

# The syntax, pragmatics and semantics of life.

## Dilthey's hermeneutics of life in light of contemporary biosemiotics<sup>1</sup>

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Seitdem ich aber in der Struktur des Lebens die Grundlage der Psychologie erkannte, mußte ich den psychologischen Standpunkt zu dem biologischen erweitern und vertiefen.

Wilhelm Dilthey (1995/96)

### Introduction

Does Dilthey's hermeneutics of life (*Lebensphilosophie*) have any relevance for contemporary discussions in the philosophy of biology? In this contribution, I will argue that it does. In order to substantiate this claim, I will relate Dilthey's hermeneutic philosophy of life to contemporary developments in biosemiotics. In this context, I will focus in particular on the specific space the life sciences (*Lebenswissenschaften*) occupy in-between the natural sciences (*Naturwissenschaften*) and the human sciences (*Geisteswissenschaften*).

Unlike most other contributions to this volume, I will approach my subject from a systematic rather than a historical perspective. In connecting Dilthey's philosophy to *contemporary* developments in the life sciences and biosemiotics my approach resembles the one Christian Damböck takes in his recent analysis of Dilthey's empirical philosophy in relation to recent methodological and ontological disputes in analytical philosophy on the role of philosophy vis-à-vis the

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<sup>1</sup> This article has been written as part of the research project *Hermes' Hormones. Biomimics and Biohermeneutics*, which is attached to the program *What Can the Humanities Contribute to Our Practical Self-Understanding?*, funded by the Netherlands Organisation for Scientific Research (NWO-grant 317-20-010). It continues a line of argument which I began in J. de Mul: Understanding nature. Dilthey, Plessner, and biohermeneutics, in: G. D'Anna/H. Johach/E. S. Nelson (Hrsg.): *Dilthey, Anthropologie, und Geschichte*. Würzburg 2013, 459–78.

natural sciences.<sup>2</sup> The debates in the contemporary life sciences and biosemiotics which I will address are connected with methodological and ontological issues and the relationship between philosophy and the natural sciences too.

Mainstream Neo-Darwinian biology is characterized by a »*greedy reductionism*«<sup>3</sup> and a *mechanistic naturalism*, but in the past few decades Neo-Darwinist orthodoxy has been criticized increasingly from various sides.<sup>4</sup> Partly, this critique was formulated within the prevailing reductionist and mechanistic paradigm. In those cases, it primarily aims at a broadening of this paradigm. We may think, for example, of the debates on *top-down causation* in systems biology.<sup>5</sup> However, oftentimes the critique is more radical, aiming at nothing less than a paradigm shift in the life sciences, which would lead these sciences beyond orthodox Neo-Darwinism. Examples of this critique can be found, for example, in (the recent re-emergence of) *emergentism* in the so-called sciences of complexity, such as chaos theory, network theory, nonlinear systems, self-organizing and –constructing systems theory<sup>6</sup> and also in the fast expanding field of *epigenetics*, which studies non-genetic systems and processes of inheritance, which has given rise to a remarkable rehabilitation of Lamarck in the life sciences.<sup>7</sup> Finally, orthodox Neo-Darwinism has been criticized by *biosemiotics*, which analyzes the role codes, signals, signs and their

<sup>2</sup> Chr. Damböck: Wilhelm Diltheys empirische Philosophie und der rezente Methodenstreit in der analytischen Philosophie, in: Grazer Philosophische Studien 85 (2012), 151–185.

<sup>3</sup> The phrase is taken from D. C. Dennett: *Darwin's Dangerous Idea. Evolution and the Meanings of Life*. London 1995, 82. Although reductionism is a fruitful scientific method, in the case of Neo-Darwinism this reductionism has an ontological character as well. This strong form of reductionism is characterized by »the assertion that the whole *really is*, in the final analysis, nothing but the sum of the parts, and that the formulation of concepts, theories, and experimental procedures in terms of higher-level concepts is merely a convenience«. Ph. Clayton/P. C. W. Davies: *The Re-Emergence of Emergence: The Emergentist Hypothesis from Science to Religion*. Oxford 2006, xii.

<sup>4</sup> See for a more detailed account of this critique: J. de Mul: *Philosophical anthropology 2.0. Reading Plessner in the age of converging technologies*, in: J. de Mul (ed.): *Plessner's Philosophical Anthropology: Perspectives and Prospects*. Amsterdam/Chicago 2014, 457–475.

<sup>5</sup> D. Noble: *The Music of Life. Biology Beyond the Genome*. Oxford 2006; P. Davies: *The Epigenome and Top-Down Causation*, in *Interface Focus* 2 (2012), 42–48.

<sup>6</sup> Ph. Clayton/P. C. W. Davies, *The Re-Emergence of Emergence*, xii.

<sup>7</sup> J. Maynard Smith: *Models of a Dual Inheritance System*, *Journal of theoretical biol-*

interpretation play in living matter.<sup>8</sup> Although these approaches point to various differences, they all share the fundamental claim that the mechanistic principles that govern the micro-level are inadequate in their ability to take account of the behavior and activity of living matter.

Although these different critiques are connected in several ways, in the following I will focus in particular on biosemiotics, because this field presents striking similarities with Dilthey's empirical philosophy. Let me begin with a short overview of my paper. In the *first* part I will elucidate the similarities between recent biosemiotics and Dilthey's philosophy of life, as expressed in the *Berliner Entwurf* for the second Volume of the *Critique of Historical Reason* (1893), especially in the fragment entitled *Leben und Erkennen*. Within this context I will also discuss some recent contributions to Dilthey Studies. Besides the aforementioned article of Christian Damböck's on the empirical character of Dilthey's philosophy, I will refer to Matthias Jung's interpretation of Dilthey's philosophy of life in his article »Das Leben artikuliert sich«. *Diltheys performativer Begriff der Bedeutung Artikulation als Fokus hermeneutischen Denkens*<sup>9</sup> and his book *Der bewusste Ausdruck. Anthropologie der Artikulation*.<sup>10</sup> I will defend the thesis that both Dilthey and biosemiotics defend an emergent evolutionary theory proclaiming that life develops itself through a series of qualitatively different stages characterized by increasingly complex forms of semiosis.

In the *second* and final part I will analyze these stages in more detail, with the help of the semiotic distinction between syntax, pragmatics and semantics. Furthermore, I will elucidate Dilthey's developmental model of life by referring to Marcello Barbieri, one of the leading biosemioticians. The resulting layered biohermeneutics functions as a »ladder of understanding«, which helps us to better fathom

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ogy 143 (1990), 41–53; J. Maynard Smith/Eörs Szathmáry: *The Major Transitions in Evolution*. Oxford 1995; N. Çabej: *Epigenetic Principles of Evolution*. London 2012.

<sup>8</sup> M. Barbieri: *Introduction to Biosemiotics: The New Biological Synthesis*. Dordrecht 2007.

<sup>9</sup> M. Jung: »Das Leben artikuliert sich«. *Diltheys performativer Begriff der Bedeutung Artikulation als Fokus hermeneutischen Denkens*, in: *Revue internationale de philosophie* (2003/4), 439–54.

<sup>10</sup> M. Jung: *Der Bewusste Ausdruck: Anthropologie der Artikulation*. Berlin/New York 2009.

the subsequent stages in the process in which life understands life, »Leben erfaßt hier Leben«. <sup>11</sup>

### Three postulates Dilthey and biosemiotics share

Although the word »biosemiotics« was introduced at the beginning of the 1960s, only quite recently has it become an umbrella term that refers to a number of related, partly overlapping and partly complementary approaches at the border of the natural sciences (the life sciences in particular) and the humanities (semiotics and hermeneutics in particular), such as Darwinian semiotics<sup>12</sup>, zoosemiotics<sup>13</sup>, semantic biology<sup>14</sup>, and biohermeneutics.<sup>15</sup>

Although the theoretical background and sources of inspiration vary – ranging from Peirce, Von Üexküll, Schrödinger, Von Neumann and Bateson to Aristotle, Heidegger, and Merleau-Ponty, most biosemioticians share at least three<sup>16</sup> postulates:

1. The first postulate is that *all life forms are characterized by semiosis*, that is: processes, activities or conduct which involve the produc-

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<sup>11</sup> W. Dilthey: Der Aufbau der geschichtlichen Welt in den Geisteswissenschaften, GS VII, 136.

<sup>12</sup> T. W. Deacon: The Symbolic Species: The Co-Evolution of Language and the Brain. New York 1997.

<sup>13</sup> T. A. Sebeok: Zoosemiotics, in: American Speech 43 (1968), 142–44.

<sup>14</sup> M. Barbieri: The Organic Codes: An Introduction to Semantic Biology. Cambridge, UK 2003.

<sup>15</sup> S. V. Chebanov: Biohermeneutics and Hermeneutics of Biology, in: Semiotica 127 (1999), 215–26; A. Markoš: Readers of the Book of Life: Contextualizing Developmental Evolutionary Biology. New York 2002.

<sup>16</sup> The first two postulates were taken from Marcello Barbieri: What Is Biosemiotics?, in Biosemiotics 1 (2008), 1–3. The third postulate expresses the evolutionary emergentism that not only characterizes Barbieri's biosemiotics, but that can also be found in the following programmatic article of five prominent representatives of biosemiotics, in which they articulate a set of eight assumptions – including, in a slightly different formulation, Barbieri's two postulates – which are shared among most researchers in the field: K. Kull, T. W. Deacon, C. Emmeche, J. Hoffmeyer, & F. Stjernfelt: Theses on Biosemiotics – Prolegomena to a Theoretical Biology, in: Biological Theory 4 (2009), 167–173. The decision to restrict myself to these three postulates is not only that they are the most fundamental ones, but also that they are the most relevant for the comparison with Dilthey's philosophy of life.

tion and interpretation of codes, signals and signs.<sup>17</sup> In other words, semiosis is a defining characteristic of life. In the words of theoretical biologist Howard Pattee: »Life is matter controlled by symbols«. <sup>18</sup> The basic unit of life is the sign, not the molecule.<sup>19</sup> Semiosis is closely intertwined with functionality and interrelated notions such as organization, agency, teleology, inheritance, the creation of *Umwelt* and normativity (semiosis can succeed or fail, e.g. in cases of misinterpretation or disfunction). The presupposition that semiosis is a defining characteristic of life, which cannot be found in inanimate matter, distinguishes biosemiotics from both pansemiotics and reductionist physicalism. As Barbieri puts it:

The first postulate [...] sharply differentiates biosemiotics from pansemiotics<sup>20</sup>; the doctrine that accepts the existence of semiosis even in the physical world. And it also differentiates it from physicalism, the doctrine that denies the existence of semiosis both in the physical world and in the organic world.<sup>21</sup>

2. The second postulate is that *semiotic elements, such as codes, signals, signs, their decoding, reading and interpretation are natural phenomena*. Although biosemiotics is a strongly interdisciplinary school that draws upon the insights of quite different fields, varying from physics and biochemistry to zoology, systems theory, philosophy, and cultural studies – they share a strong empirical and at the same time anti-reductionist orientation. Although biosemiotics opposes the physicalism of orthodox Neo-Darwinism, it is no less critical of metaphysical speculations with regard to the phenomenon of life, as found, for example, in 19<sup>th</sup> century vitalism, or, more recently, in creationism. As Barbieri puts it: »This [second postulate – JdM]

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<sup>17</sup> Cf. the formulation of this first postulate by Kull et al.: »The semiotic–non-semiotic distinction is coextensive with the life–nonlife distinction, i. e., with the domain of general biology« Ibid., 168.

<sup>18</sup> H. H. Pattee: The Physical Basis of Coding and Reliability in Biological Evolution, in: C. H. Waddington: Towards a Theoretical Biology 1. Prolegomena. Edinburgh 1968, 67–93; H. H. Pattee: Physical and Functional Conditions for Symbols, Codes, and Languages, in: Biosemiotics 1 (2008), 147–68.

<sup>19</sup> J. Hoffmeyer: Signs of Meaning in the Universe. Advances in Semiotics. Bloomington 1996.

<sup>20</sup> At present, pansemiotics in particular seems to be flourishing in so-called object oriented ontology. See for example: G. Harman: Tool-Being: Heidegger and the Metaphysics of Objects. Chicago 2002.

<sup>21</sup> M. Barbieri: What Is Biosemiotics?, in: Biosemiotics 1 (2008), 1–3.

sharply divides biosemiotics from the doctrine of ›intelligent design‹, and from all other doctrines that maintain that the origin of life on earth was necessarily the product of a supernatural agency«. <sup>22</sup> For that reason, when biosemioticians talk about life in teleological terms, they use this concept in a Kantian sense, referring to an immanent form of self-organization in organisms. As Kull, Deacon, Emmeche, Hoffmeyer, and Stjernfelt have expressed in their programmatic article ›Theses on Biosemiotics – Prolegomena to a Theoretical Biology‹:

Kant's *Kritik der Urteilskraft*, one of the early masterpieces of theoretical biology, provides some interesting definitions of teleology in biology. Kant has described organisms as possessing a ›formative power‹ to construct themselves as an ›organized and self-organized being‹ in which ›every part is reciprocally both ends and means‹. <sup>23</sup>

It is important to underline that in making these definitions of teleology, Kant is, as so often, criticizing naive metaphysics where the idea of a *telos* is treated as something external to nature, which by means of strange, unknown powers affects natural processes. By contrast, his definition of *telos* is functional and thus *internal* to nature and characterizes a specific class of natural processes. It is a concept of *telos* that does not refer to unknown vitalistic forces but rather defines *telos* by a specific class of causal processes«. <sup>24</sup> In other words, the ambition of biosemioticians is to become the ›Newtons of the grass halm‹. <sup>25</sup>

3. The third postulate of biosemiotics is that *life is characterized by an emergent evolutionary history, in which the semiosis becomes increasingly more differentiated and more complex*. The first of these emergent phenomena is life itself, in the manner in which it develops out of inanimate nature. Often the emergence of life is seen as a sudden transition where the many properties defining life (like cellularity, reproduction and metabolism) arise together or are tightly interconnected. However, in accordance with present research into the

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<sup>22</sup> Ibid.

<sup>23</sup> I. Kant: *Kritik der Urteilskraft*. Werkausgabe Band X, Frankfurt 1968, B295–296. Quoted after the English translation by J. C. Meredith: *I. Kant: The Critique of Judgment*. Oxford 1952.

<sup>24</sup> K. Kull, T. W. Deacon, C. Emmeche, J. Hoffmeyer, & F. Stjernfelt: *Theses on Biosemiotics. Prolegomena to a Theoretical Biology*, 170.

<sup>25</sup> I. Kant: *Kritik der Urteilskraft*, B338.

origins of life, biosemioticians regard emergence as a heterogeneous and gradual process.<sup>26</sup> Referring to the idea of a sudden transition, Kull et al state:

However, this appears to be both too simple and implausible. There is no simple dividing line where all the interconnected properties of living systems, as we know them, emerge. Instead we observe what we call a threshold zone, probably involving incremental stages in which different component processes emerge.<sup>27</sup>

But also the subsequent transformations in which semiosis gradually differentiate, and phenomena like consciousness and self-consciousness emerge, are taking place in what biosemioticians refer to as threshold zones rather than single events. ›Mind‹ is not a single homogeneous phenomenon, but a complex, embodied phenomenon, which is enacted, embedded in and extended to its environment. Our mind expresses itself in a variety of functions, such as memory, awareness, feelings, language etc. And in each stage in this development the foregoing elements are being integrated into a more complex whole.

Let me, following this concise description of the three main postulates of biosemiotics, compare these postulates with comparable elements in Dilthey's philosophy of life. That human life is inherently connected with signs – expressions that have a meaning and can be interpreted – is a postulate that evidently connects biosemiotics with Dilthey's hermeneutics. However, there seems to be an important difference. Whereas according to biosemiotics semiosis begins with the emergence of life in the first primitive cells, Dilthey often seems to restrict understanding and interpretation to the human world. Unlike Plessner, who expanded Dilthey's view in such a way that expressivity appears as a characteristic of life as such, Dilthey was reluctant to extend his hermeneutics to non-human life.

Thus we read in the *Einleitung in die Geisteswissenschaften*:

Die Tatbestände in der Gesellschaft sind uns von innen verständlich, wir können sie in uns, auf Grund der Wahrnehmung unserer eigenen Zustände, bis auf einen gewissen Punkt nachbilden, und mit Liebe und Haß, mit lei-

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<sup>26</sup> R. M. Hazen: *Genesis: The Scientific Quest for Life's Origin*. Washington DC 2005.

<sup>27</sup> K. Kull, T. W. Deacon, C. Emmeche, J. Hoffmeyer, & F. Stjernfelt: *Theses on Biosemiotics – Prolegomena to a Theoretical Biology*, 168.

denschaftlicher Freude, mit dem ganzen Spiel unserer Affekte begleiten wir anschauend die Vorstellung der geschichtlichen Welt. Die Natur ist unstumm.<sup>28</sup>

And also in a late work such as *Der Aufbau*, Dilthey still explicitly denies the possibility of a human understanding of plant life: »Bedeutung oder Wert kann etwas nicht haben, von dem es kein Verstehen gibt. Ein Baum kann niemals Bedeutung haben.«<sup>29</sup> The possibility of understanding or interpretation *by* non-human agents such as animals, plants, tissues or cells is not even considered by Dilthey.<sup>30</sup>

In the last quote, concerning the tree that lacks meaning, Dilthey seems to have mainly higher expressions of human life (*Erlebnisausdrücke*) in mind. However, when we think of what Dilthey in his later *Entwürfe zu einer Kritik der historischen Vernunft* calls *technical understanding*, the situation seems to be more nuanced. Technical understanding, Dilthey argues, does not contain the whole nexus of life in which an action takes place but only the purposive system, which lies embodied in the action.<sup>31</sup> The purposive nature of the behavior of a person who picks up a hammer and knocks a nail into the wall can be understood irrespective of that person's feelings and motives. The »inner« that is understood here concerns the internal relation between the different acts that constitute this action (cf. Heidegger's analysis of tools in *Sein und Zeit*<sup>32</sup>). This kind of pragmatic understanding, if we may call it thus, we can also have of animals. I can perfectly understand the behavior of my dog when he invites me to play. I do not so much reconstruct or re-experience what is going on in its head, but I grasp his embodied intention in our ›second entity perspective‹ interaction.<sup>33</sup>

Moreover, in the middle period of his development, and especially in *The Berliner Entwurf* and some related texts, Dilthey seems to be more open to the idea of an evolutionary continuity of meaning. In *Leben und Erkennen* (1892/93), for example, we read:

<sup>28</sup> GS I, 36.

<sup>29</sup> GS VII, 259.

<sup>30</sup> Cf. J. de Mul: Understanding Nature. Dilthey, Plessner and Biohermeneutics, 468 ff.

<sup>31</sup> GS VII, 206; cf. J. de Mul: The Tragedy of Finitude. Dilthey's Hermeneutics of Life. New Haven 2004, 250 f.

<sup>32</sup> M. Heidegger: *Sein und Zeit*. Tübingen 1979, 68 ff.

<sup>33</sup> Cf. J. de Mul: Understanding Nature. Dilthey, Plessner and Biohermeneutics.



Die Struktur und Artikulation des Lebens überall, wo psychisches Innen auftritt, sonach in der ganzen Tier- und Menschenwelt dieselbe. [...] Die Entwicklung der Lebewesen zu höheren Formen ist also nach der Innenseite angesehen eine Artikulation; das Leben artikuliert sich. Und dieser inneren Artikulation entspricht die äußere des tierischen, organischen Körpers in einer Reihe von Stufen.<sup>34</sup>

In this quote, the articulation of life, which implies both self-expression and the possibility of understanding these expressions, seems not to be restricted to human life.

With the remark on the »Reihe von Stufen« we already enter the territory of the third postulate concerning the evolution of life. However, before discussing this in more detail, I will first discuss the second postulate concerning the empirical and anti-metaphysical stance in Dilthey. Here it seems to be evident that Dilthey and biosemiotics are in accordance with each other. I only have to call to mind Dilthey's famous dictum »Empirie, nicht Empirismus«. <sup>35</sup> Just like the biosemioticians, Dilthey advocates an empirical approach, both as a historian and as a philosopher. The affinity goes even deeper, since both Dilthey *and* biosemiotics explicitly reject empiricism when it quasi-a priori and dogmatically declared one specific form of experience (namely the outer, which is characteristic of the reductionist natural sciences) to be the only possible form thereof.

In his aforementioned article on Dilthey's empirical philosophy, Christian Damböck also emphasizes the non-reductionist character of Dilthey empirical approach:

Die logischen Formen, die Begriffe, die Werte, kurz: die »geistigen Gegenstände« sind empirisch, aber weder in dem naiv platonischen Sinn der empirischen Wahrnehmung von Ideen noch im Sinne einer materialistischen Theorie, die diese Dinge letztlich physiologisch zu analysieren versucht. <sup>36</sup>

In his philosophy of life Dilthey – not without reason referred to by Habermas as the first post-metaphysical philosopher in modern philosophy – is utmost critical of metaphysical explanations. After all, the second book of the *Einleitung in die Geisteswissenschaften* (and as such an integral part of the planned *Kritik der historischen Vernunft*) is even devoted to what Dilthey – using an interesting biolo-

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<sup>34</sup> GS XIX, 345.

<sup>35</sup> GS XIX, 17.

<sup>36</sup> Chr. Damböck: Wilhelm Diltheys empirische Philosophie, 162.

gical metaphor! – calls an »Euthanasie der Metaphysik«. <sup>37</sup> Finally, with regard to the Kant-inspired notion of immanent teleology, Dilthey's position is close to the position of the biosemioticians too. In the context of his descriptive psychology, but also in his ethical writings and in the later *Aufbau*, Dilthey emphasizes again and again the immanent character of »dem teleologischen Charakter des Seelenlebens«. <sup>38</sup>

This brings us back to the crucial third postulate on the emergent evolution of life. Here, too, the affinity between Dilthey's historicized Kantianism, which foreshadows developments in evolutionary epistemology and psychology, and the biosemioticians is remarkable.

Das a priori Kants ist starr und tot; aber die wirklichen Bedingungen des Bewußtseins und seine Voraussetzungen, wie ich sie begreife, sind lebendiger geschichtlicher Prozeß, sind Entwicklung, sie haben ihre Geschichte, und der Verlauf dieser Geschichte ist ihre Anpassung an die immer genauer induktiv erkannte Mannigfaltigkeit der Empfindungsinhalte. <sup>39</sup>

Discussing Dilthey's historization of the Kantian a priori, Christian Damböck also emphasizes the developmental dimension in Dilthey's thinking: »In Wahrheit sind die logischen Formen keine naturgegebenen ewigen Vorgaben, die Logik ist nicht analytisch oder transzendental, sondern die logischen Formen sind das Produkt ›bloßer Anpassung‹ [...] (XVIII, 199)«. <sup>40</sup>

However, according to Damböck, we should not understand this adaption (*Anpassung*) as an evolutionary phenomenon. The just quoted passage continues: »eine Anpassung, die bei Dilthey jedoch nicht *evolutionsbiologisch* gedacht ist, sondern *soziologisch-psychologisch-historisch*, als das Produkt unserer (über Jahrtausende gehenden) *Erfahrungen des Denkens* bzw. der Geschichte unserer Sprache und Kultur«. <sup>41</sup>

Although it is certainly true that the sociological, psychological and historical dimension of life received most attention in the published works of Dilthey, in my view Damböck underestimates the importance Dilthey ascribes to the role of biological evolution and to biology as part of the planned *Kritik der historischen Vernunft*. Espe-

<sup>37</sup> GS I, 405.

<sup>38</sup> GS IX, 185, cf. GS VII, 57.

<sup>39</sup> GS XIX, 44, cf. 51.

<sup>40</sup> Chr. Damböck: Wilhelm Diltheys empirische Philosophie, 162.

<sup>41</sup> Ibid.

cially in the middle period, Dilthey frequently refers to biological evolution in a Darwinian sense. Damböck himself quotes several passages from the Nachlass in which Dilthey explicitly uses the word »evolution«. For example, in one of the preparatory texts for the *Ideen* Dilthey remarks: »Die Ausdrücke Entwicklung, Evolution, Entfaltung sprechen zutreffend die Art von Kausalität aus, welche hier waltet«. <sup>42</sup>

Furthermore, in the *Berliner Entwurf* Dilthey explains:

[3.] Die Wechselwirkung zwischen dem Selbst, das gleichsam von einem Körper umschlossen ist, und den Objekten hat ihren Ausdruck in der Struktur alles inneren Lebens. Diese erfahren wir in uns, und wir finden sie wieder in anderen Lebewesen. Sie beruht darin, daß inmitten der Reize, welche aus dem Milieu auf ein Lebewesen eindringen, dieses entsprechend der Befriedigung seines Trieb- und Gefühlssystems in Reaktion auf diese Objekte dieselben seinen Erfordernissen anpaßt, bezüglich sich dem Unveränderlichen anpaßt.

Diese Struktur finden wir in jedem Lebewesen verwirklicht. Sie vollzieht aber die Aufgabe, welche subjektiv als Triebbefriedigung und Gefühls-gleichgewicht, objektiv als individuelle Erhaltung und Fortpflanzung bezeichnet werden kann, in verschiedenen Graden von Vollkommenheit der Anpassung vermittelt verschiedener Stufen der Differenzierung der Funktionen und ihrer Verbindung.

Dies ist das große Gesetz alles Lebens, welches die ganze tierische Welt durchwaltet. Dieses ist dasselbe, ob man ihm die Erklärung von Aristoteles oder Cuvier, Goethe, Lamarck oder Darwin unterlegt. Es selbst unterliegt keinem Streit und ist keinem Zweifel ausgesetzt. <sup>43</sup>

In the *Berliner Entwurf*, Dilthey even explicitly states that he wishes to expand his psychology with a complementary aspect of biology, since the biological constitution of man is the foundation of the human mind: »Seitdem ich aber in der Struktur des Lebens die Grundlage der Psychologie erkannte, mußte ich den psychologischen Standpunkt zu dem biologischen erweitern und vertiefen«. <sup>44</sup> Now, one could object that these quoted statements belong to the period in which Dilthey still intended to make psychology the foundation of the humanities, but that after his hermeneutic turn of around 1900 he rejected the biological dimension together with his earlier descrip-

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<sup>42</sup> GS XXII, 12. Quoted in Chr. Damböck: Wilhelm Diltheys empirische Philosophie, 155.

<sup>43</sup> GS XIX 309.

<sup>44</sup> GS XIX, 345.

tive psychology. However, for several reasons this objection is questionable. As most Dilthey scholars seem to agree nowadays, Dilthey's ›hermeneutic turn‹ does not so much imply a complete abandonment of his descriptive psychology, but rather an integration of its findings into a broader hermeneutic framework. One obvious indication for this continuity is that Dilthey included many passages of earlier descriptive-psychological writings *ad verbum* in his later writings. Moreover, Dilthey continues to refer to the role of evolution in later writings, such as the *Aufbau*: »Auf dem Boden des Physischen tritt das geistige Leben auf; es ist der Evolution als deren höchste Stufe auf der Erde eingeordnet.«<sup>45</sup>

In »*Das Leben artikuliert sich*«. *Diltheys performativer Begriff der Bedeutung Artikulation als Fokus hermeneutischen Denkens*, Matthias Jung proposes an interesting explanation for these persistent references to biological evolution. Since the subsequent stages of the evolution of life can be comprehended as an integration and transformation of earlier structures on a new emergent level, the hermeneutic trias of *Erlebnis*, *Ausdruck* and *Verstehen* should, according to Jung, be understood as a transformation of an earlier biological structure: »Diese Basisstruktur, wie sie im *Aufbau der geschichtlichen Welt in den Geisteswissenschaften* immer wieder variiert und erläutert wird, kann man als eine Rückübertragung des Reflexbogen-schemas Reiz-Verarbeitung-Reaktion auf die kulturelle Sphäre verstehen.«<sup>46</sup>

Given the developmental and differential character of Dilthey's concept of life, this does not surprise. After all, as we have already seen, Dilthey claims in the *Berliner Entwurf* that the structure of life realizes itself »in verschiedenen Graden von Vollkommenheit der Anpassung vermittelt verschiedener Stufen der Differenzierung der Funktionen und ihrer Verbindung.«<sup>47</sup>

In order to elucidate this transformational model of the evolution of life I will return to semiotics and more particularly to a basic distinction that is generally made between the syntactical, pragmatic and semantic dimension of the sign.<sup>48</sup>

<sup>45</sup> GS VII, 196.

<sup>46</sup> M. Jung: »Das Leben artikuliert sich«, 447.

<sup>47</sup> GS XIX 309.

<sup>48</sup> In his article, and – in more detail – in his book *Der bewusste Ausdruck: Anthropologie der Artikulation*, published in 2009, Jung argues that in the proces of articulation »dem nichtmethodische individuelle Erfahrung in einen symbolischen Ausdruck

## The syntax, pragmatics and semantics of life

The distinction, commonly made in semiotics, between syntax, pragmatics and semantics, refers to three different though structurally related dimensions of the process of semiosis. The syntactic dimension concerns the formal relationships within and between the signs being used; the pragmatic dimension concerns the relationship between the sign and the user, and the semantic dimension concerns the meaning (sense and reference) of the sign. Their structural relationship can be made clear by defining semiosis as a process that a) occurs with a certain probability or frequency within a sequence or arrangement of physical events, b) contains the potential to modify the mental and/or physical actions or behavior of the recipient in a particular way, and to which c) a specific reference and meaning is ascribed by a recipient.<sup>49</sup> A simple example: when during my stay in Vienna I read in the newspaper that there will probably be rain in the capital tomorrow. This relates to the specific arrangements of the letters printed in the newspaper (syntax), the effect these signs have on my behavior, for example resulting in me taking my umbrella with me when I go outside (the pragmatic dimension) and this presupposes that I know what the words »rain« »probably« and »tomorrow« refer to (semantics).<sup>50</sup> Moreover, all kinds of connotations may be connected with this, depending on my horizon of experience, for example reading the weather forecast I may realize that the boat to Bratislava will probably not depart due to the heavy rainfall and the resulting rise of the water level of the Donau.

In biosemiotics the same distinction can be made – sometimes

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transformiert wird, dessen Verständlichkeit sich intersubjektiv geltenden und eben deshalb immer explizierbaren Erzeugungsregeln verdankt«. M. Jung, »Das Leben artikuliert sich«, 441. »Bedeutung« für Dilthey bekanntlich »die umfassende Kategorie, unter welcher das Leben auffassbar wird« (GS VII, 232), ist Resultat von leiblichen Artikulationen endlicher Menschen, die sich lebensweltlich zumeist aus der Teilnehmerperspektive sozialer Werte auf die objektive Welt beziehen«. M. Jung, »Das Leben artikuliert sich«, 442. »Verständlich ist das Leben, insofern es objektive Ausdrucksformen erzeugt. Deren Sinn wird erschlossen im Zusammenwirken semantischer, syntaktischer und pragmatischer Regeln«. Ibid. 452.

<sup>49</sup> J. de Mul: *The Informatization of the Worldview*, in: *Information, Communication & Society*, 2 (1999), 604–29.

<sup>50</sup> Because of the semantic composability of human language, the syntax also has its influence on the (semantic) meaning. »Mary hits John« does not have the same meaning as »John hits Mary«.

named biosyntax, biopragmatics and biosemantics. A dog, for example, may understand the specific behavior of another dog, e. g. bearing its teeth, as a sign of aggression and may act accordingly. Cells and organs produce many different transmitters and hormones which enable the communication between the different parts of the body. However, it is clear that the dog's interpretation or the communication between organs is of a different order than a human person interpreting the weather forecast in the newspaper. In order to understand the differences in these various kinds of semiosis, both a precision and a historization of the phenomenon semiosis is necessary.

The definition I gave of semiosis was a very general one, making it possible to apply it to a wide variety of phenomena. The definition of the pragmatic dimension, for example, may refer to a human being, an animal, a plant or a machine. After all, the thermostat, which on the basis of temperature switches the central heating on or off is also changing its behavior because of the signals it gets from the environment. In this respect, even this simple device is involved in semiosis, in contrast to, for example, the thermometer, which reads the temperature but does nothing with that information. And this even applies to simple molecules, the so-called replicators, which with the assistance of smaller molecules in their vicinity make copies of themselves.<sup>51</sup>

However, with regard to the semantic dimension, important distinctions must be made. Per definition, a sign refers to something outside itself. However this reference can take place in different ways. It can, as in the case of the indexical sign, be determined causally (for example, when a catalyst causes a chemical reaction in an organ), but it can also take place iconically on the basis of an analogy (the dog recognizing certain movements as playful behavior and interpreting them as an invitation to play) or symbolically, based on conventional signs. In order to distinguish between these different kinds of semiosis, often different words are used, for example codes, signals and signs in a more restricted sense (understood as arbitrary symbols).

In general, three basic types of semiosis can be distinguished. As Marcello Barbieri aptly expresses it:

Life is essentially about three things: (1) it is about manufacturing objects, (2) it is about assembling objects into functioning structures and (3) it is about interpreting the world. The discovery that these are all semiotic pro-

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<sup>51</sup> R. Dawkins: *The Selfish Gene*. Oxford 1976.

cesses, tells us that life depends on semiosis much more deeply and extensively than we thought on the basis of the interpretive semiotics of Peirce. This approach, in other words, is not wrong, but too limited, too restrictive. There are three distinct types of semiosis in Nature and interpretive semiosis is only one of them.<sup>52</sup>

It's not difficult to recognize the semiotic division between the syntax, pragmatics and semantic dimension of semiosis in the three dimensions mentioned by Barbieri.

It is important to keep these differences in mind, as in the crypto-semiotic terminology of Neo-Darwinism semiotic terms are often used in a very loose way, which easily causes considerable conceptual confusion. In genetics, for example, it is common to use semiotic terms like »information«, »adaptation«, »signal«, »cue«, »code«, »messenger«, »fidelity«, and »cross talk«. However, »these uses are seldom well defined and are often applied in an allegedly metaphoric way, with the implicit assumption that they can be reduced to mere chemical accounts if necessary.«<sup>53</sup> Barbieri gives a concrete example of this confusion:

The genetic code is often compared to the Morse code because both can be described by a set of »transformation rules«, but in reality this is only a superficial analogy. For one thing, the Morse code is perfectly *reversible*, or *invertible*. It transforms the letters of the alphabet into dots and dashes and, vice versa, dots and dashes into letters of the alphabet, whereas nothing of the kind takes place in the cell. The genetic code is absolutely *irreversible*, or *non-invertible*. It goes from genes to proteins and absolutely not vice versa. The reverse transformation is not just avoided, it is physically impossible. Another major difference is that the messages written in Morse are perfectly equivalent to those of the Alphabet world. They carry exactly the same information and are simply two different ways of expressing the same reality. The Morse code, in short, transforms a world of entities into a world of equivalent entities. In the case of the genetic code, instead, the situation is totally different. Genes and proteins are not at all equivalent objects, they belong to completely different worlds. This is because protein synthesis is not just a semiosis, but a manufacturing semiosis, i. e., a type of semiosis whose function is to produce objects that cannot come into existence in any other way (the manufacturing processes of the cell should not

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<sup>52</sup> M. Barbieri: A Short History of Biosemiotics, in: Biosemiotics 2 (2009), 234.

<sup>53</sup> K. Kull, T. W. Deacon, C. Emmeche, J. Hoffmeyer, & F. Stjernfelt: Theses on Biosemiotics – Prolegomena to a Theoretical Biology, 169.

be assimilated to those of our machines because cells have an internal code-maker, whereas in our machines the codemaker is outside them).<sup>54</sup>

Signaling semiosis plays another role; it is not about generating objects, but it organizes them into functional wholes. Interpretive semiosis has yet another function, as it plays a crucial role in the self-maintenance of an organism. And just as in the case of manufacturing and signaling semiosis there are distinct forms. The way an amoeba interacts with its *Umwelt* is quite different from the way a chimpanzee interprets its *Umwelt*, and in the case of human beings endowed with language yet another layer of semantics comes into existence, changing the *Umwelt* of the animal into a *Welt*. The ongoing process of differentiation, which characterizes the evolution of semiosis, here results in a gradual transcending of the pragmatic dimension by the semantic one. In »Diesseits der Pragmatik. Semiotische und hermeneutische Aspekte der Reflexivität des Lebens« Frithjof Rodi offers an interesting analysis of what he calls the »transfunktionale Realisation«, a term which refers to the phenomenon »daß *innerhalb* des handelnden Lebens immer wieder der Ablauf zielgerichteter, zweckrationaler Vorgänge transzendiert wird auf Bedeutsamkeit hin.«<sup>55</sup> Here we enter the domain of what Dilthey terms the *Erlebnisausdruck*, and which – at least for human beings – can be regarded as the final stage of semiosis.

If we consider the history of semiosis, there seems to be a certain order in which the three dimensions of semiosis appear. There is no semiosis without the material stuff needed for the spatial and temporal arrangement of the signs: the atoms and molecules, which appeared after the Big Bang, 13.8 billion years ago. The pragmatic dimension is connected with the origin of life, about 3.8 billion years ago, whereas in the case of human beings the semantic function developed itself in various sub stages, ranging from the implicit understanding of the intentions of others to the explicit interpretation of the meaning of thoughts expressed with the help of arbitrary symbols. And each new stage is characterized by a reconfiguration of the whole structure of life. The territorial attitude of animals, for example, finds its expres-

<sup>54</sup> M. Barbieri: A Short History of Biosemiotics, 233.

<sup>55</sup> F. Rodi: Diesseits der Pragmatik. Semiotische und hermeneutische Aspekte der Reflexivität des Lebensblockakß'ßblockakß, in: Ders.: Erkenntnis des Erkannten. Zur Hermeneutik des 19. Und 20. Jahrhunderts. Frankfurt a. M. 1990, 68–87.



sion in the higher semantic domains as patents and copyrights on ideas.

Each of the dimensions of semiosis seems to be connected with a particular type of experience. The syntax of life – as studied in the natural sciences – is experienced from a third-person perspective (what Dilthey calls outer experience, *äussere Erfahrung*). The pragmatic dimension of life is predominantly experienced from a second-person perspective, which we could call interactive experience (*interaktive Erfahrung*). The semantics of life, finally, is experienced when we take a first-person perspective (*innere Erfahrung*). In human communication we often combine these perspectives, for example when we try to understand the inner life of another person (inner experience) via his expressions (given in outer experience) or interactions with us (interactive experience).

In the first part of this chapter I discussed the objections semioticians have raised against the reductionistic method and mechanistic ontology of Neo-Darwinism, in which there is no place for semiosis. However, within the biosemiotic movement there is also a tension between the position Barbieri defends and the biohermeneutics of authors like Anton Markoš. In his book *Readers of the Book of Life: Contextualizing Developmental Evolutionary Biology*, Markoš, inspired by the philosophical hermeneutics of Heidegger and Gadamer, and motivated by a similar critique of orthodox Neo-Darwinism, as found in Barbieri's work, develops a framework for a general biohermeneutics that emphasizes the role of interpretation in living nature and in which he proposes studying the history of life as a ›narrative‹, just as we study the history of culture.<sup>56</sup>

However, according to Barbieri, Markoš overstretches the role of symbolic interpretation by claiming that even single cells are capable of interpretation. In reality, says Barbieri, manufacturing semiosis only requires coding and decoding,

and there is no need to assume anything more complicated than that in single cells. Hermeneutic biosemiotics, in conclusion, wants to turn biology into a field of the humanities, whereas code biosemiotics wants to keep it within science, because meaning is a natural entity and we must introduce it in science just as we have introduced the concepts of energy and information. And this is not because science is superior to the humanities. It is

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<sup>56</sup> A. Markoš: *Readers of the Book of Life: Contextualizing Developmental Evolutionary Biology*. New York 2002.

because organic meaning exists in the organic world just as cultural meaning exists in the cultural world.<sup>57</sup>

Although Barbieri – trained as a natural scientist and working as an embryologist at the University of Ferrara, Italy – sometimes seems to be inclined to comprehend biosemiotics on the whole as an objectivist science – he certainly has a point in his critique of Markoš overstressing the role of symbolic interpretation in nature.<sup>58</sup> The question remains, however, how in the interdisciplinary project of biosemiotics the relationship between the different disciplines involved should be conceptualized. Herein lies an important task for biosemiotics, including biohermeneutics. Biohermeneutics and biosemiotics are not only methods within the life sciences and humanities to interpret concrete expressions of life (as occurs for example in zoosemiotics, neurosciences and the human sciences), but they can also play a role as an auxiliary science for each of the three classes of sciences in the study of life. By explicating the basic semiotic and hermeneutic structures and processes that characterize life, they not only help to establish the basic vocabulary for life sciences and human sciences, but they can also help to reconstruct the emergence of the subsequent stages in the evolution of life and to conceptualize the relationship between the three classes of sciences.

In this context, Dilthey's remark on the relationship between the natural sciences, life sciences and human sciences in his essay ›Die Entstehung der Hermeneutik‹ (1900) is highly relevant. In the ›Zusätzen aus den Handschriften‹ we read:

Es sind selbstverständlich [...] dieselben elementaren logischen Operationen, die in den Geistes- und Naturwissenschaften auftreten. Induktion, Analysis, Konstruktion, Vergleichung. Aber darum handelt es sich nun, welche besondere Form sie innerhalb des Erfahrungsgebiets der Geisteswissenschaften annehmen. Die Induktion, deren Data die sinnlichen Vorgänge sind, vollzieht sich hier wie überall auf die Grundlage eines Wissens von einem Zusammenhang. Dieser ist in den physikalisch-chemischen Wis-

<sup>57</sup> M. Barbieri: A Short History of Biosemiotics, 235–6.

<sup>58</sup> The distinction Dilthey makes between the technical understanding of the purposive nature of action and the understanding of expressions of lived experience (*Erlebensausdrücke*) is relevant here. Whereas we may attribute technical understanding to animals, for example when a predator ›understands‹ the escape behavior of its prey and acts accordingly, they will not – probably with some exceptions, such as the great apes – have a theory of mind and as a consequence will not re-experience the first-person perspective experiences of their prey.

senschaften die mathematische Kenntnis quantitativer Verhältnisse, in den biologischen Wissenschaften die Lebenszweckmäßigkeit, in den Geisteswissenschaften die Struktur der seelischen Lebendigkeit.<sup>59</sup>

In light of this three-part division of the sciences we should rephrase Dilthey's dictum from the *Einleitung* that »Die Tatsachen des Geistes sind die oberste Grenze der Tatsachen der Natur, die Tatsachen der Natur bilden die unteren Bedingungen des geistigen Lebens.«<sup>60</sup> We could reformulate this as follows: the various aspects of the phenomenon of life, such as having a boundary, reproduction, metabolism, structure, development and teleology, designate the upper limits of the natural sciences, whereas the facts of inanimate nature constitute the basic conditions for living matter. And the various aspects of (self) consciousness, such as language, meaning, memory and anticipation, designate the upper limits of the life sciences, whereas the facts of the life sciences constitute the basic conditions for mental life.

In this context, we could, following Theo de Boer in his book *Foundations of a Critical Psychology*, speak of a »ladder of understanding«<sup>61</sup>, which we could climb or descend, depending on the context of the problems we are dealing with. De Boer himself, in the context of psychotherapy, proposes that in a therapeutic context one should always start high up on the ladder and assume that everything the patient says is meaningful. Only when the communication breaks down, does one go one step down and – in our terminology – approach the words of the patient from a pragmatic point of view and resort to a functional explanation. And should a functional explanation fail, one should go back to the level of causal explanation.<sup>62</sup>

Although biosemiotics and biohermeneutics can help us to understand the developmental patterns that underlie the different subsequent stages in nature, from inanimate matter to self-conscious life, one may wonder whether we will ever be able to fully understand the major transformations from inanimate matter to living matter and

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<sup>59</sup> GS V, 334–335.

<sup>60</sup> GS I, 17.

<sup>61</sup> Th. De Boer: *Foundations of a critical Psychology*, Pittsburgh 1983.

<sup>62</sup> Often stepping down the ladder of understanding is the result of a failed downward causation. For example, in a compulsive neurosis, the patient is not able to (downwardly) control his drives. His behavior can only be explained by directing our attention to its function within the survival of life. And, when this fails, a psychiatrist may try to explain the behavior of his patient by determining the cause (e.g. a lack of a certain chemical substance).

from living matter to self-conscious matter. Maybe it is at this juncture that we stumble upon what Dilthey terms the *Unergründlichkeit* des *Lebens*. However, this unfathomability should not prevent us from the examination of our lives in the spirit of Socrates. After all: »Philosophie ist gar nicht eingeschränkt auf irgendeine bestimmte Antwort auf die Frage des Lebensrätsels, sie ist dieses Fragen und Antworten überhaupt«. <sup>63</sup>

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<sup>63</sup> GS V, cxiii.