Opening Reason to Transcendence:

A Philosophical Grounding of Architecture

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“A great building, in my opinion, must begin with the unmeasurable go through measurable means and end with the unmeasurable.”

Louis Kahn
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Preface

This work opens with an image of a building and its surroundings covering the title page: The Salk Institute of Biological Studies in California, designed and realized by the American architect Louis Kahn. The building, which hosts state-of-the-art research facilities for studies of life and of how to cure diseases, overlooks the Pacific Ocean. Life on a small microscopic scale and life on a large cosmological scale meet on the site of the Salk Institute, where research into the tiniest cells virtually takes place with a view to the endless horizon of the sea and the immense sky. Architecture has made it possible that scientific objectivity opens up to and is in contact with that which transcends it, the unfathomable universe which surrounds us.

The purpose of the present work is to ground architecture in a philosophical outlook which opens human beings to transcendence. Such an outlook is already present in the earliest tectonic tradition of architecture, the origins of which will be unearthed in the work. Yet, a broader philosophical investigation, which draws on anthropological, epistemological, ethical and theological traditions, is needed in order to articulate the meanings of transcendence and return to the source of scientific rationality by beginning to explore anew the open-ended search for wisdom and truth which is at the origins of human knowledge.

Each of the four chapters in the work originates from one research paper of mine:

Chapter 1 Rethinking Philosophical Anthropology in Dialogue with Architecture is built upon “Rethinking Dwelling and Building. On Martin Heidegger’s Conception of Being as Dwelling and Jørn Utzon’s architecture of Well-being” which came out in ZARCH – Journal of interdisciplinary studies in Architecture and Urbanism No. 02, 2014.

Chapter 2 The Art and Epistemology of Tectonics is based on my most recent paper “The Fall of the Tektôn and the Rise of the Architect: On the Greek Origins of Architectural Craftsmanship” which was published in Architectural Histories on March 23, 2017. In this chapter I also rely on a more technical study “Recovering a broader understanding of tectonics. The case for the architectural potentials of sheet metal”,

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carried out in close collaboration with Danish architect Ole Egholm Jackson, and which we presented at the III International Conference on Structures and Architecture (ICSA 2016) in Guimarães on July 29, 2016. Our paper was published in the proceedings from the conference Structures and Architecture. Beyond their Limits (London: Taylor & Francis Group, 2016).

Chapter 3 Ethical Aspects and Implications of Architecture revolves around topics which I have touched on in most of my publications since finishing my thesis Ethics on Friendship in 2005 (published in Danish in 2013). For this work I have especially drawn on my paper about Emmanuel Lévinas’ ethical thinking, “Hospitalidad como iniciación a la ética”, which was published in ALEA - Revista internacional de fenomenología y hermenéutica no. 9, 2011.

Chapter 4 At the Limits of Architecture: Meaning and Transcendence draws on another recent study of mine, “Giver livet menneskelig mening?” (“Does life make sense in a human perspective?”), published in the Norwegian Journal Arr 3-4, 2016, the only Nordic journal, together with the Danish journal Slagmark, which publishes papers on History of Ideas. I have been a member and editor of Slagmark, and I hold a Ph.D. in Philosophy and History of Ideas (from Aarhus University, Denmark).

All chapters have been written over the past six months and are further elaborations of the above-mentioned studies of mine, now integrated into a coherent research work, which I hereby submit to be evaluated by the jury of the Premios Razón Abierta.
Introduction

Wonder and Wisdom: Extending the Meaning of Reason in Search for Truth

The origins of human aspiration to know and acquire wisdom are to be found in wonder, according to the two most influential philosophers of all time, Plato and Aristotle. Despite their differences on cosmological, anthropological, epistemological and ethical matters, both Greek thinkers coincided on tracing love for wisdom, *philosophia*, back to one single act which they identified with the same verb, *thaumazein*.

In ancient Greek this word has a similar double meaning as the English equivalent “wonder”: It means both to be amazed by what is out of the ordinary and to wonder about the extraordinary reality that has been revealed.

Following this ancient line of thought, all knowledge and thus all the sciences spring from a passionate human openness to the world in all its immensity, which moves the researcher, who has been struck by wonder, to ask questions about its inner constitution. The one, who is struck by wonder, is also struck by silence and becomes open to and perhaps even aware of how extraordinary even the most ordinary reality can be. It is the thesis of the present work that in wondering, understood as beholding the wonder of the world and being bewildered by its meaning, human reason is moved by what surpasses it in search for answers that might help to discover how the world hangs so amazingly together.

What surpasses human reason will also be referred to as transcendence: that which precedes our existence and goes beyond our grasp. In the broadest sense of the word, which has been endowed with religious and spiritual meaning through history, transcendence relates to the unmeasurable immensity of the universe and the true mystery of being that there is something rather than nothing. The existence of the universe transcends, spatially and temporally, the grasp of the human mind which can still be receptive to this mystery and wonder about its ultimate meaning.

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1 *Theaetetus* 155 d; *Metaphysics* 982 b.
2 For studies in “scientific wonder” and wonder as “the germinal seed of science”, see Fisher (1998) and Silverman (1989), who confine, however, wonder to an initial stage of knowledge which should be left behind, excluding wonder in the sense of the miraculous. This is, according to the present study, an alarming symptom of a widespread tendency among scientists to turn its back on theology and transcendence.
The question of meaning in human life will be addressed in the fourth chapter, while two further understandings of transcendence, associated with the first one, will be given due consideration in chapter two and three in relation to the more mundane context of architecture: Matter and materials can be said to contain certain spiritual qualities, uncreated by man, who can mind and make them appear, but if he starts forcing or manipulating them, he will violate their nature. Matter and the whole of planet earth evoke a form of “material transcendence”, which is ultimately beyond human words and understanding, although it can still be experienced as something present. This material form of transcendence plays an important role in chapter two on tectonic beauty, and in chapter three, which deals with the ethical implications of architecture, a third understanding of transcendence associated with goodness in interpersonal relationships will be expounded. This chapter picks up on the concepts of human well-being through dwelling and hospitality from the first chapter.

These three understandings of transcendence do not necessarily appear separately, but can reinforce each other, for example as it happens in Christian church architecture which serves as a gathering place for believers to approach God in love and faith. Materials, light and the divine reality, represented in the church, matter and support the liturgical actions which convey the evangelical message of God’s love for human beings, incarnated in Jesus Christ, as the ultimate meaning of human life. The Christian Church seeks to open reason and human hearts to transcendence, so that each person will receive and give to others in the same loving and merciful way as Jesus did. Seen from this perspective, heart and reason are not necessarily opposed. As Pope Benedict XVI, Joseph Ratzinger, once remarked: to see God requires “the ratio pura, i.e. purificata [purified reason] or as Augustine expresses it echoing the Gospel,

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3 Harries 1997: 159; I use the expression “something present” on purpose, as it is meant to convey the presence of something and that it is given, as Harries suggests, like a “gift”.
4 For interpretations which give liturgical practice a key role in architecture’s anagogical reference to transcendence, see Vosko 2006, Halgren Kilde 2008, Daelemans 2015 and Sandal 2015: “I understand architecture, thus, as an integral part of the liturgy [...] Liturgical practice is about a divine presence, and correspondingly, the sacred in architecture is a treatment of God’s presence in the world [...] When architecture is congruent with the liturgical acts, it is so usually through spatial organization and the formal articulation of gathering around and experiencing divine reality. In this way, it can communicate the experience of divine transcendence as well as of divine presence through its particular medium. (p. 413-414)”
the *cor purum* [the pure heart].5 The way toward purifying one’s reason and heart is opened up by being deeply moved in the face of transcendence.

Returning to the Greek understanding of openness to transcendence through wonder, cosmology, theology and philosophy formed the historical basis of the sciences which were thus founded on a sharpened sense of the world order. On this basis, the meaning of reason was extended beyond being a mere logically structured calculating machine, incapable of seeing beyond its own operations. Logical reasoning, which results in scientific and practical knowledge, is tied to *logos*, according to Plato and Aristotle, who both reserved the term *nous* for an extended form of reasoning which reaches the level of wisdom in accessing the first principles underlying science. In wonder, the form of reasoning which awakens, is of noetic nature and sets the one who marvels on his or her way to philosophy in search for wisdom and truth.6

This awakening and extension of reason through wonder is among the most needed undertakings in today’s schools, universities, research centers and in society as such. The pragmatic and utilitarian approach to Arts and Sciences, which has become so dominant worldwide in recent decades, forces human knowledge into parameters of productivity and measurability. Only seldom do these parameters take into account genuine processes of truth-finding, which tap into the whole of human reality, uncreated by man. There is nothing wrong with calculating, measuring, testing and reproducing results. All these activities are part and parcel of scientific methodology and form the basis of human knowledge as such, but when they become the only recognized steps toward knowledge, fundamental elements within the whole of human reality, accessible through wonder and wisdom, faith and awe, are left unexplored. Although Aristotle famously defined man as being in possession of *logos*, he extended his definition to include divine *nous*, which all the wise, according to his

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5 *The Dignity of the Human Person*, 155.
6 In Plato’s *Philebus* (28 d-31 a) *nous* is linked to wisdom and constitutes the first principle of the world order. For Aristotle in the *Nicomachean Ethics* (1141 a-b) wisdom, guided by *nous*, deals with first principles and ultimate truths, which is what philosophy, rooted in wonder, is in search of; see also Krader 2010: 157 and Nightingale 2004: 12-13
teacher, Plato, consider to be “the king of heaven and earth”⁷, and he added that being human “is set in order according to nous and logos”.⁸

In relating the beginning of philosophy and of science to wonder, Aristotle pointed to a principle (archê) behind human wisdom, which lies outside the finite horizon of human beings and their ordinary knowledge: Starting with things, which were out of the ordinary on a small scale, the first philosophers proceeded, amazed by what they witnessed in their search for the truth, to investigate into more extraordinary phenomena on a larger scale, such as the sun, the stars and the origin of it all. And just as human beings marveled at this order of interconnected phenomena, considering it to be divine, so they were amazed, in the sense of thaumazein, by the sages, who developed a profound insight into this order.⁹

The sages were, in the earliest Greek tradition to which Aristotle refers, not only thinkers, but “the most perfect masters of their art”, and he adds, “wisdom (sophia) merely signifies artistic excellence (aretê technês)”.¹⁰ In Homeric epic these masters were called tektones, the forerunners of the architects in classical times, and they were admired for their eminently skilled work which was seen as something marvelous, thauma idesthai.¹¹ We shall see that these master craftsmen built their work on a holistic form of thinking, grounded in wonder, thereby establishing a fruitful connection between theory and practice. The purpose of the present work is to recover what can arguably be conceived as a missing link between philosophy and architecture and give the latter a philosophical grounding founded on a dialogue between the two disciplines, which will prove to be highly relevant for broadening the horizon of architectural discourse and practice at the beginning of the 21st century.

The roman architect Vitruvius, who wrote the only complete ancient treatise on architecture which has been handed down to us, De Architectura (Ten Books on Architecture), still reminds us of this link, when he asserts that human beings differ from other beings on earth in that they are not bent over and bound to the ground,
but their erect posture lends itself to observing the magnificence of the starry sky. Although Vitruvius does not establish any direct causal relationship between the first moments of observation of the sky and the erection of the first buildings, he advances the thesis that humans started out from a primitive life in forests and caves, and it was not until they began to open up and lifted their heads from the ground to the sky, looking beyond their natural habitats, that they also took up the art of building.12

Vitruvius does not offer, as the American theorist Karsten Harries has also observed, a systematic explanation of what this vision of cosmic permanence, this moment of “gazing upon the splendor of the starry firmament”, has to do with the origin of building. Yet, the Roman architect intends to highlight what marks off humans from other living beings on earth, and Harries sees this intention of the Roman architect to link “the origin of the first house to the awe-inspiring sight of the inaccessible timeless order of the stars” as pointing towards an architecture which, beyond addressing physical needs of bodily existence, takes into account spiritual needs of the human mind and soul.13 Architects have attempted to represent the heavenly order of the firmament in vaults and arches since Roman times. Every church, which is a monument to the dead and resurrected Christ, “is also a monument to the victory of life over death, a victory that finds architectural expression in choir arches built in the image of Roman triumphal arches.”14 The word “firmament” is also linked to firmness or firmitas, which Vitruvius focuses on as one of the three key values in architecture, the other two being utility (utilitas) and beauty (venustas).15

12 De Architectura, Liber Secundus, Caput Primum.
14 Ibid., 299.
15 De Architectura, Liber Primus, Caput Tertium.
Harries associates the opening to transcendence of which Vitruvius speaks with the supposedly first ancient Greek philosopher Thales, who on one of his daily walks was so amazed by the miracles of the sky that he fell into a well. Remembering that Thales, who Vitruvius also mentions, was a versatile inventor of tools and an expert in finding original solutions to technical and scientific problems, his “thinking” may be put into another and little-explored perspective. We shall return to this in a moment and for now only follow Harries, as he takes one step further and asserts that Vitruvius, apart from evoking the Greek philosophy of wonder, also points to human dwelling at the intersection of horizontality, the spatial and temporal condition of human life on earth, and verticality, the spiritual and divine dimension beyond life’s finitude, synthesized in the image of the cross.16

Human building and dwelling is, like wondering and thinking, from beginning to end bound up with horizontality and verticality, the earth and the sky, not only in Christian theology of the cross, but both dimensions form part and parcel of architecture from ancient Greece until today. In a short text from the beginning of the 1950s, titled Building, Dwelling, Thinking, the German philosopher Martin Heidegger asserts that the original expression of human existence on earth is to build and dwell under the sky awaiting signs from the Gods. In the first chapter on philosophical anthropology we shall elaborate further on Heidegger’s notion of building and dwelling

16 Harries 2005: 151-152.
and here only prepare the way towards a deeper understanding of the connections between philosophy and architecture.

Both Vitruvius and Heidegger were deeply influenced by early Greek philosophy. Keeping in mind that Thales was himself a builder, it may well be that philosophical thinking and tectonic building were tied together in their origins, and that the first philosophers even learned from the first architects appearing under that name around the same time that men, such as Thales and Anaximander, began to write down their reflections on the cosmos. In the earliest tradition of architectural craftsmanship the line between theory and technical skill, wisdom an art was blurred which implied that "architects" and “philosophers” did not always see themselves as belonging to two distinct traditions, but often as drawing on the same ancient tectonic culture in order to develop their visions of the world. Robert Hahn has argued that the rationalizing mentality of the first philosophers, especially Anaximander’s proto-scientific approach and invention of instruments and models, was inspired by the first architects’ technical knowhow and practical form of reasoning which led them to create what amazed the philosophers about cosmos: *thaumata*, wonders of the world.17

It is surely no coincidence that Plato’s Socrates, as he identifies the chief passion (*pathos*) of the philosopher and the true beginning (*arché*) of philosophy with wonder (*thaumazein*), mentions the legendary kinship between Thaumas, the wonderer, and his daughter Iris, the rainbow and messenger of the gods.18 The Jewish-German thinker Hannah Arendt, who was a student of Martin Heidegger, has interpreted the meaning of this kinship in the following philosophical way: “As the rainbow connecting the sky with the earth brings its message to men, so thinking or philosophy, responding in wonder to the daughter of the Wonderer, connects the earth with the sky.”19

In Greek thinking this response can only come, as Arendt also suggests, from noetic reasoning, which corresponds on a cosmic level, as we saw, to “the father of

17 Hahn 2001: 1-2, 85, 220; see also Coulton 1977: 23-24 and Holst 2017: 5-6
18 See note 1.
19 The Life of the Mind, 142.
heaven and earth”. In Plato’s *Republic*, Iris the rainbow is likened to a bright light, which spans and connects heaven and earth like a column, and the constitution of the whole world is compared to that of a big ship.\(^{20}\) In the second chapter on the art and epistemology of tectonics, we shall see how Plato draws on similar tectonic analogies, when he describes the origins of cosmos in the *Timaeus*. In Christian theology different traditions have invoked or compared God to the architect of all things, first of all Thomas Aquinas in the *Summa*\(^ {21}\), but also Philo of Alexandria compares God to the architect, who strikes out in advance the noetic cosmos.\(^ {22}\) In contradistinction to the Greek Demiurge, who forms already existing matter, the Biblical God creates the world out of nothing.

Like Plato, Aristotle conceived *nous* as a divine faculty in humans and considered the sages’ profound insight into the cosmological order to be the closest humans could get to the divine. In searching for wisdom and truth, philosophy and theology can become connected and open up a dimension uncreated by humans, who may sense, when wondering about the origin and meaning of the world, that they are part of it all and belong to it. No particular reason seems to explain why humans begin to wonder. Wondering precedes scientific reason which is unable to reach all the way back to the first principles that form its own basis and are related to the origins of reality.\(^ {23}\)

Only *nous*, the guiding light of wisdom, can connect humans to a reality which transcends their finite nature, or in Christian theology, *divine logos*, incarnated in Jesus Christ, not only shows the way into another realm beyond death, but He is the door and the way through which believers must pass, if they want to enter Heaven.\(^ {24}\) Greek temples and Christian churches were meant, each in their own way, to reflect the heavenly light of wisdom which directs and keeps human beings connected to the

\(^{20}\) *Republic* 616 b-c.

\(^{21}\) *Summa* I. 27, 1. r. o. 3.

\(^{22}\) *De opificio mundi* IV.16-V.22. See Runia (1986), pp. 151-174 for a thorough discussion of Philo’s difficult attempt to reconcile Greek cosmology and Christian theology by reinterpreting key concepts such as *genesis*, *archê* and *kosmos noétes*. It lies outside the scope of the present work to go into a discussion of *nous* in relation to sin. For a recent study in the concept of the noetic effects of sin, which clears up certain misunderstandings concerning this concept, see Moroney 2000.

\(^{23}\) *Nicomachean Ethics* 1140b-1141a.

\(^{24}\) *John* 10, 9; 14, 6.
divine. In the fourth and final chapter, the Church of Holy Wisdom, the Hagia Sophia, will be highlighted as a paradigmatic example of a formidable synthesis of Greek philosophical wonder and Christian awe and faith. In the same chapter, late modern architects, especially Louis Kahn and Rafael Moneo, are also presented as drawing on this ancient tectonic tradition.

The higher dimension, which belief in Christ makes accessible in theology, is distinct from the one which wonder and wisdom make humans vaguely aware of in philosophy, but both are linked to the divine. Wonder may cause perplexity and confusion at first, Aristotle remarks in the Metaphysics, as it refers to what is out of the ordinary and may displace humans from what they consider to be their own place and order, apparently leaving them with no way out (aporōn). In the Hebrew Psalms and Proverbs, there is a sense in which awe of the awesome and terrifying works of God marks the beginning of human wisdom. Man becomes terribly aware of an archē which surpasses him infinitely, but this awareness is precisely what endows him with a true perspective on life and death.

Abraham Joshua Heschel has drawn a parallel between Athens and Jerusalem in his book, God in Search of Man, in which he states that “the beginning of awe is wonder, and the beginning of wisdom is awe”, which again constitutes an “awareness of the divine”. In his more epistemological explanation of wonder and wisdom, Aristotle stresses that thaumazein is not necessarily a wonderful experience, but can induce the belief in people that they are ignorant, which is again, according to his historical account, the most probable reason why they began to philosophize in the first place, namely to escape ignorance.

Yet, in the Aristotelian argument it remains unexplained what it is in wonder that puts humans on course to truth, wisdom and a divine reality. Is wonder merely the negative state of perplexity and ignorance, which man has to pass through in order to get to the stages of philosophy, theology and science, and how does man get out of

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25 Metaphysics 982 b.
26 Heschel 1959: 46, 74. In contrast to Heschel, Kass 2003: 3-4 sees a radical difference between Greek wonder and Christian awe, and there is a difference, but it is not as radical as he makes it seem. Both Augustine and Thomas Aquinas understand wonder and awe as containing admiratio, which is a form of the wondrous, which Plato may be closer to than Aristotle, please see the following note.
his own ignorance in order to reach an enlightened state of mind in relation to the world and what lies beyond? Aristotle draws the conclusion that as the aim of the first philosophers was to escape ignorance they must have searched for knowledge in its most pure form without looking for any extrinsic advantages. However that may be, it still does not explain how man gets from being in a state of wondrous perplexity and ignorance to a philosophical investigation of truth and the divine.27

Would it not be more in line with Aristotle’s own thinking to search for, as we have proposed, an unrealized potential in wonder, which opens up humans to the extraordinary reality of everything that comes and has come into being? Furthermore, would the realization of such potential in wonder not reestablish a genuine connection between wonder and philosophy, which remains present in later stages of human knowledge? Answering this question in the affirmative and thus confirming the initially mentioned thesis28 constitutes an important part of the present work, which offers a systematic grounding of architecture in a philosophical study of anthropological, epistemological, ethical and spiritually meaningful matters, some of which can be found within architecture’s own traditions. Others will be unearthed from congenial philosophical traditions, which will help establish the view that architecture is an epistemologically based art form, whose most distinguished purpose is to provide shelter, make room for human wellbeing, and open dwellers on earth to transcendence.

The experience, which was attested by the ancient Greek philosophers that human beings wonder and think about what lies beyond their own finite horizon, implies that they are, on a deeper ontological level, open to transcendence. One of the first to reformulate this anthropological evidence in modern times was the German philosopher, Immanuel Kant, who realized that it is inherent in human reason to raise questions about matters, such as freedom, immortality and God, which it is unable to

27 It should be said that Aristotle tries to explain it in different ways, but all his explanations seem to presuppose that the truth or things themselves will, in the end, manifest themselves as the philosophical research advances, see Metaphysics 984 a. In other words, the transcendent realm, which appears vaguely in wonder and confronts man with his own ignorance, ends up becoming immanent and knowable. As a contrast to Aristotelian epistemology, this work maintains that there are things in and beyond this world which remain transcendent in relation to human knowledge and language, also called miraculi by Thomas Aquinas in the Summa I. 105, 7.
28 See page 7.
find a certain answer to. By distinguishing clearly between what can be known through scientific reasoning and what metaphysical thinking aims at, namely “to extend, albeit only negatively, our use of reason beyond the limitations of the sensorily given world”, Kant meant “to make room for faith”. Given the nature of his critical thinking, which was to draw up the limits of reason, he might not have been aware of the extent to which he also made room for thinking about the meaning of existence and so opened up a wider horizon, foreshadowing philosophical and theological perspectives on life in the 19th and 20th century.

Hannah Arendt saw Kant’s greatest achievement in liberating philosophical thinking from the standards of scientific knowledge: Whereas the latter sets up criteria for verifiable, cognitive knowledge, the former is in search of meaning through a form of dialogical thinking which extends the coherent use of reason beyond what can be known through cognition. The form of reason, which becomes open to transcendence without forsaking its own rationality, is inherently dialogical, as it is painstakingly aware of not being in possession of the truth as such.

Arendt was right in seeing this line of thinking in Kant’s philosophy as going back to the ancient Greek philosophers’ understanding of wonder as the opening shock, “this wonder-struck beholding”, which shakes and plunges the human soul into veritable bewilderment. However, she oversaw or did not see clearly that although reason in its thoughtful search for meaning is not subject to the same criteria of verifiability as the sciences, truth still remains a principal concern in philosophical and theological thinking. Arendt wished to make a clear-cut separation of knowledge and thinking, truth and meaning, but this may not be sustainable once we discover and develop the anthropological conception of humans as being open to transcendence.

Although this openness constitutes an essential part of what it means to be human, it is not to be taken for granted as something already given, but it is most commonly concealed by humans’ multifarious interests in the world. Being in the world is the inescapable condition of being human, according to the German

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29 *Kritik der reinen Vernunft, Vorrede*; see Hannah Arendt’s *The Life of the Mind*, 14, where she quotes Kant’s notes to his lectures on metaphysics and links his metaphysical and epistemological thinking.


31 Ibid., 142.
philosopher, Martin Heidegger, who like his contemporaries, Karl Jaspers and Max Scheler, followed in the footsteps of Aristotle and Kant in pursuit of an understanding of humaneness as being fundamentally open to existence and what lies beyond. Their differences untold, all three saw the distinction of being human in the decisiveness to transcend the “objective” appearance of worldly phenomena.

What usually happens, however, is that we humans fall back into the “objective” mode of being and get lost in the world’s appearances. In Being and Time Heidegger interprets this fall into everyday life behind a closed horizon as an integral part of being in the world. In order for there to be a breakthrough, an opening to transcendence, the world as we know it in our everyday concern for survival and busyness needs to be interrupted or unlocked by an event which reveals the limits and thus the whole finite horizon of our existence.

Like Aristotle, Heidegger, Jaspers and Scheler saw in wonder a genuine philosophical modus operandi of breaking with any inner worldly reductionism, which seeks to annihilate or explain away transcendence. Yet, unlike their ancient Greek predecessor, they considered the moments of straying from the path and being out of place as fundamental for transcending one’s own inertia and reaching a more enlightened phase in one’s own coming to terms with existence. Man has to be displaced and exposed in order to become really open to transcendence, which by definition lies beyond the finite human horizon, but precisely because it evokes the infinite, transcendence can reveal another reality beyond human egoism and give meaning to life as such. These issues will be taken up again in the third and fourth chapter on architecture’s ethical implications and its contribution to finding meaning in life.

Viewing the search for wisdom and truth in this light, Aristotle’s characterization of the objective of philosophy as lying in the opposite direction of

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32 Heidegger’s most elaborate reflections on thaumazein as that which moves thinking “into the beginning of genuine thinking” is to be found in his Freiburg lecture series, also called Grundfragen der Philosophie (Fundamental Questions of Philosophy), and later in Beiträge. For profound interpretations of Heidegger’s thinking of wonder, see McNeill 1999 and Rubenstein 2011. Scheler dedicates one page to thaumazein in his Schriften zur Anthropologie (Anthropological Writings), see p. 81, and so does Jaspers in his text Was ist Philosophie? (What is Philosophy?), see p. 102.
wonder seems more to be an attempt to escape from the predicaments of *aporia* than an actual escape from ignorance. Not only does Aristotle omit to tell us how the seeker of wisdom, amazed and bewildered by what he or she has witnessed, frees him- or herself from perplexity and embarks on a philosophical search for truth, but it remains unclear in Aristotle’s writings what wonder contributes with besides inducing ignorance and perplexity. He may have wanted to say, as we have suggested, that wonder moves the one, who marvels, to start reaching for the truth of what has been revealed.

Prior to Aristotle, Plato had already drawn attention to the human inclination of preferring ignorance over wisdom and living comfortably surrounded by shadows and echoes instead of making an effort to break loose from this condition. In his famous allegory of the cave, Plato lets Socrates say that it takes quite a lot of force to free somebody from his or her chains. Yet, Socrates does also consider another way out of the cave, but opening up this way presupposes the presence of a philosophically educated soul, which is what Plato sets up as his new political ideal: Philosophers governing society wisely. Aristotle may have been right in criticizing Plato’s political utopia for being too restrictive, but what he did not consider sufficiently was the extent to which human beings are ignorant and oblivious of their own openness to existence and often willingly surrender themselves to their worldly and self-destructive desires.

Christian theology underlines this fundamental aspect of human existence: Humans do not just sometimes commit mistakes, but “is always astray in errancy”33, as Heidegger reformulates it in his late work recalling the original meaning of the Biblical word for sin, *hamartia*: being in error. This text, in which Heidegger is closer to Christian thinking than to Greek philosophy, appears in a work titled *Wegmarken*, pathmarks, which are productive for human thinking and action, as they testify to the confrontation of the mind with something extraordinary which surpasses it. It is at this point, where humans face their existential and epistemological limits that they may begin to open themselves up to transcendence and get a truthful glimpse of what lies beyond their own capacities. Still, the question put to Aristotle remains: How do

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33 *On the Essence of Truth (Pathmarks)*, 151.
human beings cope with situations where they are displaced from their comfort zone, facing their own finitude, and get exposed to transcendence?

We shall answer this question in four steps corresponding to the four chapters in the work: The first chapter will focus on dwelling and building as primordial conditions for humans to start to dwell on the origin and meaning of their own existence on earth. The second chapter presents a historical and philosophical exploration of how architecture has developed an extensive body of detailed tectonic knowledge, which helps humans to find an existential foothold in life, a foundation upon which they can build in order to enter into more harmonious relationships with the world in their coming to terms with existence and what lies beyond. The third chapter addresses the ethical implications of architecture and the challenges we still face as humanity at the beginning of the 21st century in relation to the ecosystem of planet earth and in the relationship to our peers. Both relationships refer to forms of transcendence which will be integrated with the fourth and final chapter on meaning in life which touches on and points beyond the limits of architecture.

This work inscribes itself in the tradition of recent research studies which relate spirituality to human well-being and meaningfulness within a transcendental framework covering metaphysical and religious meanings, the ethical significance of community, and the environmental and ecological horizon of the built environment.34 As the purpose is to deliver a philosophical grounding of architecture, based on a Western tradition, and as transcendence is also an issue in “profane” architecture, sacred architecture as such or mystical experiences of God will not be addressed.35 In regard to sacred architecture, Christian church architecture plays a key role, in so far as it contributes to opening up and approaching human beings to transcendence.

Architecture can actually assist us in “accessing a realm of integral spiritual

34 See especially the introduction to the anthology Architecture, Culture, and Spirituality (2016), edited by Thomas Barrie et al., but also in the introduction to another anthology, Transcending Architecture (2015), edited by Julio Bermudez, do we find support for the approach and purpose of this work in its endorsement of “the surrendering of architecture to something larger and better than itself, a movement beyond disciplinary partiality for the sake of the whole or holy (p. 4).”
35 Sacred architecture is covered extensively in Constructing the ineffable: Contemporary Sacred Architecture (2011), edited by Karla Britton. For a study on wonder and wisdom, which takes its starting point in architecture outside Europe, see chapter 16 in Architecture, Culture, and Spirituality mentioned above.
unity: Beauty, goodness, truth.”\textsuperscript{36} The philosophical approach and purpose of the work is to open up a view to transcendence through architecture, or employing the eloquent words of religion scholar Diana Eck: “it is through the windows that we are able to see in ways our unfettered gaze cannot comprehend. Architects do not, in that sense, construct the sacred. How could anyone do that? But they do enable us to see it, and in that sense architecture is a revelatory act. It is training the eye to see, training the soul to deep seeing.”\textsuperscript{37}

\textsuperscript{36} Bermudez 2009: 48.
\textsuperscript{37} Quoted from Crosbie 2016: 64.
I. Rethinking Philosophical Anthropology in Dialogue with Architecture

1. Aristotle and Vitruvius: The Origins of Philosophy and Architecture

In the *Metaphysics*, right after his statement that philosophy began and still begins with wonder, Aristotle traces the transition from wonder to philosophical investigation back to the time, when people began to liberate themselves from the burdens of covering their basic needs and thus gaining more free time, which he again takes as an explanation of the freedom from necessity and utility entailed in the philosophical endeavor.

Despite being a theoretical activity imbued with freedom and directed towards non-pragmatic purposes, philosophy still depends on certain worldly factors for its realization. It is not in itself productive, but at the roots of its origin some sort of production or even construction must clearly have played a key role in supplying “practically all the necessities of life”. 38 Aristotle says that it was with a view to a life of ease and pastime without being bent under the yoke of necessity that philosophical investigation began. He may have in mind the time, when humans were no longer continuously on the move, hunting, gathering and laboring to survive, or when they started to live less exposed to adverse circumstances, such as climatological factors and never-ending wars. At any rate, the Greek philosopher maintains that for philosophy to arise, life must come to a certain standstill, where people can make a halt without being forced by necessity to survive or uphold life all the time, and this is again only possible, if people have the means and the supplies to sustain themselves and to withdraw a bit from the hazards of life.

What is entailed in the story of the origins of philosophy, which Aristotle tells, is that the first philosophers had started to dwell on earth with a view of dwelling on other matters too, such as the sky and the stars. Covering “practically all the necessities of life” presupposes some minimally developed socioeconomic structure, which again opens up possibilities of living well in a community: “While it (polis) comes

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38 *Metaphysics* 982b.
into existence for the sake of life, it exists for the good life”\textsuperscript{39}, Aristotle states in his treatise on politics, which for him is the supreme science of human affairs, as it allows humans to move from covering their basic needs within the household to reaching a much broader socially embedded state of self-sufficiency.

We do not have to leave the context of the \textit{Metaphysics} though to see that Aristotle implies that the first philosophers had a place to dwell in order to dwell on transcendental matters. This comes out implicitly in the two words, \textit{raistōnē} and \textit{diagōgē}, which Aristotle employs to refer to the ease and the leisure implied in philosophical endeavor: Both words denote rest and relief from anything strenuous, be it pain or labor, which does not exclude that the one, who rests, the philosopher, partakes in other activities. It is precisely, because the philosophers can rest from strenuous activities that they have time and energy to dedicate their lives to philosophy, which gives them access to an exact knowledge of first principles, desirable in itself; not unlike the mathematical sciences, which were invented, Aristotle posits, in Egypt, where the ruling class had leisure (\textit{scholē}), i.e. free time to investigate for the sake of knowledge.\textsuperscript{40} Wonder opened up the minds of the philosophers to other matters than merely covering their basic needs, and now they came in need of something more intangible, namely time and also space to explore and explain these matters which challenge the human mind to extend itself toward that which transcends it.

We shall see how architecture helped the philosophers in achieving this: Living less exposed, with a place to rest and entering into a more harmonious relationship with the world. Yet, Aristotle has a view of the economic condition underlying philosophy, understood in the Greek sense of \textit{oikos} as household, which is typical of his time: Those, who can afford it, will hire people to take care of the most laborious work in order not to suffer and so devote their time to politics and philosophy. In Aristotelian philosophy dwelling is reduced to a platform for further development which entails a certain exploitation of others. Dwelling does not have a lasting significance in itself, and, like wonder, it is turned into a mere initial stage in the search

\textsuperscript{39} \textit{Politics} 1252b.
\textsuperscript{40} \textit{Metaphysics} 981b.
for truth and wisdom, but in the end it is to be overcome. Is there another way of linking wondering and dwelling, philosophy and architecture than the one Aristotle implies?

We shall turn to another source in search for the missing link between wonder, dwelling and building. This important source is the Roman architect Vitruvius, who begins his outline of the origins of architecture by drawing attention to one crucial condition of supplying necessities of life: It was only after producing fire and seeing its advantages that humans, who had recently left the caves and the forests, began to talk to each other (sermones inter se), create communities (conventus et concilium), contemplate the magnificent sky (astrorum magnificentiam aspicerent) and build the first roofed dwellings (facere tecta).41 Although Vitruvius’ reconstruction of how the first humans discovered fire due to strong winds and the friction of twigs seems oddly out of place, as if humans played no active role in discovering fire, and although he sets up an apparently arbitrary chronology of these decisive events in human history, the implications of his description, some of them untold by himself, happen to correspond strikingly well with important insights of modern philosophical anthropology.

In Catching Fire: How Cooking Made Us Human, Richard Wrangham argues that fire contributed decisively to human evolution, as cooking food over the fire allowed for easier and faster meals and digestion. Apart from saving energy and living off easily consumable food items, the fire, the meals and the hearth became vital for people to come together and build themselves a home and over time larger communities. Wrangham is not that far from Vitruvius, when he elaborates on the historic implications of humans controlling fire: “In addition to warmth and light, fire gives us hot food, safe water, dry clothes, protection from dangerous animals, a signal to friends, and even a sense of inner comfort.”42 Still, we should be careful not to announce fire to be that magic element which made us human. It does not distinguish us qualitatively from other living beings on earth, and, according to Plato, fire is still

41 De Architectura, Liber Secundus, Caput Primum.
42 Wrangham 2010: 9.
inside the cave, which humans will have to transcend, if they are to become aware of the source from which a brighter and more vital light springs.

In the same passage, in which Vitruvius draws attention to the first humans creating communities and observing the sky, he insinuates that walking upright sets arms and hands free for other purposes than sustaining the body, for example manipulating objects of all kinds and erecting buildings. The erect posture may constitute one more step on the way for humans to become less bound to the earth and acquire more freedom to move around. In this way, he correlates, without giving any causal explanation, the clearing in the forest provoked by the fire, the first communities based on communication, humans walking upright and starting to observe the sky and erect the first roofed dwellings. One of the pioneers of 20th century philosophical anthropology, Helmuth Plessner, stresses in his work that the erect posture is a labile posture, which entails a freer and less conditioned stance to the world. According to this anthropological understanding, the freeing of the hands from the ground is part of the explanation why man has developed the ability to grab and grasp things and make an object of himself and talk about it. Still, Plessner is aware that evolution cannot explain the whole of man’s development as a spiritual being in possession of logos.

Vitruvius’ attempt to dig out the origins of building and dwelling is a tentative description of how humans became human, which also entails the humanization of nature. The Roman architect indicates that as long as the beings, who were later to become human beings, lived in caves and forests and led a life more akin to fierce beasts “with faces to the ground” they would not look up at the sky, and they would therefore have no need or reason to set up a roof over their heads. Whereas the philosopher Aristotle, who relates the contemplation of the starry sky to wonder, Vitruvius, being an architect, links this moment to the building of the first dwellings.

The first builders began to look to the sky and set up roofs observing how other

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43 Die Frage nach der Conditio humana: 169-180; see also Pallasmaa 2009. Plessner’s thesis, which he established in a critical dialogue with the sciences of his time, is corroborated by recent studies in neuroscience, see Michael A. Arbib’s outline in “Language is handy but is it embodied?” in which he argues that “the visual control of hand movements played a crucial role in the evolution of the human language-ready brain. (p. 59-60)”
dwellings and roofs were built by birds, the animals of the sky. It is possible that living in caves and forests gave them a primitive idea of enclosure\textsuperscript{44}, which they reproduced once they started living in clearings under the sky. When touching upon the open view to the sky, Vitruvius may be hinting at one of the basic lessons of architectural know-how, namely to take into account the water and light coming from the sky when erecting a building, but he also seems to say that apart from physical needs, building and dwelling serve spiritual needs. Already in the first chapter of the first book, he gives a detailed description of all the disciplines which the architect should be familiar with, among which we find geometry, philosophy, astrology and cosmolology.

The clearing in the forest described by Vitruvius marks the space needed on a horizontal scale to start building and making room for more people, and it entails the vertical opening to the starry sky which invites earthlings to wonder about what lies beyond their finite horizon. People must surely have been walking upright, when they were still living in caves and forests, but if they did not have a clear view of the sky or did not habitually look to the sky, because they remain too tied to the earth, no opening up to anything beyond their most urgent instincts and desires would have taken place. Looking to the sky entails a certain distance to life on earth, embodied in the erect posture which allows humans, as we have already observed, to gain a freer stance to the world.

For wonder to set in, such a free stance must have come about, which allowed humans to distance themselves a bit from the ground in order to become more open and also more exposed to their surroundings, particularly the starry sky. Man cannot bring about wonder, but is struck by it, as if it were by a lightning, and, like lightning, wonder can both illuminate man’s life on earth and throw him off his trail or even put his life in danger, depending on the way he exposes himself to that which surpasses him. Building in order to dwell is man’s primordial answer to the challenge of living on

\textsuperscript{44} Umberto Eco (1997) has advanced this speculative thesis about “the man who started the history of architecture”: “Sheltered from the wind and rain, he examines the cave that shelters him, by daylight or by the light of a fire (we will assume he has already discovered fire). He notes the amplitude of the vault, and understands this as the limit of an outside space, which is (with its wind and rain) cut off, and as the \textit{beginning of an inside space} [...] Once the storm is over, he might leave the cave and reconsider it from the outside; there he would note the entryway as a “hole that permits passage to the inside”, and the entrance would recall to his mind the image of the inside. (p. 174-175)\)”
earth under the sky, and this opens up a completely new perspective from which to dwell on things and enter into a meaningful relationship with the world. Philosophical thinking may only be developed fully and sustained as an activity, in so far as the one who thinks also dwells.

2. Martin Heidegger’s Conception of Being as Dwelling

The first modern thinker to shed new light on the relationship between dwelling, building and thinking is Martin Heidegger, who reinterprets the fundamental condition of mortal man as dwelling on earth under the sky awaiting signs from the Gods. Heidegger’s text *Building, Dwelling, Thinking*, which he first gave as a conference in 1951, is one of the philosophical texts which has had most influence on architects in the second half of the 20th century and their way of thinking about architecture. Mark Jarzombek ascribes this to “the rather simple historical fact that this was the first time in over a century that a major philosopher had expressed himself directly on the subject of architecture”, and he goes on to assert that “after Heidegger, all architecture, philosophically speaking, underwent a transformation”\(^{45}\).

Jarzombek may go too far in his last assertion, and he himself recognizes that Heidegger does actually not address architecture as such, but rather building or, in German, *bauen*\(^{46}\). As we shall see, there is more to architecture than building, and architects have kept creating their own distinct way of thinking after Heidegger, whose philosophical approach to building and dwelling remains, nevertheless, one of the most important and thought-provoking interventions in the field of architecture in the 20th century, worthwhile a critical review, although it does not transform all architecture.

Heidegger makes it clear from the beginning of his text in which direction he wants to take his reader: “This venture in thought does not view building as an art or as a technique of construction; rather it traces building back into the domain to which


\(^{46}\) Ibid.: 35.
everything that is belongs.” He highlights the word “is”, and being as such, the central theme of Heidegger’s thinking, forms the horizon within which he will elaborate on building and dwelling, bauen and wohnen. Both words can, according to Heidegger, be traced back to the High German word buan which refers to staying and dwelling, but not only that: In it are hidden the German verbs for being, bin and bist. Heidegger ends up having a series of words at his disposal which circumscribe the way we human beings are on earth: Buan, being, building, dwelling, or in German, which may sound more convincing, Buan, bin, bauen, wohnen.

For Heidegger the real meaning of worldly phenomena lies hidden in language, especially in its deeper layers, which the philosopher will do well to dig out and make appear again in its original way. Words and their meanings are without a doubt important when trying to rethink building and dwelling, but it remains an open question whether Heidegger’s etymological deductions and the conclusions which he draws, are all valid: bauen and wohnen may well be traced back to the same word buan, but this does not necessarily lead to the conclusion that “building (bauen) originally means to dwell (wohnen)” as Heidegger states. In many of his works Heidegger seems to presuppose that the further you go back or the deeper you dig down into the most profound layers of language, especially Greek and German, the truer are the meanings you get hold of, and the more we will know about how things really are.

It goes without saying that Heidegger’s as well as any other’s etymological deductions are based on interpretations which by their very nature highlight certain aspects, while at the same time leaving other aspects in the shadows. In addition, Heidegger’s predilection for Greek and German carries him on to certain interpretations which may be contested, if we take our starting point in other languages. If we turn to Old English and focus on the word dwellan, from which “dwell” originates, then it means “to stray from the path” or “to be led astray”, but it “was modified in meaning by the Old Norse dvelja “abide” to present-day “dwell”.

47 Building, Dwelling, Thinking, 95.
48 Ibid.: 96.
49 Idem.
Old English and Old Norse are considered to be proto-Germanic languages which influenced each other. What often happens in this linguistic give and take is that in one of the two languages the pronunciations and the meanings are slightly or sometimes completely different.\textsuperscript{51}

What seems to be an odd extension of the meaning of dwelling, which originally referred to something as dynamic and dispersive as straying, but came to signify the opposite static act of staying and lingering, makes more sense in the light of the English philologist Henry Cecil Wyld’s interpretation of dwelling and its cognates as ways of expressing delay and doubt. According to him, dwelling does not originally refer to living in a place, but rather to making a halt and lingering on a path in doubts about where to go. Following this line of thought, the original setting of dwelling is neither the house nor any kind of built environment, neither is it the free, peaceful place nor the act of freeing, sparing and cultivating, as Heidegger maintains throughout \textit{Building, Dwelling, Thinking}. The setting for \textit{dwellan} is characterized by lacking clearness and connotes the unknown in which someone is stuck, but it is this state of not finding a way out which allows for an extension of the word “to dwell”, through the influence of the Old Norse \textit{dvelja}, to mean “remaining or staying where one is”.\textsuperscript{52} Originally, dwelling was associated more with the state of wonder and bewilderment than with residing and living in an already defined space.

Analyzing the etymological meanings of the word “to dwell” does not reveal the original truth about dwelling, but it may give us a richer picture of what it means to dwell and it leads us onto other Heideggerian paths, the famous \textit{Holzwege} or \textit{Pathways}, which are not directly evoked in \textit{Building, Dwelling, Thinking}. In 1950, a year before he gave his conference on building and dwelling, Heidegger had published a compilation of texts in a volume titled \textit{Holzwege} which in German refers to paths in a forest where timber is carried away leading to no human settlement. In German, \textit{Holzwege} therefore also means to be on the wrong track or straying from the beaten path, as these ways are not meant for human circulation and they are in this sense misleading. \textit{Holzwege} conveys the old meaning of \textit{dwellan} and forms a kind of

\footnotesize \textsuperscript{51} Barber 1995: 130-31.  
\textsuperscript{52} Liberman 2008: 60.
backdrop to Heidegger’s reflections in *Building, Dwelling, Thinking*, in which he is mainly concerned with dwelling in the sense of abiding and being at home in the world. This is what “to dwell” came to mean, but if we follow the meaning of the word back to *dwellan*, another unknown world appears, in which man is neither at ease nor at home. He is rather lost and straying on paths in doubts about where to go, but it is out of this state of not knowing one’s way that dwelling in the sense of abiding and staying springs.

![Figure 2. Holzweg](image)

Considering the significance which these paths have for Heidegger’s thinking, it is remarkable that there is almost no trace of them in *Building, Dwelling, Thinking*. In his *magnum opus Time and Being* from 1927, Heidegger presented human existence as being thrown into the world without having any safe haven or already given instructions to take refuge to. Many years later in another compilation of texts called *Wegmarken* or *Pathmarks*, first published in 1967, Heidegger goes even further and sustains that man “is always astray in errancy”\(^{54}\).

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\(^{53}\) I say almost no trace, because the way in which Heidegger begins his essay, referring to it as a “venture in thought”, does evoke the pathways of thinking along which he takes his reader, but these pathways have no real impact on his concept of dwelling. See Miguel de Beistegui, *Thinking with Heidegger: Displacements*, especially chapter 6, “The Place of Architecture”, for a combined reading of *Being and Time* and *Dwelling, Building, Thinking* which, like Heidegger, focuses more on the ontological sense than on the architectural sense of dwelling.  

\(^{54}\) *On the Essence of Truth* (in: *Pathmarks*), 151.
Yet, in *Building, Dwelling, Thinking* these reflections on the human condition do not play any important role, although they could have proved to be relevant for his meditation on building and dwelling. Is it not building and dwelling which can protect and even free human beings from going astray all the time and being always exposed to the elemental forces of the earth and the sky? When Heidegger describes us mortals as being, in the sense of *buan*, on the earth under the sky awaiting signs from the Gods, he makes it sound as if this fitting into the fourfold of things, as he calls it, were in itself peaceful, preserving and free of strain. The fitting into the fourfold is what Heidegger understands as building, *Bauen*, in the form of dwelling, *Wohnen*, and this presupposition explains why he can do without any architectural expressions and dismiss dwelling in buildings as something secondary to the philosophical course.

Heidegger claims that we have forgotten to dwell in the same way as we have forgotten what it means to be in the original sense of the word; but how can mere existence on earth, being exposed to straying around on the wrong track and to elemental forces such as wind and water, give us back the real meaning of dwelling and building? How could we mortals ever dwell on earth and take care of it without a building which forms a refuge and allows us to withdraw temporarily from the haphazardness and hardship of earthly life? If we take these questions into account together with Heidegger’s existential reflections on human finitude, we will be led back to the meaning of dwelling as making a halt, withdrawing in order to be less exposed and so resist being swept away onto unknown pathways. Dwelling runs counter to being thrown into the world and delimits a space in which an inhabitant resides in the sense of sitting back and, in that way, gets a reference point to orientate him- or herself.

This approach makes room for imuing dwelling and building with architectural meaning. Heidegger is right in linking building closely to dwelling: “we build and have built because we dwell, that is, because we are *dwellers*” but according to our

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55 *Building, Dwelling, Thinking*, 97-98

56 In the fourth chapter, we shall return to the question of meaning in architecture and draw on the Norwegian architect and thinker, Christian Norberg-Schulz’ concept of orientation as a way to finding meaning.

57 *Building, Dwelling, Thinking*, 97.
interpretation of the two terms, building is not in itself or really dwelling, as Heidegger claims in the same passage. Building is a dweller’s way of creating a space into which he or she can withdraw in order to be less exposed, get a reference point for orientation and come to live well. In “dwelling” we should still hear the act of lingering in a vast landscape of multiple unknown pathways, as in William Wordsworth’s ode *She Dwelt among the Untrodden Ways*. Remarkably enough, on the dedication page of *Holzwege*, Heidegger evokes indirectly the old meaning of dwelling as *dwellan*, when he mentions the mostly overgrown pathways that come to an abrupt stop in the forest at the point, where what lies beyond them is “untrodden” (*Unbegangenen*)58.

It is not only the way that comes to a stop here, but the person straying from the beaten path stops in front of what is inaccessible and can either try to find his or her way back or, if there is no way back or no home to return to, make a pause and linger on the verge of the unknown. We must not forget that it is this pause, while going astray, which stands at the beginning of dwelling in the sense of staying in a place. The old Nordic word *dvelja* first referred to making such a pause on the way in order to dwell on something or “*dvåle*”, as we say in the Nordic countries when taking our time to give our full attention to something. It is this sort of dwelling as *dvelja* that is presupposed in building which would never take place, if no one ever lingered in a place on his or her journey through life. Building is not identical with dwelling, but makes it possible for a dweller not only to stay for a while, but to dwell on transcendent matters and make the world inhabitable.

In the Western tradition, architecture has often been seen as covering the basic needs of man, giving him a shelter, but this is only one of the purposes of building, and architecture is more than just building. It entails a vision of being embedded in a world of endless pathways, less exposed and without going astray, but still in contact with the surroundings and with what lies beyond the finite human horizon. Architecture allows the inhabitants to reside in the sense of sitting back and dwell. Dwelling, however, does not only mean to withdraw from the world, but involves withdrawing into the world which is experienced in a different light from the inside.

58 *Holzwege*, 4.
Light, colours, air and materials become essential components in architecture in order to let inhabitants dwell among multiple pathways and dwell on things living in a building which opens up towards its surroundings and becomes a reference point for orientation. Heidegger dismisses air, light and living in buildings as lesser aspects in dwelling, and he thereby dispenses with fundamental dimensions in architecture, but there is more to man than just living on the earth under the sky. He can come to live still better with a view to a transcendent dimension. Architecture plays a vital role in fulfilling this human aspiration.

3. Jørn Utzon’s Architecture of Human Well-being

In 2004 Jørn Utzon gave one of his last interviews to Poul Erik Tøjner, art critic and director of the Louisiana Museum of Modern Art in Copenhagen. In his introduction to the interview, Tøjner calls Utzon “the great architect of human well-being”, a concept which Utzon introduces in the interview to stress that architecture for him is about furthering the well-being of the people who use and dwell in the buildings. It is this word, “well-being” or in Danish “velbefindende”, which Tøjner highlights as the main intention behind Utzon’s work as an architect.

In the same interview, Utzon goes on to explain that this architectural principle implies studying the causes and the factors involved in human well-being: Light and sounds, stairs and walls, things and surroundings. These factors have in themselves always played a key role in architecture. We can also find them in modern architecture and in Heidegger’s text Building, Dwelling, Thinking. Heidegger is especially interested in things as the center out of which everything else finds its place, and place is in itself essential for a certain strand of modern architecture to which Utzon belongs.

Things, places and surroundings do undeniably play a key role in Utzon’s work as in so many other modern architects’ edifices, but what needs to be taken into consideration is that Utzon shows an interest in these factors in so far as they can

59 Holm et al. (ed.) 2008: 4.
60 Ibid., 6-7.
61 For a thorough analysis of this strand of modern architecture, see Michael Asgaard Andersen’s Places in Utzon’s Architecture, especially chapters II and III.
make a contribution to human well-being. He is not specifically interested in any formal or abstract analysis of things, places or surroundings, although it may form part of any architectural project, and especially in modern and postmodern architecture, formal analysis often plays a key role in projects. Utzon shows an interest in how these fundamental factors influence and become sources of human flourishing; not being in itself, but well-being, not things in themselves, but human beings in relation to the things of everyday life is what Utzon centers on in his architecture.

This is important to bear in mind so as not to think that one can adequately uncover the cornerstone of Utzon’s architecture using Heideggerian concepts. For Heidegger, human beings become integrated into the fourfold through things and places, but in his text on building and dwelling there are no clear indications of how to heighten the feeling of being alive and living on earth. It seems sufficient for him to return to an original sense of being as dwelling which does not principally mean letting human beings dwell, but it is rather being which lets earth and sky, the mortals and the gods fit together and dwell in the fourfold. Heidegger bases his understanding of building and dwelling on being and, in this scheme of things, human beings play only a minor role. Utzon proposes another understanding of dwelling and building based on human well-being. Where Heidegger dismisses architectural observations and reasoning about light and air, assemblage and economy as secondary in relation to the original meaning of dwelling and building, Utzon displays an architect’s sensibility for these elements’ significance in visualizing and creating places where people can integrate the building process into dwelling as a way of furthering human well-being.

We shall later return to this utzonian idea of integrating building with dwelling, but let us first look at how Utzon envisions that architecture can make the earth a better place to live. In an article, which Utzon wrote together with Tobias Faber in the 1940s, he states that “architecture forms the setting for existence”. Utzon and Faber advocate for living in and feeling architecture, as if it took place inside a shell with its

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62 Christian Norberg-Schulz and Kenneth Frampton go quite far in applying Heideggerian concepts in their interpretation of Utzon’s work, but going into this discussion here will take us too far away from the present task, which is rather to show the difference between Utzon and Heidegger in their approach to architecture. See Teal 2013 for a Heideggerian study of the immaterial structures of place which reveal the extraordinary in everyday life.

63 Utzon, Faber 1947; quoted from Holm et al. (ed) 2008: 28.
naturally curved and folded form which becomes paradigmatic of Utzon’s work. The shell is both a material manifestation and a visual representation of human existence as a unique life form which is in need of architectural building as the setting not only for living, but for living well.

Choosing the shell as a material manifestation and a visual representation of dwelling, we are reminded that architecture, first of all, safeguards its inhabitants against wind, weather and intruders, creating a place into which they can withdraw without losing contact with the world. In contrast to Heidegger, whose natural setting was the immense forest in Southern Germany, Schwarzwald, Utzon’s life horizon, since he was a child, had been the Nordic sea and the water surrounding Denmark. While Heidegger relates dwelling and being to freeing and abiding on the earth under the sky, Utzon links dwelling to a protected place in the middle of a landscape where the sea, which is not always calm and clear, is often near. In so far as being on the earth under the sky does not mean to dwell in any original sense, but it can rather refer to being lost without a place to stay, architecture is the art of building places where people can feel rooted to the earth and stay in contact with the forces of the sky, the air, the light and the sun, without being directly exposed to them. The careful study of the influences of these elements on human well-being is what Utzon proposes as the basic architectural principle.

The Danish word which Utzon uses for well-being is “velbefindende”. It is an enhancement of what in Danish is called “befindende” which refers to how one feels physically and emotionally. The German cognate is “Befindlichkeit” which Heidegger analyzes in Being and Time and explains as disclosing “Dasein in its thrownness”. Dasein is man’s way of being open toward his own existence, and Befindlichkeit refers to the existential mode in which man finds himself being thrown into the world. The key word is “find” and corresponds to the Spanish expression “encontrarse” in the sense of how one feels, which is something that cannot be controlled from the start, but rather happens to us human beings. This is what both Utzon and Heidegger want to refer to: A state of being which is not provoked by man himself, but whereas Heidegger stays there and elaborates on what being means, Utzon goes beyond the

64 Sein und Zeit, 136.
mere state of being and envisions how the “surroundings affect us with their dimensions, light, shadows, colours”\textsuperscript{65}. This observation is taken from a text, “The Essence of Architecture”, which he wrote in 1948, and in which Utzon already talks about “well-being” as “the basis of architecture if we want to achieve harmony between the space that is created and what is to happen in it.”\textsuperscript{66}

Utzon actually comes close to Heidegger in this text when he talks about how a man finds himself in space feeling pleasure, joy or discomfort, but the Danish architect believes that architecture can have a significant influence on these states and transform given conditions into a heightened awareness of the surroundings. “This should be our starting point: moving unconscious reactions towards conscience”, he states programatically and continues: “Nurturing our ability to perceive these conditions and their influence on us, being in contact with our surroundings, we find the path to the essence of architecture.”\textsuperscript{67} This is not a path like Heidegger’s \textit{Holzwege}, where the thinker dwells on untrodden ways. Instead, it leads to human dwelling places where the inhabitants are in contact with their natural surroundings and through the act of dwelling and building get an enhanced perception and a heightened feeling of belonging to the place.

Utzon’s understanding of dwelling is almost a reversal of the Heideggerian dictum that building is dwelling. Dwelling is, according to Utzon, a dynamic state in which the dwellers are invited to participate in the building process which extends and assembles the already given parts of the dwelling in new ways. Utzon opens the way for the inhabitants to partake in what he himself calls “additive architecture”, which resembles the organizing principle of natural life forms, when they add to their state of being, their “\textit{befindende}”, further components or pieces in keeping with the ground structure and without having to cut anything to measure first.\textsuperscript{68} This extension of their own being through which the dwellers participate in adding something vital to their own life form, aware of the nature of the elements and dimensions in the building process, contributes to the heightened state of well-being, “\textit{velbefindende}”, which

\begin{footnotes}
\item[65] Utzon 2006: 23.
\item[66] Ibid., 24.
\item[67] Ibid., 23.
\item[68] Ibid., 245.
\end{footnotes}
Utzon sees as the principal aim of architecture. Human beings do not have to remain in a state of finding themselves thrown into the world, disclosed in *Befindlichkeit*, but they may find a source of well-being, *velbefindende*, in dwelling and building.

This explains why Utzon links the study of human well-being to the capacity of visualizing space and creating buildings in which the materials can be combined and assembled in new ways that resemble nature.69 This organic way of dwelling and building, in which the dweller does not stand under the architect, but understands him- or herself as partaking in architecture and the architect sees him- or herself as a dweller, shows “a strong desire for getting away from the box-type house”70, Utzon says in “Additive Architecture”. Instead, the utzonian form of building – and, in this respect, Utzon is clearly under the influence of the American architect, Frank Lloyd Wright – opens the dwelling from the inside and lets dwellers interact with their surroundings.

Utzon’s housing schemes for the Kingo and Fredensborg settlements from the 50s and 60s, respectfully placed out in open nature, are based on additive principles which allow the inhabitants to remodel their “settings for existence” in an organic and economic way. Additive architecture follows natural growth patterns by assembling pre-fabricated modules through what Utzon considered to be “a new architectural expression”71 and opens the possibility of going beyond the already given sizes, measures and partitions of a house without breaking up the basic structure of the building. Dwelling still covers the basic meaning of remaining in a place, being well and sheltered, but for Utzon being well involves being able to give form to one’s own life form and thus “to avoid sinning against the right of existence of the individual expression”72.

70 Utzon 2006: 245.
71 Idem.
72 Idem.
Again the image of the shell comes to mind and seems to embrace the meaning which Utzon wants to reinvest architecture with: A protected, but at the same time open and potentially extendible life form which is simultaneously folded in on itself and discretely turned outwards. The Sydney Opera House with its curved and folded roof construction, which looks like an immense structure of overlapping sea shells, can illustrate this point. In an essay titled “Architecture as Contemplation”, Poul Erik Tøjner describes this construction in the following way: “The whole point of the sails or shells – or whatever we should call this floating roof construction – is that they refer to the geometry of the circle. Each shell rises from the ground with resilient poise, but returns just as naturally again – for if you extend the line of each pointed arch, they curve inwards in an embrace rather than lift themselves towards the skies.”[^1]

The arches still point towards the sky, but their curved form keep them close to the element, which they refer to and are surrounded by in Sydney: Water. The transcendence, which Utzon’s architecture points to, is present in the organic world in the form of elements, over which man is not the sovereign master. Utzon aimed at drawing people into the world through his buildings by letting them partake in building and dwell in the sense of *dvæle*, the Danish term for giving dwellers time to contemplate the world from a calm place and so furthering human wellbeing.\(^74\) The Kingo and Fredensborg settlements as well as Utzon’s two houses on Majorca are constructed around a gathering place which opens up towards the world, or as Utzon himself has put it: “I feel that I began from inside. I consider that if I design a space for people to meet in, I place them around a table, pour some light over them, and encase them with walls, and perhaps make an eye-level opening for a view onto, say, a tree [...]”\(^75\)

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\(^{74}\) The double nature of dwelling as calmness and contemplation in Utzon’s architecture has been interpreted under the anthropological category of refuge and prospect by John Roberts in Holm et al. 2004.

\(^{75}\) Utzon 1978: 426.
Figure 5. Utzon’s own house on Majorca, Can Lis.

This statement by Utzon reflects significant aspects of anthropological, architectural, ethical and spiritual nature, some of which have been touched upon already: Meeting other people lies at the origins of human communication and sociability, as Aristotle and Vitruvius claim, and, as we shall see in the following chapter, the art of tectonics, which is the source from which architecture springs, plays a key role in the creation of artefacts, buildings and societies in order to make human well-being possible and open up man to transcendence.

From inside a dwelling, transcendence may seem far away. The immanent world is felt closer, but this is precisely, according to the French-Jewish philosopher, Emmanuel Lévinas, the way in which man resides in the world by protecting himself from elemental forces, appropriating things and encircling his existence around his possessions. What breaks open the possessiveness of the human ego, must come from outside the house, from afar, from the exterior, as Lévinas states in Totality and Infinity, and for the those living inside the house transcendence comes in the form of a stranger, who draws closer and appears on the doorstep. For Lévinas ethics begins with an act of hospitality in the face of transcendence which he also calls a “wonder”, a “shock” and a “miracle.”

Lévinas 2003: 26-35. See Rubenstein 2008: 68-69 for an interpretation of these terms within Levinas’ ethics.
This act has already taken place, as Utzon, almost like a godlike master builder, draws the dwellers into the house, which becomes a meeting place, like a clearing in the forest, as he lets some light shine on them. Before humans begin to dwell on the earth under the sky, as Heidegger says, they have already withdrawn a bit, originally into caves or forests. Yet, it is not until they start to build that they accomplish to dwell in the full sense of the word and withdraw into the world which allows them to live less exposed and, in this sense, better by resting and residing in conversation and contemplation.

Rethinking building and dwelling has thus led us to another conclusion than the one Heidegger draws. The foundation for philosophical thinking and enduring contemplation is laid by architecture and the art of tectonics. Without any form of built environment man remains too exposed and without enough supplies to move beyond the initial stage of covering basic needs. The philosophical grounding of architecture carried out in this work thus also makes a contribution to an architectural grounding of philosophy, although the main focus is on the former approach. In order to dwell on something one needs to dwell in the first place, which again promotes the form of well-being which is specifically human. This new philosophically grounded anthropology cannot do without architecture understood as the art of building dwelling places with a heightened awareness of the nature of materials, colours and light. Heidegger sees all this as secondary, at least in *Building, Dwelling, Thinking*, and he concludes his reflections on building and dwelling by saying that a deeper, but still insufficient understanding of building lies concealed in the tectonics of architecture as *technē*.

Tectonics should though not be confounded with *technē*, although the two words come from the same word *tiktō*, as Heidegger remarks. Tectonics is a concept which can be traced back to the ancient Greek tradition, and it cannot, as Heidegger wishes, be separated from basic construction processes as little as architecture can be.

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77 In another text, *What is Called Thinking?*, Heidegger does give due consideration to the tectonic potential of matter and relates it to dwelling: “If he is to become a true cabinetmaker, he makes himself answer and respond above all to the different kinds of wood and to the shapes slumbering within wood – to wood as it enters man’s dwelling with all the hidden riches of its nature. (p. 15)”

78 *Building, Dwelling, Thinking*, 103
separated from building dwelling places. The American architectural theorist, Kenneth Frampton, has applied the concept of tectonics to modern architecture and argues that “Utzon’s work is grounded in the tectonic line of the modern movement”\(^{79}\): “Utzon believes that the poetics of built form must derive in large measure from the totality of its tectonic presence”, and Frampton concludes that despite “the strong feeling for craftsmanship, and a particular responsiveness to both climate and context – Utzon remains committed to the ideal of an emerging world culture that, while springing from local conditions, transcends them at the same time.”\(^{80}\)

A more thorough investigation into the concept of tectonics is required in order to fully understand Frampton’s statement and see the relevance of tectonics for late modern architecture. This will be delivered in the following chapter along with a critical delimitation of epistemology in architecture.

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80 Ibid., 292.
II The Art and Epistemology of Tectonics

1. Tektones: The forerunners of the ancient Greek architects

In the earliest Western tradition knowledge and wisdom designated qualities, which were not reserved for an “intellectual” elite of priests and thinkers, but they were also employed about “practical” people, among whom we find politicians and craftsmen. In Homeric epic these craftsmen were called tektones, a term which could refer to working men felling trees in a forest or shipbuilders, for example Odysseus, who builds a sea-worthy ship in such an elaborate way that he is said to be well-versed in the art of tectonics (eu eidos tektosynaon). 81

The words for Odysseus’ well-applied knowledge of tectonics are used in a similar context in the Iliad, where a shipbuilder, whose identity is unknown, is highlighted for his fine ability to set up timber in accordance with a chalk line. As any highly skilled tektōn, the poet tells us, he has a thorough understanding of his work and minds the advice of Pallas Athene, the goddess of all artisans (eu eidi sophiês). 82

He is even said to be wise, which was also noticed by the ancient commentary, the Suda: “Homer used the term “sophia” only once, although not to denote the development of character through word and deeds, but rather tectonic skill (tēn tektonikēn technēn).” 83

Although wisdom does not refer to the development of character in this context, the technical skill of a wise craftsman does include a certain susceptibility to divine guidance. Throughout the ancient Greek tradition the highly skilled artists and artisans were admired for their ability to make an invisible order visible by creating wonders out of matter, not unlike the god of craftsmanship, Hephaestus, who was considered to be, together with Pallas Athene, the teacher of techne 84, which entails not only a technical know-how of how to treat materials according to their nature, but

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81 Odyssey V 250.
82 Iliad XV 410-12.
83 Cit. from Squire 2011: 112.
84 Odyssey 6.233-234, 23.160-161; Hephaestus is ‘famous for his skill’ (klytotechnēn), see Iliad I 571, XVIII 143, 391; cf. Homeric Hymn to Hephaestus and Odyssey XIII 296-97, 327, 332.
also a deeper insight into the cosmological world order. Using Heidegger’s expression, the best of the tektones were awaiting signs from the Gods, especially when they embarked on the daring task to make a transcendent order visible on earth.

**Figure 6.** A black-figure vase painting: Athene’s birth from Zeus’ head cleaved by Hephaestus.

A knowledgeable shipbuilder had the status of being in contact with divine powers by bringing to light a hidden order\(^85\), of which he proves to have a truthful understanding, when seeing clearly what a ship and its navigator need to adapt to under changing circumstances. He would consequently build the ship according to these navigational needs taking into account the interplay of materials, the construction principles and the forces of the universe. Such a ship would be wisely well-wrought and fit marvelously into the world order as a paradigm of tectonic beauty. This does obviously not mean that it lasts forever. Odysseus’ ship is wrecked, not long after he has built it, crushed by a tremendous storm sent by Poseidon, and it is only thanks to Athene that he survives and finds his way to the nearest island; a *memento mori* of how exposed human beings are to adverse climatological factors and how ephemeral human life is on a cosmological scale.

Still, *technē* enables human beings to build themselves a stronghold and enter into a more harmonious relationship with the world through the creation of artefacts

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\(^{85}\) Kurke 2011: 99.
which fit into the world and curtail, to a certain limit, the unfortunate effects of destiny (tuchē): “Technē, then, is a deliberate application of human intelligence to some part of the world, yielding some control over tuchē.” In Homer, however, man is still so exposed to relentless and often destructive powers that he can only find an endurable place in the world by standing on good footing with the Gods. As we get closer to classical antiquity, humans find still more ways of using their knowledge, understanding how to build themselves a life on earth and thus make sense of their lives.

Tectonic know-how played a key role in the formation of an organized society, not just in Greece, but in all ancient civilizations. By establishing a certain worldly order through the creation of structures and artefacts, such as buildings, ships, floors, walls, armour, tools and jewellery, which would, to a higher or lesser degree, reflect the cosmos as such, the tektones literally laid the foundation for the flourishing of social life and for people to get into contact with other people through travelling and trading. Not only that: They built the first sanctuaries, altars and temples to receive the gods and make offerings opening up spaces to transcendence on earth.

Architectural craftsmanship entails the power to create order and delimit humans’ communication with the divine, which is not unproblematic, as the Bible recounts several times: Humans’ have a tendency to transgress their own finite limits and boast with their earthly power, exemplified by the Babel tower, which manifests the immense potential of architecture to reach for the divine and so transcend the human realm, but with dire consequences. We have been given a hint that an artist of tectonics keeps a certain balance between the human and the divine realm by keeping in mind the limits of human power and architectural craftsmanship.

The first architects, appearing under that name in the fifth century BC, were, as their name indicates, familiar with and skilled in the archaic arts of tectonics: The Indo-European root “tec” or “tek”, which we find both in technē and tektonikē, means to cut or fashion with the axe, but it also refers to weaving and building, fabricating and joining. The ancient Greek verbs related to tectonics, tiktō and tektomai, denote the

86 Nussbaum 2001: 95.
87 McEwen 1993: 46, 72.
act of bringing forth and giving birth to something, which broadens the field within which the tektones can display their skills. Highly skilled tectonic craftsmanship is creation, poiēsis, elevated to the highest artistic level. It flows out into all the arts and is not limited to poetry. Poets counted themselves among the tektones in classical times and belonged to the same category as, for instance, carpenter, weavers and metal workers, in so far as they were all involved in poiēsis. The outcome of the most elaborate tectonic craftsmanship is the materialization of an immaterial and beautifully formed dimension on earth. The first architects in ancient Greece relied on tectonic know-how, when they erected the first monumental temples which came to define the cultural landscape in the southeastern Mediterranean area.\(^8\)

Is it possible to give a more elaborate description of the epistemology of tectonics which formed the basis for architectural craftsmanship? The highly skilled tektones in Homeric epic have epistēmē, which means that they have a thorough knowledge of how to measure, cut and combine different materials so that they fit marvelously together and also fit into a given worldly context. These extraordinary well-proportioned artifacts are referred to as daidala, a word directly related to the legendary craftsman Daedalus, who was famous for creating such lifelike sculptures that they seemed to be able to move around; daidala refers to shiny, wonderful things of extraordinary beauty and vitality, “constructions made of well-adjusted pieces, capable of inducing wonder”.\(^9\) It is from the praise of these things that the name Daedalus springs.\(^9\)

Being a sculptor, an inventor and what was later to be called an architect, Daedalus exemplifies the versatility of the ancient tektones, who excelled in more disciplines: Legend has it that, apart from his lifelike sculptures, Daedalus built the labyrinth for the minotaur on Crete, and he also fashioned wings for himself and his son in order for them to escape from the island. His name is mentioned only once in Homer, remarkably enough in a comparison with Hephaestus\(^9\), but in Homeric epic

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88 Holst 2017: 2-4.  
91 Iliad XVIII 590-592.
we also hear of other tektones, who are involved in building palaces and fashioning their interior.

The first architects, who may have appeared under that name already in the sixth century BC, were responsible for ‘the greatest works of all the Greeks’, according to Herodotus\(^{92}\), who highlighted the sculptor and metal-worker Rhoikos for his work on the Temple of Hera and Eupalinos for building a one kilometer long aqueduct on Samos. Both works of architecture were the greatest, by which he does not seem to mean merely the size of the works, but also that they testify to the greatness of their masters. What becomes clear from Herodotus’ description is that an architect was not only a builder of temples or houses, but he could be involved in other projects, the extraordinary dimensions of which called for the skills of a tekton mastering his métier.

The aqueduct of Eupalinos is still today considered by archaeologists and engineers to be a unique achievement, not comparable to any other constructions of its kind in Ancient times.\(^{93}\) The architect demonstrated his practical and theoretical aptitude, as he embarked on the daring task to excavate from both ends and succeeded in connecting the two meandering ends of the tunnel. Planning the route ahead, constantly controlling and correcting the direction of advance, negotiating topographical obstacles and resorting to structural solutions were key to Eupalinos’ success, which embodies the ancient Greek ideal of tectonic wisdom as the ability to foresee, measure and create order in what appears to be unforeseeable, unmeasurable and disordered.\(^{94}\)

This accomplishment was probably what inspired the French poet and essayist, Paul Valéry, to praise Eupalinos for knowing how to make the invisible visible and ennoble matter so that it would vibrate with the human soul in an almost imperceptible way.\(^{95}\) In the same vein, another modern commentator has wondered about the marvel it must have been to see such a gigantic temple as the Temple of Hera\(^{96}\), which, apart from requiring the most intricate and detailed tectonic know-how,

\(^{92}\) *Histories* 3.60.
\(^{95}\) Vályery 1944: 23-24.
\(^{96}\) Holloway 1969: 282.
demanded a hitherto unseen amount of work force and logistic strategies to get the stone from the quarry to the building site.

Another pioneer in architectural craftsmanship was Theodorus, who teamed up with Rhoikus and worked on two wonders of the ancient world, the temple of Hera at Samos and the temple of Artemis at Ephesus, rivalling “that other, greater craftsman-inventor, Daidalos”.97 Rhoikos and Theodorus were perceived as “larger than life”, which was also the case of the architects of the first stone temple of Apollo at Delphi. They were celebrated as “legendary figures, almost on a par with Daidalos”.98 All these first generation architects rose out of the high order tectonic crafts: Being a highly skilled architect entailed having a deep insight into the cosmological order and the capacity to make it shine through in the material world.

We remember Aristotle’s comment that wisdom was in the past used about the finest craftsmen, and he stresses, probably with Plato in mind, that the architect is held to be wiser than other workers.99 The prefix in architect, archē, means both beginning and rule, and Plato understands the profession of the architect quite literally as the master, who rules over the workers: “Every architect (architektōn), too, is a ruler of workmen (ergatōn archōn), not a workman himself”.100 If the ancient masters of tectonic craftsmanship and the very first architects still worked on the site themselves and got dirt on their hands, the Platonic view of the architect is that of an overseer, who rules, not unlike the Platonic philosopher king, over the ignorant workers without getting involved in the work. Among the workers we also find the tektones, who fall from their high status of old during the fifth century B.C.

Despite his ambiguous and at times pejorative stance to tectonic craftsmanship and the arts as such, Plato lets the demiourgos in Timaeus proceed like a skilled tektōn, as he forms the world order according to ideal measures, which points to an essential aspect of the art of tectonics, namely its inherent quality of making apparently disparate phenomena fit harmoniously together. When describing the details of the demiourgos’ elaborative work, Plato employs terms from the vocabulary of tectonics

97 Burford 1972: 192.
99 Metaphysics 981 a.
100 The Statesman 259 e
to specify how the tangible and the intangible, matter and soul become interwoven so as to create the cosmological world order.\textsuperscript{101}

2. The Relevance of Tectonics for Late Modern Architectural Practice and Discourse

How far is it possible to recover the ancient art and knowledge of tectonics and show its relevance for late modern architectural practice and discourse? It seems so far removed from us in time that it may be hard to see what tectonics can offer architects nowadays. Today’s world, which is filled to the brink with mass-produced artefacts of high technology without any aura of transcendence, is so fundamentally different from the ancient world that it easily becomes an anachronistic task to try to show the relevance of the art of tectonics. Moreover, the architects and engineers of today work with advanced computer machine and robot technologies which facilitate progress and new construction practices, but they also create further distance between the architect, the construction and the users of the constructed spaces.

Yet, if it can be proven that tectonics still have a role to play in late modern architecture, then this whole argument against its pertinence may be turned around: It is precisely because a larger meaningful horizon, which opens up humans to transcendence, has started to withdraw in the modern age that the art of tectonics is more needed than ever in today’s architectural practice and discourse. The first architectural theorists in modern times to pick up the ancient Greek term and infuse it with architectural significance were two Germans from the mid-19\textsuperscript{th} century, Karl Bötticher and Gottfried Semper. Their predecessor, Karl Friedrich Schinkel, had already opened up this way of reinterpreting ancient Greek architecture and applying these newly won insights to his own times. In a series of notes on “rational architectonics” (\textit{vernunftgemässer Architektonik}), he stresses that architecture as a fine art lets each constructive part express itself according to its nature within a dynamic whole that conveys a certain liveliness (\textit{etwas lebendiges}), freedom (\textit{Freiheit}) and rest (\textit{Ruhe}).\textsuperscript{102}

\textsuperscript{101} \textit{Timaeus} 28b-29b, 32b-33a, 69a-70e.
\textsuperscript{102} Schinkel 1979: 49-58.
Bötticher took up the thread after Schinkel and extended the use of the term *Tektonik* to cover the whole of ancient Greek architecture. In the first paragraphs of his three-volume work on Greek tectonics he formulates the main purpose of modern tectonics: To build in accordance with the tasks that spring from physical and spiritual needs by imbuing the whole work with an ethically minded art form, which lets the nature of the materials express themselves dynamically in the constructed work.103

Semper had a slightly different approach to tectonics: He favored a more free articulation of the form than what Bötticher allowed for in his systematic account of the structural mechanics (*Kernform*), which was to be fully expressed in the spiritually-laden art form (*Kunstform*). For Bötticher the artful expression of a given work was ideally grounded in matter itself, in the nature of the material, whereas Semper searched for ways in which the artistic idea could emancipate itself from matter in a not already determined way and so express itself more freely.104

Despite their disagreement on the exact correspondence between the material core and the art form, without which architecture would be reduced to mere mechanics and insignificant accumulation of static fragments, they both agreed that tectonics could keep alive a spiritual dimension in architecture. Schinkel had been inspired by Johann Wolfgang von Goethe’s holistically conceived theory of colours and the balance between antagonistic forces, when he advanced the principle of art in architecture: “Assembling different materials for one specific purpose within a corresponding whole is called building”.105 This tectonic awareness of combining different materials into a greater balanced whole has often been forgotten, even by the leading theorists of tectonics. Semper tends to limit the scope of tectonics to certain materials and structural principles, particularly to utensils of ceramics, textile and timber constructions such as the wooden frame; a presupposition which goes back

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103 Bötticher 1852: 3-4; “*Tektonik*”: “die bauliche und geräthebildende Werktätigkeit, sobald dieselbe ihre aus Bedürfnissen des geistigen oder physischen Lebens hervorgegangenen Aufgaben ethisch zu durchdringen vermag [...]”

104 Semper 2008: 7; for further interpretations of the differences between Bötticher’s and Semper’s understanding of tectonics, see Mayer 2004: 85-97 and Hvattum 2004: 57-64. Frampton 1995: 65-75 and Vesely 2004: 16-17 offer further historical research into this line of German tectonic thinking from Goethe and Schinkel to Bötticher and Semper.

105 Schinkel 1979: 21; “das Prinzip der Kunst in der Architektur”: “Verschiedene Materialien zu einem bestimmten Zwecke entsprechenden Ganzen verbinden, heisst bauen.”
to the German archaeologist and philologist, Karl Otfried Müller, who explicitly defines the ancient concept of tectonics in this way, excluding the use of metal.\textsuperscript{106}

In his seminal work on tectonic culture in the 19\textsuperscript{th} and 20\textsuperscript{th} century architecture Kenneth Frampton bases his theoretical approach on the German tectonic tradition, which partly hinders that a broader understanding of tectonics is opened up.\textsuperscript{107} The ancient Greek art of tectonics did, in fact, include tektones working in metal, the siderotektones (metalbuilders).\textsuperscript{108} As we have seen, the tectonic arts entailed working with all kinds of materials within different crafts. The highly skilled tektones had the ability to let each material express its own nature and embody well-fitting, hitherto unseen structures. It is out of this broad field of tectonic craftsmanship that architecture arises in ancient Greece.

Semper was not unaware of the tectonic potentials of metal, but he understood it mainly in analogy to carpentry and textile work, namely as “iron-carpentry” (Eisenzimmerei)\textsuperscript{109}, whereby iron was not seen in its own right. Bötticher was one of the few theorists in the mid-19\textsuperscript{th} century, who saw metal as a unique challenge which modern architectonics would have to face and cope with, if it wanted to maintain its status as the state of the art and be ahead of its own times. Since Bötticher’s times, architecture has, undoubtedly, made the most of metal in its many sorts, but it has not always taken into consideration its tectonic potentials.

In collaboration with the Danish architect, Ole Egholm Jackson, who published his thesis on the tectonic potentials of concrete in 2013, I have suggested that thin sheet metal is a material, whose tectonic potentials and properties are still waiting to be explored further. Drawing on the work of the French metal craftsman, Jean Prouvé, who was one of the first architects to explore the tectonic properties of thin sheet metal, we argue that metals in contemporary building practice carry potentials to bring advancement in areas where we need to improve our built environment. These include a higher degree of material efficiency and savings resources, advancing re- and

\begin{footnotesize}
\begin{enumerate}
\item Müller 1848: 10
\item Frampton 1995: 4.
\item Holst 2017: 2.
\item Semper 1879: 526.
\end{enumerate}
\end{footnotesize}
upcycling, enhancing building envelope performance, and not least endowing the finished work with versatility and beauty.\textsuperscript{110}

In contradistinction to how metal is applied in most modern architecture, typically manufactured into and utilized in non-load bearing façade systems, such as columns or beams, Prouvé worked the metal himself creating “plastic forms of a kind until then unknown to architecture”\textsuperscript{111} and by using the uniquely formed metal as load bearing. He considered himself to be the first to use folded sheet metal for building, and he experimented with a variety of metals by letting them express their nature through new fabrication techniques, or as he himself put it: “it seemed to me that the possibilities afforded by steel sheet were limitless: after cutting, it could be formed, rolled, beaten to create profiles, each perfectly adapted to whatever use, from rectilinear to the most elaborately shaped and curved.”\textsuperscript{112}

Using expressions such as “perfectly adapted” and “elaborately shaped” he points to the tectonic construing which he himself carries out and elaborates further on in another context, where he envisions how a new architecture will draw on a “wide variety of possible materials”, among other things well bonded stone that holds its own and metal components from the hood of a motor car or the fuselage of an aircraft.\textsuperscript{113} Asking rhetorically, “Why would these builders of aircraft, of dams, why would they not be classed as architects?”\textsuperscript{114}, Prouvé places himself in the tectonic tradition of versatile and highly skilled craftsmen, who were the pioneers of ancient Greek architecture. He himself highlights this ancient tradition for bringing forth beautiful structures, in contrast to the poor form of modern architecture which hides the materials and the structure of the built environment, making “no sense of that in the reading of it”.\textsuperscript{115}

In relation to the following two chapters on ethics and meaning, the art of tectonics proves to take into account both aspects: The intention behind the art of

\textsuperscript{110} Holst and Jackson 2016: 411-12.
\textsuperscript{111} Sulzer 2011: 35.
\textsuperscript{112} Quote from von Vegesack 2005/2007: 130
\textsuperscript{113} Ibid., 175, 178.
\textsuperscript{114} Ibid., 31.
\textsuperscript{115} Ibid., 178.
tectonics is to create well-crafted artefacts and buildings which promote human well-being by allowing them to fit into a worldly context, while remaining open to that which transcends and points to a meaning beyond architecture and the arts themselves. Tectonic work allows for a transcendent dimension to shine through, which Prouvé hints at by employing the term “beautiful”: “It is not form that makes something beautiful, but its constitution”, he states thereby emphasizing the tectonic insight into the form being upheld by the interplay of forces and the efforts to which the structure is subjected. This tectonic way of thinking makes it possible to develop sustainable solutions which grow even more sustainable over time, as the constructed work falls more and more into place due to its carefully fashioned constitution, in which each part fits and hangs together with every other part in an intricately crafted pattern.

![Airframe sketch by Prouvé. Center: Prouvé’s Maison Metropole. Right: sheet metal furniture. The forces of compression and tension should be appreciable in the structures.](image)

**Figure 7.** Left: Airframe sketch by Prouvé. Center: Prouvé’s Maison Metropole. Right: sheet metal furniture. The forces of compression and tension should be appreciable in the structures.

Our reassessment of thin sheet metal and Prouvé’s work also showed the relevance of digital tectonics, a concept which has been developed to designate ways of generating coherent and sustainable relationships between materials, technology and architectural form. Introducing detailed information, which falls within these three parameters, into a digital format of computers and robots, can generate “a new tectonic language, rendering the trajectories of forces visible”. The most important results are increased efficiency and optimization as well as cost reduction of material

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116 Quote from Graf 2011: 61.
consumption and related construction activity.\textsuperscript{117} Through visualization and simulation, complex forms and performances of materials and structures can be predicted in such a precise way that it is possible to reach a high degree of freedom in the expression and composition of the tectonic work spending less time and using less resources than in the past.

Yet, human beings still need to introduce the information into the machines and apply their knowledge in order to bring about meaningful results. The computers and the machines cannot by themselves tell what is beautiful, well-fitted and meaningful nor is it possible to get a real feeling of space and light through a computer screen. The digital is only a means to find meaning in the material world, which is still in need of tectonic visions and formations springing from the wise ethos of well-educated architects and engineers, who know how to convey the intangible through tectonic beauty.

3. Visualization, Materialization, Contextualization:

A Critical Delimitation of Architectural Epistemology

The art and epistemology of architectural craftsmanship underwent a decisive change, as the architect took on a new role in classical times becoming the leader and overseer of the tektones. The first architects in ancient Greece were tektones themselves, highly skilled artisans with a deep insight into the material and immaterial nature of the world, but this changed when Plato and Aristotle relegated the work with matter to be a secondary task and elevated the theoretical vision of the leading architect to represent true knowledge of immaterial principles.\textsuperscript{118}

\textsuperscript{117} Søndergaard and Christiansen 2014: 16-21. Jabi 2004 reviews the short history of digital tectonics, first introduced by Neil Leach and others in 2004, and he defines digital tectonics as “the poetics of digitally conceived, structurally clarified and directly manufactured architecture”.

\textsuperscript{118} Holst 2017: 4-5; see also Parcell 2012: 31. Aristotle may value matter and technical know-how higher than Plato, but his concept of artistic knowledge (technē poiētikē) is still too committed “in the direction of theoretical knowledge” and does not do sufficient “justice to feedback that one can receive from the materials in the actual process of making” (Dunne 1993: 315), which is precisely what is entailed in the art of tectonics (technē tektonikē). See Beim 2004 for a tectonic investigation into feedback processes between visionary and constructive approaches in contemporary architecture.
In Vitruvius we can still find remnants of this tendency to privilege sight and theoretical knowledge over hands-on practical knowledge. Yet, he still stresses that an architect should be skilled in both fields.\textsuperscript{119} Since then, the theoretical discourses and positions within architectural history have explored almost every position between the initial theoretical vision and the practical work with matter, pendulating back and forth and most often giving priority to the former over the latter. One of the first to take up Vitruvius’ writings in early modern times was Leon Battisti Alberti, who in the preface to his influential work \textit{De re aedificatoria}, not coincidentally composed of ten books like Vitruvius’, states that “the carpenter is no more than an instrument in the hands of the architect”\textsuperscript{120}, thus underestimating, in much the same way as Plato and Aristotle did, the inherent value of tectonics and the messy processes of materialization.

Our renewed focus on tectonics intends to find a more balanced position between the two poles in architecture, which again allows us to keep in mind a third element often left out of architectural theory, namely the context or the \textit{topos}, as it is called by those theoreticians, among others Christian Norberg-Schulz and Kenneth Frampton, who each in their own way underline the importance of the historical and the topological context of the built environment.

It could be argued, as some critics have, that even they do not always take into account the various aspects of materialization and contextualization which they themselves advocate\textsuperscript{121}; but having said that, we may come to realize that it lies in the nature of any theoretical discourse to remain at a certain distance of the materiality and the context of worldly things the multiple aspects and contingent character of which it can never fully cover, or as the Spanish architect Rafael Moneo has eloquently put it in architectural terms: “It is true that an architect dictates the construction of a building, but there is nobody like the architect for recognizing the extent to which the being of things escapes from him as the construction process advances.”\textsuperscript{122}

\textsuperscript{119} \textit{De Architectura}, Liber Primus, Caput Primum; cf. Pont 2005.
\textsuperscript{120} On the art of building in ten books (\textit{De re aedificatoria}), Prologue.
\textsuperscript{121} For a mild critique of Frampton’s focus on the tectonic edifice, excluding at times certain materials, structures and representation from tectonics, see Fausch 1996, Dye Schmidt 2007, Holst 2016. A thorough study of the critical reception of Norberg-Schulz’ work can be found in Wilken 2013.
\textsuperscript{122} Moneo (1967-2004): 29.
Moneo, who worked with Utzon on the design of the Sydney Opera House, is one of the few late modern architects, who through an on-going critical dialogue with ancient and modern architectural traditions has kept re-conceptualizing and reworking what he considers to be a unique body of knowledge within architecture. These principles of knowledge underlying architectural practice are not immaterial Platonic forms which the architect is in a privileged position to see independently of any worldly context. Architectural knowledge is, according to Moneo, embodied in the built environment which can be interpreted and evaluated by comparing the materialization of the ideas of the architect to the tasks and problems inherent in the project.¹²³

In contradistinction to the hegemonic architectural tradition, which gives priority to ideal and often utopic visions, Moneo proposes to start out from the other end of the three concepts introduced in order to deliver a critical delimitation of architectural epistemology: The project and commission of a client “provides the anchorage for the work in society”¹²⁴, Moneo states, meaning by that that the commitment to society, often in an urban context, constitutes the horizon, within which the vision of the architect and the processes of materialization must unfold, if architecture is to be conceived as a meaningful activity that again bestows meaning on human life. The initial vision is and should be blurred, according to Moneo, who allows for the intuition and the interpretative skill of the architect to act freely at the outset. As the work advances “the developmental process filters the initial vision” and makes the architectural idea stand out and appear sharper, once it becomes materialized, but it is also in this transition from visualization to materialization that “the being of things” proves to be larger than the architect, who needs to realize this in order to let the immensity of the materialized work stand and “speak” for itself.¹²⁵

¹²³ For further interpretations of Moneo’s concept of theory, practice and architectural knowledge, see González de Canales 2013 and González de Canales & Ray 2014. Evaluating the often contradicting factors and unpredictable issues in a project is, obviously, a complex matter which in many cases implies a pragmatic approach and a scientific methodology, but as this project focuses more on what goes beyond pragmatism and science, this topic cannot be explored further here. See Foged 2016 for a scientific and instrumental approach to architectural research and practice.
Moneo locates the pivotal point, which distinguishes architecture from other arts and sciences, in the transition or mediation between the initial vision and the materialization of a work in a worldly context: “Architecture explains itself in its “making”. Architecture is an extremely mediate activity. You cannot make architecture without a shift from the idea to the constructed work. There always has to be a distance that mediates between what you imagine and what is going to exist. The acknowledgment of this mediation implicitly involves thinking about how architecture is done.”126 The architect’s awareness of the distance between him or herself and architecture or the constructed work entails a certain ethos, imbued with respect, responsibility and humility, not unlike the wise tektōn, who minds divine advice.

Architecture is different from any other art or science in that it erects a thing which – through a complex and varied organization of interior and exterior spaces, horizontal and vertical elements – works as a gathering place for its surroundings or as a dividing line. A poem, a painting, a sculpture or a song do not have an inside which people can enter like a building. Other architectural constructs, like walls and certain memorial stones, which are without an interior, undoubtedly have features in common with sculptural artefacts. Yet, if they are still to be considered architectural in their compositional articulation, one would expect to find what Moneo in a memorable text on Inca walls calls “an awareness of the value of the horizontal” in building.127

Keeping to the horizontal is a balanced gesture inscribed in every building, which means that the vertical dimension is founded on the horizontal in architecture. Conceptually, this insight resonates with the present project of grounding architecture in a philosophical outlook to transcendence, which is infinitely elevated above human life, but, paradoxically enough, also fundamental to human life and present in this world: There are aspects of transcendence which are brought forth in tectonic beauty in relation to the mindful combination of well-adjusted materials. In the following two chapters on ethics and meaning, transcendence can also make its presence felt in human beings’ relationships with each other through goodness and when facing God in the solemn moments of truth. Beauty, goodness and truth point toward dimensions of

126 Ibid., 29.
127 Moneo 2009: 46.
depth or height that surpass the naturally given on earth. If there had never been any signs of transcendence on earth, it would be practically impossible that any human being could ever see beyond his or her own limitations.

Revisiting Moneo’s critical contribution to a three-fold epistemology of architecture serves as an example and not as a paradigm which excludes other contributions. One could think of other architects, who would take their starting point in visualization or materialization and work their way through the other two key concepts in order to arrive at a balanced position which aspires to cover the multiple facets of architecture, while, at the same time, remaining aware of its limits. Towards the end of the fourth chapter, we shall review Louis Kahn’s approach to architecture, which begins with a broad vision of space in its unmeasurable immensity and looks for means to materialize this vision within a given context. Moneo has spoken highly of Kahn as a source of inspiration when it comes to “[H]is inventive use of materials, especially his way of putting disparate materials together in a way which achieves a resonance.”\(^{128}\)

The Catalan architect, Enric Miralles, remarks on one occasion that he works “with constructive, not visual criteria” and without having “a prior idea of the space” to be constructed. He feels that he forms “part of a tradition that values making, manufacturing, as the origin of thinking.”\(^{129}\) Miralles may overstate his point about never having a prior idea of space when he begins the architectural work. Yet, starting out from the craftsman’s work with matter corresponds with the original tectonic tradition of artisans, who would not always at the outset have a clear idea of the final product. They would rather rely on fabrication and manufacturing as trial and error processes which end up materializing the possible actions and ends to pursue.

One of the most influential 20\(^{th}\) century architects, Alvar Aalto, once spoke of the experimental and almost playful nature of all research guided by intuition. Like sharp senses, intuition can be as “rational” as reason itself, Aalto clams, especially when working with matter and trying to let it express its own nature and character. Minding matter ennobles the work of the architect, in so far as he or she respects it,


for example the veins in wood. Rather than forming wood or any other material freely, the sensible architect minds its character, its tectonic potentials, which will stand out in the finished work.

In this way, matter and materialization can work as “a detonator of the action”, as the Portuguese architect Alvaro Siza has said. Working intricately with materials can generate further ideas and thinking about the context. Siza, who is a confessed follower of Aalto’s artistic work and thinking, even goes so far as to state that “one looks at all the aspects of a context in order to be freed from the context” and so penetrate to “the heart of the situation, its special atmosphere – by intuicing the particular moment”. In this passage Siza clearly speaks as an artist, who looks for visionary freedom within the constraints of the architectural project, but without losing sight of the larger context. This vision is correlated with “the sensation of entering a “world” which goes on and on, everchanging”, a dimension which although dependent on architectural formations transcends the built environment and makes the density of space tangible.

In the fourth chapter we shall return to this dimension of transcendence which all the above-mentioned architects touch upon in their work, although only briefly, as it cannot be grasped and maintained. The intention here is not to evaluate the works of each of these architects nor to set up objective criteria for such an evaluation, but rather to delimit critically the scope of an architectural epistemology which keeps in mind its own tectonic origins: The architect is a tektōn, who oversees and dictates the work, aware of the limits of architecture, and in whose knowledge there is also room for the artisan’s and the artist’s sensuous knowledge of the materials and the geographer’s and the urban planner’s detailed knowledge of the context.

Staying only in the sphere of graphic visions, like the visionary architect of the French Enlightenment, Étienne-Louis Boullée, whose spherical buildings seem to “deny gravity” and leave the body behind, “outstrip the capabilities of the builder” and run

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130 Pallasmäa 2010:40, 59.
131 Siza (1958-2000): 10
132 Ibid., 239.
133 Ibid., 241.
counter to the architectural aspiration of letting humans dwell on earth. An overly materialist or contextualist approach is easier to accommodate within the architectural profession, as these are the parameters without which architecture is in danger of losing its grounding in reality and its reason to exist. Still, the risk of these approaches is that they easily lose sight of a meaningful horizon beyond the purely functional which needs, in so far as we humans are not mere mechanic machines, to be complemented by an amplified sense of human well being and transcendence.

The grounding of architecture in reality and the reasons, which architects employ to underpin their discipline, cannot do without a broader and more attentive vision of the built environment and of the larger context in between buildings and beyond them. Saper vedere l’architettura, Bruno Zevi called his work from 1948, in which he deplored the general lack of interest and knowledge among most people to appreciate architecture and “the inner space”, the key to understanding architecture, which cannot be represented or grasped entirely but through a direct form of experience that senses the whole. More recently, Girot has questioned “the gradual withdrawal from landscape as a place to landscape as a piece of paper or a computer screen”. This distance to the place privileges cartography and downplays the site-

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specific vision of topography out in the terrain. Harrison has claimed that “nothing is less cultivated these days in Western societies than the art of seeing”. According to his analysis, the way most people tend to observe something is primarily as superficial and static images instead of perceiving appearances with intimate, penumbral depth. In his study of tectonics, Frampton has, in a similar way, criticized a dominant tendency in late modern architecture which stages buildings as if they were scenographic objects with no or very little sense of the tactile quality and solid resistance of constructional form.

Still, the biggest challenge in architecture, according to the architects presented above, is not to take into account each of the three key areas, but to consider and work with them at the same time and know how to negotiate, adjust and reach compromises which are aligned with the commission and the needs of the client. Two examples of the complex and perhaps never wholly satisfactory solutions to architectural problems will be presented as evidence of the unmeasurable dimension which an architect faces at almost every turn: Visualization is not only about the vision of the architect, but as much about the views from the inside and from the outside of a given building or place. Seen from this multifaceted perspective, the context is not something that is added to the building, but it forms part of its whole setting and cannot be separated from the process of materialization either. The openings, such as doors and windows, relate a building to its surroundings and help to define a building’s character and architectural typology.

Touching upon the dual role of every element in architecture, Moneo suggests that an architect working in the urban fabric of multiple readings must accept and consider, at some point, not only the different users, but “the different scales that a building – a work of architecture – has to respond to.” As an example, he chooses a building on the Diagonal of Barcelona, which is clearly conceived in relation to the city,

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137 Harrison 2008: 114-118.
139 Moneo 1967-2004: 29. Cf. Siza’s (1958-2000) reflections on the same dual aspect of the inside and the outside of a church which he built in Marco de Canaveses: “A context can be read in several ways. Even as a series of “events”. At Canaveses much attention is given to the changing views of the building, but also to the views from the building. (p. 235)”
but once you find yourself at one of the windows in the building as the owner of the place from which you look out, the perspective changes and so does the whole design process, including the materials and the colours around the window. The interrelationship between vision, materials and context cannot be worked out beforehand through a scientific method, but needs to be renegotiated and reconfigured through dialogue and feedback processes as the work moves along.

The other example is taken from Tom Spector’s book *The Ethical Architect* and is also of a dual nature. It can be interpreted as an elaboration of Moneo’s example and as a preview of the following chapter: An architect will inevitably face incommensurate demands, as long as he or she takes on the uneasy role of mediating between the private interests of the client and the public good. Clients’ visions do only seldom correspond with what is best in a broader social context, and it is the architect’s concern to find a delicate balance between the two: “Architects are compelled to consider design strategies or building solutions beyond their own or their client’s egoistic wishes in a fair, responsible, well-meaning, and non-cynical way. Society has the right to expect that an architect will give full consideration to the moral dilemmas of building.”¹⁴⁰ Returning to Moneo’s example: If the owner, hypothetically speaking, wanted to eliminate a window or make the whole wall transparent, it is the architect’s responsibility to keep in mind the consequences for the owner and the possible social consequences. There may be good reasons to engage in a dialogue with the owner and even persuade him or her from going ahead with the idea, if it reduces the possibilities of being well in the inhabited space or closes the space off from the rest of the world.

In so far as architecture, or a big part of it, is about the thoughtful and artistic creation of spaces for human well-being, it can only create a frame and a place for the good life, but people living in these spaces still have to lead their lives and find a meaning with what they do, something that neither architecture nor the architect can ever wish to determine, although many architects have strived to do so. In the following two chapters the contribution of architecture to ethics and to the

meaningfulness of life will be explored, which will also make it clearer what lies outside, albeit still adjacent to the field of architecture.
III. Ethical Aspects and Implications of Architecture

1. The Ethical Significance of Architecture and the Ethos of the Architect

In Plato’s *The Statesman* Socrates limits the architect’s domain to ordering lifeless things (*apsychōn*)\(^{141}\) and initiates a tradition in Western thinking which excludes architectural knowledge and craftsmanship from having influence on the psyche and ethos of human beings. Although Socrates relates the architect’s work to other people, namely to lead and supervise the workers, under which we also find the tektones, who in classical times fall from their high status of old, this relationship remains asymmetrical and is comparable to the one Aristotle describes between the master and his slaves, who are likened to lifeless tools.\(^{142}\)

Today we can appreciate some of the lacunas in Plato’s and Aristotle’s ethical thinking, which makes little room for human dignity, and the lack of ethical reflection in the tradition of architecture. Tom Spector has ascribed “an unnecessary narrow view of what constitutes an ethical outlook” in architecture to “modernism’s exclusive reliance on a philosophy of utilitarianism”, and he draws the conclusion that architecture is in need of “a moral mission”.\(^{143}\)

Yet, the modernists cannot take all the blame for the absence of an ethical outlook and a moral mission in architecture. Apart from the ancient history of the fall of the tektones, other and more recent factors, such as the division between engineering and architecture in the 19\(^{th}\) century and the architectural discipline’s inherent concern for utility, should also be mentioned when explaining why ethics has been and is still largely neglected among architects.\(^{144}\) Spector also recognizes that we can find ethical reflections and statements among the so-called modernists, for instance Le Corbusier, Alvar Aalto and Jørn Utzon, when he says that “the modernist

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\(^{141}\) *The Statesman* 261 c.  
\(^{142}\) *Politics* 1253 b.  
\(^{143}\) Spector 2001: Introduction X.  
\(^{144}\) Benévolo 2007: 23-25, 52-53. For more reasons why architecture ethics has been largely underdeveloped, see Fox 2006: 1-2.
ideal of an ethically unified architecture has yet to be rehabilitated from its disrepute.”

By drawing on Utzon’s work, a basis has been laid for a new approach to building and dwelling in architecture, which also incorporates anthropological insights and tectonic knowledge, so as to recover an understanding of humans as being constitutionally vulnerable and exposed to the environment in which they live and in dire need of a well-proportioned place to live in order to flourish. Place is not limited to the physical space in and around particular edifices, but entails the social and ecological environment as well as the psychic and spiritual atmosphere, which has been designated the spirit of the place, *genius loci*, by the Norwegian architect and theorist Christian Norberg-Schulz.

Ethics is concerned with how humans can lead a good life together. In the first chapter, we saw in the first chapter the way in which Jørn Utzon conceived architecture’s contribution to human well-being as dwelling in sunlight and gathering around a table with a view to the basic elements in life. Utzon’s description is imbued with a deeper spiritual meaning, which could be interpreted as an ethical reconstruction of Plato’s allegory of the cave, in which sunlight is suddenly let in and people gather more freely without being chained to the place. The light points to a source of transcendence, which the architect cannot reach nor can he manipulate its emanations. He can only welcome it as that which makes the world visible and inhabitable in the first place, which calls for a specific ethos of respect, humility and love.

Remembering that Aristotle deduced the term “ethics” from *ēthos*[^146^], which originally referred to dwelling, and that he understood human well-being in sociopolitical terms reach its culmination in love and friendship, architecture can be said to make its own unique ethical contribution to life on earth or, in Harries’ word, it can acquire an “ethical function” in offering a place for humans to dwell together in space.[^147^] Architects are called upon to set up well-proportioned boundaries in order to

[^145^]: Spector 2001: 60.
[^146^]: *Nicomachean Ethics* 1103 a.
[^147^]: Harries 1997: 4, 13, 140.
make dwelling possible, but without enclosing the inhabitants completely. Dwelling would be practically impossible in infinite space as well as in a totally enclosed edifice. Openings in the form of entrances, doors, and windows are not just added onto buildings, but define them and speak a “human language” which denotes entries and exits, admittance and departures, hospitality, community and communication, but also of enclosures and excommunication.

Emmanuel Lévinas reminds us of the close relationship between dwelling and ethics, when he states that ethics begins with hospitality: “I welcome the Other, who presents himself in my house, by opening my home to him.”148 Hospitality means to receive the other in such a way that he or she is not turned into an object or another possession of the house, but remains other, a stranger and a guest, who infinitely transcends my egoistic economy of consumption and appropriation. Receiving the other opens the way to transcendence for a human being, who in facing the other proves to have the capacity to contain and do more than what his or her identity already entails. Offering more than what you thought you contained and thus transcending your own contained thoughts is a sign of the true goodness of “friendship and hospitality”, as Lévinas concludes in Totality and Infinity.149

Lévinas’ whole ethical-religious discourse recalls the magnificent gesture of hospitality which Abraham offered the three godsend visitors by the oak of Mamre. As we reinterpret architecture not only as a setting for existence with contemplative openings to nature, but as a setting for an ethics of hospitality which is receptive to transcendence, we should not forget that the disciples, in Jesus’ words, also received him as a stranger, and that he sat down with them around a table in the Eucharist to offer them the greatest gift: to be the guiding light which will lead them and all of humanity through the darkest night, from where no one returns, death, and into a transcendent realm, the kingdom of heaven.150 Seen in the light of the ancient history of tectonics, it is no coincidence that Jesus is declared to be a tektōn in the evangelical sense of the word151, as he is the one, who knows how to build a solid house on rock,

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148 Totality and Infinity, 171
149 Holst 2011: 67.
151 Mark 6, 3.
bring life and love to a spiritually dead world and make it shine in a light coming from beyond.

The art of tectonics is the historical and epistemological basis for architectural craftsmanship that takes into account the nature of materials in order to create well-fitted artefacts which fit into the world, and whose constituent parts fit harmoniously together. This constitutes an ethical aspect belonging to a form of organic or adaptive organization, which the Australian architectural ethicist, Warwick Fox, has called design fit or responsive cohesion: “the elements or salient features that constitute things can be said to feed into and play off each other, or answer to each other in various ways, such that they generate and maintain a form of organization that is cohesive overall.”

Responsive cohesion refers to a similar organic way of assembling well-adjusted pieces as the art of tectonics. We remember that Jean Prouvé also deployed “constitution” about the fundamental way in which well-crafted artefacts hold their own and express the play of forces inherent in them in response to their surroundings. Fox extends his theory of responsive cohesion to cover the whole human-constructed world, making it the foundational value of ethical living on earth. The built environment should thus be valued according to the degree to which it is internally coherent and responsive to the social and biophysical realm of which it is only a small part. The basic elements and materials of a building can hang coherently together, but if it falls out of the social and urban context, in which it should fit in, and if it is, furthermore, unsustainable and contaminates the environment, then it falls short of the ethical demands of the 21st century. Fox touches upon concepts which we delimited conceptually in chapter two, but he also broadens the horizon so as to reconsider the ethical concerns and implications of architecture.

At this point, it is timely to remember Moneo’s call for humility in order to remain aware of the limits of architecture and the architect’s skills: A dividing line separates theory and practice, thinking and action, visualization and materialization in everything that humans do and touch, but precisely because of that do we have ethics.

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152 Fox 2006: 5.
and theology as congenial guides in assisting us to find and share ways of harmonizing the oppositions and conflicts in life. If a human being were able to solve all problems and *aporias* on his or her own, he or she would be in no need of any support or help, but in so far as this is not so, architecture and what goes on inside the built environment play a key role in remedying “the deficiency of a world that transgression has rendered inhospitable”\(^{153}\). Harries makes this remark with reference to Adam’s and Eve’s misdeed which sent them out of Paradise and into an exposed and needy state; the principal and most urgent need being shelter which again presupposes building.

Architects have launched visions of an almost ethereal character aspiring to move beyond the material appearance of construction work and into a sphere of lucid transparency. Glass and voids have often served this purpose, and those architects, such as Étienne-Louis Boullée, Paul Scheerbart and Bruno Taut, who have played with this idea of creating perfectly spherical or translucent buildings, also share the view of an architecture which overcomes its own density by directing and lifting its inhabitants toward the stars of the sky.\(^{154}\) Many modernist architects have had a dream of changing society and people’s mindsets through new designs and construction techniques. Among all the arts, architecture is possibly the one which interferes most directly in people’s lives and furnishes a setting for life, as Utzon called it, but this is also the reason why it needs a philosophical grounding in an ethical outlook in order not to become misrepresented as “the edifice complex”, built exclusively on power relations and the architect’s ego which threatens to grow as big as his own buildings, as he tries to reach for the sky.\(^{155}\)

\(^{153}\) Harries 1997: 137.
\(^{154}\) Harries 2002.
\(^{155}\) For such a reading see Sudjic 2011.
The advocates for utopian visions of translucent architecture may think that they serve people’s highest spiritual needs, but it is highly improbable that all people want to dwell in such “visionary” buildings which try to triumph over matter, body and the need for privacy. In a certain sense, dreamlike utopias strive toward overcoming the public place as well and perhaps even place as such, as they tend to make material qualities, unforeseeable meetings and critical dialogue obsolete. Everything is meant to become transparent and fluid, but as long as human beings not only have a body, but are their body, in which their souls are sheltered, they will, in multiple ways that correspond with human plurality, need an outer shelter as well, into which they can withdraw and be less exposed. This explains why the present work has opted for recovering tectonic visions of dwelling on earth, which remain rooted in an ethical outlook that reflects human plurality and respects ecological diversity. Being directly exposed to transcendence endangers human life which needs protection while it approaches that which transcends it.

The other extreme in architecture would be to bring everything down to earth by reducing the sacrosanct, which has intrinsic value, to functionalist standards. In establishing an argument against such a deflation of the extraordinary Spector presents Louis Kahn’s design of the open plaza at the Salk Institute as a paradigmatic piece of architecture which cannot be measured and valued in pure utilitarian terms. Kahn was “committed”, Michael Benedikt has suggested, “to the all-but-impossible
mission of showing how architecture should and could unite the transcendent with the workaday worlds.” Even Spector, who is a skeptic of attempts by master builders to harmonize conflicting interests between functionality and beauty, must admit that “the demands of utilitas and venustas are satisfied in generous bucketfuls” at the Salk which offers versatile and user-friendly facilities in combination with the amazing view of the open plaza and the limitless horizon of the Pacific Ocean. Using Kahn’s own concepts, The Salk Institute testifies to the meeting of the measurable and the unmeasurable which we shall return to in the last chapter on meaningfulness. In the following section, the ethical importance of utilitas for sustainable and often life-saving design solutions will be highlighted.

2. Ethical Challenges in Architecture at the Beginning of the 21st century

The reluctance of many architects and theorists to speak of ethics in architecture might be understandable, if we only looked at the discipline from a technical or an aesthetic perspective. Yet, the ethical challenges, which architects and engineers face at the beginning of the 21st century, are so big that it can hardly be a responsible attitude to deny the ethical significance and implications of architecture and engineering all together. Engineering is mentioned here together with architecture, because the two disciplines, although often facing different challenges, need to work closely together in order to solve, in a sustainable way, major problems in the future related to the possible effects of climate change and contamination of the environment.

Foreseeing “the potentially catastrophic human and environmental consequences of our over population and over consumption of resources” Thomas Fischer has proposed a series of architectural design solutions and ethical principles applicable to “the whole superstructure of modern civilization, seemingly so stable and secure”, but which has, however, started to feel as shaky as many of the houses,
bridges and vehicles collapsing every day all over the world.\textsuperscript{158} Heightening the awareness of the dangers inherent in modern technology and the highly destructive human behavior over the past centuries will automatically move ethics into the center of attention and call for solutions which are friendly toward the ecosystem, humanity and the human-constructed world.

Fischer puts his finger on one of the many weak spots of modern civilization when he claims that “much of the toxic waste and environmental damage we have wrought at a global scale over the last century has arisen from a lot of very bad design of objects, structures, and systems that did not take into account the energy they needed, the waste they generated, or the durability they needed to have.”\textsuperscript{159} Some of these badly planned and executed projects have already caused much damage. Others may have dire consequences for the future and need to be substituted by better design solutions and tectonically grounded problem solving. Architecture and engineering, including their highly accelerated material flow and supply chains necessary to keep up with the rhythm of late modern capitalism, are responsible for almost half of the world’s total energy use and CO$_2$ emissions, which is one of the reasons why many parts of the world are asphyxiated by contamination, while others are running out of resources.

Returning to more sustainable and responsible ways of life may entail, Fischer suggests, a return to more local traditions of proactive hands on approach to designing and building, similar to the ones described in the tectonic tradition and in Utzon’s credo that dwelling entails building. Fischer proposes Jesus Christ’s ethos of helping the poor and the weak as a paradigm for future architectural design, which invests Jesus’ profession as a tektôn with new meaning. The art of tectonics is about cutting and combining materials together in a well-crafted way, and this is, in fact, an often un-addressed problems for those most in need: “the one thing most people around the world seem to need most is a way of fastening different materials together”.\textsuperscript{160} We tend to think of architectural design as high end building culture for a rich elite or for the bourgeois society, but what is especially required of architecture today, if the earth

\textsuperscript{158} Ibid., 2.
\textsuperscript{159} Ibid., 13.
\textsuperscript{160} Ibid., 77. See Lepik 2016 for a recent plaidoyer for social change in underserved communities
is to become an inhabitable place for all inhabitants, and not just for two thirds of it, as it is today, are solutions to the basic problems which more than two billion people face every day: Keeping out wind and water, heat and cold, malaria mosquitos and other animals.

In the spirit of the tectonic tradition, which Bötticher imbued with an ethically minded knowledge of assembling different materials together in a well-fitted manner, two paradigmatic examples of sustainable design solutions will be highlighted:

The first is inspired by the Danish theorist Karl Christiansen, who defines tectonics as creating meaningful form out of the careful combination of materials by using adequately tested techniques. All these factors refer to each other so that if the technique is changed, the materials and the form will also be organized in a different manner and mean something else. Christiansen, who has worked in Norway as an architect, uses the Scandinavian laft building technique to exemplify a tectonically sustainable solution to basic problems in construction work.\textsuperscript{161}

One of the best known building techniques in Scandinavia, before the laft technique was introduced, was stav. It was based on raising polished trunks and planks vertically next to one another, initially by driving the piles into the ground in order to create protecting walls, but builders and dwellers soon realized that wood submerged in earth starts to rot in a relatively short time. This led to improvements, such as placing the timber on top of a foundation made of stone and binding and backing up the planks through constructions on the inside of the building. Yet, the technique of creating walls out of timber raised vertically, inevitably, runs into a recurrent problem: The trunks and planks break and shrink over time, because of weathering and of drying up, so that fillings are needed to keep the timber together and avoid that wind and cold penetrate through the undesired openings. As with any temporary solution, which only postpones decay for a shorter or longer period of time, the fillings cannot hold the whole artefact together and will also weather away prematurely. From beginning to end, time runs counter to the whole building project and will result in unsustainable stopgap measures, if the building technique is not turned around towards the

\textsuperscript{161} Christiansen 2015.
horizontal, so that the timber can start to develop its own productive dynamics which grows sustainable over time.

![Image of timber wall](image)

**Figure 10.** Timber wall of vertical planks

The *laft* technique offers exactly that. It consists in putting wooden beams horizontally on top of one another, adjusting the pieces to each other so that they fit into a repeating pattern which conveys the impression of great solidity and balance. Each beam will often be convex-shaped at the top and concave-shaped at the bottom in order for the top pieces to carve themselves slightly into the pieces right below them. In addition to this, a part of each beam in the corners is gouged, so that it can receive the next beam coming on top, which has also been prepared to fit and receive the next. In this way, the beams in the wall end up falling into place under their own weight and become interlocked.\(^{162}\)

If we add the weight of the roof and the heavy snowfall in northern Scandinavia, the whole building will become more and more well-fitted, as each carefully prepared beam works its way into the adjacent beams. This sort of joint timber building becomes more robust over time and needs only a few preventive adjustments to cope with the inevitable weathering and movements of the timber. The oldest *laft* houses still standing in Norway are from the 12th century.\(^{163}\) Needless to say, no material structure lasts forever, but the *laft* technique is a paradigmatic example of tectonically sustainable development which not only unfolds its maximum potential without using up its resources prematurely, but in its unfolding it

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162 Steen 2003.
163 Clementz and Flatland 2008.
consolidates and sustains itself over such a long time-span that it gets as close as we can come to self-sustainability.\textsuperscript{164}

Figure 11. Corner of Laft Timber construction

Seen through the lens of tectonics, the *laft* technique shows how development can become sustainable by building its unfolding on its own folds, which are prepared in such a way that they come to fit together. The point of highlighting this technique is obviously not to extend its field of application beyond its own well-defined limits and start building like this everywhere, but to use it as an example of tectonic sustainability which is relevant for technological and human development.

The late modern tradition of tectonics in architectural theory, notoriously represented by Kenneth Frampton, has made a case for tectonics as a humanistic and ethical response to the environmental and existential challenges facing mankind at the turn of the millennium: Tectonics is based on a thorough knowledge of the nature of materials, stemming from local traditions, which are reinterpreted so as to be applicable in the late modern globalized world. In contradistinction to the abstract non-places of the accelerated civilization of illusively unlimited consumption and the monotony and mismatch of suburban sprawl, tectonics creates durable and distinguishable dwelling places for human well-being. It promotes a legible, ecological built environment, into which is inscribed its own making, and it is resource saving and easy to recognize and to reproduce, as the materials and the structural units going into

\textsuperscript{164} Christiansen 2015.
tectonic work fit harmoniously together and relate the whole artefact respectfully to its surroundings. 

In the light of the enormous ecological impact which the construction industry has on the planet, and considering that architecture tends more and more towards becoming a technocratic, mechanical management of resources and information flow, cut off from local environments and, to a large extent, governed by global trends and economies, tectonics offers sustainable solutions that let materials express their nature in accordance with regional cultural traditions and the living ecosystems of the earth. 

Frampton borrowed the term “critical regionalism” to designate his own scrutinizing attempt to challenge the dominant architectural discourse, which revolves around utility, commodity and profit, by recovering a tectonic art of creating dwelling places poetically. His approach finds a parallel in bioregionalism, which seeks to create, not unreal, immaterial utopias, but eutopias, good places to live, that contain a dynamic and sustainable equilibrium between human habitation, social organization and local ecology. The art of tectonics embodies sustainable ways of integrating technological development with human development by letting the built environment be formed by and thus embedded in local and regional traditions, which hold the keys to a deeper understanding of the sustainable correlation between the materials used, the living ecosystems, cultural identities and human well-being. This may entail inviting nature into the cities again as a central part of its organization, as Bruce Mau has proposed for Downsview Park in Toronto, allowing for an urbanized ecologic preservation and regeneration of the planet.

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165 Frampton 2002.
Figure 12. Tree City design for Downsview Park, Toronto, realized by Bruce Mau in collaboration with city planners and artists.

The other paradigmatic example of a sustainable and ecological solution to a hitherto unsolved problem also comes from the Scandinavian architectural tradition: Jakob Brandtberg Knudsen had been working as an architect in East Africa for years, when he stumbled upon an article in the *Lancet* which concluded that too many people still die from malaria in Gambia despite living in more closed and mosquito-repelling houses. The conclusion did not surprise Knudsen, whose experience and know-how allowed him to come up with a solution which might reduce considerably the rate of millions of people, who die from malaria every year. All the pills, vaccines, sprays and nets, which governments have invested in for decades, have undoubtedly also helped to reduce the death rate, but what Knudsen saw as the main reason why
chemic solutions had not meant a more considerable decrease in the malaria disease was the badly ventilated dwellings.

Their dense and often thick walls did not allow the members of the house to breathe well, and the suffocating heat accumulating inside the houses made it almost unbearable to sleep under the mosquito nets. It is practically impossible to avoid that mosquitoes enter the houses in the hottest Tropic areas of Africa, so any solution to the problem must take into account the use of mosquito net and the well-being of the dwellers, which again means that the night temperature in the houses must be low enough for the inhabitants to be able to rest and breathe without suffering from suffocation. Knudsen proposed to let more air enter into the houses through lightweight walls made of wood and bamboo, which again reduces the amount of CO2 in exhaled air which attracts malaria mosquitoes from afar.

Through computer simulations and detailed measuring of the indoor climate in these newly made houses from local materials, which have so far been set up in certain parts of Africa and Asia, Knudsen and his team has registered the results they were expecting: Instead of building more dense enclosures or selling more chemical medicaments, the best antidote against malaria may be found in creating conditions for human well-being through architectural design, inspired by an Asian building tradition, whose moveable lightweight structures also left a lasting impression on Jørn Utzon.

Thinking along the same lines as the tectonic tradition, which Utzon belongs to, we have shed new light on the ethical significance of architecture and pursued possible solutions to some of the most pressing ethical challenges that we face today. Utzon sought, like Prouvé, a new tectonic language of working with and assembling well-adjusted materials together in an organic way which is meant to promote human well-being within a larger worldly context.

The following and final chapter looks beyond the architectural ideals of firmness and utility to the third value which Vitruvius also mentions: Beauty. It is actually much more than a value and has an equal transcendental status as goodness

168 Knudsen 2014.
and truth, as all three are valuable in themselves and do not serve other purposes. They are fundamental for the flourishing of human life and for finding a meaning also outside the different “fields” of life, including architecture, which can still represent and point to an all-encompassing meaningfulness.
IV. At the Limits of Architecture:

Meaning and Transcendence

1. In Search for Meaning

When we ask for the meaning of something, for instance human existence or life as such, we ask for its aim or purpose, a teleological question, which can be interpreted and answered in different ways. Aristotle, whose philosophy is structured around a teleological framework, answers the question regarding the telos of human life ambiguously in the *Nicomachean Ethics*: Man realizes his essence as a political being, he states in the first book, but in the last book he comes closer to the Platonic view of humans becoming godlike, when he states that man should strive towards what is best and most godlike in him, namely *nous*. The question of the meaning of life opens up a transcendent dimension which becomes manifest in Christian theology, where the ultimate meaning is given by following Jesus Christ, through faith and love, into a life with God beyond death.

The Austrian psychotherapist, Viktor Frankl, who published his seminal work “Man’s Search for Meaning” after having survived four concentration camps under the Nazi regime, can help us clarify the concept of meaning: “man transceends himself into the world, toward meaning, toward *logos*.“ Frankl also designates the horizon of meaning opening up people’s lives “the noological dimension”, which recalls the extended conception of a spiritually laden rationality present in Plato’s and Aristotle’s thinking, and like his two Greek spiritual predecessors he compares reason to a seeing eye transcending itself.

Thus we speak of seeing or not seeing the meaning of something, which refers to the end or the aim of something. We should though keep in mind that finding meaning in life is not merely a goal-oriented activity, through which man transcends

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169 *Theaetetus* 176 b; *Nicomachean Ethics* 1178 a-b.
170 *Der Mensch vor der Frage nach dem Sinn*, 35-36.
171 *The Will to Meaning*, 17.
172 *Man’s Search for Ultimate Meaning*, 85.
himself, but it is, at the same time, a movement in which the one in search for meaning can also see and find him or herself. An activity may appear meaningful, because it aims at something, but if I cannot see myself carrying it out or identify myself doing that activity, it may not make sense at all. Frankl complements his theory of man’s self-transcending will to meaning, when he states that more important than seeking meaning and expecting something specific from life is the question of what life may expect from me as something which is still to be realized. This question is linked to the moment of wonder and awe, which opens humans up to transcendence and may make us aware that we are questioned and urged to respond.

Thus logos and nous do not exclusively point to something outside man, but they also refer to what essentially characterizes man and is inherent in him. The concept of an aim entails both a starting point and an end point in the sense that when we aim at something that is meaningful for us, we bridge the gap between ourselves and the world and can identify ourselves with it. What is truly and humanely meaningful describes a way that makes sense from beginning to end. Meaning is precisely a word for that dimension which connects beginning (archē) and end (telos) in a coherent way: Logos is both the archē of man, according to Aristotle, but it is also a reality outside man in the evangelical sense of Jesus Christ as the divine logos, who opens up mankind to the ultimate horizon of life, death, while infusing them with hope and being among them in love. In the end, human lives may only make sense, if there are aims which point beyond death. If death becomes the only aim or end point in life, meaning will slowly evaporate and leave man with no way out.

As Frankl describes so vividly in his books, this was sadly enough what happened to millions of people in extermination camps under the Nazi regime: Death as the only end to look forward to. Yet, Frankl shows three ways through which man can rise above the most horrible circumstances and look beyond the atrocities of the death camps: He found a meaning in the belief that one day he might finish his life work and so carry on doing something of vital interest to him. This meaningfulness has to do with beauty, which Plato described as the brightest phenomenon appearing

173 From Psychotherapy to Logotherapy, xvii.
(ekphainestaton) in life\textsuperscript{174}, when man is deeply touched by that which transcends him. Frankl recalls how he and his inmates in one of the camps, amazed by the bright, colourful and almost supernatural evening light, exclaimed: “How beautiful the world could be!...”\textsuperscript{175}

As this fleeting moment of beauty is not given for everyone to see, Frankl opens up another vital way out of meaninglessness: Love. Despite being almost completely absent in the extermination camp, this extreme setting for survival may conjure up, Frankl insists, inner visions of a loved one, in Frankl’s case his own wife, which saves him from falling into misery and allows him to envisage a meaningful life in the middle of the cruelest circumstances.\textsuperscript{176} As a complement to the absence of love, friendship did exist among the inmates as a worldly miracle, which helped people to give to each other more than they each had and thus look beyond the merciless fight for survival. Love and friendship are two congenial phenomena which open humans up to transcendence and in happy moments help them to transcend their own finite limits. We remember that Lévinas, who also spent time in a concentration camp under the Nazi regime, founded his ethical thinking on human rationality opening itself up to transcendence vis-à-vis the other, whose face, marked by the presence of the infinite God, speaks and questions my egoism. In so far as I receive the other, I enter into a dialogical relationship of hospitality, goodness and friendship with transcendence, in which my response to the other turns into limitless responsibility for the other.\textsuperscript{177}

The two ways presented by Frankl describe openings to transcendence within an aesthetical and an ethical horizon of beauty and goodness. There is a third way towards transcendence which Frankl witnessed in the extermination camps: Those who walked into the gas chambers with a prayer on their lips and their heads held high so as not to succumb completely to their terrible destiny. The incredible becomes credible for them and for those, who like Frankl payed attention to this moment of truth on the path of faith. These people kept their faith in something or someone holy

\textsuperscript{174} Phaedrus 250 d.
\textsuperscript{175} ... trotzdem Ja zum Leben sagen, 67. See also the following description of “the moment, when a light is lit early in the morning in a peasant’s house far away [...] et lux in tenebris lucet. (p. 68)”
\textsuperscript{176} Ibid., 63-65
\textsuperscript{177} Holst 2011: 69-70.
being with them in the final hour or awaiting them on the other side of life. Even standing at the limits of their lives, faith made them see, according to Frankl, a truth and a point in life. This may only be possible, in so far as human beings already have acquired enough spiritual resources to confront even the most horrific dead ends without losing their religious belief, consolidated through years of praying and remaining open, in faith and love, to a divine beyond.

It appears that the presence of transcendence can be experienced in any circumstance which opens humans up to the ultimate horizon of life. Frankl illustrates this by describing an episode in the concentration camp with a woman, who knew that she would die within a few days, but who was assured of the presence of eternal life by watching and talking to a tree outside her window: “It told me: I am the eternal life …” 178 Utzon’s vision of dwelling in light with a tree outside one’s window keep generating meaning on ever higher spiritual levels which are linked to earthly life and also transcend it.

2. Recovering Meaning in Architecture

As we saw in the introduction, the question of meaning entails such questions which science cannot answer in a purely objective way. The one in search for meaning needs to reach beyond his or her logical calculations to find answers and so extend reason toward the unfathomable horizon designated the unmeasurable or the intangible by the American architect Louis Kahn. Kahn claims that it takes a philosophic or religious state of mind to transcend one’s own thoughts and feelings and tap into the unmeasurable dimension of the intangible.

Another term used by Kahn for this state of mind, which the architect is called upon to align him or herself with, is wonder, which he uses again when he confesses that, as an architect, he dreams of “space full of wonder”. 179 The difficulty facing the architect, who searches for means to make the intangible tangible, is how to measure this dimension and make it visible. Kahn answers this difficult question in a way which

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178 ... trotzdem Ja zum Leben sagen, 107.
is similar to how Frankl approached the question of meaning in life, namely to reverse the perspective and ask what it is a place and a given material asks for and wants to be.\textsuperscript{180}

So Kahn actually answers the question by posing another question, the answer to which guides the architect in finding those measurable means that manifest, represent or stand in some sort of correspondence with the unmeasurable. One might ask how far this is possible. We saw that Michael Benedikt called Kahn’s attempt to harmonize the measurable world of work and science with the unmeasurable infinity of silence and religion an all-but-impossible mission. In this final chapter, we are, undoubtedly, touching the limits of architecture and of human life as such, which is also where the answers to the meaningfulness of life may be found. Thinking of the architect and his or her dignified work, Kahn once said: “A man’s greatest worth is in the area where he can claim no ownership.”\textsuperscript{181}

Recalling Walter Riezler’s appreciation of the possibilities in a certain strand of late modern tectonic architecture “to erect oneself above the purely rational and functional thinking that has characterized modern architecture heretofore and into the realm of the spiritual”\textsuperscript{182}, Kahn advocates for visualizing and building spaces that go beyond function and through their harmonious programs and designs express beauty, human well-being and evoke a feeling for transcendence in the form of unmeasurable qualities.\textsuperscript{183} Such spaces may have a dreamlike character, but they should from the start be formed by the architect’s sense for materiality and tectonic structure, which Kahn reflects on, very much like Prouvé before him, in his critique of “the inorganic trabeated rigidity of the standard steel frame”. Instead, he “favors the more organic, one may even say neo-Gothic, potential of welded tubular steel” which expresses the flow of forces and stress variations to which it is subject.\textsuperscript{184}

As we can see from this critique, his focus on sensuous and spiritual facets of space, matter and light in architecture does not mean that he oversees the pragmatic

\textsuperscript{180} Kahn 1961: 205-206.
\textsuperscript{181} Kahn 2003: 267.
\textsuperscript{182} Quoted from Frampton 1995: 180.
\textsuperscript{183} Kahn 1991: 100-118.
\textsuperscript{184} Frampton 1995: 211-213.
side to building, but he keeps looking towards the end of all architecture, even when he considers building economics and budgets, safety measures and standards. He speaks of “a sense of realization of the problem” inherent in the architectural project which is expected to respond to the needs of humans being in space: “We try to get the nature of our problem from the nature of spaces that we actually want to enclose or leave open”, Kahn states programmatically. Before starting to design and build, Kahn pauses and asks, what is the meaning of a given space, for instance a library? The answer to the question is for him not to be formulated in mere utilitarian terms, i.e. to read, to study and to search for sources, but it entails the transcendent and intangible dimension enveloping the whole project: Kahn begins and ends his reflections with how the light falls in through the windows and enlightens this space in the first place. In another, but similar context, where he talks about the relationship between space, light and matter as examples of the intangible becoming tangible, he marvels at “how much spirit there is”, and continues, “you can see the open space”, which he also calls a “clearing”.

Heidegger employs the same word for the revelatory moment, where being as such is disclosed, a moment of truth, which human beings can only behold, not grasp and get hold of. For Heidegger, as for Vitruvius before him, the clearing marks an opening on earth to the sky, where light suddenly falls down from above. Light breaks through an enclosed space, be it the Platonic cave, the primeval Vitruvian forest or the enclosed house of the Levinasian Ego, and manifests its subtle quality of making things matter and come alive, while pointing, at the same time, to its transcendent source. This has obviously been known for millennia, first of all by architects of sacred architecture, for who light seemed “to bridge the gulf separating this world from the sacred beyond.”

As highlighted in this work, the tectonic origins of architecture lay the foundation for a whole tradition of wisdom, whose representatives knew how to make

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185 Ibid., 62.
186 Ibid., 318.
187 Vom Wesen der Wahrheit, 201. The German for “clearing” used by Heidegger is Lichtung which is directly related to light.
188 Harries 1997: 108.
an invisible and intangible order visible and tangible on earth by letting things and spaces appear with an extraordinary splendor and liveliness. Based on William Swaan’s studies of Christian church architecture, Thomas Barrie has argued that it had roots in Plato’s description of the Demiurge ordering the universe, although fully developed it became “an earthly embodiment of the Divine Jerusalem”, representing the veritatis splendor and serving as mediator between the ancient Greek world and the Renaissance.\(^{189}\)

One of the most magnificent churches still standing today, which succeeds, according to a modern commentator, in conveying the transcendental value of suspending “our disbelief in the ideal” through “a choreography of space, light and surface”\(^{190}\), is the Hagia Sophia or the Church of Holy Wisdom in present-day Istanbul. Already in early Medieval times, shortly after it was built, the historian Procopius remarks about the architect behind it, Anthemius, that he was “the most learned man in the skilled craft which is known as the art of building”, and that the basilica itself, “a bewildering sight”, “exults in marvelous [...] and indescribable beauty”.\(^{191}\) The poet Paul the Silentiary likened the dome to “the firmament which rests on air”, because of its floating appearance generated by the radiant effect of the light from within the dome.\(^{192}\)

![Figure 13. View of the central dome in the Hagia Sophia.](image)

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\(^{189}\) Barrie 2010: 144-146.

\(^{190}\) Lozanovska 2010: 428-429.

\(^{191}\) De aedificiis 1.1.24-27.

\(^{192}\) Quoted from Kleiner 2013: 261. For an allegorical interpretation of materiality and the extrasensory in early Christian architecture, which links the Hagia Sophia in Istanbul with the Basilica di Santa Prassede in Rome, see Fleischer 2015.
It has been debated among scholars, if Anthemius was really an architect with the adequate education and knowledge. The ekphratic way, in which Procopius and Paul the Silentiary praises the church to the skies, indicates that he belonged to the ancient tradition of the most skilled and versatile tektones. Schibille has argued that through ekphrasis, both sixth century writers attempt to create a visual image of something unimaginable by making it intelligible; a wonder (thauma), only perceivable through intellecction (noēsis).193

At first, the spectator can be left bewildered and confused (aporia), but both writers invite and encourage their audience to see through and even “look beyond the materiality of Hagia Sophia and to grasp the epiphanic character of the edifice”: “Hagia Sophia becomes the material manifestation of divine revelation [...] The experience of Hagia Sophia inspired indescribable wonder (thauma) in the sixth century beholder, and it is this marvel that the two exphraseis are trying to convey. Traditionally thauma anticipates the moment of divine epiphany, and thauma is the origin of philosophy in the quest for truth and knowledge.”194

The key concepts in the ancient tectonic tradition reappear in Procopius’ and Paul the Silentiary’s ekphraseis, but they are transferred into a Christian building tradition, in which light is meant to drive away all darkness and God dwells in the light. Still, the Church of Holy Wisdom, which crowns the Christian aspiration to open up humans to divine transcendence, cannot escape its materiality and being subject to gravity. We do not know why the golden dome of Anthemius’ daring construction collapsed in 558 AD, but it could be that the architect attempted to stretch the whole construction too much toward the sky, or in Procopius’ words, “it soars to a height to match the sky”.195 The dome also became known as “heavenly”, and, according to Procopius, Anthemius’ otherworldly achievement lay hidden in making it appear as if the light flowing in through the many windows were generated in the interior of the

193 Schibille 2016: 15-16,
194 Ibid.,
195 De aedificiis 1.1.27.
church which does not seem “to rest on solid masonry, but to cover the space with its golden dome suspended from heaven.”\textsuperscript{196}

It is evident that no architect or engineer builds like this anymore nor do we share the exact same world view which founded this formidable church and imbued it with meaning. Yet, we can still experience the space which it opens up and also the meaning of it, in so far as any building, as the German thinker Hans-Georg Gadamer once remarked, points back to its original purpose.\textsuperscript{197} Meaning points, as we saw, towards ends and aims which are inscribed in buildings through the distribution of space and especially in how they are orientated. Orientation is one of the key concepts which Christian Norberg-Schulz, who like Gadamer was influenced by Heidegger, employs to highlight the meaningfulness of a place for human beings, who dwell and wander on earth. Meaning arises, when human beings can orient themselves around a central axis which gives them an identifiable reference and arrival point, a dwelling place to belong to that offers a retreat and, at the same time, an opening to destinations beyond the house.\textsuperscript{198}

In this sense, houses and cities become images of the world (\textit{imago mundi}). Norberg-Schulz exemplifies this with the Christian church which is centered round the event of following the resurrected Christ into a new life beyond death. In architectural terms, this way and destination manifests itself along a longitudinal axis leading to the altar, the symbol of the communion with Christ. Norberg-Schulz’ concrete example of Alberti’s Basilica di Sant’ Andrea in Mantua illustrates a central point in this work: The ratios of the church become a harmonious 1:1, as one approaches the altar\textsuperscript{199}, which in the terminology of this work means that human rationality, in so far as it is struck by wonder and awe in the church, starts to open up and move into a correspondence with that which transcends it, God’s \textit{logos} in the guise of Jesus Christ.

Outside churches architectural theorists have, not unlike Frankl, deplored the existential vacuum, the loss of meaning, which continues to expand all over the world, as long as the majority of the inhabitants on earth live uprooted or without an aim that

\textsuperscript{196} Schibille 2016: 24-25.
\textsuperscript{197} Truth and Method, 156.
\textsuperscript{198} Norberg-Schulz 1985: 20-25.
\textsuperscript{199} Ibid., 75-81.
opens up to well-being or to transcendence. In his book, *Architecture and the Crisis of Modern Science*, Alberto Pérez-Gómez launches a severe critique of modern architecture for standing behind “the algebraization or “functionalization” of architectural theory as a whole, the reduction of architecture to a rational theory [...]”\(^\text{200}\) Modern architecture has taken on the ideals and explanations of scientific logic pursuing abstract, utopian ideas of creating edifices and spaces for the future, while leaving the past and not least the present uninhabitable or even inhospitable; a true paradox, in so far as architecture is meant to make the earth inhabitable. Pérez-Gómez extends his critique to contemporary man who “lives with the illusion of the infinite power of reason. He has forgotten his fragility and his capacity for wonder.”\(^\text{201}\)

Colin Rowe has claimed that much of modern architecture lost some of its original meaning, when it became institutionalized after the Second World War and got lost in artistic experiments or scientific models without aiming at human beings of flesh and blood.\(^\text{202}\) Prouvé also disapproved of many modern urban landscape which made no sense “in the reading of it”. Maurice Culot and Leon Krier see the destruction of the modern city with its stereotypical design as a direct consequence of modern industrialization and a capitalist-based consumer society which believes in progress without limits.\(^\text{203}\) In his reading of Heidegger, the Italian philosopher Massimo Cacciari sums up the problem of modern uprooted man, when he suggests that the art of tectonics and of building poetically, like Eupalinos, has been lost and thus there is no place to dwell, no place to come home to in “the great glass windows” of the metropolis which reflect “a supreme indifference to dwelling”.\(^\text{204}\)

One of the main purposes of this work has been to demonstrate that it is still possible to recover the original meaning of architecture as the artful knowledge of tectonics which envisions humane ways of dwelling on earth in and outside the city; not as a nostalgic desire to return to times past. Tectonics has proven its capacity to adapt to modern times developing a new architectural language and a heightened

\(^{200}\) Pérez-Gómez 1998: 466.  
\(^{201}\) Ibid., 468.  
\(^{203}\) Culot and Krier 1998: 350-351.  
sensibility for the spiritual qualities of materials, absorb new technologies and link dwellings and monuments to meaningful horizons. Surely, Rowe, Krier and Cacciari call our attention to historic and urban realities, whose existence cannot be debunked by looking in the other direction, but precisely by becoming aware of these inhospitable conditions, under which more than one third of the world’s population live, is it again possible to reconfigure new tectonic building traditions which take into account the nature and biodegradability of materials, their relationship to local contexts and cultural traditions, and the meaning of dwelling and building as human attempts to live well and create openings to transcendence.

These two aims are usually seen as falling into two different architectural typologies, the two poles, around which the history of building turns: “one marked by the house, the other by the temple or the church; one comparatively private, the other comparatively public; one comparatively profane, the other comparatively sacred.”\(^{205}\) Yet, at the origins of ancient building culture, the house also served public and even sacred purposes, and the sanctuaries and temples were considered to be refuges and residences for the Gods. The theory that sacred spaces grew out of and was built on the domestic sphere is today well established: “The dome emerged from the earliest domestic architecture and eventually (or inevitably) came to be potently conflate home as center and the domed sanctuary as the center of the cosmos.”\(^{206}\)

From the Archaic *megaron* to the classical temple and from the *domus ecclesia* to the first atrium churches there is a connection which Harries elaborates further on, when he reminds us of “the Thomistic definition of the church as the house (the Latin *domus*, “house”, becomes the German *Dom*, “cathedral”) in which the community joins in celebration of the sacrament, this house not only is called “church” but signifies the Church, that is to say an ideal communal dwelling.”\(^{207}\) The Church understood as the gathering of believers “underway to the community of the faithful, dwelling with God” has a different meaning than the gathering of dwellers in a private

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\(^{205}\) Harries 1997: 286.

\(^{206}\) Barrie 2015: 34. See also Holst 2017: 6.

\(^{207}\) Ibid., 287; see also Harries’ interpretation of Thomas Aquinas’ often invoked definition: “The house in which the sacrament is celebrated signifies the church and is called “church” (*domus in qua sacramentum celebrator, ecclesiam significat et ecclesia nominator*). (p. 103)”
house. Still, both building types are forms of dwelling for the gathering of a community with a view to a transcendent dimension, but the purpose and thus the meaning of the gathering in the two cases is different and so is the meaning of transcendence.

As Harries explains in *The Ethical Function of Architecture*, from which the quotations above are taken, the Christian Church prefigures the Heavenly city of God, *civitas dei*. The structure and organization of spaces in a medieval cathedral, for example, is in every detail built with clear references to this ultimate meaning, explained in the Bible through examples of other paradigmatic buildings, such as Moses’ tabernacle in the desert and the temple of Solomon in Jerusalem, but also by referring to “Christ Jesus himself being the chief cornerstone, in whom the whole structure is joined together and grows into a holy temple in the Lord; in whom you also are built into it for a dwelling place of God in the Spirit.”

In a text titled “Ecclesia” with reference to 1 Corinthians 3: 16, Cacciari touches upon the possibility of still “edifying” a true temple, “formed by the gathering of the community”; not as a mere get-together, but as a sacred call for a “coming-to-gather” of the scattered, so that their pilgrimage may receive a meaning through the church as the *civitas dei*, the arrival point in the future. Moneo took a more modest approach to the Church as a sacred institution, when he once spoke of his thoughts and sincere doubts about the design and construction of the new Cathedral of Our Lady of the Angels in Los Angeles, one of the largest in the world. He recognized that he could not take for granted that his vision of the sacred would correspond with the vision of all those, who were going to use the cathedral. Still, his intentions behind the design and the building of it remain clear: “I would very much like to make a building in which people can feel alone, but where they can also have a sense of solidarity. I would also like to create an atmosphere in which people can experience a sense of the transcendent.” When touching upon the importance of light in a church and the historic sources which he drew on, he highlights the “wonderful way in Byzantine

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208 Ibid., 103.
209 Cacciari 2011: 81.
210 Moneo 2010.
211 Moneo (1967-2004): 50
churches where the entire building became almost like a lamp – a space emanating light itself.\(^{212}\)

It is beyond the scope of this work to go further into the complex history of Christian architecture and church building\(^{213}\), but the reason why it remains important to recall part of its history here is that Christian theology, just like its Greek and Roman predecessors, found an answer to the question of meaningfulness in building and in dwelling: As their answers to this question are markedly different, so is the sacred architecture with which they identified themselves: All sacred architecture is meant to open human beings up to transcendence in order to enter into contact with the divine, but the understanding of the divine and the way toward it is not the same in the ancient Greek and in the Christian world, which is why early modern architects, such as Augustus Welby Pugin and Christian Carl Bunsen, insisted on developing a specific Christian church architecture, independently of the classical Greek ideals and with the Gothic style of the Middle Ages as paradigm. Both architects had an immense influence on the churches which were built in England and Germany in the 19\(^{th}\) century, and Gottfried Semper refers explicitly to Bunsen in his own reflections on the adequate construction of Christian churches.\(^{214}\)

One of the reasons why the architecture of the Christian world could still built on ancient Greek and Roman architecture was that the latter had already established a tectonic “language” for representing the intangible and invisible dimension of the divine in tangible and visible structures on earth, balanced horizontally and vertically in the famous post-lintel system of the temples. Heidegger saw the temples as revealing the earth, upon which “historical man grounds his dwelling in the world”, and opening

\(^{212}\) Idem.

\(^{213}\) For further studies on the multiple meanings of Christian church architecture, apart from those already mentioned in notes 4 and 35, see particularly Daelemans 2015, who offers “an apologetic of contemporary church architecture as capable of expressing transcendence” (p. 2) and a theological grounding of architecture, which similarly to this work approaches transcendence along three paths: A synaesthetic, which addresses the perception of spiritual qualities in body and matter, a kerygmatic, which revolves around conceiving images and meaning in space, and an Eucharistic, which centers on assembling and congregating in song. Seen through this work’s philosophical lens, these three approaches correspond to beauty (aesthetics and matter), truth (spirituality and meaning), and goodness (ethics and community). Daelemans also relies on Valery’s text on Eupalinos and the tectonic “experience of awe before the wonders of architecture” (p. 3).

\(^{214}\) Evers and Thones 2003: 614. For further discussion of Semper’s ideas on Christian church architecture and its origins, see Mallgrave 1996: 144-147.
up the whole horizon of this world in wonder. The architects behind the Christian churches and cathedrals took one step further and oriented the house of God toward transcending this world as such by letting light, images and gold guide the believers on their spiritual way toward God. Like wonder, the Christian churches, basilicas and cathedrals were meant to provoke an awe-inspiring sense of unsurpassable height and might in the believers.

It is this unsurpassable moment, when the finite horizon of human life and thus of what lies beyond it is revealed, which modern architects, standing in the tradition of late modern tectonics, are still trying to make room for in their architecture. Siza once remarked, in a conversation about one of his buildings, the Portuguese Expo Pavillion in Lisbon, which overlooks the Atlantic Sea, that it conveys “this sense of the entire world”: Aalto went one step further on one occasion, which also reflected his own approach to architecture as the creation of “complete images of the world”: He emphasized that “every architectural building is a symbol of paradise and pretends to demonstrate that we desire to construct an earthly human paradise.” When he said this, Aalto must have known that the Christian Church represents “heaven on earth”, which may also be why he slightly modifies the expression to “an earthly human paradise”. Like Utzon and Moneo, Siza and Aalto have also designed and built modern churches which they are only able to, because their architecture already contains the double intention of grounding humans in an earthly context and opening them up to transcendence.

When he was about to finish The Salk Institute of Biological Studies, Louis Kahn invited the Mexican architect, Luis Barragán, over to see it and hear his opinion about the design of the central plaza. Barragán, who has been said to have built “transient paradises on earth”, or what he himself called “the most efficient Heaven against the aggressiveness of contemporary life”, advised Kahn, who wanted to plant a garden,

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215 Cf. Fleischer 2015: “the church building [...] is also rooted in the world, to speak of the world, which introduces phenomenology into the further considerations of the church building as an opening towards transcendence. (p. 399)"
217 Quoted from Pallasmaa 2010: 91.
218 MacNamara 2011: 56.
219 Hejduk and Williamson 2011: 59.
to leave it open to the sky and the sea. And so he did. Today the Salk Institute houses a flourishing community of scientific researchers, who are given the chance, while they are investigating into and measuring out the depths of organic life, to look out at the endless horizon and up into the unmeasurable sky, marveling at that which transcends the finite horizon of life on earth.
Conclusion

Opening Reason to Transcendence

The ultimate meaning of any building is beyond architecture”, Juhani Pallasmaa writes in *The Eyes of the Skin*, and he continues: “Significant architecture makes us experience ourselves as complete embodied and spiritual beings. In fact, this is the great function of all art.”

The purpose of the introduction and the first chapter is to open up human reason, through philosophical wonder and theological awe, to this meaningful horizon beyond human beings themselves. Architecture as the tectonic art and knowledge of building well-fitted artifacts, dwellings and monuments has proven to play a key role in opening up this horizon, as it promotes human well-being and points to a transcendent dimension. Of all the arts, architecture has throughout history been assigned the mediating role of making spaces for people to relate and communicate with each other and with the divine. Religion refers to the connection which binds all people together through the belief in God, and church architecture has played a key role in keeping human reason open to transcendence.

The second and the third chapter describe the way from the tectonic origins of architecture over the architectural vision and materialization of spaces to a heightened awareness of the social, ethical and ecological context in architecture. The critical outline of an architectural epistemology sheds new light on the tectonic knowledge of visualization, materialization and contextualization inherent in architecture, but it also draws up the limits of the discipline which is not committed to determining people’s lives. An architectural ethos of responsibility, respect and humility takes into account the spiritual and transcendent qualities of materials, uncreated by man, who through tectonic visions can make these qualities come alive and shine within a larger context.

Two meanings of transcendence have been addressed within an ethical context of architecture: The first is related to receiving the other in hospitality which turns dwelling into a gathering place that gives human beings a reference point for

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220 Pallasmaa 2005: 11.
orientation. The other meaning opens people up to nature and the whole ecosystem constituted by planet earth, promoting a true ecologic awareness which architecture can integrate with its work through the sustainable ways, in which it treats materials and through openings onto nature. Both ways of understanding transcendence in relation to humanity and planet earth point to the final chapter on meaningfulness, but they also pick up on and enrich the concept of human well-being from the first chapter.

The subtitle of the work refers to the need for a philosophical grounding of architecture in order to achieve a balance between the transcendent dimension which many architects have aspired to reach or to represent, and the immanent world in which human beings build or search for a home. The fourth chapter addresses the question of meaningfulness of life and the contributions which architects and theorists have made to fulfil human longing for a meaningful and peaceful place on earth and beyond this life. Every human being, who searches for a meaning in life, is searching for a place to come home to, not merely as a physical shelter, but as an existential and spiritual foothold in life which offers openings to transcendence.

The Christian churches are, despite their different orientations and styles, paradigmatic architectural examples of a successful union of tectonically well-fitted works, which are meant to receive all human beings and unite them in the Holy Spirit. The work concludes that a similar, yet more modest intention is behind, for example, Louis Kahn’s architecture which pursues meaning through the all-but-impossible attempt of letting the measurable work open up to and reflect the unmeasurable dimension of spirit and order in the universe.
Bibliography


Due Schmidt, Anne Marie (2007): The Tectonic Practice: In the transition from the predigital to the digital era. Aalborg: Aalborg University Press.


Tøjner, Poul Erik (2014): “Architecture as Contemplation”, Hotel Magazine (checked April 6 2017), [http://hotelmagazine.dk/blog/articles/architecture-as-contemplation](http://hotelmagazine.dk/blog/articles/architecture-as-contemplation)


The initial quotation by Louis Kahn on the back of the title page is taken from Writings, Lectures, Interviews, 117.