

GHOST 13

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ARCHITECTURE AND THE HUMAN NATURE
- searching for a sustainable metaphor

“My work always tried to unite the true with the beautiful; but when I had to choose one or the other, I usually chose the beautiful”.¹

Hermann Weyl, mathematician, who perfected the quantum and relativity theory.



The call for an ecological ethics, life style, and sustainable architectural thinking is surely the most important force of change in the field of architecture since the breakthrough of modernity a century ago. Architectural history is seen as a succession of varying stylistic canons, but today's challenge calls for a new understanding of the very essence of architecture. We continue to see ourselves and our artefacts independently of the Grand Clockwork of Nature, but the challenge of today is also likely to alter the received polarity between nature and the human artefact. I have earlier described this paradigmatic change as the shift from metaphorical functionalism to ecological functionalism. This challenge calls for a new understanding of goals and processes, aesthetics and performance, form and function, rationality and beauty, artistic objectives and ethics, and, finally, of ourselves as children of Mother Earth.

THE MACHINE METAPHOR

Functionalist thinking has regarded functional and technical performance mainly in terms of the aestheticized mechanical metaphor. The mechanized object even became an ideal in the arts: “The object has to become the main character of modern painting and it has to throw the human figure from the throne. If the person, the face or the body turn into objects, a great freedom opens up to the modern artist ... to me the human face or figure does not have more meaning than a bunch of keys or a bicycle”, wrote Fernand Léger.² Ever since that era, architecture has been dealt with primarily

as problem solving, a functional equation, and the design of aestheticized metaphoric machines, as exemplified by Le Corbusier's influential credo "house is a machine to live in" of 1923.³

Today's ecological imperative calls for an architecture whose performance is credibly identifiable and measurable, not only metaphoric or symbolic. This requirement suggests a non-autonomous architecture, that becomes part of the natural processes and cycles. Yet, the visual dominance in architecture continues to prevail. In fact, the purely visual understanding of the art of architecture may never in history have been more dominant than in today's architecture of the commercialised image, reinforced by the digital media and world-wide journalism. Even sustainability is most often judged by the eye as an aesthetic and symbolic aspiration rather than through an analyses of the actual performance. However, in the Age of Ecology, the concept of "form" has to be seen as a temporal process, or emergent situation, rather than a closed and finite aesthetic entity.

FALSE SUSTAINABILITY

During the past decade, images of "sustainability" have become as symbolic of progressive and responsible design, and various technical devices are frequently added on to rather conservative projects to create the desired progressive image. Sustainable design has also become a new marketing strategy both among designers and developers. Regrettably, also the established methods of evaluating sustainable qualities of design tend to support this superficial view, rather than stimulate profoundly valid ecological thinking, life style, and ethics. This opportunistic way of using "sustainable" design as a shrewd means of commercial manipulation merely hides the real issues. The emotionally and ethically appealing concept of sustainability can even turn against true sustainability as it makes us believe that we are already doing our share in this big task. By designing a Leed certified building we justify not only the continuation of our suicidal economic ideology, but its continued acceleration.

The true criterion of sustainability implies the evaluation of projects as entire processes from harvesting and producing the materials, the processes of manufacture, transportation, and construction, through use and maintenance to eventual dismantling and demolition of the structure. The re-use of materials and components, and analysing the overall material and energy consumption as well as the toxic and otherwise harmful side effects and products is equally important. The processes have to be analysed and evaluated in relation to the continuum of time, not merely through the momentary judgement of the aesthetic eye or short-term balance sheet. As the entire life-cycle is added on to the already complex logistical equation of architecture, nobody seems to be able to grasp the entity with scientific certainty.

ARCHITECTURE – AN IMPURE DISCIPLINE

I have called architecture an “impure” and “messy” discipline because it contains inherently irreconcilable ingredients, such as metaphysical, cultural and economic aspirations, functional, technical, and aesthetic objectives, etc.. In fact, I cannot think of a more complex human activity, or artefact, than architecture. The conflicting aspirations that are an inseparable part of human architecture tend to turn our constructions towards irrationality. The great Norwegian architect Sverre Fehn once said to me in a private conversation: “The bird’s nest is absolute functionalism because the bird is not conscious of its death”.⁴ Our actions, however, are deeply motivated by our suppressed fear of death. To condense the “illogical” nature of architecture, we can say that architecture is at the same time the means and the end.

As Alvar Aalto claimed in the 1950s, only artistic vision can bring the thousands of conflicting ingredients in an architectural problem into a harmonious synthesis.⁵ Yet, in the perspective of sustainability, the various crucial qualities of this synthesis have to pass a critical evaluation and measurement. I am not preaching of a “scientific architecture”, I suggest an architecture that is grounded in the full existential understanding of human destiny, and this view certainly calls for a deeply lived vision more than scientific formulations. Our task is more ethical than technical. Architecture is not only engaged with today, it also expresses what we want to become. We build and dwell in accordance with our thoughts, fears and dreams.

THE LIVED METAPHOR

We architects are used to think in terms of space and material form; we think of objects rather than systems, aesthetics rather than processes, visual qualities rather than existential issues, and the present rather than the temporal continuum. As George Lakoff and Mark Johnson, two philosophers, have convincingly shown in their book *The Metaphors We Live By* (1980), language, thought and action are metaphorical: “[...] Metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual systems, in terms of which we both think and act, are fundamentally metaphorical in nature”, the authors proclaim.⁶ Arnold H. Modell, psychiatrist, argues similarly that we are not even aware of the metaphors that guide our thought: “Metaphor is primarily a form of cognition rather than a trope or figure of speech. Further, metaphor as a cognitive tool can operate unconsciously, so that a metaphoric process is one aspect of the unconscious mind”.⁷ This psychiatrist-philosopher suggests that we are guided by our own metaphors as much as we consciously mould them. Indeed, already Aristotle acknowledged in his *Poetics*: “The greatest thing by far is to be master of metaphor, [which is] the one thing that cannot be

learned from others, and it is also a sign of genius.”⁸ Along with the metaphor, analogy and synecdoche are our essential tools of thought. Like verbal and poetic thinking, architectural thinking is engaged in metaphors and analogues. In fact, we can think of buildings as material, embodied and lived metaphors.

ARCHITECTURE AND IMAGE OF SELF

We live in metaphors; buildings, structures and cities are constructed material images of our view of the world, belief systems and fears as well as of ourselves, as much as they are practical devices. The interplay or, better, total fusion of the mental and material dimensions of life is usually disregarded when thinking of architecture. We tend to forget that every human construction, beautiful or ugly, reasonable or outrageous, always originates in the human mind. One of my personal missions as an architectural writer has been to emphasize the total interpenetration of these two worlds. As Robert Pogue Harrison maintains: “In the fusion of place and soul, the soul is as much a container of place as place is a container of soul, and both are susceptible to the same forces of destruction”.⁹ When building structures of concrete and steel, we also build immaterial and imaginary structures of ideas, percept and ideals. The essential task of architecture is to improve the world that we live in, to make it a better place for ourselves to be in. As Rainer Maria Rilke beautifully writes: “Art is not a little selective sample of the world, it is a transformation of the world, an endless transformation towards the good.”¹⁰ In his inspiring book on Venice, entitled *Watermark*, Joseph Brodsky, the Nobel Laureate poet states: “In the end, like the Almighty Himself, we make everything in our image, for want of a more reliable model; our artefacts tell more about ourselves than our confessions.”¹¹

THE CHANGING METAPHOR

The guiding metaphors of building have historically shifted from images of shelter to mechanistic images, and further to today’s electric, electronic and digital models of invisible performance. However, we eventually need to refer to the staggering complexity and precision of biological phenomena. Edward O. Wilson, the biologist, defines the new attitude of biophilia “as the innate tendency to focus on life and lifelike processes”.¹² The currently prevailing globalized architecture of alluring and memorable images usually flattens architecture into three-dimensional pictures, spatial advertisements, as it were. It is evident that the new Brave Digital World, to paraphrase the title of Aldous Huxley’s gloomy book¹³, has so far facilitated questionable processes of globalization more than it has genuinely helped the cause of architecture. I venture to say that the computer has been largely misused from the ethical point of view to advance instant and fluid commerce and control the world over.

It is most likely that the future models and metaphors of thought and design, from everyday technology to computer and material sciences, and from economics and medicine to architecture, will increasingly be based on biological imagery, not bio-morphic forms, but the often incredible subtlety and complexity of biological systems of interaction, dynamic balance, and emergence. This approach, inspired by models of biological performance, has already emerged in such areas of investigation as *Bionics* and *Biomimicry*. The single argument by Edward O. Wilson, world's leading myrmecologist and spokesman of Biophilic ethics, to the effect that the 'superorganism' of a leaf-cutter ants' nest alone is a more complex system in its performance than any human invention and unimaginably old, should convince anyone that the biological world offers exciting models for the refinement of human artefacts and systems.¹⁴ Indeed, complex traffic systems are today conceived on the basis of the traffic systems of ants, and self-cleaning glass and numerous other inventions have been made studying biological precedents. New revolutionary carbon computers are also being developed on the basis of the computing principles of our own neural nets.

LESSONS OF ANIMAL ARCHITECTURE

Permit me to say firmly: I do not support any romantic bio-morphic architecture. I advocate an architecture that arises from a respect of nature in its complexity, not only its visual characteristics, and from empathy and loyalty to all forms of life and a humility about our own destiny.

Indeed, architecture cannot regress; all life forms and strategies of nature keep developing and refining. The magnitude of our problems calls for extremely refined, responsive and subtle technologies. That is the kind of technology nature uses from the smallest parts to the most complex entities. Nature uses self-repairing materials, such as the rhinoceros's horn, that is not live tissue, yet repairs its wounds, or the inner cell of the abalone that is twice as tough as human-made high-tech ceramics, and instead of breaking deforms under stress like a metal.

I have myself been interested in animal constructions since my early childhood at my grandfather's humble farm in Finland during the war years, and the more I have studied this subject matter the more amazed I am. Many of you are surely familiar with the fact that the drag-line of the spider is the toughest material yet known; its tensile strength is more than three times that of steel. The spider silk consists of small crystallites embedded in a rubbery matrix of organic polymer – this is a composite material developed tens of millions of years before our current age of composite materials. The spider silk line is even tougher than polyaramid Kevlar, the material used for bullet-proof vests and facial masks for riot police. Significantly, the spider produces its line in body temperature without any poisonous

side products, whereas Kevlar is produced in pressurized vats with concentrated sulphuric acid at very high temperatures, and the process creates problematic toxic byproducts.¹⁵ You may also know that the African termite *Macrotermes bellicosus* seems to be able to choose between two theories of physics in the construction of its collective artificial lung in its nest community of ten million inhabitants, depending on whether they happen to live in the moist coastal areas or arid central regions of Africa.¹⁶

It is becoming evident that we have distanced ourselves too far from nature with grave consequences. The research of the Finnish allergiologist Tari Haahtela has shown convincingly that many of the so-called “civilization diseases”, such as all allergies, diabetes, depression, many types of cancer, and even obesity, are consequences of living in too sterile and “artificial” environments. We have destroyed the natural bacterial habitats in our intestines. This specialist in allergies tells us that he has never met an allergy patient “with earth under his fingernails”.¹⁴

PREVAILING VIEW OF MAN

I believe, that the view of ourselves that prevails in western thinking, daily practices and education, has to be fundamentally re-evaluated. Edward Wilson argues: “All of man’s troubles may well arise [as Vercors (Jean Bruller) suggested in *You Shall Know Them*] from the fact that we do not know what we are and do not agree on what we want to become”.¹⁵ We first need to give up the hubris of regarding ourselves as the centre piece of the Universe, and as the *Homo Sapiens*, who knows. We should also stop seeing ourselves as the image of God. We are not the image of God, the Grand Systems of the Universe and Nature are.

Without going too far into the area which arises from philosophical and ethical judgement as well as recent scientific thought, I want to mention some of the areas of our own humanity that need to be reconsidered. These suggestions have direct implications on architecture.

A NEW VIEW OF MAN

Firstly, we need to accept the essentially embodied essence of human existence, experience, cognition and memory. As Merleau-Ponty writes, “The painter takes his body with him, says [Paul] Valery. Indeed, we cannot imagine how a mind could paint.”¹⁹ We can say the same about architects; architecture is constituted in our embodied way of being in the world and it articulates that very mode of being. Besides, buildings unconsciously represent the body.

Secondly, we are fundamentally sensory and sensual beings. Architecture is possibly engaged with a dozen different but integrated

sensory systems, not only the five Aristotelian senses. Steinerian philosophy, in fact, identifies twelve senses.²⁰ The senses especially central in architecture are the existential sense, the sense of self and the sense of temporal continuum and causality.

Thirdly, perception, thinking, and memorizing, are complex activities that are fundamentally based on embodied processes and mental or neural images rather than words and language. Language is a secondary articulation of these neural patterns. The language of architecture is primarily a non-conscious embodied and existential dialogue. This is where the logo-centric theories of architecture go astray. Colin St. John Wilson writes about this archaic and existential language: "It is as if I am being manipulated by some subliminal code, not to be translated into words, which acts directly on the nervous system and imagination, at the same time stirring intimations of meaning with vivid spatial experience as though they were one thing. It is my belief that the code acts so directly and vividly upon us because it is strangely familiar, it is in fact the first language we ever learned, long before words, and which is now recalled to us through art, which alone holds the key to revive it."²¹

Fourthly, human intelligence is routinely described by the IQ score, but this is a very crude and uninformed view of intelligence. In accordance with psychologist Howard Gardner's current studies, there are ten categories of human intelligence: He first lists seven categories of intelligence: linguistic intelligence; logical-mathematical intelligence; musical intelligence; bodily-kinesthetic intelligence; spatial intelligence; interpersonal intelligence, and; intrapersonal intelligence. Later, he suggests three further categories: naturalistic intelligence; spiritual intelligence, and; existential intelligence.²² I would definitely add the categories of emotional, aesthetic, and ethical intelligence in the list of human cognitive capacities. Emotional intelligence, in fact, could well be the most instant, synthetic, holistic, integrated, and reliable of our systems of reacting to complex environmental and social situations. By emotions, we judge complex life situations, such as the ambience, mood, or atmosphere of a space, or place, whereas the scope of the IQ intelligence is limited. Mood may well be the most synthetic of architectural features but it has hardly been consciously analysed or theorized. Indeed, as architects, we need to sharpen at least twelve categories of sensing and the same number of modes of intelligence in order to do our job well.

THE MARVELLOUS BRAIN

I also want to add that we tend to think of our behaviour in terms of our conscious faculties, but consciousness is only a tiny fraction of the ways through which we are related with world, and situations of life. In accordance with Matti Bergström, a Finnish neurologist, the information capacity of a single nerve fibre, and also of our

consciousness is about 100 bits per second. On the basis of the synopsis in our brain, he calculates that the information handling capacity of our entire brain is staggeringly in the category of 10^{17} .²³ Mind you, this is a figure with seventeen zeros. This dizzying figure helps to explain why our settings can have a dramatically stronger impact on us than we can consciously identify and analyze, not to speak of being able to describe these interdependences verbally.²⁴ As I said earlier, we have great capacities to decipher atmospheres or ambiences, which are very complex environmental situations.

Also recent research in neurobiology provides promises of a new understanding of our own brain activities in general, and the meaning of aesthetic judgement and pleasure. In his pioneering book *Inner Vision: An Exploration of Art and the Brain*, Semir Zeki, neurologist, suggests the possibility “of a theory of aesthetics that is biologically based”.²⁵ I personally have no doubt about it; what else could beauty be than one of nature’s powerful instruments of selection. It is clear that a culture that is losing its sense of beauty is already declining. Zeki also argues that “art [is] an extension of the functions of the visual brain in its search for essentials”²⁶. No doubt, architecture is similarly an extension of our neural system to facilitate our constant search for meaning and a satisfactory relationship with the world.

Architectural structures decisively increase the order and predictability of the environment.

“Most painters are also neurologists [...] they are those who have experimented upon and, without ever realising it, understood something about the organization of the visual brain, though with techniques that are unique to them”, Zeki writes.²⁷ Again, we can undoubtedly make the same assumption of profound architects. They grasp the essence of human nature in addition to being sensitive to the characteristics of space and form. Great architects are able to create atmospheres that make us feel safe and comfortable. As Gaston Bachelard suggests, “The chief benefit of the house [is that it] shelters daydreaming, the house protects the dreamer, the house allows one to dream in peace.”²⁸

THE TIME OF ARCHITECTURE

Modern architecture at large has been future-oriented. Yet, we are primarily historical and biological beings whose neural systems, senses, and reactions have developed during millions of years. Time in biology has different scales than in human culture, such as *organismic time*, *bio-chemical time*, *ecological time*, and *evolutionary time*. Also architecture deals with the dimensions of time as essentially as with space. “Architecture is not only about domesticating space, it is also a deep defence against the terror of time. The language of beauty is essentially the language of timeless reality”, Karsten Harries, the philosopher, writes.²⁹ Architecture

articulates our experience of time and the historical dimension, but it also reconnects us with our past.

The modernist poet Ezra Pound argues that the arts need to maintain their umbilical cord to their own archaic origins: “Music begins to atrophy when it departs too far from the dance ... poetry begins to atrophy when it gets too far from music.”³⁰ I wish to add that, in my view, architecture withers when it departs too far from the primary experiences and images of dwelling.

Along with the inspiration brought about by biological models, a deeper understanding of our own biological and cultural historicity is needed. We have the tail bone as a reminder of our arboreal life, the remains of a horizontal *plica semilunaris* of our Saurian phase, and traces of gills from our fish life, and we certainly must have similar mental remnants in our collective memory. In fact, Freud made the assumption of the existence of “archaic remnants” as he theorized the unconscious human mind. The origins of architectural pleasure can similarly be traced back to our evolutionary history. To head enthusiastically into a digital, computer generated virtual world forgetting where we have come from, seems careless to me. I see the defence of our biological and historical essence and of the authenticity and autonomy of experience as crucial tasks of art and architecture. A “mental ecology” is needed to expand the notion of ecology into the human mental world, as ecology and sustainability cannot be dealt with merely in technical terms.

THE IDEOLOGY OF SUICIDE

It is shocking to notice that during the recent worldwide recessions, no major political figure or economic expert has touched upon the obsessive ideal of perpetual growth, which undoubtedly is the basic cause of our escalating environmental – and I would say, also our mental – problems. The unanimous concern world-wide has been to get the wheels running again, at least at the same pace as before the financial collapse. Before the real issues, related with our biased beliefs and objectives are faced, no sustainable architecture can decisively change the suicidal course of industrial civilizations. Shouldn't we follow the example of social insects who have happily refined their constructions during tens or hundreds of millions of years and will undoubtedly continue to do so after the human species is gone?

I know, for instance, I should not be here in person, at the ecological cost of over fifty hours of flying; I should only have sent my paper. Yet, the value of human contact seems to overrule reason.

City planning, construction of infra-structures, and architecture, form the core concern in orienting human destiny towards a sustainable and more dignified future. Gardening and landscape architecture

already provide models for a softer, fragile and time-conscious design practice. The ethical change in thinking and values of life is bound to arise from individuals, as societies do not seem to be capable of learning. As architects, the wise development of a sustainable attitude to life is our ethical share in this enormous task. In today's consumer culture, architecture is mostly seen as the design and production of aestheticized commodities. I wish to argue firmly that architecture is too deeply biologically, culturally, existentially and mentally grounded in our historicity – and I am here referring primarily to our bio-historicity – to be merely a realm of aesthetics or commerce. Or, rather, even our aesthetic desire and longing for beauty have to be seen in an existential and biological perspective, not as a mere pleasure or marketing strategy.

As the Nobel poet Joseph Brodsky argues, “Man is an aesthetic being before becoming an ethical being”³¹ and, consequently, sustainable architecture has a future only if we can make it aesthetically exciting and seducing. Paradoxically, sustainability has to be turned into a new concept of beauty. For me, the best examples of architecture that arise from a deep understanding of the place and its climatic and natural characteristics, such as Glenn Murcutt's buildings, and the humane High-Tech buildings by Renzo Piano, that exploit refined construction methods and new material technologies for the purposes of dynamic energy efficiency, project a special beauty, the beauty of human reason and ethics. Brodsky assures us with the conviction of a poet: “Believe it or not, the purpose of evolution is beauty.”³²

NOTES

- 1 As quoted in Edward O. Wilson, *Biophilia: The human bond with other species*. Harvard University Press, Cambridge, Massachusetts, London, England, 1984, p. 61.
- 2 Fernand Léger, *Maalaustaitteen tehtävät* [The tasks of painting], K. J. Gummerus, Jyväskylä, 1981, pp. 63, 69.
- 3 Le Corbusier, *Towards a New Architecture*. The Architectural Press, London, 1959, p. 89.
- 4 Sverre Fehn in a private conversation with the author in the Villa Mairea, 1985.
- 5 Alvar Aalto, “Art and Technology” (1955) in *Alvar Aalto in His Own Words*, edited and annotated by Göran Schildt. Otava Publishing Company, Helsinki, 1997, p. 174.
- 6 George Lakoff and Mark Johnson. *Metaphors We Live By*. The University of Chicago Press, Chicago, and London, 1980, p. 3.
- 7 Arnold H. Modell, *Imagination and the Meaningful Brain*. The MIT Press, Cambridge, Massachusetts, and London, England, 2006, p. XII.

- 8 Aristotle, Poetics 59a 8-10, as quoted in Arthur C. Danto, *Beyond the Brillo Box: The Visual Arts in Post-Historical Perspective*. Farrar, Straus, Giroux, New York, 1992, p. 73.
- 9 Robert Pogue Harrison, "Sympathetic Miracles", *Gardens: An Essay on the Human Condition*. The University of Chicago Press, Chicago and London, 2008, p. 130.
- 10 Rainer Maria Rilke, letter to Jacob Baron Uexkull, Paris 19.8.1909. Liisa Enwald, editor, "Lukijalle" [To the reader], *Rainer Maria Rilke, Hiljainen taiteen sisin: kirjeitä vuosilta 1900-1926* [The silent innermost core of art; letters 1900-1926]. TAI-teos, Helsinki, 1997, p. 8.
- 11 Joseph Brodsky, *Watermark*. Penguin Books, London, New York, 1992, p. 61.
- 12 Edward O. Wilson, op. cit., p. 1.
- 13 Aldous Huxley, *The Brave New World*, Harper Perennial Modern Classics, 2006.
- 14 Edward O. Wilson, op. cit., p. 37.
- 15 Janine Beney, *Biomimicry*. Quill William Morrow, New York, 1997, p. 132.
- 16 Karl von Frisch, *Animal Architecture*, Harcourt Brace Jovanovich, New York, 1974, p. 142.
- 17 Professor Tari Haahtela in a lecture during the "Science Days" at the Helsinki University, 15 January, 2011.
- 18 Edward O. Wilson, op. cit., p. 20.
- 19 Maurice Merleau-Ponty, *The Primacy of Perception*, Northwestern University Press, Evanston, IL, 1964, p. 162.
- 20 Albert Soesman, *Our Twelve Senses: Wellsprings of the Soul*, Hawthorn Press, Stroud, 1998.
- 21 Colin St. John Wilson, "Architecture – Public Good and Private Necessity", *RIBA Journal*, 1979, March.
- 22 Howard Gardner, *Intelligence Reframed: Multiple Intelligences for the 21st Century*, Basic Books, New York, 1999.
- 23 Matti Bergström, *Aivojen fysiologiasta ja psyykestä* [On the physiology of the brain and psyche], Helsinki, 1979, pp. 77-78.
- 24 According to Edward O. Wilson, English words average two bits per letter. A single bacterium possesses about ten million bits of genetic information, a fungus a billion, and an insect from one to ten billion bits according to species. If the information of a single insect were translated into a code of English words and printed in standard size letters, the string would stretch over a thousand miles.
- Wilson, op. cit., p. 16.
- 25 Semir Zeki, *Inner Vision: An Exploration of Art and the Brain*. Oxford University Press (Oxford), 1999, p. 1.
- 26 Op. cit., p. 22.
- 27 Op. cit., p. 2.

- 28 Gaston Bachelard, *The Poetics of Space*. Beacon Press, Boston, 1964, p. 6.
- 29 Karsten Harries, "Building and the Terror of Time", *Perspecta: The Yale Architectural Journal*, issue 19. The MIT Press ABC of Reading, New Directions Publishing Company, New York, 1987, p. 14.
- 30 Ezra Pound, *ABC of Reading*, New Directions Publishing Company, New York, 1987, p. 14.
- 31 Joseph Brodsky, *On Grief and Reason*. Farrar, Straus and Giroux (New York), 1995, p. 208.
- 32 Joseph Brodsky, "An Immodest Proposal, in op. cit., p. 207.