflicting meanings. While it seeks to emphasize proximity and personal engagement, the image of accompaniment hides the fact that the equal partnership needed for real accompaniment is no longer possible. "Assisting," Malherbe argues, would be a more truthful way to render what caring really means in this context, because, as he poignantly asks: "How can we still claim to be walking with someone who can no longer walk? The answer, alas, is clear: we have to push the wheelchair" [152]. To some extent this critique is certainly specific to dementia care and the particular case and development of the disease of Malherbe's wife. And yet, irrespective of the particular condition that dementia constitutes and the ways it poses specific challenges to caregiving, Malherbe uncovers the inherent ambiguity of a supposedly positively connotated terminology in the healthcare context. Malherbe thereby asks the pressing question whether the language we use to express caring activities may be fraught with euphemisms. Imbued by a healthcare culture which places autonomy on a pedestal, our language is shying away from calling things by their true names. The real dependency of the other is concealed, and this leads to minute, almost imperceptible acts of violence at the level of language.

3. Cultural violence of care

Tahar Ben Jelloun, a poet and former Prix Goncourt winner documents in *"Sur ma mère"* the final years of his mother's life who is increasingly affected by Alzheimer's. The text may be termed autobiographical, yet, Ben Jelloun has preferred to call it a novel, "because it is the story of a life I knew nothing about, or almost nothing" [153]. It mostly focuses on the way the disease has changed his mother, as well as telling her life prior to the disease, and exploring the relationship between Ben Jelloun's mother and her long-time housekeeper and now caretaker Keltoum. A central difference with regard to Malherbe's text

is that unlike Malherbe's wife, who is placed in a professional institution, Ben Jelloun's mother is cared for at home by a woman who has been an employee of the family for years. Ben Jelloun writes from within a society where caring for parents at home by delegating care to domestic help is common, which is why for Ben Jelloun the question of culpability, namely whether he should undertake the care work himself, never arises.

Yet this delegation of care is not uncomplicated. Instead of leading to a romanticized idealization of home care for the terminally ill [158], Ben Jelloun's mother's home becomes the stage for seemingly everyday's acts of violence. The family, relegated to the role of bystanders, are thereby turned into witnesses of recurrent abuses of power in a caring relationship. A memorable scene that unfolds between Ben Jelloun, Ben Jelloun's mother and Keltoum makes tangible what is at stake:

"Keltoum is in a bad mood. She is being abrupt. My mother protests, Rhimou too, who doesn't like Keltoum's manners. I'm in the hallway and I watch the scene, helpless. My mother is crying. Like a child caught in the act, she cries. I look away. I think to myself: I could have come half an hour before or after the incident. Maybe Keltoum left her in her shit, so I could see everything she does when I'm not around. It is possible. This is what I endure, you who only pass by at tea time, kiss your mother, ask her to pray for you and bless you, and then you go away and I am always there to endure her insomnia, to follow her into her delusions, to pick up her shit, put her in diapers and get on all fours to clean the floor, yes, your mother no longer holds back, she loses urine and shit, I've gotten used to it, but you, you make faces and turn your face away" [153].

The literary scholar Enda MacCaffrey has called what Ben Jelloun is describing here the "tyranny of vulnerability";²⁹ the inability to tolerate the complete dependency of the other that one is exposed to as a caretaker. Burke has wondered whether it may be "precisely the need to be cared for, and the specific effects of dementia that prompt and justify the carer's abuse" [155]. In the context of Ben Jelloun's text, however, the specificity of dementia care is accompanied by an important cultural context, as part of which Keltoum is not merely an employee, but also a part of the family. Throughout the book Jelloun documents various minute transgressions, and yet, he seems to silently accept them, both because of Keltoum's familiarity—indeed, his mother insists on being cared for by her—and because she is doing the care work that he is unprepared to undertake.

Ben Jelloun resents what he is witnessing, but undertakes nothing to oppose it. In fact, he even compares his empathetic reaction to his mother's continuing decline to the Western perspective of his friend Roland, who is

²⁹ Enda MacCaffrey has discussed this in a paper entitled 'Cerebral Suffering' with regard to Michael Haneke's 2012 film *Amour* at the 2017 Conference 'French Studies and the Medical Humanities' at the Institute of Modern Languages Research, School of Advanced Study University of London.

relating to him his visits to his mother who is in a care home in Lausanne. Roland describes how difficult it is to cater to his mother's ever shifting whims and how during his visits he comes to feel like a "hypocritical son" realizing that "family ties pervert everything". Ben Jelloun comments that Roland writes about his mother with a "lucidity bordering on cruelty", and that unlike Roland, he does not feel "the need to be hypocritical, or to be cynical and cruel". On the contrary, "[his] mother disarms [him]" [153]. And yet, Ben Jelloun remains silent when witnessing Keltoum's cruelty.

Summary

What we find in Malherbe and Ben Jelloun is not a clear-cut picture of what constitutes care and caring, and even less do they provide any specific recommendations on how to care for a family member with dementia. Instead, the two examples can attune us to the inherent ambivalences in care, thereby reconnecting us with the original dual meaning of care and unsettling a romanticized idealization of caregiving, the role of the family and the home in care and the cultural conditions that frame care work and its delegation. They alert us to the fact that language may be the place where violence in care begins.

If we are to take seriously the goal of the critical re-orientation of the Medical Humanities than this entails making visible that literary works have an unsettling role to play in the ways we think about the affective dimensions of caregiving [160]. One way to do this, as I have laid out here, is by challenging the theoretical conceptualizations of care that often draw on the positively connotated meanings of care with literary and autobiographical texts that have explored the lived experience of caregiving. This will not provide us with answers, but it will allow us to formulate urgent questions that any ethical conceptualization of care should engage with.

Dr. Dick Diver—Portrait of a psychiatrist in F. Scott Fitzgerald's novel "Tender is the Night"

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Introduction: Medical Humanities

The interface between medicine and the humanities looks back upon a deep-rooted tradition. This enduring legacy is exemplified by the longstanding history of medicine and the abiding Viennese „Josephinum“.

From the early 1960s, the writings of Ronald A. Carson and Thomas R. Cole established the term medical humanities as a comprehensive concept for a multidisciplinary field of research and study and expounded on its function and purpose [161]. Since then, medical humanities has increasingly spread across the Anglo-American world and continental Europe, opening up a field in which medicine and the humanities engage in dialogue on experiences and conceptual issues. Furthermore, medical humanities unfolds opportunities to reflect on one's own function, on the aspirational goals of shaping personal and professional identity and on the enhancement of students' education. Medical humanities raises a broad range of questions concerning professional ethics and treatment techniques, the handling and boundaries of treatment as well as the subjective understanding of illness and death, including their religious aspects. Accordingly, this research field implies a strong focus on mental states of patients and the persons treating them from perspectives that transcend both the medical and the psychological points of view.

Sigmund Freud suggested that psychoanalysis drew attention to phenomena that were long ago "discovered" by poets and writers in their literary works. However, Freud wrote psychoanalysis attempts to grasp them scientifically. Medical humanities currently takes a similar stance. For instance, novels and poems can convey, in a very vivid way, insights into the aetiology and pathology of many clinical conditions as well as empathy for case-histories.

A paradigmatic example for my topic is F. Scott Fitzgerald's story of 26-year-old US-American psychiatrist Dr Richard Diver in his famous novel "Tender is the Night" [162]. In the novel, the blurring between a clinical phenomenon ("transference-love") and a psychophysical process in everyday life (such as falling in love and being in love) as well as their consequences are narrated from the unbiased view of the novelist, who knew neither the technical rules nor the recommended treatment of this clinical phenomenon.

Freud and poets

Freud repeatedly remarked that psychoanalysis had gained access to phenomena previously unavailable to scientific research. Poets have always put into words and shaped these phenomena in their literary works. In this sense, Freud acknowledges poets as allies in his book "Delusions and Dreams in Jensen's *Gradiva*" [163]³⁰.

"But creative writers are valuable allies and their evidence is to be prized highly, for they are apt to know a whole host of things between heaven and earth of which our philosophy has not yet let us dream. In their knowledge of the mind they are far in advance of us everyday

³⁰ The chronological order of Freud's writings is based upon the volume by Meyer-PalmedoI, Fichtner G, editors. *Freud-Bibliographie mit Werkkonkordanz* (Freud-Bibliography and Concordance of his Publications). Frankfurt/Main: Suhrkamp; 1989. pp. 15-90.

people, for they draw upon sources which we have not yet opened up for science.” (p. 32)

Literature enjoys privileged access to the unconscious sources from which this knowledge arises, as Freud writes [164]:

“The concept of the unconscious has long been knocking at the gates of psychology and asking to be let in. Philosophy and literature have often toyed with it, but science could find no use for it. Psycho-analysis has seized upon the concept, has taken it seriously and has given it a fresh content.” (p. 286)

In “Tender is the Night”, F. Scott Fitzgerald captures a broad variety of clinical phenomena such as the traumatic consequences of incest, boundary crossings, or boundary violations in psychiatric or psychotherapeutic treatment, as well as the pathways by which traumata are transmitted. Phenomena that are clinically and diagnostically observed in psychiatry, psychotherapy and psychoanalysis are brought closer to the reader through this literary narrative, thus becoming more intelligible and comprehensible.

The novel’s focus on the life and career of psychiatrist Dr. Dick Diver seems exemplary, even paradigmatic, regarding the specific contribution that medical humanities can offer students and professionals in medicine and health sciences.

Even if a writer methodically identifies with each of his or her characters—in this case the obvious link between F. Scott. Fitzgerald and the psychiatrist Dr Diver—any attempt to interpret Dr Diver as simply autobiographical falls short. We meet one of the most sophisticated writers of the 20th century, whose narrative is not limited to a basic modelling of the writer’s own life. Freud remarks on the theme of the elaboration of personal experiences in works of art [165]:

“A man who is a true artist has more at his disposal. In the first place, he understands how to work over his day-dreams in such a way as to make them lose what is too personal about them and repels strangers, and to make it possible for others to share in the enjoyment of them. He understands, too, how to tone them down so that they do not easily betray their origin from proscribed sources.” (p. 376).

Similarity of access to works of art

Medical humanities has highlighted that novels and poems, through the narrating a story, can facilitate empathy and provide insight into aetiology and treatment, as well as subsequent impairments and further consequences of some diseases. The interest of psychoanalysis in works of art resembles the medical humanities’ approach, which envisages a goal of synergies between medicine and humanities. The psychoanalytical approach is neither directed towards a presumed pathology, diagnosing the poet in absentia, nor does it place an artist or his or her work on the couch.

When deciphering works of art (a literary work, in this contribution), medical humanities and, similarly, con-

temporary psychoanalysis focuses on how processing a character or a phenomenon conveys deeper insights into pathologies or adds perspectives that render clinical justifications of technical rules of treatment more accessible. In a short essay, Freud evokes how poets enable us to experience the same vicissitudes as his or her literary figures [166].

“It would seem to be the dramatist’s business to induce the same illness in us; and this can best be achieved if we are made to follow the development of the illness along with the sufferer. This will be especially necessary where the repression does not already exist in us but has first to be set up.” (p. 611)

In F. Scott Fitzgerald’s plot, Dr. Dick Diver is a 26-year-old American psychiatrist, who practices at the psychiatric clinic of Professor Dohlmer on the Zurich-see during the First World War (1917). Dr Diver comes into fleeting contact with Nicole, a victim of incest and a severely psychotic patient. For no apparent reason Nicole develops an intense transference-love for him and begins a correspondence as soon as Dr Diver leaves the clinic. Dr Diver does not allow himself to be diverted from further contacts with Nicole by the clinic, which learns of their correspondence. A noticeable improvement in the patient’s condition misleads Dr Diver who begins to reciprocate Nicole’s feelings and eventually decides to marry her.

The code of ethics of psychoanalysis distinguishes between milder boundary crossings and severe boundary violations. In the case of Dr Diver, his transgression seems at first glance a milder form of boundary crossing, as he was involved in the clinic as just one psychiatrist among several. Therefore, Dr Diver was neither the sole nor a direct psychotherapist of Nicole—in fact, he did not treat her personally. Nevertheless, Dr Diver crossed the boundaries delimiting the roles and division of labour between the treating person and the patient more than occasionally. Eventually, his derailment consolidates into a permanent situation established by the relationship in the marriage.

Dr. Dick Diver’s role models in psychodynamic psychiatry

F. Scott Fitzgerald lets us know that Dr Diver completed his training during the First World War, first in Oxford (1914) and then in Vienna (1916), before specializing at the aforementioned psychiatric clinic of Professor Dohlmer in Zurich (1917). While in Vienna, Dr. Diver stayed at Damenstiftgasse hoping to encounter Freud personally. After the war (1919), Dr. Diver returned to Zurich to a scientific environment deeply influenced by psychodynamic psychiatry and C.G. Jung. In the novel, F. Scott Fitzgerald presents to the reader several clues regarding Dr Diver’s role models, in whose foot-steps he follows [162].

“Jokingly in front of Nicole, now his wife, Dr. Diver glamourizes an accidental meeting with a former American acquaintance as an encounter between the founder

of psychoanalysis and a celebrated New Yorker socialite: '[...] he and I shaking hands there on the boulevard. The meeting of Sigmund Freud and Ward McAllister.'" (p. 194)

In a further sequence of the novel, a former colleague at Professor Dohlmer's clinic, Dr Franz Gregorovius, pays Dr Diver a visit to persuade him to jointly take over the psychiatric department of the late Professor Braun on the Zugersee [162]:

"When one writes on psychiatry, one should have actual clinical contacts. Jung writes, Bleuler writes, Freud writes, Forel writes, Adler writes—also they are in constant contact with mental disorders. 'Dick has me' laughed Nicole. 'I should think that'd be enough mental disorder for one man.'" (p. 202)

The so-called "transference-love" in the technical literature

Freud had already illuminated the mirror maze of transference-love, by unveiling transference-love as a repetition of the infantile feelings of the patient transferred into the person of the analyst [167]: The analyst "must recognize that the patient's falling in love is induced by the analytic situation and is not to be attributed to the charms of his own person" (p. 160–161).

However, Freud not only unravelled transference-love as a harmless repetition of the past, but also as a powerful resistance [167]. "A little reflection enables one to find one's bearings. First and foremost, one keeps in mind the suspicion that anything that interferes with the continuation of the treatment may be an expression of resistance." (p. 162)

Once reciprocated, this supposed "love" endangers the flow of the analytic process [167].

"As regards the resistance, we may suspect that on occasion it makes use of a declaration of love on the patient's part as a means of putting her analyst's severity to the test, so that, if he should show signs of compliance, he may expect to be taken to task for it. But above all, one gets an impression that the resistance is acting as an agent provocateur" (p. 163)

The fatal consequence of the analyst reciprocating the patient's feelings of love is, inevitably, defeat [167].

"If the patient's advances were returned it would be a great triumph for her, but a complete defeat for the treatment. She would have succeeded in what all patients strive for in analysis—she would have succeeded in acting out, in repeating in real life, what she ought only to have remembered, to have reproduced as psychical material and to have kept within the sphere of psychical events." (p. 166)

Freud had already acknowledged that a further course of treatment outside the structured clinical setting would take a negative turn [167].

"In the further course of the love-relationship she would bring out all the inhibitions and pathological reactions of her erotic life, without there being any possibility of correcting them; and the distressing episode would end in remorse and a great strengthening of her propen-

sity to repression. The love-relationship in fact destroys the patient's susceptibility to influence from analytic treatment. A combination of the two would be an impossibility." (p. 166)

Although in his technical writings Freud is concerned with a male treatment person and a female patient, a constellation also present in Fitzgerald's novel, transference-love is a clinical phenomenon that obviously may occur in a setting with a female psychoanalyst and a male patient, or can even be non-gender specific with regard to the composition of the analytical dyad.

Contemporary psychoanalysis takes a further decisive step towards understanding the nature of the so-called transference-love. Transference-love is no longer referred to the conceptual framework of the libido, but rather more radically understood as an expression of the death drive or aggressive drive or *destrudo*.

One of the most clear-sighted contemporary psychoanalysts, Betty Joseph, indicates a premise that Freud himself had emphasized [168], "how the patient's demands for love, her erotization of the transference, can be seen as a resistance, as a force that interferes with the continuation of the treatment." (p. 104)

Betty Joseph explains [168] "how patients who erotize the transference are bent on nullifying or actually defeating the treatment" (p. 106). When Freud wrote his "Observations on Transference-Love" [167], he had not yet arrived at his later insight into the varieties of destructive phenomena, which he later conceived of as expressions of the death drive in "Beyond the Pleasure Principle" [169]. Betty Joseph recalls how Freud had to recognize that these highly aggressive aspects were in conflict with life drives, including sexuality. The idea that patients might have an interest in undermining progress was then further developed into the concept of negative therapeutic reaction [168]. "In the transference-love paper we get a marvelous picture of such negativism using erotization as its main weapon [...]" (p. 106)

The patient has lost his or her contact with reality and the object and uses all available means to attempt to blur the perception of a difference between himself or herself and the object. The patient [168] "struggles to avoid any sense of difference between self and object and cannot allow for the analyst's different qualities or skills, or his superiority." (p. 104)

The so-called "transference-love" in the novel and its consequences

In the novel, Dr. Dick Diver succeeds in creating ideal conditions for Nicole's further stabilization within their married life, as Nicole herself admits retrospectively to her sister Baby Warren after separating from Dick towards the end of the novel [162].

"Dick was a good husband to me for six years," Nicole said. "All that time I never suffered a minute's pain because of him, and he always did his best never to let anything hurt me." (Baby Warren): "That's what he was educated for." (p. 349)

In order to create a conducive “facilitating environment” for Nicole’s recovery, Dr Diver neglects his scientific and clinical career and eventually abandons it altogether. On her part, Nicole manages to nourish Dick’s weaknesses, further undermining his scientific self-discipline [162]: “Naturally Nicole, wanting to own him, wanting him to stand still forever, encouraged any slackness on his part, [...] His work became confused with Nicole’s problems” (p. 195).

Thus, the virtues of the pastor’s son Dick Diver crumble and shatter under the impact of the blurring of the boundaries of the relationship between psychiatrist and patient.

Dr. Diver feels increasingly disappointed because, despite his sacrifices, Nicole seems to have made little progress in coping with her disorder [162]. “This was more difficult because he was currently annoyed with Nicole, who, after all these years, should recognize symptoms of strains in herself and guard against them.” (p. 192)

Dick becomes more and more estranged from Nicole and progressively addicted to alcohol [162]. “The most unhappy aspect of their relations was Dick’s growing indifference, at present personified by too much drink.” (p. 314)

And yet Dr. Diver is unable to disentangle himself from the situation and retreat from Nicole’s side, even though Nicole’s delayed but progressive stabilization goes hand in hand with his decay and the ultimate abandonment of his ethical principles as a doctor and psychiatrist [162]. “Not without desperation he had long felt the ethics of his profession dissolving into a lifeless mass.” (p. 288)

Nicole’s unconscious payback for her traumatizing childhood experiences provoked by her incestuous, predatory father is carried out on the new object—her former psychiatrist Dr. Dick Diver, who progressed to being her husband. In everyday life, outside the rigorous setting of psychiatric or psychoanalytic treatment, the treating person no longer has any technical instruments to interpret and work through the dynamic web of projections and introjections.

F. Scott Fitzgerald masterfully portrays clinical phenomena, in this case the transmission of trauma from the patient to the treating person. In the clinical setting, the treating person can defuse and metabolise the patient’s toxicity by interpreting the projected representations and emotions. In everyday life the treating person is doomed to fail [162].

(Nicole:) “[...] I’ve ruined you.”

(Dick:) “So I’m ruined, am I?” he inquired pleasantly. (p. 300)

Later, the novel outlines the detrimental unfolding of events [162]:

(Dick:) “You ruined me, did you?” he inquired blandly. “Then we’re both ruined. So –” (p. 306)

The pioneering psychoanalyst Melanie Klein calls the “nourishment” provided by the treating person “breast”. In Kleinian terms *ante litteram*, Fitzgerald leaves his character Nicole wondering; she is [162] “afraid of what the stricken man [Dick] above would feed on while she

must still continue her dry suckling at his lean chest.” (p. 312)

Dr. Diver, into whom Nicole projects the severe alcoholism of her incestuous father, introjects Nicole’s representation, because he is, after all, a psychiatrist who violated his boundaries. In fact, he is the second offender. Therefore, Dr. Diver increasingly identifies unconsciously with the first abuser, becoming a heavy drinker and, finally, an alcoholic.

After having exploited and degraded her husband, Nicole is now able to turn freely to another man, Tommy Barban. The transition to a new marriage allows Nicole to leave her psychiatrist and former husband behind for good, although occasionally she falters [162].

(Dick:) “Then why did you come, Nicole? I can’t do anything for you anymore. I’m trying to save myself.”

(Nicole:) “From my contamination?”

(Dick:) “Profession throws me in contact with questionable company sometimes.” (p. 336)

These last words of Dr. Diver which qualify Nicole as “questionable company” are experienced by Nicole as abusive. The breast of her former psychiatrist is now “sucked dry” and Dr. Diver is not capable anymore to speak to her as thoughtful as a psychiatrist does, but simply as Dick Diver, a defeated husband, a crushed man.

Dr. Diver’s annihilation seems to enable her to finally [162] “cut the cord forever. Then she walked [...]” (p. 337).

Love in everyday life

Unlike Dr. Diver, Nicole’s new partner Tommy Barban does not regard her as a former victim and helpless patient. Diver never ceases to justify unpleasant aspects of Nicole’s personality with the traumatic events of her past. He is ready to accept and contain them as psychiatrists do. Tommy Barban explains to Dick [162]: “You don’t understand Nicole. You treat her always like a patient because she was once sick.” (p. 345)

Tommy, conversely, is able to perceive Nicole’s aggressiveness as such. Tommy does not have to derive Nicole’s aggression from traumatic events or treat her with tactfulness, as a psychiatrist would do. The following passage reveals this, when Tommy Barban abruptly asks Nicole: [162] “When did you begin to have white crook’s eyes?” (p. 326)

(Nicole to Tommy:) “[...] if my eyes have changed, it’s because I am well again. And being well perhaps I’ve gone back to my true self—I suppose my grandfather was a crook and I’m a crook by heritage.” (p. 327). Nicole to herself: “So I have white crook’s eyes, have I? Very well then, better a sane crook than a mad puritan.” (p. 328)

End of the treatment

Even in the serious condition of his own decay and in free fall, the disgraced Dr. Diver, due to some remaining leftovers of his former ethical principles as a psychiatrist, endeavors to be considerate of the patient, not disclosing his impotence [162].

“Dick waited until she was out of sight. Then he leaned his head forward on the parapet. The case finished. Doctor Diver was at liberty.” (p. 337)

Illness narratives in comics: using graphic medicine in the medical humanities

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Two of the fundamental tenets of the medical humanities are that (i) medical phenomena need to be understood in broader socio-cultural contexts and (ii) societies can negotiate their understanding of concepts of health and illness, ethical standards, and social practices through works of art. What contribution can the use of comics make in this context? This article serves as an introduction to the textual and visual strategies of illness narratives in comics, arguing that comics in the genre of “graphic medicine” are aesthetically appealing and address ethical, epistemological and socio-political issues, making them key for medical research, teaching and practice.

1. Illness narratives in comics and the term “graphic medicine”

Over the past 50 years, hundreds of comics have been published in different countries that provide insights into the individual experience of illness, disability, medical treatment, care, recovery and dying. Most of these comics are either fictional or based on (auto-)biographical perspectives from people who have become experts on the subject through their own experiences [170]. Starting in the 1970s, and gaining momentum particularly since the late 1990s, narratives have been created in comic form by those living with cancer, HIV/AIDS, sexual violence and trauma; complications relating to conception, pregnancy and childbirth; mental illnesses (such as bipolar disorder, depression, schizophrenia, and obsessive-compulsive disorder); eating disorders and addictions; infectious and autoimmune diseases; chronic and degenerative ailments (such as multiple sclerosis and Parkinson’s disease); private and institutional care for people with learning disabilities and dementia; and suicide, end-of-life care and death [171]. They promote empathy and deliberately violate taboos such as laying bare the exhaustion felt by family carers or the loss of independence experienced by people who are considered ‘mentally disabled’.

Even though there is no formally agreed-upon term for the genre of illness narratives in comics, the term “graphic medicine”, coined by British physician and cartoonist Ian Williams, has been to date adopted internationally. In 2012, a website was set up as a platform for a “community of academics, health carers, authors, artists and fans of comics and medicine” whose work and inter-

ests support “interaction between the medium of comics and the discourse of healthcare”.³¹ The 2015 seminal book “Graphic Medicine Manifesto” further cemented this trademark as moniker of a larger movement [172]. As personal and artistic forms of expression, comics in the genre of graphic medicine seek to improve the health care system and initiate self-understanding for both patients and medical and nursing professionals.

2. Information in comics: dialogues with medicine

Due to the clarity and ease with which comics convey knowledge, works in this medium have been used worldwide for educational, informational and promotional purposes, aiding establishments from pharmaceutical companies to healthcare institutions. Medical comics aimed at paediatric, adolescent, and adult patients as well as health care professionals are available in bookstores, on the Internet as open-access materials, or distributed in doctors’ surgeries and hospitals. The success of collaborative work between medicine, comic art and science communication can be seen in such projects as “Superduperaffengieniales Narkose-Comic” produced by Jena University Hospital for small children and their parents about the pre-surgical procedure of anaesthesia [173], and “Patientenaufklärung Linkskatheder-Untersuchung”, a 20-page, four-colour patient information booklet about heart catheterisation, illustrated by Sophie Martineck and published in 2016 by medical doctors Anna Brand and Verena Stangl at Charité Universitätsmedizin Berlin [174]. The latter project, designed to complement a typical medical information sheet for patients, includes illustrations of an empathic conversation between doctor and patient as well as the actual stages of catheterisation. As shown in Fig. 19, the images of the examination via contrast agent are superimposed over the clothed upper body of the patient creating a sort of panel within a panel, hence maintaining the integrity of both his physical state and personal appearance. The naive and accessible drawing style, the medical explanations in the accompanying text (“The inner walls of blood vessels are insensitive because there are no nerves.”) corresponding with the patient’s personal experience (“Interesting, I feel nothing!”) and the positive results of the examination (“Left ventricular and aortic pressures are normal.”) are all meant to increase patient confidence in medical procedures [175].

3. Alternative perspectives: criticism of medicine in comics

Informational medical comics aim to provide a reassuring glimpse into interactions between patients and medical or nursing staff. Many autobiographical and fictional comics, by contrast, express clear criticism of treatment procedures and medical facilities either from the patient’s perspective or that of medical staff members. Brian Fies’s

³¹ <https://www.graphicmedicine.org/> (30 March 2020).

Fig. 19 Brand, Stangl, Hamann, Martineck. Patient Information, Left Heart Catheter Examination, 2016, p. 5 (© Charité – Universitätsmedizin Berlin. Reprint by courtesy.)

award-winning comic “Mom’s Cancer”, which first appeared in 2004 online and was subsequently published as a book in 2006 [176] is a good example of this. The comic narrates Fies’s mother’s metastatic lung cancer, including both her stays in hospital and follow-up appointments, and their corresponding impact on the lives of both her and her relatives. On a double page spread, we see Fies’s mom within a box-like container, meant to represent a full-body scan (Fig. 20). The sites affected by the disease are visually represented by symbols, and symptoms are linked with treatment recommendations. The initial commentary and the visual distribution of the body over two pages echoes a kind of bisection of the patient, critiquing high-tech medicine’s tendency to lose sight of patients’ individuality (with regards to the indivisibility of body and mind). While “impressive hospital specialists” are responsible for “everything from Mom’s neck up”, local cancer doctors take care of the rest of the body. Some recommend “patience” as the best form of therapy while others laconically explain that the cure lies in repeated courses of radiation and chemotherapy “until better or dead”.

Fies’s North American audience will likely recognize the double-page spread “inoperable” as a parody of the operation table gameboard in the US children’s game “Operation”, which first came out in 1964. This battery-operated game of skill requires children to operate on a

Fig. 20 Brian Fies, Mom’s Cancer, 2006, p. 12–13 (© Brian Fies. Reprint by courtesy.)

patient called “Cavity Sam”. Small ailment pieces (as they are called in the game) must be removed with tweezers from the patient’s body without touching the metal rim surrounding them (these tweezers also appear in the comic). Players receive a winning point for each successfully removed piece; touching the rim during extraction, however, causes the board to buzz and a red bulb on the patient’s nose to light up. “Operation” is in effect a game of playing doctor, requiring dexterity of the hand whilst exploiting a patient’s body. Although Mom’s condition in the comic is considered inoperable, the allusion to the game echoes medicine as a form of violent intervention, and one possibly undergone for the profit of the hospital as opposed for to the benefit of the patient. In either case, neither the binary logic of “better or dead” nor the visual divide between head and body do justice to Mom’s actual experience of her illness.

4. Hyperbole and concealment: ill bodies in comics

Comics visualize and embody their protagonists, granting them (realistic, abstract, or defamiliarizing) corporeality and the pictorial embodiment of facial expressions, gestures and movements. This makes comics particularly well-suited to the representation of bodily experiences, including those addressing medical issues. The result is works reflecting the cultural boundaries between ‘sick’ and ‘healthy’ bodies, the relationship between self- and external perception, and the dynamics of exposure and stigmatization [177]. Hyper-realistic, grotesquely alienating or (self-)ironically exaggerated representations of the body, as well as omission, concealing or self-exposure of (possibly stigmatized) signs of disease are just two ways in which comics can display and expand the limits of what can be shown and told [178, 179]. This holds true not only for physical conditions, but also for emotional states and invisible illnesses including psychological ailments.

Comics based on autobiography can be seen as attempts to gain control of one’s personal identity through self-presentation, as opposed to presentation by others, and provide a contrast between personal experience and medical and cultural discourse on deviation and disability. The 2017 16-panel comic “My Battle with Crohn’s Disease” by Australian artist Safdar Ahmed illustrates how different representations of the body can both complement and critique each other [180]. The symptoms of Crohn’s, a chronic autoimmune disease of constant inflammation, chronic diarrhoea and weight loss, are of-

Although the double-panel illustration of the inside of the intestine (Fig. 22) is drawn in the style of medical illustrations, it is more expressive than anatomically accurate, replacing physiological terminology with descriptions of a “mental battle” with pain. Creative visual metaphors such as a cheese grater are used to illustrate the protagonist’s torment, reflecting the limitations of understanding the disease through a purely medical/functional perspective. In “My Battle with Crohn’s Disease”, the inner conflict felt by the alter-ego-protagonist whose body has effectively turned against itself is transformed visually into a split body with the animation of the artificial anus. Brought to life, this imitation sphincter

Comics represent time spatially through sequences of panels, allowing them to deviate from chronological time to visualize flashbacks, flash-forwards, and fragmentation of moments, which reflect subjective experiences in everything from waiting, feeling pain or living with a chronic illness that resists the simple logic of diagnosis, therapy and healing. Ellen Forney’s much-acclaimed 2012 comic “Marbles: Mania, Depression, Michelangelo and Me” offers convincing images for her experience of bipolar disorder, a mental illness characterized by alternating manic and depressive states [181]. One full-page, wordless black-and-white drawing of a depressive phase (Fig. 23) presents a small figure enveloped in a blanket

Fig. 24 Leela Corman, PTSD: The Wound That Never Heals. Coming back to life after losing my first child, 2015, detail (© Leela Corman. Reprint by courtesy.)

who moves from bed to couch in an attempt to escape her mood-induced torpor. The corresponding move from one room to another is almost indistinguishable, given the reduced illustrative style of the drawings which seem to reflect a constant, unchanging space. A lack of panel frames results in a rhythmically uniform composition as opposed to a conventional comic sequence of images. Simple lines and the absence of facial expressions help emphasize the unchanging nature of the scene and, thus, the immutability of the protagonist's mental condition: on this page, an escape from depression is not an option. With these aesthetic strategies, Forney's Marbles does a remarkable job of conveying the realities of a disease often minimized due to its fundamentally non-visible nature.

There have been repeated arguments that the comics medium is particularly adept at illustrating the actual experience (and particularly the aftereffects) of traumatization. Comics can use media-specific internal tensions (between single image, page design and image sequences, between image and text, between repetition and variation) to illustrate, for instance, memories violently breaking into the present in the form of flashbacks [182]. Leela Corman's comic "PTSD: The Wound That Never Heals", first published online in 2015, tells the tale of her alter-ego-protagonist after the sudden death of her two-year-old daughter [183]. Page 5 of the comic (Fig. 24) combines psychological and neuro-scientific knowledge: schematic internal views of the brain and

nerve tracts of a body are contrasted with the personal experience of multiple temporalities between "time and space right now" and "moments, plural"³², where the past beleaguers the present uncontrollably. The mental split ("like two movies playing at once") is visualized by illustrative fragments swirling around and through the head of the protagonist where she remembers times gone by with her deceased daughter. Although the watercolor pages are colorful and appealing, the 'panel shards' convey the destructive repercussions of trauma. Corman's comic "PTSD" combines both educational and emotional factors—like many other illness narratives in comics—to question in a distinctly aesthetic way the boundaries between health and illness.

6. Conclusion

Illness narratives in comics grant their protagonists bodies, which readers can emotionally respond to or even identify with. Protagonists are embedded in social contexts and contend with both human vulnerability and mortality. By telling individual stories, illness comics negotiate social, epistemological and ethical questions in an aesthetically diverse way. They are also being explored in various academic contexts, including the "PathoGraphics" research project at Freie Universität Berlin [184, 185]. Exhibitions of illness narratives in comics [186, 187] show how graphic medicine is being implemented into medical study programs, while research into the ways in which patients and family members respond to informational comics are clear evidence of the success of using graphic medicine in medical education [188, 189]. All these works provide new opportunities within a clinical context to better understand the nuances of illness as well as the possibilities and limitations of therapeutic treatment.

Using comics to teach medical humanities

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Medicine, if we're doing it right, involves emotions. If it does not, there's probably something wrong with how we're practicing [190].

Medical humanities

For centuries, journalists, cartoonists and writers have criticized medical doctors for being pompous, inhumane or even cruel [191]. Modern technologies and numerous medical options require even greater attention to hu-

³² www.fsgs.fu-berlin.de/pathographics (30 March 2020).

man dimensions of medicine in order to remain sensitive to the needs of patients, as these developments may bring about deficiencies and shortcomings in regard to personal attention and bedside presence. The turnover of patients has increased, while professional as well as humane management skills are necessary to succeed in a competitive medical system. So what is meant by the term *medical humanities*? Is it a “cure-all” solution to increasingly mechanical and technical medical care? Is it concerned with analytic skills, attention, dialogue, friendliness, availability, communication, continuity, good interpersonal relationships, listening skills, individual care, kindness, and thoughtfulness? Concerns about deficiencies in these qualities have led to changes in the curricula of medical education programs to introduce a stronger focus on communication skills, ethics and social sciences and produce more “rounded doctors” who are able to adapt to the needs of patients from different backgrounds [191]. The field of medical humanities is concerned with the necessity to reflect upon what the medical profession is about and links medical science with humanities. As clinical habits are known to be formed at an early stage of medical training, a stronger focus on medical humanities might improve medical students’ humanistic skills [192]. Rita Charon, who has called for a research program on narrative medicine—which means addressing the individual relational and psychological dimensions that occur in tandem with physical illness—proposes that medical humanities might result in students and doctors who are more empathic, reflective, professional, and trustworthy [193]. However, humanism should not be regarded as “anti-science”; it simply aims to foreground people [194]. In medical education, the use of arts, literature and film offer possibilities to experience a change of perspective and observe that there is very often more than one answer, one authority or one way to look at a particular situation. This encourages engagement with complexity and ambiguity [195].

The results of a study which tested 739 medical students using an online survey, and hypothesized that medical students with higher exposure to humanities would report higher levels of positive characteristics in areas such as emotional appraisal, empathy, spatial skills, self-efficacy, and wisdom, and report lower levels of negative characteristics in areas such as cognitive weariness, emotional exhaustion, intolerance of ambiguity, physical fatigue, showed that exposure to humanities significantly correlated with positive personal characteristics, and inversely correlated with burnout [196]. Innovative teaching practices such as integrating humanities into curriculum planning and teaching, or promoting student-run humanities blogs as well as critical, interdisciplinary and interprofessional discourses addressing challenging medical themes, have the potential to help medical humanities permeate into mainstream medical education [197]. The importance of both soft and hard skills should be acknowledged, and medical humanities support efforts to develop competent and compassionate physicians [198].

Medical comics

Comics (*graphical medical narratives*) from the field of medical humanities have been used in medicine for a long time. For example, medical history topics were popular in the 1940s. They stylized doctors or carers as heroes (such as Florence Nightingale or Robert Koch). Comics in the forms that we are familiar with today appeared from about the middle of the 19th century. In many cases, comics were used to express subversive tendencies. In the first half of the 20th century, comics developed into a mass phenomenon in a variety of genres from fantasy comics to superhero comics. The term *graphic medicine* was coined by the British physician and artist Ian Williams and describes the role that comics can play in the study and delivery of healthcare [199]. Ian Williams has been a pivotal figure in the increasing use of medical comics. Since 2007, many initiatives have been launched which can be categorized as graphic medicine (see footnote no. 31). The article *Missed it*, a pictorial story on the topic of treatment errors resulting in death, which appeared in the respected journal *Annals of Internal Medicine* [200] represented a milestone in graphic medicine. Published in 2015, *Graphic Medicine Manifesto* is as a combination of scientific essays and visual narratives with a comic-style conclusion which laid the foundation for the establishment of graphic medicine as a new field of research [201].

The value of medical comics in interacting directly with patients is now undisputed. It is a particularly effective means of communicating with children and adolescents, or people with language barriers. Comic art is used to help deliver healthcare services, but also for training and communication purposes [202]. Another example from clinical practice is a piece of comic art used to provide patients with information about cardiac catheterization at Charité -Berlin, which has been shown to improve patient understanding and reduce anxiety [203]. An increasingly important area of healthcare is medical histories from the point of view of the patients (graphic pathographies). This involves patients sharing their experience with a disease. As a result, for example, people who may be at the very beginning of dealing with a chronic illness can be reached and provided with support at an early stage. In doing so, knowledge about a clinical picture, ways in which the illness may be treated, as well as strategies for coping with the disease. It is important to reflect on the gaps between medical facts and individual experiences. Only a part of the story told is conveyed through pictures or words, the viewer must actively supplement the content that is not shown using their imagination. (Auto)biographical comics can be used by medical professionals as well as medical students to help them understand the experiences of patients and their caregivers [204]. In particular, in medical education one can use the inherent potential of comics to accelerate self-reflection, to raise awareness of aspects of communication and to develop skills of observation, for example [205]. In medi-

cal education, medical comics can be used to develop abilities in areas such as empathy, emotion, creativity, and to present alternative perspectives [206]. The field of medical humanities has recently received increasing levels of attention and has found its way into the curricula of medical degree programs [207]. Ideally, medical humanities will be integrated into every year of study by means of vertical coordination across medical training [208]. Raising difficult questions or confronting medical students with challenging topics should stimulate discussions and personal development. An interdisciplinary or multidisciplinary approach leads to the question of what qualities might be necessary in addition to fact-based medical knowledge and skills in order to provide the best possible care for patients and their caregivers. The needs of patients and caregivers therefore move into the foreground. In addition however, one should not lose sight of oneself [198]. Medical humanities support the development of so-called *tacit knowledge*, which describes skills and experiences that are difficult to transfer to another person by means of writing them down or verbalizing them. Tacit knowledge leads to new ways of perceiving relationships and human interactions.

Comics can foster visual literacy (“training the eye”), which is essential for clinical practice [192]. Medical comics are an art form that has evolved over decades. Drawings are combined with words, sentences or texts depending on the situation. They can be developed into a comprehensive picture story or stand on their own (Fig. 25). The variety of topics addressed and the different forms of presentation used are suitable for different age groups, interests and professions. A broad range of graphic medicine is available: to impart knowledge, to illustrate problems, to criticize, to offer solutions, to show the way forward, to communicate, and to offer hope.

Medical comics at the Medical University of Vienna

Studying medicine involves developing a wide range of knowledge, skills and attitudes. The Medical University of Vienna aimed to broaden the skills its students acquire by addressing aspects of medical humanities in the fifth year of its medicine degree, known as the pre-clinical

year (a medical degree lasts six years in Austria). Medical comics can be used to teach aspects of medical humanities which address challenging situations that occur within medical settings. It is a medium through which patient stories as well as the different perspectives of patients, caregivers, relatives or medical staff can be addressed. In November 2018, medical students were assigned one of three comics within a blended learning setting via an online learning platform. The medical students were asked to reflect on the comics by answering three questions within a period of a week. The intended learning outcomes were (i) to understand the demands placed on young doctors during night shifts; (ii) to be able to reflect on a doctor-patient interview situation; and 3. to be able to recognize patients’ physical and/or emotional needs. The answers to the task were reviewed by two lecturers (a clinician and a human scientist). 507 out of 508 medical students completed the online-task. On average, each student spent 12.75 minutes on the task (SD 11.60) and wrote 111 words (SD 79; range 4–602). Eighty-four percent of all answers were rated as sufficiently detailed or containing an excellent amount of detail. In December 2018, a lecture was held based on the medical students’ answers. The results indicate that medical students benefited from the medical comics task with respect to engaging with challenging topics and were also able use the comics for meaningful critical reflection. This kind of blended learning successfully showed that a large group of medical students can engage with medical humanities. Medical comics successfully inspired the medical students.

Exhibition of medical comics at the Medical University of Vienna: Impression—Expression—Interaction, Perception in Medicine

Medical comics can be used alongside literature and art, and are a medium which leaves space for the reader to personally engage with a story or message. Viewers have the opportunity to engage actively, but can do so at their own pace. Visual art offers a variety of opportunities to communicate and goes beyond language and the limits of the reader’s reading competence. It has been applied for centuries in different forms as a visual representation of experiences, sensations and emotions. For example, in the form of a picture, a series of pictures or a picture story. Visual representations always provide space for reception, interpretation and reflection by the viewer. Pictorial expression occupies an important place, especially in the field of medicine, where ultimately pain, loss, stress overload, illness, grief, emotional stress, visible and invisible injuries, and much more has to be processed. Everyday situations in all specialisms pose challenges to doctors, medical students, medical staff, and, last but not least, patients. Critically reflecting on situations by engaging with medical comics allows you to look below the surface. Comics are not primarily intended as a form of humorous presentation, but rather a visual illustration of various topics. In October 2019, the Medical University of Vien-

Fig. 25 Drawings (a, b) standing on their own (© Barbara Pirker. Reprint by courtesy.)

na held an exhibition of medical comics titled “Impression—Expression—Interaction, Perception in Medicine” on the premises of Vienna General Hospital, choosing a title which deliberately refers to the possibility of a change of perspective. The exhibition set out to facilitate interaction between impression and expression. It was designed to inspire reflection on what the characters in the comics feel and what the observers feel. Everyday medical situations can always be viewed from multiple angles. These are the views of patients, relatives, medical staff and students. The concept of the exhibition focused on such a change of perspective. The images used for the exhibition were selected through intensive research, and found in books, journals and on social media. The range of possible emotions symbolizes the versatility of experiencing situations. Changing perspectives indicate that it makes sense to consider other perspectives as well. From a variety of aspects, three priorities were selected for the exhibition “Impression—Expression—Interaction, Perception in Medicine”: personal boundaries, communication and patient safety. Interactive stations were integrated into the exhibition and offered the opportunity to actively reflect on pictures or picture stories.

Alongside this exhibition, the Medical University of Vienna also displayed the medical comics exhibition “Sick! Reclaiming illness through comics”. The exhibition presented selected comics from an international competition and was originally held between October 2017 and March 2018 at the Berlin Museum of Medical History, part of Charité—Universitätsmedizin Berlin. It focused on the perspective of patients in the form of experiences with medical diagnosis, recovery, care and therapy.

Summary

Medical comics in the form of *graphic medicine* embody a multi-faceted, linguistic-visual rhetoric and can help students, patients, caregivers, and medical staff to overcome challenges. Comics offer a challenge and an opportunity—for both the artist as well as the reader. Medical comics can therefore be a valuable learning tool. In terms of content, pictorial representations can address ugly realities, such as disgust or disgusting images exhaustion and helplessness. This corresponds to situations or sensations that are found in everyday medical practice. Particularly in the context of medical education, medical comics have the potential to support the identification of individual coping mechanisms.

“We do not need doctors to be painters or poets or dancers, but we need them to be observant, articulate and comfortable with the human body” [209].

Arthur Schnitzler: Spa Doctor Gräsler—the doctor-patient relationship and understanding of disease at the beginning of the 20th century

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Water has been said to repair the body and the soul [210]. Numerous legends deal with the discovery of water sources and their healing powers: One famous treatment of this subject is the painting, “The Fountain of Youth”, by Renaissance painter Lucas Cranach the Elder. During the 19th century, spa treatments experienced a great boom because natural remedies, especially in Germanic countries, were becoming established under the influence of natural philosophy. The trigger for this upturn in popularity was the spread of “therapeutic nihilism” from the second half of the 19th century onwards, when the Viennese Medical School shook the trust in traditional multidisciplinary therapy and aroused excessive confidence in the natural healing powers of springs. In Austria, Johann von Oppolzer (1808–1871), director of the Second Medical Clinic of the University of Vienna, was one of the principal sponsors of these spas [211].

At the height of the spa boom, the Austrian writer and doctor Arthur Schnitzler (1862–1931) wrote the novella “*Doktor Gräsler, Badearzt*”. The plot is as follows: Gräsler is 48 years old and single. His older sister had recently committed suicide on Lanzarote, where he works as a doctor in the winter. During the summer, he works as a spa doctor at a small health resort in Germany. At the health resort, he meets Sabine, who used to be a nurse, and thinks of marrying her. Nevertheless, once Gräsler is back in his homeland, he enters into a relationship with the young saleswoman Katharina. Sabine then breaks off her relationship with Gräsler, but Katharina contracts scarlet fever—possibly infected by Gräsler who had cared for a neighbor’s child. Ultimately, Katharina dies, and Gräsler returns to Lanzarote with the widow Frau Sommer and her infant—the child who indirectly infected Katharina with scarlet fever. Schnitzler’s work was almost finished by 1912 and was later published in 1917 in the *Berliner Tageblatt* [212]. Although the situation in Europe at the time was very difficult, due to the First World War, the novella went through 26 printings within six months of its publication [213]. Its writing was influenced by Guy de Maupassant’s novel *Mont-Oriol* (1887), which satirizes spa physicians [214]. Schnitzler’s reading list does contain *Mont-Oriol* [215], but it should be noted that the well cure and the profession of spa doctor are described much less in Schnitzler’s text. As the Germanist Müller-Seidel points out, the satire in *Doktor Gräsler, Badearzt* is less conspicuous than in *Mont-Oriol* because Gräsler was unable to notice the melancholy of his nearest sister, Fried-

erike [216]. This oversight suggests that Gräsler's problem as a doctor lies in his distance from the patient.

It should be explained here that in western Europe, in contrast to Japan, drinking medicinal spring water is more common than bathing in it. The spa doctor's task was to prescribe how the spa water should be consumed [210]: for example, advising the patients gathered at a health resort how much water should be taken from a particular source. The spa doctor was essential for management of the health resort hospital. In *Doktor Gräsler, Badearzt*, Gräsler is not shown telling the patient how to drink mineral water, whereas in Maupassant's *Mont-Oriol*, the scene is described with humor and detailed instructions.

In *Doktor Gräsler, Badearzt*, the health resort is satirized only through the representation of the patient Mrs. Schleheim. She has stomach problems, but according to Gräsler, these ailments seem temporary and are not serious. After the first examination, Mrs. Schleheim shows distrust of both the spa cure and medical science by vehemently refusing to follow the strict diet that Gräsler prescribes for her [217]. Although her daughter Sabine used to work as a nurse and is a medical expert, Mrs. Schleheim is a complete layperson in this field. "Thus she claimed that for shipping purposes the bottles were filled with ordinary well water, into which the mixture, pepper, and even more dubious spices were infused, so that Gräsler, who always took part in the call of the health resorts in which he was practicing and was responsible for their successes and failures, could not completely suppress a certain amount of hurt" [218].

The spa doctor's role is to explain to patients when and how to bathe in and drink mineral water, so that they can recover from their illness. Gräsler has worked at the health resort for six years and is indispensable, given that no other spa doctor is available. Therefore, he feels responsible for the health resort and is injured by Mrs. Schleheim's criticism. Yet, he is not completely satisfied with his work, for Gräsler also thinks that, if it were possible, he "probably would not be sitting today as a spa doctor in this ridiculous little spa town, but in Wiesbaden or Ems as a privy medical councilor" [218]. While he desires to work in a more prestigious health resort, he recognizes that his character defects, which are often discussed in the novel, prevent the realization of this goal [219].

These personal shortcomings affect Gräsler's relationship with his patients because he cannot distinguish his private life from his professional life. For instance, his frequent visits to the Schleheim family are motivated by self-interest, namely his longing for Sabine. Usually, Gräsler reluctantly visits "local patients" because "their treatment did not bring much fame or profit", which was also the case with his first visit to Mrs. Schleheim. But, subsequently, he looks forward to visiting the family again, this time to treat her husband, after meeting Sabine. Mr. Schleheim does not really trust medicine because he lost his singing voice through the harmful treatment methods of a quack.

It is striking that Gräsler often makes himself appear important. When he is asked to visit Mr. Schleheim, he

deliberately delays his answer, although he has no appointment. "But he said nothing, leafing through his notebook, shaking his head, seeming to face insurmountable difficulties, until suddenly he picked up a pencil, determinedly smeared something that did not exist, moved on to the next page, and, since that word occurred to him first, wrote 'Sabine'".

In another scene, when he attends a hospital visit and offers his personal opinion on the course and treatment of the cases, Gräsler always adds the following restrictive sentence in his notes: "As far as we surgeons are able to maintain the connection with scientific medicine." This reservation is also based on his character defects, which he recognizes as too great a "modesty" and "a certain self-underestimation." As a spa doctor in a small resort town, Gräsler is in fact plagued by an "inferiority feeling."

Gräsler's defects are also referred to in Sabine's letter to him, in which she admits her love for Gräsler and suggests that he could take over the resort town hospital and she could help him. "She had made it quite clear that he was a pedant, vain, cool, indecisive; all qualities whose existence he did not want to deny, but which Sabine noticed less and hardly emphasized, if he were ten to fifteen years younger."

In the letter, Sabine did not want to berate Gräsler, but just encourage him to become hospital director and work with her as a colleague. To prove her wish, she writes the following: "The sanatorium, though I only confess it to you, I have liked for a long time. Even longer than the future director. The location and the park are so wonderful. It is a pity how Doctor Frank has let it degenerate. Incidentally, it was also a mistake that all sorts of sick people have been admitted there lately, who do not belong at all. I believe that it would be necessary to set it up exclusively for those suffering from nervous ailments, independently and with the exclusion of the true mental disorders."

Sabine, a former nurse, was once engaged to a young doctor who was able to share the misery of his patients. Due to her fiancé's unexpected early death, she returned to her parents' home and remains there. However, although Sabine has such a melancholy past, she adheres firmly to her mission to rehabilitate the Sanatorium for the Nervous, if possible, in the role of Women's Director.

Gräsler describes his career as a spa doctor as a "Lonely, pointless, hopeless wandering life." However, it can be assumed that Gräsler submissively accepts this situation. As Müller-Seidel notes in his essay "Physicians' pictures in transition": "They are involved in the customs—or bad habits—of society and neglect their medical duties, their ethos, by which they should differ from other professions" [216]. Sabine's view of the relationship between doctors and patients is described as follows: "She also expressed the opinion that the efficacy of an orphan would be very desirable for any doctor, if only because the conditions for a really lasting relationship between doctor and patient, and thus the opportunity to use reliable, because always controllable, healing methods are thereby provided."

It is important to note that this "lasting relationship" between doctor and patient can only come about when

the doctor settles in a certain place. It is difficult for wandering spa doctors to build such a “lasting relationship” with their patients.

Sabine’s plan to run the hospital goes awry because Gräsler sees her not as an emancipated woman, but as his possession [220]. However, she exerts a positive influence on him: after Gräsler meets Sabine, he works diligently: “Not only did he carefully follow the case histories of his patients, but he also endeavored to fill the gaps in his theoretical knowledge that gradually arose by studying medical works and magazines as much as possible” [219].

A significant change occurs in Gräsler when his mistress Katharina becomes severely ill with scarlet fever. Katharina asks if he could cure her illness. He replies, “Yes, I will, Katharina, I will” [219]. Because she was indirectly infected by a child Gräsler had treated, though he was cautious, he feels responsible for her illness: “Gräsler leaned over the patient, caressed her cheeks and hair, kissed her on the forehead, assured her that in a few days she would be well again and that she would then have to go back to him right away; that he would never leave her again and take her wherever his fate would lead him; that it had driven him back with all his might, and that she was his child and his beloved and his wife, and that he loved her dearly, as no creature has ever been loved” [219].

Gräsler watches over the sickly woman all night. He treats her out of a sense of both medical responsibility and love. Ultimately, his attempts are in vain and Katharina dies. After her death, Gräsler marries the widow Sommer and becomes the adoptive father of her daughter, who had indirectly infected Katharina with scarlet fever.

One can say that the novella *Doktor Gräsler, Badearzt* could be used as a textbook on patient care. By his narrative, the doctor-poet Arthur Schnitzler shows doctors that they should treat their patients humanely, as they would their family or loved ones.

Hearts and brains in motion: medical animated film as a popular and controversial medium for education and research

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Parts of this contribution are published elsewhere [221].

An unusual film finding was recently reported in the archives of the National Library of Medicine in Bethesda, Maryland, a result of the NLM’s efforts during the past few years to systematically organize, account for, and make accessible their rich but unmanageably large medical film collection [222].

As described in his essay, Oliver Gaycken, the scientific-film historian and scholar [223], did some masterful sleuthing to trace the origins of a film produced in 1970 catalogued only as “Anatomical Animation by Frank

Armitage” [224]. Delving further into this finding, Gaycken identified the film as indeed produced by the artist, Disney illustrator, and enthusiastic medical illustrator Frank Armitage (1924–2016). More than ten minutes long, the film depicts a kaleidoscopic multimedia voyage through human anatomy—replete with animated drawings, graphic illustrations, science fiction film clips, and historical art works. Armitage’s voice-over explicitly emphasizes the artistic value and visual quality of these images, which go hand in hand with medical science to form a direct intercommunicative system intended to engage viewers such as artists, physicians, students, and other audiences.

Of Medical Humanities and Medical Film Archives

Until recently, such substandard archiving was a typical fate for many medical films of the past [225, 226]. After their usefulness diminished due to outdated medical research techniques and procedures, as well as to changing film formats, these films were often forgotten, disposed of, or stored away without proper archival care. Their separation from accompanying materials—such as doctor’s guides, research notes, (film) production notes, information booklets, and patients’ records—further hindered the evaluation and appreciation of how significant these collections are for medical education (as well as for empirical research in the field of contemporary film and medical history). The ultimate result was that the didactic, artistic, historical, and empirical value of these visual highly aestheticized communicative sources was frequently overlooked. Medical films, whether intended for higher clinical, educational, or more cultural public health instruction, are supposed to communicate in ways that are more accessible, entertaining, or artistic. Thus, these medical media can be categorized with other medical humanities, as they interface with artistic as well as scientific issues involving visual production, design, and communication of medical knowledge. By regarding medical films as both medical instruments and visual artistic forms of expression and communication, we can see medical films as an optimal—even prototypical—example for advancing the analysis of how the highly interdisciplinary medical humanities can be applied in different fields [227]. Different disciplines assign different values and definitions to what the medical humanities should be. Evolving forms of medical treatment, operation techniques, and technological, scientific, media, and social standards are not only documented on film but are also circulated and communicated via film, shaping the perceptions of medical education and research and popular conceptions about medical practice and knowledge [228]. Now, and in times past, harnessing the medical motion picture for the purposes of public health, public information, instruction, and pedagogical purposes has been accompanied by lively debates about the implications of image-based—rather than text-based—knowledge transfer. Attitudes vacillate between high hopes for the motion picture’s educational capacity and dire warn-

ings about dissipation of knowledge and cultural decline. Debaters raise the question: What does it say about film art and about society if the latter relies, and appears, on film for the transfer of medical knowledge?

The introduction of film into medical research and education since the 1890s (and then again, nominally, after World War I) was based on a set of qualities deemed to make this medium highly efficient for teaching and learning: the purported objectivity and lifelike quality of the photographic moving image; film's potential to render visible phenomena that are not discernible by the naked eye; and film's easy dissemination via mechanical reproduction such as X-ray [229]. As the latter point suggests, appreciation of film as a potential medium for medical research and education was facilitated by the explosion of mass media following the 19th century, which fueled efforts toward a democratization of knowledge. Visual learning and communication as promulgated in the concept of the "object lesson" were key components in these initiatives. Building on this lineage, the commonplace use of film as a medium and art form, and cinema as a sphere of popular culture, have posed new challenges and modified the established conceptions, procedures, and standards of 20th-century medical education, communication, and visual organization of scientific knowledge.³³

In late 19th-century Europe and the United States, the initial development of cinematography into a method usable in medical research lacked any consistent focus. However, after British photo technician Eadweard Muybridge (1830–1904) and French physiologist Étienne-Jules Marey (1830–1904) turned to "pre-cinematographic" serial photography to capture images of animal motion and other physiological processes such as the beating of the heart, and after the Lumière brothers toured with the newly introduced *Cinématographe* through the hotspot cities of Europe from 1895 on, the first interested scientists (above all, medical researchers and university lecturers) turned to cinematography as a promising diagnostic and research tool as well as a tool for teaching and communication [230–233]. This early "medical cinema of attraction" [234] followed common ways of proceeding within clinical research. These approaches supported the handling of different devices and mechanically produced image processes: making measurements and visualizing, demonstrating, and observing natural phenomena and physiological procedures with the help of microscopes, blood pressure monitors, X-ray apparatus, and scientific photography. Now, pathological and normal forms of movement could be made tangible and visually recordable via the cinematograph.

³³ These questions are a crucial part of the ongoing FWF-funded (FWF Stand-Alone Project P 32343-G) research of the project team of which I am a part: Educational Film Practice in Austria <https://tfm.univie.ac.at/en/forschung/drittmittelprojekte/laufende-drittmittelprojekte/educational-film-practice-in-austria/> (30 March 2020).

Fig. 26 Graphic animation of the heart in the film "Anatomical Animation by Frank Armitage (USA 1970)" [224] (U.S. National Library of Medicine, Online, © Frank Armitage. Reprint by courtesy.)

Fig. 27 Graphic animation of the brain in the film “Anatomical Animation by Frank Armitage (USA 1970)” [224] (U.S. National Library of Medicine, Online, © Frank Armitage. Reprint by courtesy.)

As we will see in the following section, Frank Armitage’s decision to devote his experimental anatomical illustration film nominally to the heart and brain structure followed a long-standing interest in visually encoding/decoding the essential organic motifs of living organisms by using “(...) the method of serial section motion pictures” to give “the impression of ‘travelling’ through the anatomical structures (...) for the easy visualization of difficult spatial relations.”³⁴ In his film, Armitage pointed to “the chance to observe heart function in a large variety of ways” through the illustrated graphic human heart, vessels, and brain. He specifically considered “the value of animation as an art form” that enhanced this “controlled medium” and as an “organized graphic adventure” capable of graphically “slicing through the human brain” (Figs. 26 and 27). In this respect, the artist stressed further, “there’s a great value and a lot of satisfaction—you being able to adjust a concept, frame by frame, as one would with brushstrokes on a painting.”³⁵

Of hearts and brains and the “The Physiological Film Theater”

At the university clinics of the General Hospital in Vienna, the experimental pathologists Salomon Stricker (1834–1898) and Ludwig Braun (1867–1936) focused their research on the rational use of clinical motion pictures and initially produced experimental neuroscientific serial photographs of human brain slices and of beating animal hearts (Fig. 28). Before the clinicians turned to filming experiments, these serial photographs were taken during vivisections on sedated animals and shown via specially developed projection devices, such as the episcopes, in the clinical university amphitheater [235–237].

Stricker and Braun’s first explicit filming of a test subject was the beating heart of a dog recorded in the operating room of their Viennese department in 1896 (Fig. 29). Braun considered the anatomical motion pictures to be generating objective quantitative single-image analyses which, according to Braun, were showing changes in form and shape as well as providing an unobstructed view of the motion of the beating heart [238–240].

In addition to increasing visual information, these imaging tests also encouraged further consideration of the potential of film in medical research and education. The already lively contemporary debate about animal experiments and how to proficiently limit them (as demanded by animal rights activists, for example) in the Vienna anatomical and pathological departments, also encouraged experimental physiologists to turn to film. Programmatically, the adoption of film offered a possible solution by which animal experiments, and especially vivisections,

³⁴ Unpublished manuscript: Nichtenhauser A. History of Motion Pictures in Medicine, ca. 1950 [1954]. In: Modern Manuscripts Collection. History of Medicine Division, National Library of Medicine. Bethesda, MD. MSC 380.

³⁵ Transcript of Armitage’s voice-over: <https://collections.nlm.nih.gov/transcript.nlm:nlmuid-8801174A-vid> (30 March 2020).

Fig. 28 Demonstrations with the electrical episcope in the lecture hall of Professor Dr. Stricker in Vienna. Original drawing by B. Ledeli. (© Josephinum. Ethics, Collections and History of Medicine, Medical University of Vienna. MUW-FO-IR-000230-0002, digital copy. Reprint by courtesy.)

Fig. 29 The cinematographic method of the heart (of a dog) after Ludwig Braun (Ludwig Braun, *Über Herzbewegung und Herzstoss*. Jena: Gustav Fischer Verlag 1898, Tafel I Fig. II. [240], printout publication, private archive. Reprint by courtesy.)

could be rationalized. Scientific film enthusiasts argued that instead of requiring dozens of animals, only one animal's life would have to be sacrificed for medical training and experimental demonstrations. In addition, possible histological studies known to be difficult to access within an instructional timeframe could be projected indepen-

dently of laboratory time and space; being visually reproducible on film, they could be shown to a larger number of students who would otherwise have had no opportunity to work on individual preparations [241]. The emerging cinematographic invasive view into the open body, which made the beating heart and neuro-histological images of brain pathology visible in an animated form, stimulated visualization strategies that allowed scientists to draw conclusions about the “properties and states of the body world” [242] in a time- and presentation-efficient manner. Thus, this novel cinematographic method, considered progressively objective, was argued to make procedures focused on the heart and the brain more accessible for comprehension and analysis [243].

Of animation as art technique and stylistic device

Whether on the blackboard of a medical lecture hall, or explaining complex organic processes or operation/treatment techniques to patients, medical professionals have commonly used drawing as an aid for transferring knowledge. Before the introduction of minimally invasive cameras during surgery and of computer-controlled technologies to discern objects invisible to the naked eye, innovations such as analogue hand-drawings, charts, diagrams, graphs and eventually photographs, and live action and animated films enriched medical and popular-scientific education [244]. However, compared to the evidentiary status accorded mechanically produced images, and to what media scholar Kirsten Ostherr calls “epistemologies of medical animation,” these “animated sequences were often treated merely as enhancements of the film’s technological and educational merits rather than having any scientific authenticity or adding purely scientific value” [245]. Schematic drawings of human anatomy were roughly drawn by a medical instructor in front of the camera, on blackboard or canvas, to highlight certain organic details; and medical drawings—including animated neuroscientific serial sections—were directly animated via film. But the applications of various new techniques for animated films, as seen in Armitage’s and Braun’s examples, not only came to be regarded as a convincingly fascinating and well-liked approach that gave the impression of “travelling” through the anatomical structures, but also helped put these artistic and research techniques on the map in the clinical and popular worlds—and beyond [246].

As we have seen in this early phase of experimental medical films, however, it quickly became apparent that the potential forms and areas of application, and their actual implementation, were far more difficult to realize than the first self-proclaimed medical film authors had anticipated [247, 248]. German physiologist and neurologist practicing at the Viennese Department at that time, Karl Reicher explicitly turned to neurological filmmaking in the early 20th century to make neuroscientific phenomena visible. As a contemporary of Stricker and Braun, he was very likely familiar with their early neurophysiological visual teaching methods and film demonstrations

and integrated them into his research using animated film. He was particularly interested in making visible the invisible by animating histological and neuro-anatomical serial pictures such as dissected brain slices [249]. While some physiological, surgical, and neuroscientific film enthusiasts, as well as journalists, reported profusely on the cinematographic journey through human anatomy, critics were quick to point out the limitations of this new form of visualization for clinical research. Among their targets were inadequate technical implementation such as missing slides or rigid specimens (not suitable for animation), poor lighting conditions and lack of color intensity, the sensitive equipment, and the high complexity of surgical techniques during filmed dissections and invasive procedures. Also, the less objective and more subjective forms of medical image creation, such as medical graphic illustrations and drawings, were criticized for not displaying the full potential of directly mechanically produced imaging, although they opened up visual medicine in many more ways, such as those shown in Armitage's *Anatomical Voyage*.

Conclusion

As shown above, the primary sources—documented media reports, specialist press articles, and scientific publications—about the historical use of medical (animation) film as a research and scientific communication tool in a sociohistorical context often promised more than was actually delivered by the diverse applications and potential opportunities that were implemented in medical research and teaching. The ongoing and periodically renegotiated improvements related to the production, distribution, and communication of research and instructional films did not produce a coherent success story. Instead, they created a specific novel way of producing, communicating, and circulating visual medical knowledge. Thus, medical cinematography ultimately shaped visual scientific practices that extended far beyond the boundaries of the scientific milieu, and influenced popular ideas about what clinical research and images of health and illness should look like. Controlled by surgeons, teachers, filmmakers, illustrators, national and private film producers, and, last but not least, manifested in the patient's body, a hybrid form of medical science-cinematographic iconographic images was generated by and with the help of cinematography. This “hybrid” has given shape to the ways we imagine and reflect on organic knowledge. Many of these “ways” were only realized in recent decades, with computer-controlled technologies such as MRI and CT. But we have shown above that many were long anticipated—some, more than a century ago—in the early considerations and tests of cinematographic techniques [250, 251].

Why literature in medicine?

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Introduction

Modern medicine is a scientific and highly technical field. At first glance, it seems to have little in common with artistic creation; yet the practice of medicine often involves a narrative element. To give one example, narratives play a central role in communications between patients and physicians. Proximity to people and confrontations with borderline questions of human existence are fundamental to both medicine and the arts. Because physicians professionally deal with people's everyday lives, they also need to confront existential questions themselves: What do I mean by a good life? What do I mean by a good death? And what do I think comes after death? Questions about how to live a good life or how to deal with suffering and pain are of as much interest to the medical art of healing as they are to the fine arts. Likewise, confrontation with the Great Unknown, with the process of dying, with death, and whatever comes afterwards, has always occupied both physicians and artists. Experiences such as birth, health, illness, pain, suffering, and death, which constitute the everyday life of a physician, are difficult to cope with for all those involved. These everyday experiences are reflected in art as well, especially in literature. Not only can encounters with representatives of the medical profession and medical institutions be elaborated in an artistic way [252], but also medicine itself is a cultural product that brings together creative and imaginative elements as well as specialized knowledge and skills.

On the way ... medicine as a natural science

In Greek antiquity, the authors of the *Corpus Hippocraticum* no longer pursued concepts of health and disease based on divine intervention and religious assumptions, but searched for natural causes to explain the emergence of disease or the maintenance of health. Thus, a comprehensive understanding of health and disease based on dietetics and humoral pathology was established in pre-modern times. In this context, dietetics was to be regarded as *modus vivendi* (life style). Great importance was attached to the environment's impact on well-being, as is the case in the Hippocratic treatise “*De aëre, aquis, locis*” (On Air, Waters, and Places). The idea of including environmental factors in the understanding of health and disease has re-emerged in modern life sciences, especially in the concepts of epigenetics. According to this comprehensive understanding of health and disease, the best physician was simultaneously a man of science *and* a philosopher. The same idea is probably at work in the minds of those who, in our day, would like to reintroduce a preliminary course in philosophy (*Philosophicum*) into the medical curriculum [253]. During the 17th century,

especially, promoters of the so-called “solidist” theory attempted to supersede humoral pathology with solidism [254]. This medical paradigm had already been presented in antiquity as an alternative to humoral pathology: for instance, in the atomistic medical theory of Asclepiades of Prusa (2nd–1st century BC) and later in the doctrines of the Methodical medical school. Solidism espouses a conception of disease that does not focus on the interrelationship of fluids in the body, but rather on changes in the solid parts of the body such as the organs. This approach failed to gain wide support, however, because the various claims of the theory were too complex, often nebulous, and at times even inconsistent.

An epochal step took place with the scientific revolution at the end of the Renaissance period until the 18th century. During that time, scientists gradually turned away from traditional humoral pathology, also referred to as the theory of the four humors, and used experimental methods instead. One can assume, although with a grain of salt, that from the 1830s onwards a scientific definition of health and disease gradually came to shape the concept of medicine. This perspective, focusing on cell-to-cell interactions, defines modern medicine today: One need only think of the extensive research on signal transduction mechanisms in molecular medicine. This scientific orientation of medicine is inseparably linked with the name of the German pathologist Rudolf Virchow (1821–1902) and his collection of lectures on “*Cellularpathologie*” (1858). Since then, quantified data have been collected and the medical conditions of patients compared on the basis of measurable results. The scientific experiment was established as a research method, and natural bodily processes were understood to have explainable and predictable causes. This orientation towards cell-to-cell interactions and, subsequently, towards molecular structures strengthened the focus on biological mechanisms but entailed little or no emphasis on the social dimensions of human life. This perspective is still widely valid: Today one often refers to the concept of individualized medicine, which is understood, first and foremost, to imply a pharmacogenetic research direction aimed at individually appropriated therapeutic approaches or at the prognostic determination of an individual’s risk profile [255]. Such an orientation is in no way comparable to an approach based on the individual, subjective needs of a patient. Thus, medicine seems to have lost sight of the whole, of the realization that a human being is actually much more than the sum of its parts. Individual suffering cannot be fully measured in quantitative terms. If one follows the so-called biomedical paradigm, personal values, perceptions, and—not least—the narrative of personal illness experiences run the risk of being neglected or forgotten. In short, since its 19th century turn to cellular pathology, medicine has lacked an anthropological dimension.

Anthropological medicine

The tendency towards ever greater specialization did not remain uncriticized in contemporary times. Already in 1906, Ernst Schweninger (1850–1924), personal physician of Otto von Bismarck (1815–1898), warned that “the science of the physician kills his humanity” [256]. The Anthropological School of Heidelberg, especially its prominent figures Viktor von Weizsäcker (1886–1957) and Karl Jaspers (1883–1969), should also be acknowledged here: Von Weizsäcker developed the idea of anthropological medicine as a necessary extension of the dominant paradigm, focusing (i) on subjective experience, referred to in German as “*pathisches Moment*”, and (ii) on the social dimension of illness along with a negative view of technology as an alienating force. In his treatise on *General Psychopathology* (1913), Jaspers dedicates the chapter titled “The Patient’s Attitude to his Illness” to this latter topic. Using the example of mental illness, Jaspers examines the differing perceptions of the experiences of illness by the patient and by the physician: In the physician’s ability to take the patient’s perspective, Jaspers recognizes the key to a meaningful medicine. In 1977, the essay “The need for a new medical model: a challenge for biomedicine” was published in the journal *Science* by George L. Engel (1913–1999). The essay is central to medical anthropology in its proposal of a new biopsychosocial model for understanding health and disease. The new model aims to understand disease both as a human experience and as a definable abstract quality. Both psychosocial and somatic factors are included in the model, and the biologically recordable data are combined with scientifically sound clinical data—for instance, data collected from a structured interview with the patient. The boundaries between illness and health are regarded as fluid, since it is first necessary to determine whether and *how* a person is ill, including the patient’s subjective perception of their own state of health. Even though Engel’s plea has found its way into many lectures and books, this should not obscure the actual practice in modern medicine, which is still far from integrating empathic approaches into descriptive bioscientific conceptions. The road to integration is likely to be long and arduous.

Literature in medicine—medicine in literature

The relationship between literature, the arts, and medicine acquires its richness, above all, through an interdisciplinary approach. The combination of literature and medicine comprises two distinct subject areas that at first glance have little in common, but on closer examination reveal productive interfaces [257]. This relationship becomes particularly important for achieving a comprehensive understanding of health and disease, for literature has the inherent power to stop or decelerate events. Through literature, as through a lens, one has the opportunity to recognize and reflect on the processes of everyday life and on its shortcomings. But literature also has

the power to enlighten readers: One might think, for instance, of the function of children's and juvenile books in dealing with health and illness. Furthermore, according to Siegfried Kracauer's (1889–1966) definition, literature has a kind of "seismographic" function by which it literally records the wave motions and oscillations of everyday life and reproduces them in its own language.

Literature is understood here in a broad sense that includes both autobiographical and biographical writings (life writing), special demands on aesthetics are not necessarily associated with this understanding. To set up a high aesthetic value, however defined, as a prerequisite for literature means to misjudge the knowledge gain associated with its use in medicine. It is not so much aesthetics that is at stake, but rather a matter of everyday-life-identity and thus of human values; literature is all about inner perspective and wealth of experience. While aesthetically pleasing literature can be helpful and instructive in this respect, aesthetics is not an indispensable prerequisite for achieving that goal. Literary narratives assist in extending quantifying medicine in the natural or social sciences in a meaningful way; such narratives provide those who deal with literary texts, but also with other products of art, with an opportunity to gain a feeling for the subtle, often sensitive representations found in narratives, mostly expressed through nuances [258]. Literature is thus an important supplement to quantifying efforts in individualized medicine, and actually incorporates the individual perspective of a patient. It contributes to the biopsychosocial conception of health as formulated by Engel and is of particular value for promoting a communicative medicine, as narratives dealing with disease or everyday world experiences (ego documents, illness narratives) supplement the quantifying view of illness and depict the role medicine plays in the world and for humanity. This is the central intention of the internationally established "Medical Humanities" which, so far, have been largely neglected in Germany [259].

Against this background, art, especially literature, can be understood as an extension of the reductionist scientific perspective. But illness narratives not only have potential in the sense of supporting a communicative medicine, they also offer an assurance: Narratives provide the actors with necessary time for reflection and represent individuality at life's intersections in an exemplary way. At the same time, they allow us to recognize health and illness in their relativity.

Any physician should always reflect on themselves and their work. At some point in one's professional career, it is inevitable to ask oneself questions such as the following, ultimately connected with the fundamental meaning of the medical profession: "Did I consider all aspects when making the diagnosis?" "Was my decision for this therapy the right one?" "Did I give the patient enough space to talk about their own illness?" And last but not least: "What makes a physician a good physician for me?" Studying the stories of human beings presented or narrated in literature can be a great help in answering such questions [260]. Indeed, numerous writers

have dealt intensively with the borderline experiences of life and, consequently, with health and illness. It is a real polyphony of voices, ranging from those directly affected (patients, relatives, physicians, and other representatives of the health sector) to recognized writers interested in this complex of topics. Their diversity becomes clear through viewing the different socializations of the individual actors. The contents and forms of their narrative presentations are correspondingly diverse, as are the settings and aesthetics. After all, an illness narrative is also about criticism and distancing—that is to say, the ability to step back from the events in order to reflect on the everyday nature of medical practice. Aesthetically appealing literature can be helpful and instructive in this respect but, as mentioned before, aesthetics is not a prerequisite. Here, too, literature is in demand as an approach to multiple perspectives, one that appears not only aesthetically charged but is also, and primarily, filled with the riches of everyday experience.

Why narrative medicine?

At its best, the integration of arts and literature can contribute to a more empathic and humane medicine. Processual reading and writing can improve the ability to introspect and strengthen one's empathy through participating in the perspectives of different actors. It is also valuable for raising awareness of the challenges of dealing with certain social environments and, not least, with awareness of intercultural issues—such as an enhanced understanding of responsible, empathic humanitarian work in a difficult environment. Thus, in the processes of reading and writing, one can create knowledge, autonomy, and ultimately, meaning.

Nevertheless, this process should not be expected to have an immediate therapeutic effect or even to be established as an independent therapeutic procedure. Even terms such as bibliotherapy, graphotherapy, or poetry therapy, often mentioned in this context, require a scientific theoretical foundation before being considered a medical therapy. Caution is a virtue here. But certainly, the arts, and literature in particular, can initiate and accompany certain processes. Narrative medicine can become a meaningful addition to so-called evidence-based medicine, through which one pays attention to the plurality of different perspectives related to the condition of illness. The hope is to make clinical measures and therapeutic decisions less unilateral, more focused on the individual, and ultimately more effective. Modern medicine needs a tool to refocus on the mutual relationships of all those involved in defining the therapeutic process. The story of a patient's own illness can be an essential element in this process. Rita Charon, pioneer of the research field of narrative medicine, emphasized the benefits of such narratives for the education, training, and advanced training of medical staff, as understood particularly in the development and improvement of core competencies (communication skills, empathy, self-reflection) [260–262]:

“Literary texts have been found to be rich resources in helping medical students and doctors understand pain and suffering; literary methods of close reading have been helpful in training doctors and doctors-to-be in the fundamental skills of interpreting clinical stories (...)” [258].

In this respect, a literary canon for medicine, or indeed a canon of arts in medicine, is highly recommended. The guiding principle, above all, should be the everyday-life-density of the texts (life writing). The more humaneness is contained in such texts, the better suited they are for use in narrative medicine. Authentic everyday life, transported in literary form, presents remarkable behavioural models for living a good and fulfilling life, towards which one can orient oneself as a human being in the world. In addition to literary texts, one should also think of drama and musical theatre as well as performance art, given that everyday medicine provides plenty of dramatic material. One should also keep in mind the benefits of music itself and, finally, painting or the fine arts—or even “medicine as a media event.” To put it briefly: *An essential function of narrative medicine is to enhance the human dimension of medical care.* A humane approach to the patient is indispensable for integrating illness into life. In this respect, literature and the arts can constitute a productive and effective means of dealing with illness and disease. This intersection of literature and medical care can be regarded as a source of representations of health and illness that are by no means linear and one-dimensional, but rather to be understood as an ongoing dialogue.

Conclusion

The interaction between medicine and the arts, especially between medicine and literature, enriches both sides of the relationship. While medicine provides the arts with a rich supply of existential topics and life experiences, the arts in turn offer a view that is centred on the subject; thus, it enables us to grasp an individual’s personality. This aspect is of particular importance for modern medicine, which, as a scientific and highly technical system, runs the risk of losing sight of individuals as human beings. Technological methodology leads to defining patients primarily through their biomedical data. With the help of narrative medicine, though, this de-individuation can be counteracted and the subjective experiences of patients, with their values and desires, can be recorded. Narrative medicine must stand side by side with evidence-based medicine in order to serve human needs.

There is no doubt that it is worthwhile for both trainees and professionals to deal with art, especially literature, in order to create space for others, to place oneself in their position, to experience their feelings, and to feel as they may feel. In this context, art, and literature in particular, can make important contributions to the promotion of empathy and, not least, to the enhancement of humanity in medicine.

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