The informed performer : towards a bio-culturally informed performers' practice

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Chapter 3: Coming to terms with information – spadework into the history of words and ideas

"A word never —well, hardly ever—shakes off its etymology and its formation. In spite of all changes in the extensions of and additions to its meanings, and indeed rather pervading and governing these, there will still persist the old idea."
(Austin, 1961/1970, p. 201)

"You must realize that when you take a word in your mouth, you have not taken up some arbitrary tool which can be thrown in a corner if it doesn't do the job, but you are committed to a line of thought that comes from afar and reaches on beyond you. What we do is always a kind of changing back, which I want to call in a very wide sense 'translation'."
(Gadamer, 1960/2004, p. 552)

In the previous chapter an extensive panoply of understandings surfaced with regard to the role, status and use of 'information' in the field of score-based performance. These findings indicate a state of underdetermination and a predominantly intuitive handling of a term that serves multiple context- and orientation-dependent purposes. Taking into account information's intrinsic affinities, either antagonistically or sympathetically, with powerful notions such as imagination, inspiration, learning, cognition, truth, authenticity, learning, liberation, a more grounded and systematic understanding of information's genealogical background is mandatory in order to come to a considered, actualised and potentially game-changing role for information in the practice of performing. The spadework into the history of words and ideas presented hereafter is a means to that end and serves two more punctual purposes: 1/ challenging (and deconstructing) cherished beliefs with regard to 'information' and its incompatibility with the field of 'imagination'; and 2/ offering a horizon of possibilities which hold the potential to contribute to sketching the contours of a considered understanding of the informed performer by the end of PART I. The genealogies of information and its alleged counter-term imagination are very rich and complex; in order to pursue our enquiry in a systematic way, we hold on to a terminological and discourse-oriented approach we initiated in the previous chapters and keep to John D. Peters' four-fold, macro-historical analysis of information as a leading narrative structure as introduced in Chapter 1 and summarized in Fig. 1.1 (Peters, 1988, p. 10).

3.1 The reign of Forms (Antiquity – Late Middle-Ages)

A first form of life which is foundational in the development of information and imagination as conceptual spaces spans an extensive period starting in antiquity and continuing until the seventeenth century (with the Renaissance as a *stretto*-period). The unifying backbone is the Platonic Form-centred, cosmological worldview which dominates Greek-Roman philosophy for centuries, manages to survive

within the framework Christian creational metaphysics of the Church Fathers and the Scholastics (St. Augustine, Thomas Aquinas), and remains influential in Renaissance humanism. Antiquity's preoccupation with eternal 'Forms' and later with the process of *in-forma-tion*[81] is strongly related to a mind-set that ignites in antiquity and quests for stable and eternal truths backgrounding the volatility of the phenomenal world; the preceding knowledge cultures in Egypt, Mesopotamia and Babylonia focused primarily on practical outcomes and religious integration rather than on causality and knowledge for its own sake (Guthrie, 1962, p. 35). It is with posing the all-important 'why?'-question that a demand for generalization, abstraction and universal principles comes to be of central importance in ontology, epistemology and education. Here, 'Form', presented as the ultimate essence of things, is discovered and sets the stage for a divergence between *Forms* and *Images*.

From a linguistic point of view, the histories of both 'information' and 'imagination' can be captured in three ensuing linguistic moments wherein the concepts acquire their formal statuses[82].

1. The Greek notions 'τύπος*/týpos'* (shape, imprint), 'μορφή/*morphḗ*' (form), 'ἰδέα*/ĭdĕa*' (Idea/Form), 'εἶδος*/eîdos*' (essence) semantically precede the Latin '*forma*' (Ernout, Meillet, & André, 2001, p. 247) and dialogue with imagination's precedents: 'μίμησις*/mímēsis*' (imitation), 'εἰκών*/eikṓn'* (image), 'εἴδωλον*/eidolon'* (phantom, image in the mind), *'*φαντασία*/phantasia'* (appearance).
2. '*Forma*' gives rise to and its active derivations '*informare*' and '*informatio*' in Latin. '*Phantasia*' survives the translation from Greek into Latin and it is only in the post-classical era that its alter ego '*imaginatio*' enters the Latin vocabulary as "the action of picturing mentally" (Glare, 1968, p. 831) [83]
3. 'Information' eventually enter the French, English and German vocabularies in the late Middle Ages and around 1200 CE '*imagination*' is found in French and later also in English and German vocabularies.

Taking these three linguistic moments as structural markers (3.1.2. to 3.1.4.), we will now zoom in on the semantic spectrum that is developed in these early days of information and imagination, with a view to arrive at a more nuanced assessment of the alleged information-imagination dualism.

[81] In Latin, the prefix 'in-' in combination with 'forma' can mean either a negation or an action-oriented intensification (Capurro, 1978, pp. 51–52).

[82] For future reference the numbers are preceded by an 'L' (linguistic moment).

[83] St. Augustine of Hippo (354-430 CE) is considered to be among the first to use '*imaginatio*' as an alternative to '*phantasia*'; the Lewis and Short dictionary (Lewis & Short, 1879) indicates that '*imaginare*' appears only post-Augustinus. St. Augustin posits three classes of images/phantasiae according as they originate with the senses (memory of a face), or the imagination (supposing things that have no existence – e.g. winged dragons,), or the faculty of reason (geometrical figures and musical harmonies) (St. Augustin, 1886, pp. 314–315).

3.1.1 Pre-classical roots

The tension between a perfectly formed and stable metaphysical order and the cognitive limitations of earthlings, longing to gain access to that sublime order, is already foreshadowed, pre-classically, in the books of the Old Testament (Kearney, 1988, p. 47). There, the idea of imagination is granted a role, both implicitly as well as explicitly, in a process of divine creation[84], and this qualitative differentiation between divine and human creation initiates the *Form-Image* dualism in antiquity. In the first chapter of *Genesis*, the relation between imagination, creation and Form-like, metaphysical constituents is still (and seemingly) unproblematic while being situated in a material context: God forms a habitable world by separating and ordering[85] the (chaotic) elements of an existing universe[86], followed by the creation of mankind, based on his own image[87]. These initial acts of creation are both subsumed under the concept of '*bara*' in Hebrew[88]. In chapter two of *Genesis* a new account related to the creation of humankind is posited and placed under a new denominator, '*yetzer*' or '*yatzar*': "Then the Lord God formed man from the dust of the ground and breathed into his nostrils the breath of life; and the man became a living being" (Coogan & Brettler, 2010, pp. 13–14). Although, according to rabbinical traditions, the second mode of creation (*yetzer*) is to a certain extent shared with mankind[89], creativity and the imaginary capacities are generally considered to be a divine prerogative. This becomes apparent in chapters two and eleven of *Genesis* ('the Garden of Eden'[90] & 'the Tower of Babel'), where humankind's epistemic and creative ambitions are abated. An explicit distrust in images and

[84] The relation between 'imagination' and 'information' in the Old Testament refers to more generic and contemporary understandings concerning the relation between 'imagination' and 'creativity': "Imagination is not the same as creativity. […] To be creative you actually have to do something. It involves putting your imagination to work to make something new, to come up with new solutions to problems, even to think of new problems or questions. You can think of creativity as applied imagination."(Robinson & Aronica, 2009, pp. 89–90). See also (Stokes, 2016).

[85] 'creation as ordering'[85] (McGrath, 2012). This ordering principle refers to ancient Near Eastern mythology, in which creation is often depicted as the victory of order over the forces of chaos (Porter, 1993).

[86] Before God's interference, the earth was "a formless void" and "darkness covered the face of the deep".

[87] "So God created humankind in his image, in the image of God he created them; male and female he created them [gen 1:27]"(Coogan & Brettler, 2010, p. 13). 'Image of God': b'tzelem Elohim (Hebr.), later translated as εἰκόνα Θεοῦ (Gr.), imaginem Dei (Lt.). For the source materials in Hebrew, Greek en Latin see: http://www.scripture4all.org/OnlineInterlinear/Hebrew_Index.htm; http://www.ellopos.net/elpenor/greek-texts/septuagint/default.asp ; http://www.latinvulgate.com.

[88] In the Christian tradition, as in 2 Maccabees 7.28 (Porter, 1993) and in the texts by the Church Fathers (Pitruzzella, 2009, p. 3), the of creation in the first chapter (bara) is interpreted as the apex of creativity, namely a *creatio ex nihilo* (creation out of nothing) and to an exclusively divine prerogative; although the primary text is in fact more indicative for a *creatio ex materia*, *creatio ex deo* or *phantasia ex deo*. It is in a reaction to the Greek pagan and gnostic understanding of the world, where the divine architect is limited by the quality of the pre-existent matter, that Christian writers of the 2nd and 3rd centuries CE argue that everything (matter inclusive) had to be created by God.

[89] Can be used positively ('*yetzer hatov*') in a dialogue between man and his Creator, but also entails an evil variant ('*yetzer hara*').

[90] "You may freely eat of every tree of the garden; but of the tree of the knowledge of good and evil you shall not eat" [Genesis 2:16-17].

imagination finds its ultimate realization in the second commandment of the Decalogue where a strong admonition against the making of images is formulated: "You shall not make for yourself an idol[91] whether in the form of anything that is in heaven above, or that is on the earth beneath, or that is in the water under the earth [Exodus 20:4]".

In Greek mythology, suspicions and warnings against human imagination and creativity are present in the myths of *Icarus* and *Prometheus*, but it is when, in Classical ontology, Forms become the universal and everlasting essences that constitute a perfectly ordered cosmos (e.g. Plato's *Timaus*), that the role of imagination is further defined and curtailed. The floating, phenomenological presence of nature is considered to be the informed actualization of an eternal order[92] and as such the middle-ground by which the human ambition to rise to the standard of the universal Ideas/Forms is being settled: Forms speak to nature by means of a process of information and man attempts to communicate with this universal order either directly or indirectly, equipped with a (hierarchical) range of faculties.

3.1.2 Three seminal traditions within the first linguistic moment

The first linguistic moment of information is centred around a cluster of ancient Greek terms that predate the Latin *forma* and relate to notions such as shape, form, and model[93]. They migrate around the fourth century BCE from a more generic, material and everyday context (pottery, poetry, perception) into higher-level concepts that serve as cornerstones of antiquity's philosophical system. The crucial terms are 'ἰδέα*/ἴδέα*' (Idea/Form) and 'εἶδος*/eîdos*' (essence) and their link to 'form' is somewhat counterintuitive to us, moderns, for whom 'idea' is closely connected with notions at the psychological and mental level, such as 'concept' and 'thought'[94]. *'ἴδέα'* and *'eîdos'*, however, are derived from ἰδεῖν*/ideîn*, which means 'to see', and prior to Plato these terms were employed to refer to the visible and exterior form of things (Reale, 1990, p. 47), to 'that what can be seen'. In this pre-Platonic sense there is still a close semantic connection with the precursors of 'imagination', such as 'εἴδωλον*/eidolon'* (phantom, image in the mind) and *'φαντασία/phantasia'* (appearance). The demarcation line between the two semantic fields is whether or not the object is physically present and the compatibility of the fields is clear from the fact that an image of something can exist prior to

[91] פֶּסֶל *pesel* [Hebr.], εἴδωλον [Gr.], *sculptile* [Lat.]

[92] See Plato's dualistic ontology as a solution to the Parmenides (all is one) - Heraklitus (all is change - πάντα ῥεῖ) debate.

[93] Some authors claim that Greek culture is a culture of vision (and hence of the 'form' that is the object of vision) and in that respect opposed, for instance, to Jewish culture, in which 'listening' and 'hearing' are the dominant notions (Reale, 1990, p. 47). This particular interest in looking at things and observation is also manifest in the Greek roots of 'theory' (the verb 'θεωρεῖν' means 'to consider, speculate, look at'. The issue of theory versus practice will be considered in chapter 3. It is remarkable that 'information' and 'theory' both have this visual affinity and that both concepts seem to have a troublesome relation with the field of the auditory arts such as storytelling (Benjamin, 1936/2007) and music.

[94] This subjective turn is part of information's second form of life.

materially moulding it. These differential meanings get shattered when *'ïdĕa'* and *'eîdos'* eventually come to refer to the interior form of a thing, to its essence, its metaphysical structure, its inner most reality[95].

3.1.2.1 Plato's idealism as the standard-view

It is in Plato's oeuvre that this influential semantic turn is effectuated and that the standard-view with regard to the information-imagination dyad is developed. Plato advocates an ontological framework in which a higher-order, intelligible, a-temporal, and a-spatial world of stable and universal Ideas (or Forms) *in-forms* the visible fleeting and imperfect representations of truth which are all that we encounter in this world.

In the *Timaeus* a picture is drawn of the way in which this world came into being. The main element in his account is that the divine creator's *modus operandi* is analogous to the one of a craftsman or handworker who crafts a material object. The craftsman [δημιουργὸς/demiurge], gazes at the eternal ideas [ἰδέαν], not at manifestations of them in our world, and uses it as a model [παραδείγματι] for his creation [Plat. Tim. 28b][96]. Plato draws on the terms '*ïdĕa*' and '*eîdos*' interchangeably to refer to these ideal patterns or Forms. Knowledge of these eternal Forms (the epistemological challenge) is possible via the human soul (ψυχή*/psyche*), which is immortal, and re-enters mortal bodies over and over again. In-between its incarnations, the soul faces the eternal realities (Forms), but the memory of these fades when the soul is re-embodied. Partial recovery or reawakening then is possible via a process of recollection of that memory (ἀνάμνησις*/anamnēsis*)[97] but mainly via a rigorous process of questioning and answering (διαλεκτική*/dialektikē*)[98]. Plato's Socrates makes seminal epistemic distinctions in the *Republic*[99] between: 1/ rational intuition (νόησις*/nóēsis*)[100] and thinking (διάνοια*/dianoia*)[101], which are considered to be the epistemic tools giving (partial) access to the

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[95] Other terms that are used are οὐσία (nature, essence) and φύσις (-intelligible- nature) (Reale, 1990, p. 47).

[96] http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0180%3Atext%3DTim.%3Asection%3D28a

[97] See *Meno, Phaedo, Phaedrus*.

[98] [Plat. Politeia VI, 511c–e]. In the *Phaedrus*, *Sophist*, *Statesman*, and *Philebus*, dialectic is identified with collecting and dividing (taxonomy). "The precise description of the dialectical method varies somewhat from dialogue to dialogue, but it is primarily critical; hypotheses are tested, and the presumption is that the true hypothesis will remain standing" (Preus, 2007, p. 308).

[99] See 'Divided Line Analogy' [Plat. Rep. 6.509d-511].

[100] *Nóēsis* leads to *epistèmè* ('knowledge') of the Forms by means of philosophical conversation, it is the faculty that brings man closest to the eternal forms. In some dialogues, notably *Meno*, *Phaedo*, and *Phaedrus*, Plato presents a theory that knowledge of the forms is innate, and that learning is a matter of recollecting the forms (anamnēsis) (Preus, 2007, p. 210).

[101] *Diánoia* applies to (mainly mathematical) hypothetical- deductive reasoning which relies on tangeable objects and is concerned with reaching conclusions based on hypotheses and not so much in finding first principles [Plat. Rep. 6.510b]. Aristotle tends to apply the word to thinking in general (Preus, 2007, p. 88).

intellectual realm of knowledge and Forms; and 2/ belief (πίστις*/pístis*)[102] and imagining[103] (εἰκασία*/eikasía*), which are of an inferior rank and relate to the visual world of opinion. 'Imagining' occupies the lowest rank in this construction[104] and Plato's preoccupation with accessing real knowledge (which is knowledge of the Forms) through reason, leads him to look at imagination as an obstacle rather than as an asset. Imagination is unable to get to the intelligible world of Forms and can only mimic the appearance of things in the visible world. Therefore, painting and poetry are by Plato ideas through which alone truth may be approached (Egan, 1992, p. 14). This view is most famously expressed in the *Republic,* at the end of the sixth book in what is known as 'the Divided Line Analogy'[105] [Plat. Rep.VI. 509d-511e], in the seventh book via 'the Allegory of the Cave' [Plat.Rep.VII.514a-520a], and summarized at the beginning of the tenth (and last) book of the *Republic* where Plato makes his framework more concrete by postulating three kinds of objects (couches and tables in his example):

- The first type is the original Idea of the object. These Ideas exist in the intelligible world of Forms and must be known in order to recognize something as for example a couch or a table [Plat. Rep. 10.596b][106].
- The second type is present in the visible world and is made by the carpenter [ὁ τέκτων], who looks toward the Form in making a bed [Plat. Rep. 10.596b].
- The last one is made by an artist/painter [ὁ ζώγραφος], who does not look toward what is but toward what appears and thus imitates a phantasm [φαντάσματος] rather than the truth [ἢ ἀληθείας] [Plat. Rep. 10.598b].

From this, it is concluded that the artist, the painter, as well as the maker of tragic poems (who is the real thorn in Plato's flesh) is an imitator [μιμητής] and that his work is of an inferior rank being at three removes from what is by nature [Plat. Rep. X.597].[107] Reason enough for Plato to banish poets from his ideal state and to give priority to rationality in education (Egan, 1992, p. 15).

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[102] *Pístis* offers beliefs that are sufficient for guiding concrete action but lack the knowledge of the reasons for such beliefs.

[103] *Eikasía* is directed at apprehending images and reflections in the visible world (εἰκόνες) [Plat. Rep. 6.510a] (Liddell & Scott, 1940, εἰκ-ασία , ἡ, IV).

[104] See also [Sophist 260c-264a; Theaetetus 152a-c, Rep. 509d–511e].

[105] In the analogy of the divided line, four ascending stages of cognition are being distinguished: eikasia (conjecture, imagination) [Plat. Rep. 6.511e]; pistis (confidence, belief, conviction) [Plat. Rep. 6.511e]; dianoia (thought, reasoning) [Plat. Rep. 6.511d]; nous or noêsis or epistêmê (knowledge, understanding, intellectual grasp) [Plat. Rep. 6.511d].

[106] If not indicated otherwise, the primary texts referred to will be the one's that are listed in the Perseus digital library http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.04.0094%3Abook%3D1%3Asection%3D327a.

[107] A few paragraphs ahead, the *Republic*'s reader finds a second three-way distinction [Plat.Rep. X. 601c-602a] that criticizes imitation from another perspective. Plato's Socrates distinguishes here between 1/ a user (of a flute or bridle) who knows; 2/ a maker (of flute or bridle) who has correct belief; and 3/ an imitator (of flute or bridle) who is ignorant. This new list is intriguing (especially for musical performers) but hard to make sense of in the context of Plato's ontology (see also Pappas, 2013, pp. 207–208).

This *idealistic tradition* (Bundy, 1927, pp. 259–260) is characterized by an implicit distrust and lack of confidence with regard to the human faculty of imagination. However, Plato himself modifies his disparagement vis-à-vis imagination in some dialogues where meaningful epistemic openings toward imagination are created.

Under the concept of (divine) inspiration [ἐνθουσιασμός/*enthousiasmos* or μανία/*mania*] by visionary forms [φαντάσματα/*phantasmata*], Plato creates an opening for privileged access to the world of Forms. In the *Timaeus*, more particularly, imagination is granted the capacity to communicate with the gods. This is performed via parts of the soul located around the liver [Plat.Tim.71d] and is only possible in a state of slumber, when rational and intellectual capacities [λόγου καὶ φρονήσεως] are put on hold. Following such an episode of inspiration, rationality re-enters the scene to reflect upon what has happened:

> No man achieves true and inspired divination [μαντικῆς] when in his rational mind, but only when the power of his intelligence [φρονήσεως] is fettered in sleep or when it is distraught by disease or by reason of some divine inspiration [ἐνθουσιασμὸν]. But it belongs to a man when in his right mind to recollect and ponder both the things spoken in dream or waking vision by the divining and inspired nature [ἐνθουσιαστικῆς φύσεως], and all the visionary forms [φαντάσματα] that were seen, and by means of reasoning to discern [λογισμῷ διελέσθαι] about them all wherein they are significant and for whom they portend evil or good in the future, the past, or the present. [Plat. Tim. 71e-72A]

In the *Meno* [Plat. Meno 99c] Socrates extends the impact of inspiration when claiming that some statesmen owe their success not to the possession of wisdom or knowledge but to inspiration [ἐνθουσιῶντες] and in the *Ion* and *Phaedrus* the power of divine inspiration is invoked to account for the knowledge of the poet and the rhapsode, a reciter of epic poetry. Inspiration [ἐνθουσιασμός] comes down from the Muses and compensates for the lack of skill [τέχνη/*technê*] and factual knowledge [ἐπιστήμη/*Epistêmê*] of the rhapsode. Inspiration is then further related to a process of interpretation (hermeneutics), where poets (makers of poetical texts) are considered to be the interpreters of divine messages and rhapsodes interpret the utterances of the poets: "and so you act as interpreters of interpreters [οὐκοῦν ἑρμηνέων ἑρμηνῆς γίγνεσθε] [Plat. Ion 535]". In the *Phaedrus* four types of inspiration [μανία] are presented: prophetic madness (Apollo), ritual madness (Dionysos), poetic madness (Muses) and erotic madness (Aphrodite & Eros). Historian Penelope Murray relates this type of poetic inspiration by the Muses to 'information' when arguing that "the invocations in Homer are essentially requests for information, which the Muses, as daughters of Memory, provide" (Murray, 1981, p. 90)[108].

[108] This combination of inspirational imagination and information as external memory is something we will come back to when negotiating a role for information in an artistic process and offers an interesting perspective on the

A second instance of flexibility and openness towards imagination is situated in the *Laws* [*Νομοί*] a conciliation of *art as mimesis* and *art as inspiration* is forged, followed by an important differentiation between the fields of legislation and artistry. The poet can allow many truths in his art whereas the legislator can only allow one single truth:

> [719c] There is, O lawgiver, an ancient saying—constantly repeated by ourselves and endorsed by everyone else — that whenever a poet is seated on the Muses' tripod, he is not in his senses [οὐκ ἔμφρων], but resembles a fountain, which gives free course to the upward rush of water and, since his art consists in imitation [τέχνης οὔσης μιμήσεως], he is compelled often to contradict himself, when he creates characters of contradictory moods; and he knows not which of these contradictory utterances is true. But it is not possible for the lawgiver in his law [719d] thus to compose two statements about a single matter; but he must always publish one single statement about one matter. [Plat. Laws 4.719c-d]

Finally, a third way out of Plato's *mimesis*-doctrine is provided posthumously, when authors of later conceptions of creative imagination notice a paradox between Plato's epistemic position and his own image-laden writing and counter Plato's own condemnation of poetry and poets (Engell, 2012).

3.1.2.2 A psychological/empirical tradition[109]

Aristotle also aims at understanding the universal, but unlike Plato, who situates the universal Forms in a separate realm, Aristotle places the universal in the things themselves. In technical terms: immanent forms[110] take the place of the transcendent Forms of Plato. In Aristotle's *hylomorphism*, every natural object is a compound of matter [ὕλη*/hūlē*] and form [μορφή*/morphḗ*][111] [Aristot. Metaphysics. VII.1029a] and is determined by two intrinsic principles: the principle of potentiality [δύναμις*/dunamis*], namely, primary matter, and the principle of actuality [ενέργεια*/energeia*], namely, substantial form. The trajectory from potentiality to actuality follows an inner impulse towards the development of an own specific form (from seed to plant, or from embryo to adult) and constitutes Aristotle's perspective on the (in)-formation-process. Matter and form cannot exist or act independently, they exist and act only within and by the composite and can therefore be known only indirectly, by intellectual analysis, by studying particular phenomena, and rising to the knowledge of essences. Knowing for Aristotle is mainly a process of induction, it does not begin with knowledge of universal Forms (or Ideas) which then descends to knowledge of particular imitations of these (as in Plato's deductive method) but follows the opposite trajectory from particular to universal form. For

dilemma Peter Walls faced when titling his book. Concerning this dilemma see p.25 (Walls, 2003, p. 10).

[109] See Bundy (1927, pp. 259–260).

[110] Because of this immanent character, no capital 'F' will be used when 'form' appears in the context of Aristotle's ontology.

[111] Unlike *idea* and *eidos*, which are explicitly related to visible form, *morphē* tends to imply touchable shape.

Aristotle, 'form' is part of his general account of causality [Aristot. Metaphysics. V.1013a][112] such as the form of a statue.[113]

Aristotle's ontology (hylomorphism) and epistemology, where thinking of an abstract universal without having access to all its instances is impossible, comes with a psychology that is equipped to perform the challenges that humankind is faced with. Here, imagination comes to the fore, to play a pivotal role. In *De Anima* [Περὶ Ψυχῆς/on the soul][114], Aristotle grants *phantasia* a role as the mediator between *nous* and *aesthesis,* between our thinking capacities and our perceiving senses.[115] In the second book, Aristotle uses the wax-metaphor to explain that perception is concerned with the form of things and not with the materiality of it:

> [Aristot. De Anima II, 12] Universally, however, concerning every sense, one must understand that the sense is that which is receptive of the sensible forms [αἰσθητων εἰδων] without the material, as wax receives the seal of the signet-ring without the iron or gold: if it takes a gold or bronze seal, it does so not insofar as the seal is gold or bronze.[116]

In the third book of *De Anima* the role of imagination is further determined. According to Aristotle, *phantasia* is an independent capacity not belonging to perception [αἴσθησις] nor to thinking [διάνοια] but always in need of perception in order to exist and always providing material for different ways of conceptual thinking and judging (knowledge [ἐπιστήμη], opinion [δόξα], understanding [φρόνησις]). In the latter capacity it is the source of thinking, it provides the mind with something about which to think and know; it reactivates appearances so that intellect can discover, grasp, and thus think the forms of intelligibility implicit in them. For Aristotle, there's no thinking without *phantasia*.

> Phantasia is the state in which we are presented with a phantasma or appearance, either in perception, dreams, thought or imagination, either when an external object is present or when it is absent, Whenever the mind is active, in waking life or in sleep, in thought or in any other mode, in calm or in desire, phantasia is all-pervasive. (White, 1990, p. 13)

However, Aristotle still holds on to the view that imagination is for the most part false and is reluctant to permit *phantasia* any freedom in its own right; it is still closely and technically tied to perception [Aristot. de anima III, 3].

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[112] Also in [Aristot. Physics. II.3].

[113] Aristotle explicitly mentions the ratio 2:1 as the cause of the octave (but also considers mathematics in general as a formal cause).

[114] With regard to the primary text, three editions were consulted : an old edition with English translation by Edwin Wallace (Aristotle, 1882), a more recent English edition by Mark Shiffman (Aristotle, 2012) and a Dutch edition by Ben Schomakers (Aristotle, 2013).

[115] Aristotle identifies roles for *phantasia* in a variety of activities: in sensory experience, in memory and dreaming, in thinking and in acting. Our interest here is in the relation information-imagination. The role of imagination in action will be revisited in chapter 3.

[116] English translation (Aristotle, 2012, p. 72), Greek text (Aristotle, 1882, p. 124).

3.1.2.3 A (proto-) creative tradition

The impact of Aristotle's thinking on artistic practice is twofold. Firstly, Aristotle considers artistic activity as a knowledge-driven, poetic art (*technè*), which has "its own methodology of proceeding and its own body of knowledge that underwrites it" (Curran, 2016, p. 24). Within that context there is no need to take recourse to notions such as divine inspiration and particular states of mind. Secondly, Aristotle affirms in the first chapter of the *poetics,* the *art as mimesis* doctrine (with inclusion of instrumental playing):

> Epic poetry, then, and the poetry of tragic drama, and, moreover, comedy and dithyrambic poetry, and most flute-playing and harp-playing, these, speaking generally, may all be said to be 'representations of life' [μιμήσεις]. [Aristot. Poet. I.1447a][117]

He argues, however — against Plato — that the artistic imagination is not simply portraying copies of copies of things but rather showing through the particulars something a more generally truth about the world.

> The real difference [between history and poetry] is this, that one tells what happened and the other what might happen. For this reason poetry is something more scientific [φιλοσοφώτερον] and serious [σπουδαιότερον] than history, because poetry tends to give general truths [καθόλου] while history gives particular facts [ἕκαστον]. [Aristot. Poet. IX. 1451b][118]

With this new view on *mimesis*, artistic activity as such is far better off in Aristotle than in Plato.
This line of thinking is continued in Stoic philosophy where the denial of an immaterial realm of *Ideas* leads to postulating an internal realm in which mental activity can take place. Through the internal language constructed from *phantasiai*, humans have available the psychic domain in which to manipulate what they sense in order to construct new, more perfect objects through mental operations of the imagination (Flory, 1996, pp. 154–155). The Hellenist sophist[119], Flavius Philostratus[120] (ca. 170-245 CE) develops in *The life of Apollonius of Tyana* [Τὰ ἐς τὸν Τυανέα Ἀπολλώνιον] (Philostratus, 1912) a perspective on artistry that surpasses the commitment to *mimesis*. Answering the question of his interlocutor about how artists realise their work: do they go up to heaven and make a copy of the forms or the gods and reproduce or is there any other influence which guides their moulding (Philostratus, 1912, p. 77), Apollonius states:

[117] http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0055.
[118] http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0055%3Asection%3D1451b.
[119] Belonging to the Second Sophistic School.
[120] Philostratus was well-acquainted with the history of Greek thinking and art. He wrote on the life of the Sofists [*Βίοι σοφιστῶν*] and authored a book on art called *Images* [Εικόνες].

> Imagination [φαντασία] […] wrought these works, a wiser and subtler artist by far than imitation [μίμησις], for imitation can only create as its handwork what it has seen [*εἶδεν*], but imagination equally what it has not seen; for it will conceive of its ideal with reference to the reality, and imitation is often baffled by terror, but imagination by nothing; for it marches undismayed to the goal which it has itself laid down. [Philost. VI chapter 19] (Philostratus, 1912, pp. 78–79).

Plotinus (204-270 CE) is a Neo-Platonist philosopher and although one would expect him to be primarily concerned with understanding and promoting Platonic thought, he presents in the *Enneads* a treatment of *phantasia* in which the Platonist and Aristotelian views are thoroughly mixed.

The background ontology of the six *Enneads* is thoroughly Platonic but the psychology is quasi-Aristotelian: material related to the memory of sense-objects is furnished to the imagination, but unlike with Aristotle, imagination does not provide material to reason or intellect, on the contrary, reason has the function of receiving thought and transmitting it to the imagination (Welch, 1935, pp. 37–38). This leads Plotinus to revise the case for *mimesis* by granting that the artist is not an imitator, but is capable of conceiving the very *idea* of the bed. The artist might then inform the real with the ideal. The eighth tractate of the fifth Ennead, titled *on the intellectual beauty* [Περὶ τοῦ νοητοῦ κάλλους], considers the power of imagination and draws the following conclusion:

> Still the arts are not to be slighted on the ground that they create by imitation of natural objects; for, to begin with, these natural objects are themselves imitations; then, we must recognise that they give no bare reproduction of the thing seen but go back to the Ideas [*λόγους*][121] from which Nature itself derives, and, furthermore, that much of their work is all their own; they are holders of beauty and add where nature is lacking. [Plotinus, Enneads, V][122]

For Plotinus the imagination of artists does not derive from eternal Forms and the imitation of its manifestations, but from the Ideas within the artist and by that, transcends nature. Plotinus's concept of soul is superior to nature because of the power of phantasy which enables man to see in nature its inherent capacities. This particular subjective view on creation and imagination naturally invites us to consider Plotinus as a forerunner of romantic imagination (Bundy, 1927, p. 262; Schlutz, 2009).

3.1.3 Challenge and consolidation in the second linguistic moment

The second linguistic moment[123] is connected to authors who discuss the antique concepts related to information and imagination, and translate the original Greek words into Latin. In terms of the history of ideas, the second linguistic moment epitomizes the intellectual symbiosis between Greek thought

[121] Plotinos uses λόγος instead of ĭdĕa; 'accounts' would be a more precise translation in English.
[122] For the English text: http:// classics.mit.edu/Plotinus/enneads.html; for the text in Greek: http://remacle.org/bloodwolf/philosophes/plotin/enneade58.htm.
[123] In a chronological sense this second linguistic moment partly precedes authors like Philostratus and Plotinus. This cross-chronological situation is to be linked to the influence of hellinism.

(Plato, Aristotle) and the Christian doctrine, challenged by the pragmatic concerns of the rhetoric school.

Cicero (106-43 BCE) occupies a distinctive place in this history. His oeuvre is vital in transforming the Greek vocabulary into a Latin one, but also his position as an orator, a man of practice and of words, leads him to develop a particular creative and lingual perspective on both information and imagination in which the *status quo* is being challenged in a technical and lexical context. Cicero uses the notion of information in a context of perception where the form of entities that present themselves to our senses coincides with a representation (*rei informationem*), that is already present in the soul[124] (Capurro, 1978, p. 83). Moreover, he activates information by stating that entities which cannot rely on a preconception in the mind can be actively formed into a mental presentation (Capurro, 1978, p. 85). This perspective of 'information as mental presentation' is subsequently extended to mean the explicitation and communication of implicit thoughts via images and language (Capurro, 1978, pp. 86–87) and occupies a central place in the realm of education where is allows for knowledge transfer via language (*ad humanitatem informari*) (Capurro, 1978, p. 90).

Looking at *informo*[125] in the *Oxford Latin Dictionary* [OLD] (Glare, 1968) we clearly detect Cicero's influence, especially in the third definition where *informo* comes to mean, quite paradoxically, 'to imagine' (see: def. 3).

Informo [OLD, p.903]

1. To give a shape to, fashion, form (foetus, material)
2. To give an outline or plan of, sketch (in words) (Cicero, Quintilianus)
3. To form in the mind (ideas); to form an idea of (something), imagine
4. To mould (a person, his mind) by instruction

As a man of practice Cicero shows a special interest in how the transfer of knowledge is done in a convincing and effective way. Here, the stories of information and imagination coincide again. In Cicero's view, the communication of knowledge/information is facilitated by the use of images since figurative language has the quality of granting privileged access to the minds and memories of audiences: "One must employ […] images [*imaginibus*] that are effective and sharply outlined and distinctive, with the capacity of encountering and speedily penetrating the mind [Cic. de orat. II.6.358]"

[124] Technically it does not concern the doctrine of Innate Ideas, but Cicero makes reference here to the Epicurian notion of *prolepsis* (πρόληψις), a preconception, put together from repeated experiences of the same thing, either something external, or of ourselves (Preus, 2007).

[125] '*informatio*' receives only a limited treatment in the OLD.

(Cicero, 1942, p. 471). Cicero's poetics[126] has therefore been labelled as *pragmatic* (Abrams, 1953; Pieters, 2007) rather than *mimetic*, because of its primary focus on the effect of words on the audience.

As a counterbalance to Cicero's challenging, and pragmatic concerns, this second linguistic moment is also characterized by a number of authors who further interpret the Form-related philosophies in function of Christianity. Augustinus of Hippo (354-430 CE), further referred to as St. Augustine, bends the Platonic tradition to the service of Christian theology and invokes Divine illumination in order to come to real knowledge (Capurro, 1978, p. 105): "The mind needs to be enlightened by light from outside itself, so that it can participate in truth [*veritas*], because it is not itself the nature of truth. You will light my lamp [*tu illuminabis lucernam meam*], Lord. [Aug. *Conf*. IV.xv.25]".[127] His interest in the power of imagination however is remarkable. St. Augustine is considered to be among the first to use '*imaginatio*' as an alternative to '*phantasia*' and posits three classes of images/*phantasiae* according as they originate with the senses (memory of a face), or the imagination (supposing things that have no existence – e.g. winged dragons), or the faculty of reason (geometrical figures and musical harmonies) (St. Augustine, 1886, pp. 314–315). The Roman philosopher and mathematician Boethius (480-525 CE) is another transitional writer who fully seconds Plato's theory of Forms[128]; at the same time however, he develops an early version of faculty psychology in which imagination figures in a context where Platonic Forms, an Aristotelian psychological framework, and divine intelligence meet (Boethius, 1973). The framework implies the following faculties: *Sensus* (sense) which considers the shape set in the underlying matter; *Imaginatio* (imagination) which is concerned with the shape alone without matter; *Ratio* (discursive reason) which looks at the form which is in singulars from a universal point of view; and *Intelligentia* (divine intelligence)[129] which gazes on the pure form in itself. Boethius then asserts a continuum but makes the point that the superior type of knowledge includes the inferior, whereas the inferior, cannot rise to the superior level (Watson, 1988, p. 153).

[126] A contemporary of Cicero, who is seldom mentioned with regard to he evolution of imagination, is the Roman poet Horace (65-8BC). This negligence is probably related to the fact that in Horace's most influential work, the *Ars Poetica*, the term 'phantasia' or 'imagination' is absent. Both Horace and Cicero, however represent pragmatic theories of imagination, theories that focus on the effect on an audience, rather than the correspondence to reality, the expressivity of the author, or the auto-ontology of the work (Abrams, 1953, p. 14)

[127] http://faculty.georgetown.edu/jod/conf/frames4.html

[128] In *De Institutione Musica*, the archaic meaning of information as the process of imbuing the phenomenal world with eternal Forms, is instantiated in the realm of music. The primacy of speculative science over the sensuously perceivable art of music making is endorsed by subdividing three orders [*tres esse musicas*] built on the same ordering principle [Boethius, DIM, I, 2]: *Musica Mundana* (music of the spheres), *Musica Humana* (music of the human body and spirit), and *Musica Instrumentalis*, which is of the lowest order and deals with the physical properties of sound.

[129] *Humana ratio* vs. *divinam intelligentiam* [Boet.cons.V.4.40]

By the end of the second linguistic moment, Thomas Aquinas (1225-1274 CE) represents the mature scholastic perspective on information and imagination. Situated in the late Middle-Ages, his onto-theological framework is profoundly influenced by the revival of Aristotle's insights. The concept of information is key in Thomas Aquinas' epistemology and ontology. Ontologically, he translates Aristotle's *hylomorphism* as the process of 'in-forming' matter [*Informatio materiae*] and from the background of Christian creational metaphysics introduces the crucial distinction between physical/biological 'in-formation' processes [*per modum informationis*] and divine creational activity [*per modum creationis*]. This difference between *informatio* and *creatio* is alien to Greek thought. Plato's demiurge merely informs (informing as a *creatio ex materia*) while the Christian God is considered to be a transcendent cause who creates things —out of nothing (*creatio ex nihilo*).

In epistemology, Aquinas advances and refines a five-part faculty psychology which includes sense perception [*informatio sensus*], common sense, imagination, reason and intellect [*informatio intellectus*] (Capurro, 2009, p. 127). The order and epistemic veracity of knowledge acquisition ascends, from the lowest – sense perception – to the highest – intellect. Imagination is thus (again and very Aristotle-like) considered to be a kind of mediator between mind and body in a process where it delivers images, taken from perception, to reason which then purifies these images into abstract ideas. An extra element added by Aquinas is that he opens the way for information in the context of linguistic communication (Capurro, 1978, p. 138). In the *Summa* Aquinas sketches two scenarios where the sentient part of the soul is involved: firstly, the sensory powers are affected [*immutatio*] by a sensible thing; secondly, the power of imagining forms for itself an image [*idolum*] of an absent thing or even of a thing that has never been seen. In the former case the passive intellect is informed by the intelligible species [*passio intellectus possibilis secundum quod informatur specie intelligibili*] and once the passive intellect is formed in this way, it forms a definition by using words. These words do not signify the intelligible species themselves, but represent the things that have been formed by the intellect in order to make judgements about exterior things [Aquinas. Summa Theologiae, I, question 85.2 reply to objection 3]. Here a two-step process of (in-)formation and abstraction is assumed, the forming of images by the intellect and then the formation of communicable words and sentences that represent these images (and indirectly also the primary affection). However, despite its essential role in thinking, the imagination is still a faculty to be looked at with caution and distrust because of its susceptibility to confusion between images and reality.

> Falsity is attributed to the imagination to the extent that it presents the likeness of a thing even when it is absent. Hence, when someone turns to the likeness of a thing as if to the thing itself, then falsity results from such an apprehension. [Aquinas. Summa Theologiae, I, question 17,2 reply to objection 3][130]

[130] http://www3.nd.edu/~afreddos/summa-translation/Part%201/st1-ques17.pdf.

Notwithstanding this cautious attitude, imagination keeps its privileged status as a channel that can forges direct contact with metaphysical entities (God in this particular case) via a process of inspiration which is called 'grace' [*per revelationem gratiae*][131] here.

> We have a more perfect knowledge of God by grace than by natural reason. Which is proved thus. The knowledge which we have by natural reason contains two things: images derived from the sensible objects; and the natural intelligible light, enabling us to abstract from them intelligible conceptions. Now in both of these, human knowledge is assisted by the revelation of grace. For the intellect's natural light is strengthened by the infusion of gratuitous light; and sometimes also the images in the human imagination are divinely formed, so as to express divine things better than those do which we receive from sensible objects, as appears in prophetic visions.[Aquinas. Summa Theologiae, I, question 12, article 13]

3.1.4 Everyday usage in the third linguistic moment

With the third linguistic moment, the terms that orbit information and imagination make their formal entrance into the European languages. They first appear in French (with parallel developments in Spanish and Italian[132]), then in English, and from the 15th century on in German. This phase in the development of information and imagination coincides roughly with the transition from Thomism into its first serious adversary, the humanism of early Renaissance. Intellectual authority from ecclesiastics gives away to education by courtiers and literary men and the gradual ascendancy of a spirit of scientific enquiry takes root. The main characteristic of this third moment however is that scholarly terms such as imagination and information enter everyday language and are as such also recorded in historical dictionaries.

The persisting influences of Plato and Aristotle are still evident in Giovanni Pico della Mirandola's *on the Imagination* [*De imaginatione sive phantasia*], written (still in Latin) at the beginning of the sixteenth century. Mirandola (1463-1493) is a humanist in the larger sense of the term; he is as theocentric as any scholastic and affirms the Platonic epistemic hierarchy: "imagination conforms with intellect, in being free, unfixed, and devoted to no special object. But it is surpassed by intellect, since it conceives and fashions the sensible and particular only, while intellect, in addition, conceives and fashions the universal and intelligible, and such things as are purified from all contact with matter" (Mirandola, 1500/1930, p. 33). Mirandola also integrates Aristotle's psychology in his views: "imagination itself is midway between incorporeal and corporeal nature, and is the medium through which they are joined" (Mirandola, 1500/1930, p. 37).

[131] http://www.corpusthomisticum.org/sth1003.html.
[132] See Capurro, 1978, p. 141.

Various Renaissance movements of mystical and hermetic orientation however, force a break with scholastic thinking and can be considered as precedents to the German idealist culture of productive imagination. Giordano Bruno (1548-1600), an Italian thinker of the sixteenth century (also writing in Latin), draws from gnostic thinking and hails the human imagination as the creative source of the 'forms' of thought. According to Bruno, mortals can transcend their worldly life and unite with the cosmos via the *spiritus phantasticus*. Man's imaginative power (*vis imaginativa*) is the privileged vehicle of the Holy Spirit and is there to transform the material world in accordance with a hidden cosmic design (Kearney, 1988, pp. 159–160). In the realm of poetry and literary criticism, the resemblance between a divine creator and the poet is forged by Sir Philip Sidney's *Apology for Poetry* (Sidney, 1595/1890). For Sidney poetry privileges perception, imagination and modes of understanding and is able to create a separate reality.

The cluster of terms that are of interest to our enquiry with regard to the entrance of information and imagination in everyday language are listed in Appendices 1-9 with their pre-1600 definitions. What we observe then is in the first place a continuity with meanings that information and imagination acquired in the first two linguistic moments complemented with particular meanings that refer to the reality-delusion and the objective-subjective dualism that classically encircle the fields of information and imagination.

As second aspect of the introduction of information in the modern languages is that information is transformed and used in an everyday context primarily in its epistemological meaning, as the communication of knowledge (Capurro & Hjørland, 2003, p. 354). The shift from the conception of information as an objective process to an (inter-)subjective one is common to European languages deriving from Latin and anticipates the subjective turn in philosophy after 1600. Next to these general trends, some particular evolutions in each of the three languages however, are worth mentioning.

In French '*Idée',* retains the meaning of 'form of things' but also comes to refer to a representation in the mind. In the latter sense, it comes very close to '*imaginer*' in the sense of '*concevoir*'. Another element is that the direction of information is inversed in the sense that '*soit infourmer*' implies that the action starts with an individual and is directed towards the external world, instead of vice versa. The fact that the term is also used in the realm of juridical inquiries is related to that inversion (Capurro, 1978, p. 235). The use of information in a legal context where written documents have a particular value in terms of objectivity and burden of proof drives information's meaning further in the direction of objectivity and written fixedness (Capurro, 1978, p. 279). Finally, the use of '*informer*' as notifying and updating refers to the role of information in the imparting and communication of knowledge, with a special interest in novelty and uniqueness.

In German, '*informieren'* in the sense of '*Bildung'* is notable. In *Information über die Information* (Seiffert, 1971), Helmut Seiffert stresses the importance of *Bildung* as information: "it is well-known that the word *Bildung* can hardly be surpassed in Germany. Everything that is sacred is concentrated in this word" (Seiffert, 1971, p. 27). *Einbildungskraft* is rarely used before 1600 but that is about to change, as we will see in the next form of life (see Kant). A new adjective surfaces in this second form of life, one that is close to the meaning of 'informed' in its pedagogical meaning as it appeared around 1500 CE in the context of *Bildung*. The OED dates the first appearance of the adjective 'educated' in 1611 CE and defines it in its second meaning as:

> that has been acquired through education; resulting from education. Also: (of an opinion, etc.) based on an understanding of relevant facts or issues; informed. [OED, *educated*, 2]

The relation between facts, information, understanding and education expressed in the second part of the definition is significant for a new vision on pedagogy that challenges the medieval approach[133]. The minds of people are informed/educated but not on the basis of eternal Forms but rather relying on matters of fact.

Finally, in English, the traditional areas of application with regard to information (artificial, philosophical, pedagogical) are clearly present. Defining 'imagination' as "the tendency to form ideas which do not correspond to reality, deluded thinking" is relevant because of its contrast with "the imparting of the knowledge of a fact" which is a meaning that is attributed to 'information'[134].

During the Renaissance the term 'fancy', connoting free play and mental creativity, often eclipses imagination which is considered to be merely reproducing sense impressions (primarily visual images) (Preminger & Brogan, 1993, p. 599).[135] At the end of this first form of life, the first signs of a semantic turn surface: around 1500 CE 'informed' as an adjective and in relation to a person or a mind is for the first time registered, meaning "instructed; educated about or acquainted with a fact, subject, etc.; knowledgeable" [OED, *informed*, 1a]. This new meaning replaces 'informed' in its archaic meaning as "put into form; formed, created, fashioned" [OED, *informed*, 2] which is still reported at the end of the 16th century but then disappears from the semantic spectrum.[136] The *forming* of *minds* rather than *matter* is a key aspect of information's second form of life that will be discussed hereafter.

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[133] An 'educated guess', as "a guess based on knowledge and experience and therefore likely to be correct" is registered for the first time only in 1896 CE.

[134] A detail: for both meanings the OED refers with regard to the first use to the same source-text (Gower, 1393/1979).

[135] By ca. 1700CE, empirical philosophy will cast suspicion on *fancy*; imagination will take over because of its rootedness in the concrete evidence of sense data.

[136] Around 1900CE 'informed' as an adjective will yet again undergo a significant shift as far as semantics is concerned; it will then be linked to a new action, opinion, decision, etc.: "based on or influenced by knowledge or by an understanding of a particular situation; enlightened; (of a work) characterized by or demonstrating

3.1.5 Section summary

This first form of life is dominated by the influential standard-view provided mainly by Plato, who posits a superiority of Forms vis-à-vis the phenomenological reality; in this context, artistic images are mere copies of reality and not a solid basis to come to true knowledge and civic education. The conflation of classical and biblical cultures gives rise to distrusting and to censuring imagination because it threatens the natural order of being, the order of Forms. A closer look at Plato's oeuvre however, reveals several epistemic openings with regard to a dogmatic dualism between Forms and images: by mediation of dreams or via inspirational contact with the Muses, (partial) access can be gained to the realm of Forms and in the latter case also access to an external memory can be involved (the theme of divine illumination will be revisited by St. Augustine and the Schoolmen).

Imagination in its mediating role is more explicitly present in Aristotle who introduces *phantasia* in the realm of psychology and is foundational to the development of faculty psychology by the scholastics who come to situate imagination as a faculty alongside reason and memory. In the realm of artistic images, Aristotle elevates the concept of mimesis from its marginal status by considering it as a tool to forge more general truths about the world, but downplays the role of imagination as inspiration by focusing on artistic activity as a craft, an activity that can be accounted for.

The more rebellious visions on the information-imagination dualism are authored by 'practice-based' thinkers (Philostratus, Plotinus, Cicero), who allow imagination a superior, artist-centred and creative quality, and also grant 'words' the capacity to represent images (although this last quality is also found in Aquinas). So, in a very early phase in Western history, we encounter already discipline-specific, artistic understandings of information.

In the European languages, from the 12th century on, the juxtaposition of reality (information) and illusion (imagination) is to a great extent relegated to everyday language. An additional perspective here is the directional inversion of the informational process; the need for information can find its onset in an individual (and not in realm of Forms); man is not a passive receiver of information but can actively inform oneself (Fr: *s'informer*). Near the end of this first form of life, information finds its way to a new intentional object: the human mind.

3.2 The dissolution of information (17th-18th centuries)

During the seventeenth and eighteenth centuries, classic cosmology from the first life gradually loses terrain in favour of a modern, scientific perspective based on observable facts. This shift away from metaphysical Forms to the indications and signals of the senses, is decisive in grounding a new meaning

knowledge or learning" [OED, *informed,* 1b]. By then 'informed' will have travelled as formative factor from matter, via minds to actual decisions and actions.

for information. Instead of an all-encompassing ordering principle (empiricism does not allow pre-existing intellectual forms outside of sensations), information comes to mean the sending and receiving of atomistic, small-scale reports about the world. As scientific observation and experimentation impose themselves as a new method to produce precise answers to particular questions, the universe reveals itself to be far more complex than anyone had ever 'imagined'. Information loses its inherent metaphysical and unitary structure and orderliness and gets to be linked to the realm of isolated, sensory impulses: "the fragmentary, fluctuating, haphazard stuff of sense" (Peters, 1988). Within this new context, (eternal) 'souls' become individual 'minds' (*ego, cogito*) and direct contact with the 'Forms' yields its place to more neutral and detached 'perceptions' and 'impressions'. For empiricists, this stream of impressions is the raw material from which genuine knowledge can be built. However, the recurring challenge for empiricism is how to bridge the gap between sensation and mind? How can sensing a universe, devoid of intelligible essences or forms (as in Aristotle) lead to accountable and scientific knowledge?

Empiricists like David Hume (1711-1776) chose to abandon the quest for such ordering principles altogether. Rationalists, like René Descartes (1596-1650), for whom sensation has a rather doubtful status, consider these impressions as a veil of illusion, to be pierced by logic and reason. By positioning 'ideas' between intellect and nature, Descartes addresses the particular problem of giving structure to experience and includes an intermediate element in the epistemic process. Next to empiricism and rationalism, a third strategy with regard to the ordering problem (next to rationalism and empiricism) is the one provided by Immanuel Kant. Kant's transcendental idealism places the sources of intellectual organization in the universal, *a priori* structures of the human mind. The mind ceases to be matter in-formed, and becomes the storehouse of forms that shape and order the chaotic material of sensation. Kant thereby advocates a process of out-formation.[137]

It is in this setting that the role of imagination as *Einbildungskraft* begins to grow into the place vacated by the soul and that a delicate balance between information and imagination is reached. Departing from the received wisdom of classical and medieval philosophers, Kant rescues imagination from its servile role as an intermediary faculty between our sensible and intelligible experience and grants it a central place in epistemology and psychology.

Hereafter, four pivotal moments in the history of ideas will be discussed that contribute to a repositioning and new understanding of the relation between information and imagination.

[137] The notion of 'out-formation' is mentioned by Peters (Peters, 1988, p. 13) and he refers to a personal communication with David Ritchie for the coinage of the term.

3.2.1 A new science based on facts

In the work-plan for *the Great Instauration* (Bacon, 1620/1989), Francis Bacon (1561–1626) preludes on a subjective turn constituting a new perspective with regard to knowledge, a subjective turn that is wary about common sense perception and logic and therefore in need of additional filters and touchstones:

> The sense fails in two ways. Sometimes it gives no information, sometimes it gives false information. […] For the testimony and information of the sense has reference always to man, not to the universe; and it is a great error to assert that the sense is the measure of things. (Bacon, 1620/1989, p. 24)

In *Novum Organum* (Bacon, 1620/2000) – the second part of the *Instauration* – Bacon sets out to challenge the inadequacies of the *a priorism* which he associates with the traditional Aristotelian logic of the *Organon.*[138] He argues that the Aristotelian logic is only a means of arriving at the logical consequences of what is already known (axioms) and has a purely classificatory character. Instead of unreliable sense perception and axioms designed to draw on and illuminate common occurrences by rhetorical demonstration, Bacon advocates the use of 'experiments', which elicit from nature those 'singular instances' capable of disclosing truths about nature that are otherwise hidden [Bacon, *NO*, part 2, aphorism 2 8]) (Poovey, 1998, p. 98). As an alternative to Aristotelian science, he proposes a programme in which universal laws are induced from the observed, singular instances – objective facts:

> The human understanding is ceaselessly active, and cannot stop or rest, and seeks to go further; but in vain. […] This indiscipline of the mind works with greater damage on the discovery of causes: for though the most universal things in nature must be brute facts, which are just as they are found, and are not themselves truly causable, the human understanding, not knowing how to rest, still seeks things better known. [F. Bacon.Nov.Org.book 1, XLVIII] (Bacon, 1620/2000, p. 44)

Foreshadowing Kant's synthesis between rationalism and empiricism, Bacon further aims at promoting a pragmatic alliance between the empirical and the rational faculty.

> Those who have treated of the sciences have been either empiricists or dogmatists. Empiricists, like ants, simply accumulate and use; Rationalists, like spiders, spin webs from themselves; the way of the bee is in between: it takes material from the flowers of the garden and the field; but it has the ability to convert and digest them. [F. Bacon.Nov.Org.book 1, XCV]" (Bacon, 1620/2000, p. 79)

In Bacon's plan of a great renewal, imagination does not fare well:

[138] The Organon (Greek: *"Οργανον"*, meaning "instrument, tool, organ") is the standard collection of Aristotle's six works on logic: *Categories, On Interpretation, Prior Analytics, Posterior Analytics, Topics* & *Sophistical Refutations.*

> The whole secret is never to let the mind's eyes stray from things themselves, and to take in images exactly as they are. May God never allow us to publish a dream of our imagination as a model of the world, but rather graciously grant us the power to describe the true appearance and revelation of the prints and traces of the Creator in his creatures. (Bacon, 1620/2000, p. 24)

Notwithstanding his low esteem for imagination, Bacon grants it a prominent place in Book II of *The Advancement of learning* (Bacon, 1605/1863) where he outlines a renewed division of human knowledge and positions imagination alongside reason and memory[139] associating these fundamental faculties with respectively with three categories of knowledge: Poesy, Philosophy and History. Within this framework, philosophy – mainly Baconian Science – is promoted above the other two branches of knowledge. History is defined as the mere accumulation and collection of facts, and art is appropriated the status of 'feigned history' discharged from the laws of nature.

> Poesy is a part of learning in measure of words for the most part restrained, but in all other points extremely licensed, and doth truly refer to the imagination; which, being not tied to the laws of matter, may at pleasure join that which nature hath severed, and sever that which nature hath joined. (Bacon, 1605/1863, p. 80)

While the development of Bacon's outcome-oriented (pragmatic) method remains speculative and incomplete, his thinking enables in the course of it a departure from the antique traditions and a focus on experimentally obtained facts.

3.2.2 The subjective turn

We saw already in the transition from the Middle Ages to Modernity that in everyday language the objective meaning of information (giving essential form to matter) lost ground in favour of a subjective one (communicating something new to someone). This shift can be formally detected in the philosophy of Descartes, who considers *ideas* as 'forms of thought' not in the sense of pictures of reality in the brain but more as products of thinking (Lalande, 1992, p. 514). Descartes separates radically, in opposition to Aristotelian and Scholastic philosophy, the sensory processes from the unmediated and conscious knowledge of *ideas* (Capurro, 2009, p. 129).

It is notably in the *Meditations* (Descartes, 1641) that this subjective turn in philosophy is instantiated. Descartes' radical doubt leads him to a first of three certainties: *cogito* (I think).[140] In Descartes' terminology 'thinking' is an attribute of the substance 'mind' and one of the modes of that attribute is

[139] This division of human knowledge is not revolutionary however, it is largely inspired by the faculty psychology such as it was the taxonomy of human knowledge presented in Diderot's and d'Alembert's *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers*, published in France between 1751 and 1772, is inspired by Francis Bacon's classification. The three main branches of knowledge in the *Encyclopédie* are: "Memory"/History, "Reason"/Philosophy, and "Imagination"/Poetry.

[140] The existence of God and of a material world are the other two certainties.

that it produces 'ideas'.[141] By this, 'Ideas' leave Plato's separate realm of eternal Forms and come to be situated within the minds of people instead. According to Descartes, these ideas are usually 'clear and distinct' but it is unsure if they really do correspond to the reality of things; human's imagination is abundant (also in dreams) and the hypothesis of an omnipotent deceiver is for the doubtful Descartes at least a possibility. In order to make some progress in the matter, Descartes considers three kinds of ideas, things that people can imagine: *innate ideas* (source: own nature), *adventitious ideas* (source: things existing outside me), and *factitious* ideas (combination of ideas that are already present in the mind). The main challenge is with the second kind of ideas, the ones that have their him to conclude that there is in fact an external and objective reality that can be perceived clearly and distinctly[142]; our interest is rather in the way Descartes sees the relation between mind (*res cogitans*) and this objective reality (*res extensa*) in terms of information and imagination.

In the *Second Meditation*, Descartes describes the four faculties of thought: intellect, will, imagination[143], and sensation. The intellect deals with 'pure' thought, *a priori* truths that are accessible to thought alone. The imagination is concerned with the images of material things, finds its origin in sense perceptions and derives *a posteriori truths* derived from experience. In the *Sixth Meditation*, Descartes is more explicit about the relation between imagination, intellect, and information from the senses:

- Information from the senses is practical but it can be deceptive and it is not a reliable touchstone for judgements about the essential nature of things[144].
- Pure intellect [*puram intellectionem*] is mathematical and geometrical and can correct the mistakes of the senses.
- Imagination (for instance imagining a triangle) is simply a certain application of the cognitive faculty [*facultas cognoscitiva*] to an element of the environment which is not immediately present to it. Imagination requires a special effort of the mind, yet it is not necessary to man's nature.

Descartes makes a clear distinction between intellect and imagination and does this by means of an example: a triangle can be conceived [*intelligo*] as a figure comprehended by three lines, but it is also something that presents itself immediately to the mind, as an image; however, if one thinks of a

[141] Ideas are not the only modes of thought. For example, doubting and judging are modes of thought.
[142] Its true nature is guaranteed by God's goodness.
[143] Descartes uses the terms *imaginatio, imaginor.*
[144] "For the proper purpose of the sensory perceptions given me by nature is simply to inform the mind of what is beneficial or harmful for the composite of which the mind is a part; and to that extent they are sufficiently clear and distinct. But I misuse them by treating them as reliable touchstones for immediate judgements about the essential nature of the bodies located outside us; yet this is an area where they provide only very obscure information" [Descartes.Med.VI.15] (Descartes, 1641/1996, pp. 57–58).

chiliogon (a figure composed of thousand sides), it can easily be conceived but it is impossible to imagine. Descartes thus perpetuates the classical superiority of reason over imagination situating the basis for reasoning not in an external realm but in the mind instead.

Within the same vain of rationalism Gottfried Wilhelm Leibniz (1646-1716) constructs his *Dissertatio de Arte Combinatoria* ("Dissertation on the Art of Combinations" or "On the Combinatorial Art") which builds on the Cartesian concept of an alphabet of human thought; here, all concepts are nothing but combinations of a small number of simple, primary concepts, just as words are combinations of letters. Whereas in empiricism truths are expressed as the association of percepts, in rationalism truth consists of the appropriate combinations of concepts which are amenable to decomposition and analysis into simple ideas. This view provides also a logic of invention and imagination, an *ars combinatoria* (Iser, 1991/1993, p. 171) that comes to typify imagination in this second life.

3.2.3 Atomic impressions

Empiricism adds to the concept of information that it is gained from experience and more in particular from the fragmentary quality of sensory impressions. Within the generation following Descartes, empiricist John Locke (1632–1704) develops a rival account of the world, incorporating scientific developments from England, associated more in particular with physicists Robert Boyle (1627-1691)[145] and Isaac Newton (1642-1727). Locke's *Essay concerning Human Understanding* (Locke, 1690/1999) sets an agenda that empiricist David Hume (1711-1776) would follow in his *Treatise* (Hume, 1739/1896) and *Enquiry* (Hume, 1748/2008). Locke argues that all our 'ideas' (the constituents of our thoughts) derive from experience, and that experience is, by consequence, constitutional for the overwhelming bulk of our knowledge.[146] Locke attacks the theory of 'innate ideas' (as found the Scholastics and Descartes) and adopts an atomistic approach in which complex ideas are composed of simple ones, and the simple ideas themselves are not *a priori* but directly derived from experience. Locke recognizes imagination as an important power of the mind: "Is there anything so extravagant as the imaginations of men's brains?", but a few sentences later abates its value:

> But of what use is all this fine knowledge of men's own imaginations, to a man that inquires after the reality of things? It matters not what men's fancies are, it is the knowledge of things that is only to be prized: it is this alone gives a value to our reasonings, and preference to one man's knowledge over another's, that it is of things as they really are, and not of dreams and fancies. (Locke, 1999, pp. 553–554)

[145] Boyle's corpuscularianism (matter as composed of small particles, see also Democritus's atomism) becomes philosophical orthodoxy in Britain through the work of his friend John Locke.

[146] "Knowledge is the perception of the agreement or disagreement of two ideas" [Locke.essay.book IV.chapter 1. §2].

Despite their fundamental differences with regard to the primary material necessary to knowledge production, Descartes and Locke still share an important assumption, namely a view of a divinely created world that is potentially intelligible to human reason. Hume can be considered as the first great philosopher to profoundly challenge this pervasive assumption. He relates human thinking to that of the other animals[147], based on instinct, belief and habit rather than on a quasi-divine insight into things based on metaphysical theorizing and a priori speculation. As a representative of (late) empiricism, Hume presents his epistemological framework in book I of *A Treatise of Human Nature* (Hume, 1739/1896, 1739/2007).

According to Hume "all the perceptions of the human mind resolve themselves into two distinct kinds", which he calls "Impressions and Ideas" [Hume. A treatise. I.1.§1]. With *Impressions* is meant the sensations, passions and emotions that directly reach and appear in the soul; Hume confirms thereby the fragmentary character of these informative impressions, as can be deduced from a general proposition in paragraph seven of the treatise: "That all our simple ideas in their first appearance are derived from simple impressions, which are correspondent to them, and which they exactly represent". In a commentary on this principle the translator of Hume's work in Dutch, Frits van Holthoon comments: "Hume uses this principle to indicate that external reality reaches us in well-delineated atomic particles. Above all, it has a negative function because it denies that complex ideas have as their counterparts complex realities in the external world" (Hume, 2007, p. 15). *Ideas*, then, are the faint images of these impressions that are used in thinking and reasoning. Hume distinguishes between three faculties that process these perceptions: Memory, Imagination, and Reason (see Bacon). When a repetition of a new appearance retains a considerable degree of its first vivacity, then the faculty of memory is involved; when a repetition of an appearance loses that vivacity, and is a perfect idea, the faculty of imagination is at work [Hume. A treatise. I.1.iii.§1]. Memory necessarily preserves the original form and order, in which its objects were presented, whereas imagination (also called 'fancy') has the liberty to transpose and change its ideas (here Hume refers explicitly to the arts). Fancy is "a kind of magical faculty in the soul, which, tho' [*sic*] it be always most perfect in the greatest geniuses, and is properly what we call a genius, is however inexplicable by the utmost efforts of human understanding" (Hume, 1739/1896, p. 19). It is in the analysis of the human mind undertaken by Hume and his Scottish successors, that imagination as a creative power linked to genius, is generalized from the suggestions of writers on literature and the arts into a fundamental principle of human nature (Welch, 1935, p. 69). Imagination in Hume designates all the processes of the mind as distinguished from the processes of Nature.

[147] Over a century before Charles Darwin's Origin of Species of 1859.

> It is impossible for us so much as to conceive or form an idea of anything specifically different from ideas and impressions. Let us fix our attention out of ourselves as much as possible: Let us chase our imagination to the heavens, or to the utmost limits of the universe; we never really advance a step beyond ourselves, nor can conceive any kind of existence, but those perceptions, which have appeared in that narrow compass. This is the universe of the imagination, nor have we any idea but what is there produced [Hume. A treatise. I.2.vi.§9]. (Hume, 1739/1896, p. 42)

Imagination is the power of the mind to organize and combine its materials in various ways according to the universal principles of the association of ideas. It concerns all acts of the mind which are not logical operations of reason. All beliefs, passions, and moral conceptions turn out to be produced by the imagination and reasoning itself is but a particular case of the functioning of the imagination. The order of things, in so far as its is dependent on human nature, is made dependent on imagination and its principles.

> In all compositions of genius, therefore, it is requisite, that the writer have some plan or object; […] the events or actions, which the writer relates, must be connected together, by some bond or tie: They must be related to each other in the imagination, and form a kind of Unity, which may bring them under one plan or view. (Hume, 1772/2008, p. 178)[148]

Hume insists, however, that if reality is no more than a bundle of fictions, we must nonetheless cling to these fictions as if they were real. For without them, our everyday lives would lack all sense of 'unity and continuity'; the only legitimate role left to reason then is one of vigilant but discreet scepticism. And since reason itself can only play the negative role of shattering fictions, a profound choice confronts humankind, one between the exigencies of reason which make life impossible but 'real', and those of imagination which make it possible but 'unreal'?

> For if we assent to every trivial suggestion of the fancy; beside that these suggestions are often contradictory to each other, they lead us into such errors, absurdities and obscurities that we must at last become ashamed of our credulity. Nothing is more dangerous to reason than the flights of the imagination, and nothing has been the occasion of more mistakes among philosophers […] If we embrace this principle and condemn all refined reasoning, we run in to the most manifest absurdities. If we reject it in favour of these reasonings, we subvert entirely the human understanding. We have therefore, no choice but betwixt a false reason and none at all. For my part I know not what ought to be done in the present case. (Hume, 1739/1896, p. 141)

Imagination is one way to create a (false) coherence out of impressions. The other recourses that humans have at their disposal to take on the problem of induction are custom and habit, which

[148] In 1748 Hume revised the abstruse epistemology of the *Treatise* in essay form, as the Enquiry concerning Human Understanding, the definitive statement of his mature theoretical philosophy. This text is part of the 1772-edition of the *Enquiry*.

eventually result in belief, an instinctual and much stronger function than imagination alone (Poovey, 1998, p. 199). So, with Hume we end up with a framework of isolated impressions which function as information to the fiction-producing imagination (scepticism) and give in a pragmatic sense rise to powerful customs and beliefs.

3.2.4 Transcendental idealism

Immanuel Kant (1724-1804) operates in the same intellectual context where Hume stumbles upon the problem of induction (or how to relate impressions to knowledge by a human mind). Kant however, assimilates the achievements of his predecessors and contemporaries and proceeds by revolutionizing the perspective on accountable knowledge with his renowned 'Copernican turn' in philosophy. He thereby reformulates the impact of information and imagination. The fundamental shift that Kant effectuates is formulated at the beginning of the *Critique of Pure Reason*:

> It has hitherto been assumed that our cognition must conform to the *objects [alle unsere Erkenntnis müsse sich nach den Gegenständen richten*]; but all attempts to ascertain anything about these objects a priori, by means of conceptions, and thus to extend the range of our knowledge, have been rendered abortive by this assumption. Let us then make the experiment whether we may not be more successful in metaphysics, if we assume that the objects must conform to our cognition. (Kant, 2010, p. 13 [KrV, preface to the second edition, 1787])

Here, Kant abandons a line of thought wherein order and form are situated in the external environment and locates them instead in the faculties of the human mind which impose their inherent order and forms onto the world. Within this context information keeps its link with sensory impressions (as in empiricism) but is now also involved in a process of 'out-formation' whereby the forms that are located in the mind are enforced on the material world. The terms '*information*' and '*imagination*' are frequently found in the English translations of Kant's critical works, but are not used in the German *Ur*-texts[149], there we have to look for the German equivalents such as:

- *Eindrücke der Sinne* (Kant, 1956, p. 371): impressions of the senses. Sensorial information in the empirical sense but also referring to the antique origins (to imbue with form)
- *Sinnlichkeit*: sensibility
- (*reine*) *Formen der Anschauung*: forms (time, space) that inform (or outform) sensorial input
- *Bildung:* the concept of information in the realm of education
- *Einbildungskraft*: imagination

[149] The term 'facultas imaginandi' is used in the *Anthropologie* "*Die Einbildungskraft (facultas imaginandi), als ein Vermögen der Anschauungen auch ohne Gegenwart des Gegenstandes"* [Kant.anthr.§28] (Kant, 1798, p. 167).

- *Phantasie*: imagination (especially in relation to Poetry)[150]
- *Nachmachung:* copy (Kant, 2000, p. 188 [KU §47])
- *Nachahmung*: imitation (Kant, 2000, p. 188 [KU §47])

Kant presents his philosophical system in three critical works: *the Critique of Pure Reason* (Kant, 1787/1956, 1787/2004, 1787/2010), the *Critique of Practical Reason* (Kant, 1788/1986a, 1788/2006), and *the Critique of Judgement* (Kant, 1790/1986b, 1790/2000, 1790/2009).

In the *Critique of Pure Reason*[151]*,* Kant famously reconciles (or transcends) the viewpoints of empiricism and rationalism and advances the concept of a 'transcendental imagination'[152] as an essential component in a framework of transcendental idealism that aims at understanding the phenomenal world[153]. Here, the imagination is primarily a synthesizing power which orders and classifies experiences according to rules that exist in the mind and which are independent of the external world. Therefore the imagination is labelled 'transcendental', referring to the *a priori* character of its constitutive elements (*Formen der Anschauung*)[154]. According to Kant, "imagination is a blind but indispensable function of the soul" and a *condition sine qua non* for the acquisition of knowledge. The order and regularity that is perceived in nature is not present in the appearances themselves but is introduced to nature by the categories of the human mind which basically apply two 'forms' of intuition — space and time — to all sensory aspects of our experience. The exact function and *envergure* of imagination has been an issue of debate, but Kant summarizes his perspective on this particular faculty in the post-critical *Anthropology from a pragmatic point of view* (Kant, 1798/1974).

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[150] Kant provides his defintion in the *Anthropologie* "*Die Einbildungskraft, so fern sie auch unwillkürlich Einbildungen hervorbringt, heißt Phantasie. Der, welcher Diese für (innere oder äußere) Erfahrungen zu halten gewohnt ist, ist ein Phantast*" [Kant.anthr.§28] (Kant, 1798, p. 167).

[151] The *Critique of Pure Reason* has been published in an A (1781) and a B edition (1787). The primacy of imagination established is most prominent in the first edition of the Critique. In the second edition, the role of a limiting reason is more pronounced. For this paragraph the following editions were used : in German (Kant, 1956), in English (Kant, 2010) and in Dutch (Kant, 2004).

[152] 'Transcendental imagination' is – to my knowledge – not a concept that is found (as such) in Kant. It is used a.o. by Richard Kearny in *The wake of imagination* (Kearney, 1988b, p. 155) and Gary Banham (Banham, 2005). Indirect references are of course traceable. E.g. "*Beide äußerste Enden, nämlich Sinnlichkeit und Verstand, müssen vermittelst dieser transzendentalen Funktion der Einbildungskraft notwendig zusammenhängen*" (Kant, 1956, [182a]) ["these two poles, namely sensibility and understanding, by necessity have to correlate by means of this transcendental capacity of the imagination"] (own translation, since this particular passage from the A edition is absent in the English edition (Kant, 2010).

[153] An important and limiting consequence of Kant's empiricist point of departure in the Critique of Pure reason is that the operational field of our understanding [Verstand] is constrained to the realm of phenomena or appearances. According to Kant, we have to accept to be ignorant of the things in themselves (Dinge-an-sich) which are situated in the *noumenal* realm. The *noumenal* realm which allows for freedom will be the topic of the Kant's second critique: the *Critique of Practical Reason* [*Kritik der praktischen Vernunft*], which was published in 1788.

[154] "I apply the term transcendental to all knowledge which is not so much occupied with objects as with the mode of our cognition of these objects, so far as this mode of cognition is possible a priori" (Kant, 2010, p. 40).

To avoid construing imagination as a mimetic model of representation or as a mere mediation between mind and body (as in Aristotle's model), Kant introduces here the distinction between imagination's 'productive' and 'reproductive' aspects. Reproductive imagination operates according to the laws of association and calls to mind earlier perceptions, thereby forming a sequence of perceptions; the productive imagination is more fundamental, constructing its own reality and operating according to principles that are prior to experience. The productive imagination is guided by rules and transforms in an autonomous act of synthesis the manifold of sense impressions into forms that can be recognized by the understanding[155]. The difference and the interference between the two modes of imagination has been an issue of debate and interpretation (Furlong, 2014, p. 116). For our purposes it suffices to note that Kant's particular balance between the process of out-formation, in which the imagination structures the impressions from the external world via *a priori* forms before these are amenable to be processed by the understanding, is the historical meeting-point *par excellence* for the realms of information and imagination. In Kant's schema, *Einbildungskraft* must conform to rules of the understanding in order to be functional in the acquisition of knowledge and therefore implicitly lacks the freedom that we usually relate to imagination.

When we now turn our attention to Kant's aesthetic theory where the productive imagination is concerned in judgments of beauty, we still find that there is a conformity to rules, but in very specific circumstances.

In the *Critique of Judgement* [*Kritik der Urteilskraft*][156], Kant presents imagination in the context of art reception ('taste') and production ('genius'). 'Judgement' [*Urteilskraft*] is defined by Kant as a faculty which participates in reason as well as in understanding, links particular cases to the general laws that apply to those cases, and connects universal laws with the particular cases that instantiate those laws. If the universal law, rule or principle is given, then judgment's task is 'determinant' and simply one of subsuming the particular case under the given universal (see the first critique). If, on the contrary, only the particular is given, then the faculty of judgment is 'reflective', not directed at an object but concerned with itself: it has to look for the universal for that particular instance. The *Critique of Judgement* is dedicated to the latter type of judgement and proposes two areas of application: the field of the Beautiful and the Sublime (aesthetic judgement), and a field where reflective judgement is

[155] Terminological note: 'Understanding' [*Verstand*] in Kant is the faculty whereby scientific concepts are applied to the (phenomenal) experience of nature; its modus operandi is the object of investigation in the *Critique of Pure Reason*. 'Reason' [*Vernunft*] generates a special kind of concepts, which have no analogue in experience (example of such ideas or notions are God or the Soul). 'Reason' applies (moral) principles to our experience of freedom, is linked to a noumenal realm, and its specific character is presented in the *Critique of Practical Reason*.

[156] The primary reference texts that were used are : in German (Kant, 1986b) ; in Dutch (Kant, 2009); quotations are derived from the translation in English (Kant, 2000). Next to the page-references, also the section will be indicated [KU §].

reconnected with the phenomenal world via the concept of purposiveness (teleological judgement). We will limit our discussion to the first type of judgement.

In part I of *the Critique of Judgement*, Kant delineates the target domain of the reflective judgement to the terrain of the Beautiful and the Sublime. If we consider something to be beautiful, according to Kant, we pronounce a judgement of taste, and such a judgement is different from knowing. Knowledge is acquired by synthesizing impressions in light of linking particular concept to an object; when a judgement of taste is at stake, focus is not on the object, but rather on the way in which our mind is charmed by the presentation of an impression, it is about a subjective state of mind. In a judgement of taste, no interest is involved (as is for instance the case in the moral action or in the delight which is related to the agreeable arts) and it is pure in the sense that in the judgement as such the senses are not involved[157]. Kant further claims that the experience of beauty is based on the experience of purposiveness without purpose [*Zweckmäßigkeit ohne Zweck*]; this purposiveness, which is the *a priori*[158] principle of the aesthetic judgement that is created in the subject (not the object) arises out of a free play between imagination and understanding which are in process of figuring out how to put together the manifold of impressions. So, in judging the work as beautiful, one detects a purposiveness without an applicable concept:

> In order to decide whether or not something is beautiful, we do not relate the representation by means of understanding to the object for cognition, but rather relate it by means of the imagination (perhaps combined with the understanding) to the subject and its feeling of pleasure or displeasure[159]. The judgment of taste is therefore not a cognitive judgment[160], hence not a logical one, but is rather aesthetic, by which is understood one whose determining ground cannot be other than subjective. (Kant, 2000, p. 89 [KU §1])

Next to being involved in judgement and taste, the aesthetic imagination is also an active and creative capacity and this aspect appears in Kant's analysis of genius[161]. According to Kant, genius is a talent[162] for producing original and exemplary works that cannot be explained scientifically (Kant, 2000, pp.

[157] Kant adds to the list of characteristics of experiencing beauty that 1/ it pleases universally 2/ it has purposiveness without purpose (the purposiveness is present in the subject, not the object).
[158] Not prior to experience however, but a priori because we assume it also is valid for other humans.
[159] The feeling of pleasure is its immediate aim (unlike the mechanical arts).
[160] It is still linked to cognition and not merely to sensations (as in the agreeable arts) (Kant, 2000, p. 184 [KU §44]).
[161] "For the judging of beautiful objects, as such, taste is required; but for beautiful art itself, i.e., for producing such objects, genius is required" (Kant, 2000, p. 189 [KU § 48]).
[162] "for Kant, talent, spirit, and genius do not represent distinct faculties; rather they comprise ways of setting in motion one's other ordinary faculties, especially imagination" (Crawford, 2003, p. 160). "*Unter Talent (Naturgabe) versteht man diejenige Vorzüglichkeit Des Erkenntnißvermögens, welche nicht von der Unterweisung, sondern der natürlichen Anlage des Subjects abhängt. Sie sind der productive Witz (ingenium strictus s. materialiter dictum), die Sagacität und die Originalität im Denken (das Genie)*" (Kant, 1798, p. 220, [Anthr.§28]).

186–187 [KU §46]) and that are entirely opposed to the spirit of imitation (Kant, 2000, p. 187 [KU §47]). It functions via "the inborn predisposition of the mind (*ingenium*) through which nature gives the rule to art" (Kant, 2000, p. 186)[163] and via the productive imagination which is "very powerful in creating, as it were, another nature, out of the material which the real one gives it" (Kant, 2000, p. 192 [KU §49]). Unlike in the use of the imagination for cognition, where it is limited to being adequate to its concept, imagination in an aesthetic respect is free to provide, beyond that concord with the concept, undeveloped material for the understanding (Kant, 2000, pp. 194–195 [KU§ 49]). A third essential attribute to genius (next to imagination and understanding) is identified by Kant as 'spirit' [*Geist*], a quasi-ineffable element closely linked and refers to the antique notion of *enthousiasmos* (Kant, 2000, pp. 194–195 [KU §49]). Having identified artistic creativity as an inspired, free play between imagination and understanding that operates according its own rules, Kant makes in §49 of the third Critique, the influential claim about the fruition of genius. He asserts that genius cannot be learned through science [*Wissenschaft*] or diligence [*Fleiss*] and that moreover, a scientist like Newton, although possessing 'a great mind', is not a genius since Newton's discovery can be recounted in stepwise fashion, and can be learned on the basis of codified rules. By contrast, great art, Kant says, although based in some fundamental skill, falls under no determinate rules and so cannot be imitated, taught, or learned. Kant's bold assertions are somewhat counterbalanced by three preceding passages in which he suggests that genius as such is not enough for the production of beauty. In a first instance, Kant states that

> for beautiful art in its full perfection much science [*Wissenschaft*] is required, such as, e.g., acquaintance with ancient languages, wide reading of those authors considered to be classical, history, acquaintance with antiquities, etc., and for that reason these historical sciences, because they constitute the necessary preparation and foundation for beautiful art" (Kant, 2000, p. 184 [KU §44]).

Secondly, taking into consideration the fact that the rule of art cannot be couched in a formula to serve as a precept, it can nevertheless and 'probably' (Kant is very cautious here) serve as a model not for copying [*Nachmachung*], but for imitation [*Nachahmung*] (Kant, 2000, p. 188 [KU§47]): "the ideas of the artist arouse similar ideas in his apprentice if nature has equipped him with a similar proportion of mental powers" (Kant, 2000, p. 188 [KU §47]). Finally, Kant admits that "genius can only provide rich material for products of art; its elaboration and form require a talent that has been academically

[163] "*Genie ist das Talent (Naturgabe), welches der Kunst die Regel gibt. Da das Talent, als angebornes produktives Vermögen des Künstlers, selbst zur Natur gehört, so könnte man sich auch so ausdrücken: Genie ist die angeborne Gemütsanlage (ingenium), durch welche die Natur der Kunst die Regel gibt*." (Kant, 1790/1986, p. 241, [KU § 46]). ["Genius is the talent (natural gift) that gives the rule to art. Since the talent, as an inborn productive faculty of the artist, itself belongs to nature, this could also be expressed thus: Genius is the inborn predisposition of the mind (ingenium) through which nature gives the rule to art" (Kant, 1790/2000, p. 186, [KU §46]).

trained [*Schulgerechtes*], in order to make a use of it that can stand up to the power of judgment"[164] (Kant, 2000, p. 189 [KU §47]).

Notwithstanding these attenuating circumstances, the general claim – that creativity is inexplicable, ineffable if not magical – is to be of great influence on romantic theorizing about creativity in the two centuries that follow the third critique, resulting in the creation of an autonomous status for art and accordingly discouraging theorists of an analytic, naturalistic, or generally scientific approach (Stokes, 2016, p. 248).

Still adding to that elevated status of autonomy is Kant's notion of *the Sublime* [*das Erhabene*]. Whereas the experience of *the Beautiful* results from the imagination's freedom to create images, that of *the Sublim*e results from surpassing the concepts of understanding and the images of imagination itself: "the pleasure the imagination takes in the sublime is one of challenge, defiance, risk, excess, even shock" (Kearney, 1988b, p. 175). Whereas the experience of the beautiful is a result of a play between imagination and understanding [*Verstand*], in experiencing *the Sublime* an interaction between imagination and the faculty of reason [*Vernunft*] is suggested; the faculty that links art to moral freedom and the noumenal world. Philosopher Samantha Matherne (2016) calls it the 'moral imagination'. Unlike Plato, Kant sees art and imagination as compatible with the moral good. *The beautiful* is not only the symbol of the morally good (Kant, 2000, p. 227 [KU §59]), but the position of imagination, spanning across the domains of nature and freedom confirms our freedom to rise above the constraints of necessary causality. The moral imagination mediates between nature and freedom and encourages us to see the transformational potential within the constraints of the natural world.

By all of this, Kant effectively circumscribes the conditions for a truly creative role of imagination and situates its full freedom within the boundaries of art. The balance between information and imagination is most balanced in coping with an everyday, phenomenological environment, there the imagination is a *conditio sine qua non* for channelling and giving adequate form to a bombardment of sensorial information ; in the context of beautiful art a first dissociation takes places by postulating a non-determinant, not discursively transmittable, and genius-driven free play between imagination and understanding; when ultimately, *the Sublime* gets involved the relation between imagination and information from the 'real' world further degenerates in order to establish a realm of artistic autonomy and freedom. The tendency to separate the world of artistic creativity from the world of social reality and industrialized nature is affirmed and gets an impetus from Kant's work. Art becomes something to be felt and not something to be conceptualized: "by dissociating reason from the life of feeling, Kant

[164] *"Das Genie kann nur reichen Stoff zu Produkten der schönen Kunst hergeben; die Verarbeitung desselben und die Form erfordert ein durch die Schule gebildetes Talent"* (Kant, 1986b, p. 244 [KU §47]).

is ultimately reducing imagination to the latter and thereby anticipating the romantic opposition between science and art" (Kearney, 1988, p. 174).

3.2.5 Dictionary definitions

At the end of this second form of life new sources of reference become available: Diderot's and d'Alembert's *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers, par une Société de Gens de lettres* (Diderot & d'Alembert, 1751-1765) and Samuel Johnson's *Dictionary of the English Language* (Johnson, 1755/1785). The lemma on '*information*' in the *Encyclopédie* is restricted to its juridical meaning: "information is a juridical act which consists of the declarations of witness" and while Johnson also refers to information as "charge or accusation exhibited", he lists as a first definition the modern, communicative take on information as "intelligence given; instruction". Here information is formally linked to intelligence, not one that is produced within the mind (logic, rationalism) but intelligence with an external origin. If we look at Johnson's treatment of 'inspiration' and 'to inspire', we detect the same original 'otherness' but not linked to intelligence but rather to fancy[165] and intuition[166]. 'To inspire' – in its metaphorical meaning - is defined as "to infuse into the mind ; to impress upon fancy; to animate by supernatural intuition" and 'inspiration' as "intuiting ideas into the mind by a superior power". 'Fancy' and 'imagination' are quasi-synonyms in Johnson's dictionary; both terms refer in a first instance to a of forming images or pictures in the mind with the subtle nuance that with imagination these pictures are said to be 'ideal' whereas fanciful images are rather linked to pleasure and entertainment; next to the forming of images for both terms also meanings are listed with regard to their untrustworthy, opinion-like quality.

So, by the end of the second life we arrive in Johnson's dictionary at a situation where information comes to refer to intelligence that is derived from an external source (person or 'reality') serving as the basis for further processing by reason, and inspiration, which akin to information is linked to external elements but seems to imply supernatural origins and seems to feed fancy and imagination rather than reason.

With regard to imagination the *Encyclopédie* is more differentially nuanced and close to Kant's ultimate perspective on *Einbildungskraft.* Voltaire's article *Imagination, Imaginer* in volume eight of the *Encyclopédie* (1765) offers the following opening definition:

> Imagination is the power which every being, endowed with perception and reason, is conscious he possesses of representing to himself sensible objects. This faculty is dependent

[165] "1. imagination: the power by which the mind forms to itself images and representations of things, persons, or scenes of being; 2. An opinion bred rather by the imagination that the reason; 8. False notion; 9. Something that pleases and entertains without real use or value" (Johnson, 1785).

[166] "1. immediate knowledge; 2. knowledge not obtained by deduction or reason" (Johnson, 1785).

> upon memory. We see men, animals, gardens, which perceptions are introduced by the senses; the memory retains them, and the imagination compounds them. On this account the ancient Greeks called the muses, 'the daughters of memory'.[167] (Diderot & d'Alembert, 1751-1772/2002)

The imagination here is understood according to an empiricist model of the mind: experience is acquired through the senses in bits and pieces, and imagination is part of the faculty by which sentient beings process the raw, fragmented data of experience in order to produce a picture of, or knowledge about the world. Voltaire distinguishes the passive and the active imagination. The former is common to human beings and to animals and is "the source of our passions and our errors". Most of the section on the active imagination concerns the "inventive" imagination in the useful and fine arts.

> Active imagination is that which joins combination and reflection to memory. It brings near to us many objects at a distance; it separates those mixed together, compounds them, and changes them; it seems to create, while in fact it merely arranges; for it has not been given to man to make ideas — he is only able to modify them. […] This gift of nature is an imagination inventive in the arts — in the disposition of a picture, in the structure of a poem. It cannot exist without memory, but it uses memory as an instrument with which it produces all its performances.[168] (Diderot & d'Alembert, 1751-1772/2002)

Images are essential in mechanical invention, while in the fine arts, imagination requires sound judgment and taste in order to avoid fantastic imagination that lack order and good sense. The artistic imagination for Voltaire is classical: it associates or combines only those objects which 'naturally' go together, whereas a bizarre imagination will seek to combine the incompatible. We see clearly that with the fragmentation of information, a new kind of imagination is introduced, one that is able to make sense of the stuff that reaches our senses and imaginatively recombines these separate elements into new possible worlds.

3.2.6 Section summary

This second form of life is critical in the relation between information and imagination. We discussed four pivotal moments. Firstly, Bacon forges a break with the dogmatic and axiom-based tenets of Aristotelian philosophy. He promotes a focus on 'digesting' objective matters of fact obtained via a

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[167] *"L'imagination/imaginer: c'est le pouvoir que chaque être sensible éprouve en soi de se représenter dans son esprit les choses sensibles; cette faculté dépend de la mémoire. On voit des hommes, des animaux, des jardins; ces perceptions entrent par les sens, la mémoire les retient, l'imagination les compose; voilà pourquoi les anciens Grecs appellerent les Muses filles de Mémoire" (Diderot & d'Alembert, 1751-1772).*

[168] *"L'imagination active est celle qui joint la réflexion, la combinaison à la mémoire; elle rapproche plusieurs objets distans, elle sépare ceux qui se mêlent, les compose & les change; elle semble créer quand elle ne fait qu'arranger, car il n'est pas donné à l'homme de se faire des idées, il ne peut que les modifier. […] Ce don de la nature est imagination d'invention dans les arts, dans l'ordonnance d'un tableau, dans celle d'un poëme. Elle ne peut exister sans la mémoire; mais elle s'en sert comme d'un instrument avec lequel elle fait tous ses ouvrages" (Diderot & d'Alembert, 1751-1772).*

process of experimentation as a basis for human understanding and action. Secondly, Descartes reformulates the term 'idea' by situating it in the human mind instead of relegating it to a separate realm of Forms. 'Ideas' are considered as pure products of the mind that are amenable to combinational activity (Leibniz); imagination is human cognition's link to the external world, but it is inferior to reason and is potentially deceptive. Locke and Hume epitomize the rival view to Descartes' rationalism. Experience is for empiricism the foundational element in the acquisition and accumulation of knowledge and 'Ideas' are only faint images of impressions (a complete reversal of Plato's view). Experience however does not present itself as an ordered whole and this atomistic quality of information prompts the problem of induction, especially in Hume, who considers two opposing, organizing principles: Habit/belief and imagination. Kant addresses the problem by re-introducing *a priori* forms of understanding that impose themselves on sensible information. A central (and not a mediating) role is attributed to imagination, which has the power to form (not only to represent) an image of the world. Kant's notion of productive imagination finds its ultimate freedom and realization in the production of art which, by its alliance with genius and moral imagination, is now set to claim autonomy and superiority over the constraints that the phenomenological world must endure. In Kant, we find the ultimate balance between information, out-formation and imagination but also the seeds for a new order in which the free imagination of possible worlds comes to supersede the analysis of a phenomenological world.

3.3 The triumph of creative imagination (19th century - first half 20th century)

Within the third form of life the trajectories of information and imagination are parting again and fuel the opposition between science and art anticipated by Kant. Information transcends the realm of personal experience via the instrument of statistics and extends its horizon of objectivity; imagination in turn becomes the epitome of an artistic and humanistic counter-culture, attributing to the (sub-conscious) subjectivity of the artist a god-like creative power. There's no complete separation however, in developmental approaches a trade-off between the two domains is suggested, and within the phenomenological tradition, imagination is instrumentalized in a renewed quest for essences [*eidoi*/*εἶδοι*].

3.3.1 Statistical information

The empiricism of the second life situated information in the sensorium of an individual knower, in the 19th century (already anticipated in the second half of het 18th century), a new knower enters the stage: the state, which senses by means of bureaucracy and is informed via statistics (Peters, 1988, p. 14).[169]

[169] The first national institutes for statistics develop in the 19th century. Belgium: 'Het Bureau voor de Statistiek'

The scale of the modern state in the 19th century presents its leaders and stakeholders with a problem: a state is something difficult to imagine and to grasp and rulersdo not want to rule over an imaginary state when they need to make policy, control populations, tax-incomes, raise armies. They need facts. And so, statistics arise as the study of something too large to be perceptible – states and their climates, their rates of birth, marriage, death, crime, their economies, and so on – and secondly, as a set of techniques for making those processes visible and interpretable. Here, information, which in empiricism meant the experience of an individual, comes to mean the experience of the state. Statistics enable the acquisition of knowledge beyond the range of one's personal experience and grant access to knowledge intellectually apart from any 'real' embodied, sensory experience. In the 1902 edition of the *Encyclopedia Britannica*, the following definition is provided:

> **The Statistical Method**. - This method is a scientific procedure (1) whereby certain phenomena of aggregation not perceptible to the senses are rendered perceptible to the intellect, and (2) furnishing rules for the correct performance of the quantitative observation of these phenomena. The class of phenomena of aggregation referred to includes only such phenomena as are too large to be perceptible to the senses. It does not, e.g., include such phenomena as are the subject-matter of microscopy. Things which are very large are often quite as difficult to perceive as those which are very small.[170]

By studying something too large to be perceptible by an individual's senses (climate, birth-rate, death, crime, economics), "statistics offer a kind of gnosis, a mystic transcendence of individuality, a tasting of the forbidden fruit of knowledge" (Peters, 1988, p. 15). Peters summarizes the process as follows:

> Empiricism took the forms out of information, leaving it the chaotic stuff of sensory experience. But it remained anchored in the human mind and senses. With state empiricism – statistics – the old scale of the human mind and body is shattered. Information accumulates at rates and in quantities that can be processed by no single person. Techniques of data-reduction and analysis of central tendency arise to interpret that information. Information, the stuff of sense, qualitatively mutates as it increases in quantity: it becomes objectified, exterior, and alien to human senses. (Peters, 1988, p. 15)

From an epistemological point of view, statistics offer an opening vis-à-vis the limits that Hume encountered with regard to the modern fact (Poovey, 1998, pp. 194-213) and the ensuing problem of induction: how to relate matters of fact to human ideas, how to bridge the gap between fact and theory? Hume rejected *a priori* assumptions about systematic knowledge and overarching systems (e.g. divine providence, universal human subjectivity) and concluded that the only grounds one can have for assuming that future observations of particulars will continue to resemble past observations

(1826), 'Centrale Commissie voor de Statistiek' (1841); Netherlands: 'Commissie voor de Statistiek' (1826), Bureau voor de statistiek (1849) (Bie, 2009, p. 9); International Statistical Institute [ISI] (1885).

[170] From the *Encyclopedia Britannica*, 1902. http://www.1902encyclopedia.com/S/STA/statistics.html.

is some species of habit or belief. With belief at the heart of systematic knowledge the modern fact becomes vulnerable and is close to an implosion. While Hume himself turns to other modes of writing – such as the essay – to overcome this *aporia,* and Kant develops the model of transcendental idealism, alternative theories and conceptual abstractions are devised in the 19th century to resolve the tension between theory and observation. It is here that statistics come in, deriving meaning from a quantified and extended horizon based on the collection of 'neutral facts'. This type of perspectival objectivity becomes the credo of scientists, not because it necessarily mirrors reality more accurately, but because it serves the ideal of communicability, especially across barriers of distance and distrust. Non-perspectival objectivity is "the ethos of the interchangeable and therefore featureless observer – unmarked by nationality, by sensory dullness or acuity, by training or tradition; by quirky apparatus, by colourful writing style, or by any other idiosyncrasy that might interfere with the communication, comparison, and accumulation of results" (Daston, 1999, p. 118).

From a sociological point of view, it is argued that the collection, processing, and use of information becomes from the 19th century onwards, a powerful tool in the hand of states that replace absolutist rule by fear and violence with a regime of surveillance and monitoring.

This ideal of objectivity and self-effacing cooperation is sharply contrasted to the subjective individualism of the artist: "*l'art, c'est moi, la science, c'est nous*".[171] Statistical data function as a new divine intelligence, one that is omnipresent and gives a new order to the world. Statistics make the invisible visible, and take the place of what previously could only be imagined in novels and stories.[172] Moreover, they get to be related to real action and decision-making.

Around 1900 CE 'informed' as an adjective undergoes a significant shift as far as semantics is concerned; it is now definitionally linked to elements such as a new action, opinion, decision: "based on or influenced by knowledge or by an understanding of a particular situation; enlightened; (of a work) characterized by or demonstrating knowledge or learning." [OED, informed, 1b]. 'Informed' has now travelled from informing matter (first form of life), to informing minds – based on facts – (second

[171] *"la méthode expérimentale puise en elle-même une autorité impersonnelle qui domine la science. […] Les progrès de la méthode expérimentale consistent en ce que la somme des vérités augmente à mesure que la somme des erreurs diminue. Mais chacune de ces vérités particulières s'ajoute aux autres pour constituer des vérités plus générales. […] Pour les arts et les lettres, la personnalité domine tout. Il s'agit là d'une création spontanée de l'esprit, et cela n'a plus rien de commun avec la constatation des phénomènes naturels, dans lesquels notre esprit ne doit rien créer*" (Bernard, 1865, p. 47). [the experimental method implies an impersonal authority which dominates science. […] The progress of the experimental method is one in which the sum of truths increases to the same extent as mistakes decrease. Every particular truth adds to the others to form a more general truth. […] For the arts and letters, personality is an all-dominating factor. It is about a spontaneous creation of the spirit, and it has nothing in common anymore with understanding natural phenomena, where creation by spirit is irrelevant]" [own translation].

[172] See Benjamin's *storyteller* who introduces this section (Benjamin, 2007).

form of life), to finally reach the status of a powerful element that contributes or determines actual decisions and actions.

3.3.2 Creative imagination

As this culture of science, the putative realm of truth and facts, dissociates itself form an all-encompassing philosophy and humanistic culture, a powerful counterculture comes about, one that challenges the imperialist claims of the scientific culture (Lee, Wallerstein, & Aytar, 2004, p. 4). A central term in this countermovement is 'imagination', and the 'creative imagination' more in particular. Quite outspoken and very confident, artists, poets and critics start promoting imagination as the chief creative faculty, as a magical power, that is capable of synthesis (contra science's concern with analysis) and that is the motor of invention and originality: "imagination, once regarded at best as a useful intermediary between sensation and reason, at worst as a dangerous and delusive power, has now become the prime faculty of the human mind" (Cocking & Murray, 1991, p. v). The aphorisms bearing witness to this turning of tables are abundant and most of them intend to hierarchically oppose imagination and reason:

- "Art only begins where Imitation ends." (Oscar Wilde, *De Profundis*)
- "Reason is to imagination as the instrument to the agent, as the body to the spirit, as the shadow to the substance." (Shelley, 1821/1904, pp. 11–12). In the opening of his *Defense of Poetry*, Shelley discerns two classes of mental action, reason and imagination[173]. Reason contemplates the relation between thoughts by means of analysis, imagination colours those thoughts and creates new ones by synthesizing "those forms which are common to universal nature and existence itself […] Reason is the enumeration of qualities already known; imagination is the perception of the value of those qualities, both separately and as a whole" (Shelley, 1821/1904, pp. 11–12)[174]. Shelley, who is very familiar with Plato's work formulates a new, reversed mimetic order: "A poem is the very image of life expressed in its eternal truth… A story of particular facts is as a mirror which obscures and distorts that which should be beautiful: poetry is a mirror which makes beautiful that which is distorted" (as cited in Abrams, 1953, p. 127)
- In his annotations to Berkeley's *Siris,* English poet William Blake (1757-1827), grants imagination a divine status when comparing imagination to "the Divine Body in Every Man" (Blake, n.d.-a). In

[173] "The one is the *το ποιειν*, or the principle of synthesis and has for its objects those forms which are common to universal nature and existence itself; the other is the *το λογιζειν* or principle of analysis and its action regards the relations of things, simply as relations; considering thoughts, not in their integral unity but as the algebraical representations which conduct to certain general results" (Shelley, 1821/1904, p. 12).

[174] See also William Butler Yeats' passionate declaration "By reason and logic we die hourly, by imagination we live!".

another *annotation*, Blake provides the requisites for "Imagination, the Divine Vision", "the One Power alone that makes a Poet", and these are: first, those of observation and description and second, sensibility (Blake, n.d.-b).

- Darwin is not one to be expected in this club of imaginophiles. Nevertheless, he characterizes imagination as "one of the highest prerogatives of man. By this faculty he unites, independently of the will, former images and ideas, and thus creates brilliant and novel results" (Darwin, 1871/1981, p. 45). According to Darwin, dreaming is the involuntary manifestation of the power of imagination but he also provides a link to the notion of information as impression: "The value of the products of our imagination depends of course on the number, accuracy, and clearness of our impressions; on our judgment and taste in selecting or rejecting the involuntary combinations, and to a certain extent on our power of voluntarily combining them" (Darwin, 1871/1981, p. 46).

On a more systematic level, philosopher Friedrich Wilhelm Joseph von Schelling (1775-1854) builds on Kant's notion of '*Einbildungskraft*' and posits that imagination is both human and divine. God possesses the power of imagination in all its fullness, the human imagination shares in this faculty, though on a lower level. Common people take part in the power of imagination by perceiving unity in the multiplicity of our experience. The creative genius, however, possesses the ability to create new unity out of existing things (*creation ex materia*). Imagination is a power in nature, with the *natura naturans* being the active power of imagination itself, and the *natura naturata* the created sensible object, the product of the creative act. Shelling's philosophy of art aims at connecting the philosophies of nature and of mind by recognizing in the works of art, the unity of man's conscious and free intelligence with nature's material and objective reality. The art created by the artist's imagination is considered to be the most comprehensive symbol of knowledge.

In chapter 13 of his seminal critical work, *Biographia Literaria* (Coleridge, 1817), literary critic Samuel Taylor Coleridge (1772-1834) similarly divides imagination into two main levels. Primary imagination is the involuntary act of receiving impressions and sensations from the external world through the senses, imposing some sort of order on those impressions so that the mind is able to form a clear image of the outside world. The primary imagination is universal; it is possessed by all humans. The secondary imagination, however, is the peculiar and distinctive attribute of the artist. Secondary imagination is more active and conscious in its working. Primary imagination supplies its material to the secondary imagination which selects, orders, re-shapes and re-models it into models of beauty. Coleridge calls it a magical, synthetic power that unifies perception, intellect, will and emotion and is the basis of all poetry. It links the internal with the external, the subjective with the objective, and the spiritual with the physical or material. Coleridge advances a further division between Imagination and

Fancy. Whereas primary and secondary imagination only differ in degree, Imagination and Fancy are activities of two different kinds. Fancy is about combining perceptions into beautiful shapes, but unlike the imagination, it does not fuse and unify. In imagination elements lose their individual characteristics in order to create something new, while Fancy is merely a bringing together of a number of separate elements.[175] This separation of Fancy and Imagination, where Fancy is relegated to the realm of ornamental and mimetic activities, was key to allow for the association of imagination with the centres of creativity (Engell, 1981, pp. 329–366).

In *The World as Will and Representation (*Schopenhauer, 1818/1844*)*[176], philosopher Arthur Schopenhauer builds on Kant's bifurcation of experience into *noumena* and *phenomen*a. He claims however, unlike Kant, that the noumenal (metaphysical) world is not completely unknowable. According to Schopenhauer, the metaphysical realm, which is singular and indivisible in its own existence, manifests itself phenomenally when it is transformed in terms of time and space. The human mind generally tries to make sense of the world, pragmatically, by categorizing and delineating in concordance with the order imposed by phenomena, thereby trying to create stability out of the instability. In order to escape this enforced and artificial order and to discover the noumenal order, Schopenhauer makes an appeal to the 'Will' as the noumenal aspect that is the thing-in-itself but is also present in humans. The Will can give us a glimpse of the transcendental order and it can express itself through a medium that is entirely transcultural: music. In its non-representational quality, music comes closest of the chaotic noumenal world manifesting itself in the world of ordered phenomena.

3.3.3 Psychodynamic approaches

At the beginning of the twentieth century imagination is granted an additional perspective: in the psycho-analytical work of Sigmund Freud (1856-1939) a new source for imaginative activity is brought to the centre of attention: the unconscious. Poetic imagination and creativity are typically presented in terms of phantasy, daydreams and nocturnal dreaming and considered to be a substitution for the pleasure of childhood play. Free play is allowed to children as part of their motivation to become grown-ups; by contrast, adults must keep some wishes hidden since they already know what is expected of them and are controlled by intersubjective rules: "so when the human being grows up and ceases to play he only gives up the connection with real objects; instead of playing he then begins to

[175] 'Fancy' does not equal 'Fantasy'. In *Fantasy: the liberation of imagination* Richard Mathews situates Fantasy in the context of a poetic and prozaic genre at the end of the eighteenth and beginning of the 19th century and "the mythical process unlocks imagination from the chains of reason" that typifies these works (Mathews, 2002, p. 11).

[176] It was first published in 1818 and extended in 1844; next to the primary text in German, also the translation in Dutch (Schopenhauer, 2012), and English (Schopenhauer, 1909) have been consulted.

create phantasy" (Freud, 1908/2009, p. 46). Imagination then, according to Freud, involves a flight from reality and feeds on frustrations and situations where pleasure-oriented imaginings escape from the fertile unconscious.

The general schema is one in which the pleasure-unpleasure [*Lust-Unlust*] principle, or more shortly the *pleasure principle*, strives towards gaining pleasure (Freud, 1911/1956, p. 2553) and seeks to discharge the drive tensions via hallucinations. In its striving, the pleasure principle meets up with the *reality-principle,* which is the psyche's necessary awareness of information concerning a given reality. In an evolutionary context, Freud claims that "it was only the non-occurrence of the expected satisfaction, the disappointment experienced, that led to the abandonment of [the] attempt at satisfaction by means of hallucination. Instead of it, the psychical apparatus had to decide to form a conception of the real circumstances in the external world and to endeavour to make a real alteration in them" (Freud, 1911/1956, p. 2554). Poetic imagination and creation are the expression of these universally experienced psychological complexes where the artist reveals deeply (dark) secret wishes beyond the status of hallucinations or day-dreaming. These expressions would normally repel us if they were to be communicated in an ordinary, non-artistic fashion (Freud, 1908/2009, p. 53), however, "when a man of literary talent presents his plays, or relates what we take to be his personal day-dreams, we experience great pleasure arising probably from many sources. How the writer accomplishes this is his innermost secret[177]" (Freud, 1908/2009, p. 54). The underlying assumption is that everyone resists revealing contents of the unconscious while secretly daydreaming and wishing for the unthinkable. The neurotic person is unable to utilize this tension in a creative way; the poet/artist is saved from neurosis by an ability to give expression to pleasure-reality tension in a work of art.

> Art brings about a reconciliation between the two principles in a peculiar way. An artist is originally a man who turns away from reality because he cannot come to terms with the renunciation of instinctual satisfaction which it at first demands, and who allows his erotic and ambitious wishes full play in the life of phantasy. He finds the way back to reality, however, from this world of phantasy by making use of special gifts to mould his phantasies into truths of a new kind, which are valued by men as precious reflections of reality. (Freud, 1911/1956, p. 2557)

Following a turning away from reality, the poet thus returns to it with revelations of other possibilities. Freud distinguishes between two different types of poets, "[the ones who] like the bygone creators of epics and tragedies, take over their material ready-made, and those who seem to create their material spontaneously" (Freud, 1908/2009, p. 550). It is in the latter type of creative work that something new and unique is revealed by venturing into the dark unknown of the unconscious, bringing light to shine

[177] As with Kant's ineffable concept of genius, Freud also resists a functional analysis of poetic creation.

upon some universal experience of human conflict. Influenced by Freud's thesis on spontaneous creation, artists, and more in particular writers and surrealist painters, have aimed at showing the richness of the unconscious by exploring, since the 1920s, the richness of spontaneous action.
Freud's student, psycho-analyticus Carl Gustav Jung (1875–1961) further extends these seminal insights into the concept of the *collective unconscious*. According to Jung, this collective unconscious is formed by instincts and archetypes which are physically inherited from our ancestors and are present in symbols, signs, patterns of behaviour, and thinking and experiencing. These archetypical themes and images are the same for all cultures and encompasses the soul of humanity at large. Jung refers in the context of archetypes to universal 'categories of imagination'[178].

> My thesis then, is as follows: in addition to our immediate consciousness, which is of a thoroughly personal nature and which we believe to be the only empirical psyche (even if we tack on the personal unconscious as an appendix), there exists a second psychic system of a collective, universal, and impersonal nature which is identical in all individuals. This collective unconscious does not develop individually but is inherited. It consists of pre-existent forms, the archetypes, which can only become conscious secondarily and which give definite form to certain psychic contents. (Jung, 1959/1968, p. 43)

The collective unconscious serves as a basis from which humans establish through a process of individuation a *persona*, which represent the embodiment of a small portion of the collective psyche.

We can summarize that with the turn to the unconscious late in this third form of life, imagination further distances itself from the information elements that pertain to an external or metaphysical reality and focusses instead on the barely accessible depths of the human psyche as the main source of inspiration/information. The structures that seem to form the basis of imagination are considered to be universal and trans-historical, yet the crucial processes that lead to the production of particular artworks does not seem to be open to a functional analysis and remain an uninformed mystery.

3.3.4 New perspectives on the information-imagination alliance

3.3.4.1 Experience and imagination in pragmatism

Philosophical pragmatism, developed initially by Charles Sanders Peirce (1839–1914), William James (1842–1910), and John Dewey (1859–1952), emphasizes the practical consequences that follow from the acceptance of a belief, and claims that the value and meaning of a proposition is in the practical consequences that follow upon accepting it. This practical and adaptive perspective leans heavily on Darwin's theory of natural selection (1859) and the naturalistic approach to the theory of knowledge

[178] Jung hereby refers to sociologists Henri Hubert and Marcel Mauss as the authors of the concept.

that it implies. Darwin's theory renounces metaphysical explanations of the origins of species by considering the morphology of living organisms as a product of a natural, temporal process of the adaptation of lineages of organisms to their environments as well as the active construction of these environments. In a similar way, pragmatists (especially John Dewey) maintain that a productive, naturalistic approach to the theory of knowledge must begin with a consideration of knowledge as an adaptive human response to environing conditions aiming at actively restructuring these conditions. Thought and thinking are not essential primitives but the product of the interaction between organism and environment, and knowledge is practical instrumentality in the guidance and control of that interaction. This new epistemic outlook has far-reaching consequences on the status of sensorial information.

> We are only just now commencing to appreciate how completely exploded is the psychology that dominated philosophy throughout the eighteenth and nineteenth centuries. According to this theory, mental life originated in sensations which are separately and passively received, and which are formed, through laws of retention and association, into a mosaic of images, perceptions, and conceptions. The senses were regarded as gateways or avenues of knowledge. Except in combining atomic sensations, the mind was wholly passive and acquiescent in knowing. Volition, action, emotion, and desire follow in the wake of sensations and images. The intellectual or cognitive factor comes first and emotional and volitional life is only a consequent conjunction of ideas with sensations of pleasure and pain. The effect of the development of biology has been to reverse the picture. Wherever there is life, there is behaviour, activity. In order that life may persist, this, activity has to be both continuous and adapted to the environment. This adaptive adjustment, moreover, is not wholly passive; is not a mere matter of the moulding of the organism by the environment. Even a clam acts upon the environment and modifies it to some extent. It selects materials for food and for the shell that protects it. (Dewey, 1920, pp. 83-84)

Instead of sensorial, atomistic impressions pragmatists advance the notion of ‘experience’ to account for the interaction between agent and environment.

> When experience is aligned with the life-process and sensations are seen to be points of readjustment, the alleged atomism of sensations totally disappears. With this disappearance is abolished the need for a synthetic faculty of super-empirical reason to connect them. Philosophy is not any longer confronted with the hopeless problem of finding a way in which separate grains of sand may be woven into a strong and coherent rope or into the illusion and pretence of one. (Dewey, 1920, p. 90)

In different ways, all pragmatists argue that experience is far richer than it is portrayed in the tradition and that ‘experiences’ or ‘sense data’ cannot be identified as separable constituents of cognition.
In James’ radical empiricism the fundamental postulate is advanced that “the only things that shall be debatable among philosophers shall be things definable in terms drawn from experience” (James, 1909, p. xii). This requires experience to be far richer than in early philosophies, and indeed, James claims that our experience is not just a stream of data, but a complex process that is full of meaning.

He further asserts that “the relations between things, conjunctive as well as disjunctive, are just as much matters of direct experience, neither more nor less so, than the things themselves” (James, 1909, p. xii), and that “the parts of experience are held together from next to next by relations that are themselves parts of experience. The directly apprehended universe needs, in short, no extraneous trans-empirical connective support, but possesses in its own right a concatenated or continuous structure” (James, 1909, p. xiii).

But it is Dewey’s account which is most innovative, not at least because of its reference to a Darwinian, naturalistic understanding of experience. Dewey uses the term ‘experience’, found throughout his philosophical writings, to denote the broad context of the human organism's interrelationship with its environment, not the domain of human thought alone.

In his seminal article ‘The Reflex Arc Concept in Psychology’ (1896) Dewey argues that the dominant conception of the reflex arc in psychology, which begins with the passive stimulation of the organism, causing a conscious act of awareness eventuating in a response, is a remnant of the old, and dis-functional, mind-body dualism. Dewey advances an alternative view: the organism interacts with the world and builds experiences through self-guided activity that coordinates and integrates sensory and motor responses, the world is not passively perceived and thereby known; active engagement with the environment is involved integrally in the process of learning from the start. In this particular article Dewey does not mention the term information but rather sensory stimulus; in *Reconstruction in Philosophy* (1920) however, the reference to information is more explicit:

> To an animal an affection of the eye or ear is not an idle piece of information about something indifferently going on in the world. It is an invitation and inducement to act in a needed way. It is a clue in behaviour, a directive factor in adaptation of life in its surroundings. It is urgent not cognitive in quality. […] As a conscious element, a sensation marks an interruption in a course of action previously entered upon. (Dewey, 1920, pp. 87–88)

Dewey sees in the active engagement with information as a constituent in (re-)constructing experience a special role for philosophy and experimental science: philosophy must play the role of analysing and distinguishing between better and worse perspectives and modes of accomplishment, thereby pointing the way forward when the proper path seems unclear: “The prime function of philosophy [informed by science] is that of rationalizing the *possibilities* [Dewey’s emphasis] of experience, especially collective human experience” (Dewey, 1920, p. 122). The relation between informed experience and imagination is suggested in the last pages of *Reconstruction in Philosophy:*

> Conceptions of possibility, progress, free movement and infinitely diversified opportunity have been suggested by modern science. But until they have displaced from imagination the heritage of the immutable and the once-for-all ordered and systematized, the ideas of mechanism and matter will lie like a dead weight upon the emotions, paralyzing religion and distorting art. […] When philosophy shall have co-operated with the course of events and made

> clear and coherent the meaning of the daily detail, science and emotion will interpenetrate, practice and imagination will embrace. Poetry and religious feeling will be the unforced flowers of life. (Dewey, 1920, pp. 211-213)

Dewey advances here a new vision on artistic imagination, one that is based on reconstructing the possibilities of experience and an active engagement with information via new insights coming from science and meditated by philosophy.

3.3.4.2 'Eidetic analysis'

A final example of a specific relation between information and imagination is offered by philosopher Edmund Husserl (1859-1938). Husserl studies the structures of experience and consciousness and is considered to be the founding father of the philosophical school of phenomenology. One of the central points in his considerations is the one of *eidetic analysis* or *reduction.* Husserl thereby revisits the notion of *eidos* that we encountered early in Platonic and Aristotelian philosophy in reference to the essence of things in the world. Husserl's *eidetic reduction* is a technique in the study of essences that aims at identifying the essence of a mental object, with the intention of drawing out the absolutely necessary and invariable components that make the mental object what it is. This reduction is done with the intention of removing what is perceived, and leaving only what is required. The methodological technique that Husserl proposes to arrive at these essences is one of imaginative variation by which mentally changing different elements of a practical object lead to an assessment with regard to the characteristics that are necessary for it to be it without being something else. If a characteristic is varied, and the object *as such* remains unchanged and identifiable, the characteristic does not belong to the essence of the object, and vice versa. The steps of an *eidetic analysis* are threefold: 1/ choosing a specific object; 2/ vary it imaginatively; and 3/ figuring out that which cannot be eliminated for the object to remain itself. The essence is that what can not be eliminated.

The basic steps of an *eidetic reduction* are threefold: first, you must choose some specific example (e.g., Descartes' wax); then, you vary the example imaginatively; the third step involves figuring out that which cannot be eliminated while the example remains itself. That which cannot be eliminated is part of the example's essence.

> Starting from [a] table-perception as an example, we vary the perceptual object, table, with a completely free optionalness, […] Perhaps we begin by fictively changing the shape or the color of the object quite arbitrarily, keeping identical only its perceptual appearing. […] We change the fact [*das Faktum*] of this perception into a pure possibility, one among other quite "optional' pure possibilities but possibilities that are possible perceptions. We, so to speak, shift the actual perception into the realm of non-actualities [*Unwirklichkeiten*], the realm of the as-if, which supplies us with "pure" possibilities, pure of everything that restricts to this fact or to any fact whatever. As regards the latter point, we keep the aforesaid possibilities,

> not as restricted even to the co-posited de facto ego, but just as a completely free "imaginableness" of phantasy. Accordingly from the very start we might have taken as our initial example a phantasying ourselves [*Hineinphantasieren*] into a perceiving, with no relation to the rest of our de facto life. Perception, the universal type thus acquired, floats in the air, so to speak in the atmosphere of pure phantasiableness [*Erdenklichkeiten*]. Thus removed from all factualness, it has become the pure "eidos" perception, whose "ideal" extension is made up of all ideally possible perceptions, as purely phantasiable [sic] processes. […] every fact can be thought of merely as exemplifying a pure possibility. (Husserl, 1950/1999, pp. 70–71)[179]

With the *eidetic reduction,* Husserl fundamentally rethinks and revolutionizes the view on how essential knowledge can be obtained and how the world of facts can fruitfully interact with the realm of possibilities. In the context of our overview, we can summarize that Husserl's method involves factual information (second form of life) and creative imagination in order to arrive at essential information in its archaic meaning (first form of life).

3.3.5 Section summary

The central factor in this third form of life is the notion of 'neutral' or 'objective' information; information that transcends personal experience and thereby extends the informational horizon of humankind. Accompanying and in a way fortifying this alienating trend in information is the fruition of the notion of 'creative imagination' which is embedded in a counter-positivistic movement. Without any doubt the heydays of imagination are to be situated within this third form of life. Kant's (rather brief) treatment of aesthetic, artistic and moral and imagination inspires the disciples of romanticism to raise the anchor which connects humankind with the factual world of information and discover the uncharted terrain of idealistic, (im)possible worlds. Plato's dualism comes back with a vengeance and turns the tables for information and imagination in favour of the later one. A more functional and purposeful relation between in information and imagination is reached in Husserl's phenomenology where information and imagination cooperate to arrive at the essence of things.

An important 'new' source of imagination is discovered in this third life; inspiration does not reside in a metaphysical or a strictly rational realm but rather in the deep subconscious and hardly accessible layers of our human existence and engagement with our surroundings.

3.4 A flood of information (second half of the 20th century - 21st century)

A final and important turn is taken in the mid-twentieth-century, after the second World War, when information starts to be a crucial factor in the coding and signalling of messages (Shannon, 1948;

[179] The German text, posthumously published in 1950, is available at http://ophen.org/pub-109001; this first publication is based on the lectures that Husserl gave at the Sorbonne in 1929.

Shannon & Weaver, 1949), and in the study of communication and feedback-control (Wiener, 1948/1985). In the fourth life, information is looked at from a technical and an engineering point of view and this technical breakthrough opens the gates for an unparalleled information flood (Gleick, 2011). By disconnecting the concepts of information and message from their ancient (ontological) and modern (epistemological and subjective) context, Shannon opens new vistas towards an objective, formal and ubiquitous use of information. Within the context of post-modern philosophy this information turn leads to the hope of a transparent society (Vattimo, 1989/1992) and the dismantling of grand narratives and elite truths (Lyotard, 1979/1984).

In 2016, Oxford Dictionaries chose 'post-truth' as term of the year; 'post-truth' refers to "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief". In a recent publication Yale-historian Timothy Snyder relates a politics of resisting objective and shared facts to conditions for tyranny and the collapse of freedom.

> You submit to tyranny when you renounce the difference between what you want to hear and what is actually the case. This renunciation of reality can feel natural and pleasant, but the result is your demise as an individual—and thus the collapse of any political system that depends upon individualism. To abandon facts is to abandon freedom. If nothing is true, then no one can criticize power, because there is no basis upon which to do so. If nothing is true, then all is spectacle. The biggest wallet pays for the most blinding lights. (Snyder, 2017, pp. 65–66)

Snyder (referring to philologist Victor Klemperer) discerns four sequential modes that lead to such a situation:

> The first mode is the open hostility to verifiable reality, which takes the form of presenting inventions and lies as if they were facts. […] The second mode is shamanistic incantation […] The next mode is magical thinking, or the open embrace of contradiction […] Accepting untruth of this radical kind requires a blatant abandonment of reason. […] The final mode is misplaced faith. (Snyder, 2017, pp. 66–67)

This situation where information is omnipresent and easily accessible but at the same time also contested and subject to inflation goes hand in hand with a crisis in the creative imagination of romantic idealism and the postulation of a better world 'out there'. Mankind is confronted with and informed about the realities of everyday life (critical theory, existentialism) and access to a rhizomatic web of interdepending sources and influences leads to the devaluation of the old model based on original contributions and strong narratives. The realms of information and imagination become permeable (in theory at least): on the one hand, scientific and informational thinking is very influential and pervasive but is at the same time relegated it to the realm of literature and storytelling by post-modern analysis (Rorty, 1979); artistic imagination and creativity, on the other hand, have difficulties in maintaining their autonomous and superior creative position in an age of mechanical reproduction

(Benjamin, 1935/2003) and become informational in the sense that they always refer to one source or another.

Hereafter, in some more detail the main characteristics of the fourth form of life.

3.4.1 The informational turn

Claude E. Shannon (1916-2001), a Bell Laboratory scientist, and co-author Warren Weaver (1894-1978) are considered to be the godfathers of the informational turn (Gleick, 2011, chapter 8). They develop and disseminate a mathematically based theory of communication that serves as a model for the understanding and optimization of signal-communication and use probability theory to construe a method for determining the optimal number of binary-coded signs needed to send any given signal. A reformulation of 'information' is at the core of the enterprise: "information must not be confused with meaning", Weaver says, "information in communication theory relates not so much to what you *do* say, as to what you *could* say" (Shannon & Weaver, 1949, pp. 4–5). In the seminal papers by Shannon and Weaver (Shannon, 1948; Shannon & Weaver, 1949) the notion of a 'bit' or 'binary digit' is introduced as the smallest unit for measuring information and is primarily associated with a two-choice situation which has unit information (Shannon & Weaver, 1949, p. 5).

Hereafter, a nutshell-summary of their argument:

- The amount of information is defined, in the simplest cases, to be measured by the logarithm of the number of available choices. (When $m^x=y$ then x is said to be the logarithm of y to the base m).
- Shannon and Weaver consider it 'convenient' to opt for 2 as a base, which implies that the information, when there are only two choices, is proportional to the logarithm of 2 to the base 2. A two-choice situation is characterized by information of unity.
- This unit of information is called a 'bit' (a condensation of 'binary digit').
- When numbers are expressed in the binary system there are only two digits. Zero and one may be taken symbolically to represent any two choices, as noted above; so that 'binary digit' or 'bit' is logically associated with the two-choice situation which has unit information. One bit of information is the amount of information that we need to make a decision between two equally likely alternatives. Two bits of information enable us to decide among four equally likely alternatives… and so on (Miller, 1956, p. 344).
- An example: If one has available 16 alternative messages among which to be equally free to choose from, then since $16=2^4$ so that $\log_2 16=4$, one says that this situation is characterized by 4 bits of information.

By means of this quantification, a bridge is built between information and uncertainty; between information and entropy (disorder); between information and chaos (Gleick, 2011, p. 16); and finally also between information and freedom:

> Information, in communication theory, is associated with the amount of freedom of choice we have in constructing messages. Thus for a communication source one can say, just as one would also say it of a thermodynamic ensemble, 'this situation is highly organized, it is not characterized by a large degree of randomness or of choice—that is to say, the information (or the entropy) is low'. (Shannon & Weaver, 1949, p. 7)

Greater freedom of choice, greater uncertainty, and more information go hand in hand.

The quantification has another, hidden, mind-setting aspect: the use of a *bit* as the measure of information and the choice for a binary system in which questions are entitled to a 'yes-'or 'no-'answer is an element that sets in motion a vision on information as something to act upon in a very determinate manner. If technical actions are coded in yes-no decisions, then this certainly influences human thinking which controls these actions[180].

With this view on information, Shannon and Weaver develop a universal communication model, or better a model of signal transmission, where information is linked to the notion of 'source'. An information source produces "a message or sequence of messages to be communicated to the receiving terminal" (Shannon, 1948, p. 2). (see Fig. 3.1)

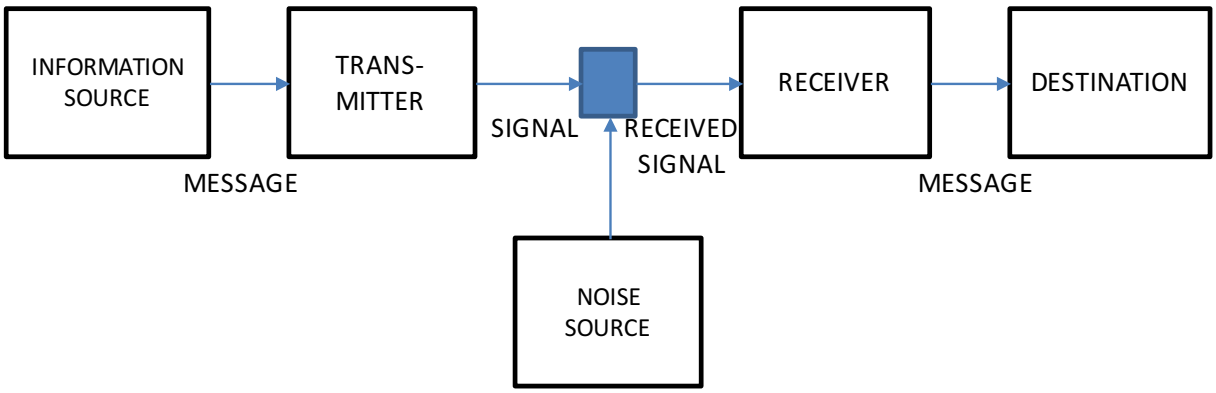

Figure 3.1. The Shannon-Weaver model of communication.

[180] *"Und so wie die technisierbaren Handlungen in technisch vollziehbare Ja-Nein-Entscheidungen aufgelöst werden können, so wird das Wissen, das diese Handlungen steuert, durch den oder unter dem Informationsbegriff aufgelöst in die Ja-Nein-Entscheidungen, die der Verstand zu treffen vermag"* (Weizsäcker, 1973, p. 14).

Almost simultaneously with Shannon and Weaver, the American mathematician Norbert Wiener (1894-1964), advances a statistically based theory about control systems and communications. His theory is initially linked to trajectory-studies of artillery shells but his investigations are also strongly imbedded in a culture of transdisciplinary research; he and his co-workers share "the conviction that the most fruitful areas for the growth of the sciences [are] those which had been neglected as a no-man's land between the various established fields" (Wiener, 1948/1985, p. 9). As far as the transdisciplinary potential is concerned, 'information' takes the cake and Wiener employs an understanding of information which amounts to a view in which the unit amount of information is "that which is transmitted as a single decision between equally probable alternatives" (Wiener, 1948/1985, p. 9). To this universal notion of information, Wiener adds the principle of (negative) feedbackloops resulting in a *cybernetics* that is applicable to computing machines, nervous systems, organisms and society at large.

A note on entropy[181]. 'Entropy' has its origins in the physical sciences, in thermodynamics more in particular, and is associated with a situation where it measures the degree of randomness or disorder of the situation and with the tendency of physical systems to become less and less organized, and thus to become more and more perfectly "shuffled" (Shannon & Weaver, 1949, p. 7). Both Shannon and Wiener use the concept of entropy and link it to information but in opposite senses. Shannon & Weaver equal information to entropy: "The quantity which uniquely meets the natural requirements that one sets up for 'information' turns out to be exactly that which is known in thermodynamics as entropy" (Shannon & Weaver, 1949, p. 7); Wiener opposes information to entropy : "just as the amount of information in a system is a measure of its degree of organization, so the entropy of a system is a measure of its degree of disorganization; and the one is simply the negative of the other" (Wiener, 1985, p. 11). This difference in views and definitions between Wiener and Shannon is based on their different research topics. Shannon considers information and signals in communication channel as pure data, without any meaning and value; Wiener attaches meaning to these signals by considering their use in control. Shannon's entropy of signals/data can be seen as potential information, Wiener's entropy is useful information (at least for the receiving information processing system). These rather technical issues do not concern us directly but indirectly point to an ambivalent relation towards information: information can be a measure of order as well as of disorder, it can provide certainty as well as uncertainty, freedom but also constraint.

[181] Jean-Paul Van Bendeghem published an essay entitled *Hamlet en Entropie : De twee culturen, een halve eeuw later. Een pamflettair essay* (Bendegem, 2009) where he examines the difficult communication and relation between the humanities (Hamlet) and the natural sciences (Entropy) and where Hamlet and entropy epitomize the discrepancy between two cultures.

A prosperous career in a vast area of disciplines is already forecasted by the authors who proclaim that their theories can account for "all of the procedures by which one mind may affect another" including "not only written and oral speech, but also music, the pictorial arts, the theatre, the ballet, and in fact all human behaviour" (Shannon & Weaver, 1949, p. 1). And indeed, spin-offs of the quantitative definition of information quickly spread to the field of artificial intelligence, genetics (DNA), physiology (hormones and enzymes as messages), music theory and psychology. It is hypothesised by some (enthusiastic) authors that "all natural systems (matter/energy) are Information Processing Systems (IPSs). Each IPS can receive, store, process and transmit information. Information processing is an essential internal feature of all systems. The universe as a whole may be viewed as a gigantic IPS" (Haefner, 1992, p. 4). It is beyond the scope of this terminological overview to trace the differential approaches to information in all the disciplines that absorbed and validated in one way or another this new view on information[182]. It will suffice to say a few words on the latter two disciplines in order to illustrate the wave of interest that was generated by information theory.

In music theory, Leonard B. Meyer (1918-2007) grounds his influential definition of musical meaning in information theory and formulates it as follows: "Musical meaning arises when an antecedent situation, requiring an estimate as to the probable modes of pattern continuation, produces uncertainty as to the temporal-tonal nature of the expected consequent." (Meyer, 1957, p. 416). Music is thus considered as the communication of information in a framework of probabilities wherein expectations are created (often in a redundant manner).[183]

In psychology, and in experimental and cognitive psychology in particular, the terms information and the information-processing become central concepts shortly after the Shannon & Weaver publications. In the mid-twentieth century, cognitive psychology overcomes the decades-long focus on conditioned, externally observable behaviour and turns the focus on innate mental capacities and thought processes.

> The term 'cognition' refers to all the processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used. (Neisser, 1967/2014, p. 4)

Within the structural pattern of information processing[184], which involves topics such as attention, perception, learning, memory (short-term, working, long-term memory), problem solving, decision

[182] See Capurro & Hjørland (2003).
[183] See also: Narmour's implication-realization model (Narmour, 1990) and Huron's psychology of expectation (Huron, 2006).
[184] This is unlike dynamic psychology which takes subject's goals, needs, or instincts as initiating elements.

making, action, and language, information is the first domino to drop in the course of these transformations. Inspired by the advances in computer programming, cognitive models usually contain:

> 1/ a control system consisting of a number of memories, which contain symbolized information and are interconnected by various ordering relations. […] 2/ a number of primitive information processes, which operate on the information in the memories. […] 3/ a perfectly definite set of rules for combining these processes into whole programs of processing. (Newell, Shaw, & Simon, 1958, p. 151)

In *The magical number seven, plus or minus two: some limits on our capacity for processing information* (Miller, 1956), psychologist George A. Miller equals the 'amount of information' to 'variance', a term more familiar in the realm of statistics and probability where it measures how far a set of (random) numbers are spread out from their mean. In technical terms and via experimental methods, he anticipates the reality of information overload by drawing two conclusions:

1. the span of absolute judgment[185] and the span of immediate memory impose severe limitations on the amount of information that we are able to receive, process, and remember.
2. Second, the process of recoding is a very important one in human psychology, in particular, the kind of linguistic recoding that people do. Recoding is the technical term for 'chunking', the grouping or organizing of the input sequence into units or chunks, whereby within the limits of human information processing capacity, the number of bits is increased by building larger and larger chunks, each chunk containing more information than before.

Psychologist Donald Broadbent (1926-1993) contributes to the study of information by adding filters to the process. Aiming at modelling certain aspects of selective listening, Broadbent's filter theory (Broadbent, 1958, pp. 297–299) asserts a cybernetic system whereby information first reaches a short term store via the senses, is then selectively filtered before flowing into a system that he calls a limited capacity stage of perception (P-system).

In *Cognitive Psychology* (1967/2014), Ulric Neisser (1928-2012) captures the central tenets of the new psychological paradigm but also addresses the flaws of the information-process perspective.

[185] In experiments on absolute judgment, the observer is considered to be a communication channel and the aim is to measure the relation between input and transmitted information. The experimental problem is to increase the amount of input information and to measure the amount of transmitted information as judged by the observer.

> Information, in the sense first clearly defined by Shannon (1948), is essentially choice, the narrowing down of alternatives. […] I do not believe, however, that this approach was or is a fruitful one [in the field of psychology]. We shall see throughout this book that human beings behave very differently, and are by no means neutral or passive toward the incoming information. Instead, they select some parts for attention at the expense of others, recoding and reformulating them in complex ways. (Neisser, 1967/2014, p. 7)

By explicitly pointing out the active character of information selection where sensory systems do not just present information to the higher mental functions but are also capable to focus on particular aspects of the external world, Neisser anticipates ecological psychologist James J. Gibson's (1904-1979) theory of information pickup. Gibson advances the idea that observers sample information from the outside visual world using an active perceptual system rather than passively receiving unprocessed input through their senses. According to Gibson, information is an inherent feature of the world, and humans and animals are attuned to pick up 'invariant' information via 'direct perception'. With Gibson and the school of ecological psychology, form and information are relegated to the environment (see Plato, Aristotle) and information departs from its familiar dictionary meaning of knowledge communicated to a receiver: "the assumption that information can be transmitted and the assumption that it can be stored are appropriate for the theory of communication, not for the theory of perception." (Gibson, 1979/2015, p. 231). In the appendix of his monograph he clarifies by noting that "information is provided by sound-fields, by odour-fields, and above all by illumination. Information, in this terminology, is not transmitted but is simply available" (Gibson, 1979/2015, p. 294).

The informational turn opens also new perspectives for philosophy. In *La Condition Postmoderne: Rapport sur le Savoir* (1979), philosopher Jean-François Lyotard (1924-1998) proposes a new way of learning, one that is not based on *Bildung* and the transmission of knowledge, but rather on the development of information literacy skills. The following fragment is remarkable, and therefore quoted at length, since it includes performativity, information and imagination.

> Didactics does not simply consist in the transmission of information; and competence […] does not simply reduce to having a good memory for data or having easy access to a computer. […] what is of utmost importance is the capacity to actualize the relevant data for solving a problem "here and now," and to organize that data into an efficient strategy. As long as the game is not a game of perfect information, the advantage will be with the player who has knowledge and can obtain information. By definition, this is the case with a student in a learning situation. But in games of perfect information, the best performativity cannot consist in obtaining additional information in this way. It comes rather from arranging the data in a new way, which is what constitutes a "move" properly speaking. This new arrangement is usually achieved by connecting together series of data that were previously held to be independent. This capacity to articulate what used to be separate can be called imagination [*On peut appeler imagination cette capacité d'articuler ensemble ce qui ne l'était pas*]. […] It is possible to conceive the world of postmodern knowledge as governed by a game of perfect

> information, in the sense that the data is in principle accessible to any expert: there is no scientific secret. Given equal competence, what extra performativity depends on in the final analysis is "imagination," which allows one either to make a new move or change the rules of the game. (Lyotard, 1979, p. 85, 1984, pp. 51–52)

In this passus, written in 1979, Lyotard suggests a new way of learning, one that cuts through all terrains disciplinary knowledge and includes objective information and creative imagination in function of performativity which, in Lyotard, very pragmatically means "the best possible input/output equation" (Lyotard, 1979/1984, p. 46). Lyotard's notion of perfect information [*information complète*] is the weak link in his analysis. Perfect information with regard to all there is to know is at best a utopian idea[186]. Nevertheless, with this perspective on a transconceptual cooperation between information and imagination, a new, productive phase in the dialectic between the two fields is reached; one that overturns the disbalanced positions in antiquity and the 19th century, and sees pragmatic, down to earth opportunities and alliances.

3.4.2 Definitions for an IT- generation

The proliferation of knowledge and omnipresence of information positions information at the centre of society in the 20th century (see chapter 6 on the Information Age). Although Shannon & Weaver's deracinated definition is not always embraced, it nevertheless marks the beginning of a heightened awareness with regard to information: new theories and approaches crop up with a view to summarize, categorize and structure the state of information in this fourth form of life. Below five innovative perspectives are briefly presented (see also Bates, 2010).

3.4.2.1 Making a difference…

Within a cluster of definitions that approach information from a signalling point of view, anthropologist Gregory Bateson (1904-1980) famously advances the idea that "information is a difference that makes a difference" (Bateson, 1987, p. 321). Bateson revisits the word 'idea' and suggests that, in its most elementary sense, 'idea' is synonymous with 'difference'. Kant's *first Critique* is taken as a point of departure to account for the seminal aphorism:

> The *Ding an sich*, the piece of chalk [for instance], can never enter into communication or mental process because of this infinitude. The sensory receptors cannot accept it; they filter it out. What they do is to select certain facts out of the piece of chalk, which then become, in modern terminology, information. I suggest that Kant's statement can be modified to say hat there is an infinite number of differences around and within the piece of chalk. […] Of this infinitude, we select a very limited number, which become information. In fact, what we mean by information—the elementary unit of information—is a difference which makes a difference,

[186] At the end of this chapter and throughout the dissertation it will be argued that the coexistence of *Bildung* and information is advantageous and even necessary because of their mutual incompleteness.

> and it is able to make a difference because the neural pathways along which it travels and is continually transformed are themselves provided with energy. The pathways are ready to be triggered. We may even say that the question is already implicit in them. (Bateson, 1987, p. 321)

Bateson's eight eight-words approach is rooted in the mathematical idea of the single difference as the elementary unit of amount of information, the single bit, the zero or one; then again, the definition also requires the presence of a sensing being who is potentially responsive and attuned to these differences. Thus, whereas the objective, observer- and situation-independent view on information proclaims that 'any difference is information', Bateson's perspective is subjective in that information has to make a difference to somebody or someone: "what is information for one person in one situation needs not be information for another person or in another situation" (Hjørland, 2007, p. 1449). Bateson's point of view is validated in information scientist Donald Case's standard reference-work *Looking for Information*, which recently saw its fourth edition (Case & Given, 2016): "unless otherwise stipulated, in this book 'information' will be taken to mean any difference that makes a difference to a conscious, human mind. In other words, information is whatever appears significant to a human being, whether originating from an external environment or a (psychologically) internal world" (Case & Given, 2016, p. 56).

3.4.2.2 Informing an Image…

The approaches sometimes referred to as activity-based (Bates, 2010a), are implicitly or explicitly indebted to interdisciplinary philosopher Kenneth E. Boulding's concept of 'the Image' (Boulding, 1961). According to Boulding (1910-1993), each individual holds a personal world-view with regard to the things that surround him and it is exactly this mental construction, this 'Image'[187], which is affected by an act of information, delivered by a signal defined as "a non-random event set in the middle of a succession of random events (noise)" (Boulding, 1955, p. 104). Prior to using 'the Image' as a central target-domain Boulding speaks more generally of 'Knowledge' (Boulding, 1955) but in the ensuing monograph (Boulding, 1961), he intentionally changes the vocabulary: "knowledge has an implication of validity, of truth. What I am talking about is what I believe to be true; my subjective knowledge. It is this Image that largely governs my behaviour" (Boulding, 1961, pp. 5–6). Boulding's view on the relation between information and knowledge/Image is quoted hereafter because of the clearness of thought and argument and because his distinctions will be revisited when discussing the relation between information and knowledge (see 2.2.5.3).

> We cannot regard knowledge as simply the accumulation of information in a stockpile, even though all messages that are received by the brain may leave some sort of deposit there.

[187] For the remainder of this text '*Image*' will be capitalized when it refers to Boulding's conception of it.

> Knowledge must itself be regarded as a structure […] Messages are continually shot into this structure; some of them pass right through its interstices (in at one ear and out the other) without effecting any perceptible change in it. Sometimes messages 'stick' to the structure and become part of it. […] There is, however, another possible impact of messages on knowledge which might be called 'reorganization'. Occasionally a message does not merely stick to the structure, but hits some 'nucleus' that knocks the props out of a large area of the structure and effects a very radical reorganization of the mental structure itself. […] In this way a very small 'cause' can produce very large 'effects' if the conditions are right. (Boulding, 1955, pp. 103–104)

Piaget's notion of 'accommodation', Bateson's 'difference', and definitions of information such as "that which is capable of transforming structure" (Belkin & Robertson, 1976, p. 198), or "that which does logical work on the organism's orientation"[188] (MacKay, 1969, p. 96) are all on par with Boulding's Image-centred approach. In *Information of the Image* (Pratt, 1977, 1998), library and information scientist Allan Pratt resonates with Boulding's view but adds the notion of freedom. Frustrated with the deterministic and scientific premises that dominate information science, Pratt takes the hypothesis that man is free as a point of departure for discussing the communication- and information-process:

> If man is free, he must be free to make decisions. To make decisions requires an antecedent value structure. Otherwise there is no basis on which to decide that alternative A is preferable to alternative B. The origin of this value structure, a scale of the "goodness" or "badness" of things, is clearly not wholly genetic. It is at least partially determined by the environment in which man exists. (Pratt, 1977, pp. 207–208)

In order to safeguard freedom and undermine a direct influence of environment on action, Pratt positions an entity between stimulus and action: Boulding's Image.

> My Image of the world, and my relationships to it, which includes my perception of cause and effect, of time, of space, of values, of everything which impinges on my consciousness, is different from yours, and from that of every other person in the world. […] All portions of one's Image would remain private evermore if it were not possible for one person to communicate with another, to attempt to share some portion of one's Image with another. But if I do communicate with you, I affect your Image in some manner. […] the purpose of communication is to affect another's Image. To communicate with someone is to change his Image; to alter it; to affect it. (Pratt, 1977, p. 208)

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Pratt equals the meaning of a message with the change it causes in the Image and therefore refers to the archaic meaning of *informare* ('giving form to'). He draws an analogy between information and an explosion, they both occur at some unique point in time and space, to some particular individual and cause a change/difference (Pratt, 1977, p. 215). With the metaphor of an explosion in mind, Pratt

[188] MacKay advances an ecological perspective on behaviour, one in which the organism is viewed as a system with a certain repertoire of basic acts (both internal and external) that in various combinations and sequences make up its behaviour and is in relation to the environment based on a matrix of probabilities. MacKay speaks about 'the impact of information on the organism' (MacKay, 1969, p. 95).

identifies different three forms of impact: 1/ the 'explosion' may have no impact whatever; 2/ it may make an incremental change by adding a new fact or a new 'coloration' to the Image; and 3/ it may cause no change because the recipient's Image is not structured in a way that it can relate to the message (even though it is in a language with which he is familiar). "A message must have some recognizable connection with a part of one's Image, beyond being in a familiar language, before it can be 'understood'" (Pratt, 1977, p. 210).

Among the more recent contributions congruent with Boulding's seminal insights, information expert Andrew Madden's effect-oriented and stimulus-response approach to information is worth mentioning. In his view information should be defined as "a stimulus originating in one system that affects the interpretation by another system[189] of either the second system's relationship to the first or of the relationship the two systems share with a given environment" (Madden, 2000, p. 348). In other words: information is "a stimulus which expands or amends the World View of the informed" (Madden, 2004, p. 9).

In the context of sketching the contours of 'information behaviour', information scientist Marcia Bates advances an inclusive definition of information that is broader than "the generally understood sense of information as being factual, statistical, and/or procedural" (Bates, 2010b) and comes close to the approaches by both Boulding and Pratt.

> The term [information] is generally assumed to cover all instances where people interact with their environment in any such way that leaves some impression on them—that is, adds or changes their knowledge store. These impressions can include the emotional changes that result from reading a novel, or learning that one's friend is ill. These changes can also reflect complex interactions where information combines with pre-existing knowledge to make new understandings, or enables the individual to deduce or induce new thoughts and ideas." (Bates, 2010b)

3.4.2.3 Information in a social context

In the humanities, 'information' is dismissed as a specifically technological and heartless concept and a concern about information social and cultural embeddedness is raised. Library and information scientist Ian Cornelius' *information and interpretation* (Cornelius, 1996) is an instance of this hermeneutic take on information. For Cornelius information is socially constructed within a set of practices; a practice being a "coherent set of actions and beliefs which we conform to along with the other people in our practice (whatever it may be, profession or game), and it has its own internal logic and ethic" (Cornelius, 1996, p. 15). In such a view information is not an objective independent entity

[189] A system may be a mechanism, an organism, a community, or an organisation.

that pertains to the real world; it is rather a human artefact, constructed and reconstructed within a particular situation of social practices. In a number of recent publications (Gorman & Gorman, 2017; Mercier & Sperber, 2017; Sloman & Fernbach, 2017) the social perspective has been further developed to account for the many situations in which sound and objective facts do not change our minds and to understand phenomena such as confirmation bias and the persistence of beliefs and opinions both in a personal and practice context (Kolbert, 2017). Rather than a crucial factor in truth finding and solving logical problems, the principle role for reasoning and information processing might be that it does help us to justify our beliefs and actions to others, that it protects and strengthens the beliefs of a social and cooperative group.

3.4.2.4 Multi-type perspectives

The multi-type approaches to information are often, implicitly or explicitly, inspired by Popper's notion of two kinds of knowledge where subjective knowledge consists of our internal dispositions, and objective knowledge refers to the logical content of our theories published in books and stored in libraries. Popper relates the two kinds of knowledges to three worlds: 'World I' is the physical world, 'World II' the realm of our conscious experiences, and 'World III' the world of the logical contents of books, libraries, and computer memories[190]. Popper's main thesis is that our conscious subjective knowledge (World II knowledge) depends very largely upon World III theories, on our theories about concepts such as body, time and existence[191]. Within this tradition of subdividing, communication specialist Brenda Dervin presents a three-fold approach to information[192]: 'Information$_1$' is objective information and refers to external reality; 'Information$_2$' equals subjective information and represents the internal reality of humans (Dervin, 1977, p. 22); finally, 'Information$_3$' relates to the set of behavioural techniques that people have to make a reconciliation between internal and external world (see also Donohew & Tipton, 1973)[193].

[190] In his contribution to the Tanner lectures, Popper explicitaly situates scores, performances and recordings in world III: "A symphony may be embodied or physically realized in many different ways. There is the composer's manuscript; there are the printed scores; there are the actual performances; and there are the recordings of these performances, in the physical shape of discs, or of tapes. But there are also the memory engrams in the brains of some musicians: these too are embodiments, and they are particularly important. One can, if one wishes, say that the world 3 objects themselves are abstract objects, and that their physical embodiments or realizations are concrete objects" (Popper, 1978).

[191] Popper claims further that "animals, although capable of feelings, sensations, memory, and thus of consciousness, do not possess the full consciousness of self which is one of the results of human language and the development of the specifically human world 3" (Popper, 1978). This view on the interplay between theory and reflective practice will be revisited in Part III.

[192] Popper is not explicitly mentioned in the article.

[193] Donohow & Tipton contend that "an individual's 'image of reality' is divided into three parts. First are the goals, beliefs, and knowledges which an individual has compiled as a result of his lifetime of experiences. […] The second part of an individual's image or reality is the concept of self. This includes an evaluation of his ability to cope with various situations […] The third part of the image of reality is an information-handling 'set' developed

3.4.2.5 Deconstructionist views

A final category of commentators on information presented in this section clearly counterbalances the enthusiasm and optimism with regard to information and questions its overpowering importance. In *The Modern Invention of Information* (Day, 2001), library and information scientist Ronald Day develops a critique on information by claiming that the value that has been attached to information is an attempt to arrive at a privileged, even totalitarian form of knowledge and discourse.

> The world of information that we are given by foundational texts and traditions of information in the twentieth century is a deeply troubling and problematic one. It is troubling because of its seeming naturalness and common sensibility and because of the ease of its predications for an information age of the present and the future. It is problematic because its claims are far too simplistic and reductionistic of the complexities of sense, knowledge, and agency in the world and because a careful examination of its own claims and foundational models reveals vast and deep exclusions and contradictions. (Day, 2001, p. 117)

What we find here in Day's concerns is in fact a plea for the re-entrance of imagination as critical counterbalance to the dominating power of information.

3.4.3 A comparative perspective: Data, Information, Knowledge and Wisdom

T.S. Eliot (the Rock 1934)

O perpetual revolution of configured stars,
O perpetual recurrence of determined seasons,
O world of spring and autumn, birth and dying!
The endless cycle of idea and action,
Endless invention, endless experiment,
Brings knowledge of motion, but not of stillness;
Knowledge of speech, but not of silence;
Knowledge of words, and ignorance of The Word.
All our knowledge brings us nearer to our ignorance,
All our ignorance brings us nearer to death,
But nearness to death no nearer to God.
Where is the Life we have lost in living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?
The cycles of Heaven in twenty centuries
Brings us farther from God and nearer to the Dust.

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out of past experiences. The 'set' probably controls the selection of information used by the individual to cope with the environment. Here we are talking about an individual's information-seeking and processing 'styles'" (Donohew & Tipton, 1973, pp. 246–247, cited in Case & Given, 2016, p.63)?

T.S. Eliot's poetic analysis of the state of information, knowledge and wisdom in the first half of the twentieth century can be seen as a prelude to a systemic and hierarchical perspective on various types of intelligence that surfaces near the end of that century. The data–information–knowledge–wisdom [DIKW] hierarchy is not so much rooted in philosophy or communication-theory but constitutes a practical and common-sense model that enlightens the relational status of the elements within information and knowledge-systems (see Fig. 3.2). The central relation, the one between information and knowledge, is already present in Boulding's framework (Boulding, 1955) where it is claimed that knowledge should not be considered to be the simple accumulation of information, but rather as a structure with its parts connected in various ways.

The DIKW-pyramid (Ackoff, 1989) is a further extension of this primary information-knowledge nucleus and the sequence is based on the assumption that the categories within it move from the least to the most integrated form; thereby data is the rawest component, and wisdom the most rarefied and exclusive one. Information scientist Chun Wei Choo (2006) adds a 'signal' to the sequence as the most basic element and proposes that the transformation from information to knowledge (wisdom is not included in his model) is the result of two complementary processes: "the 'structuring' of data and information that imposes or reveals order and pattern" and "the human 'acting' on data and information that attributes sense and salience" (Choo, 2006, p. 131). Below, the main elements of the structure are defined (see Fig. 3.2 for an overview).

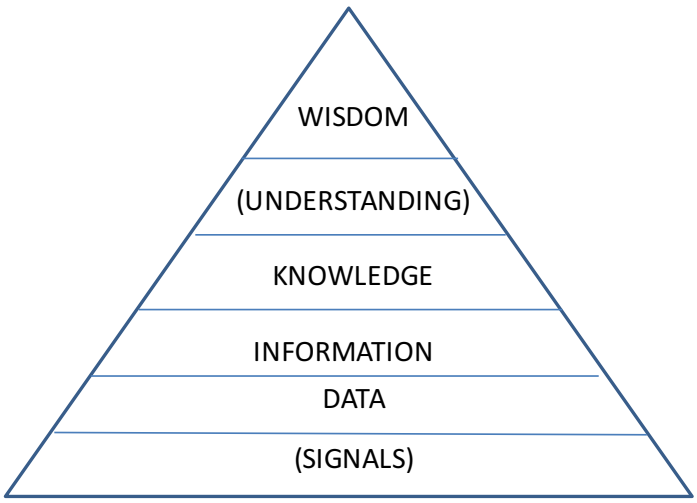

Figure 3.2. The (extended) DIKW-piramid.

Boulding, amongst others, uses the term 'signal' to characterize the most basic element in the build-up to knowledge and wisdom and defines it as "a non-random event set in the middle of a succession of random events (noise)" (Boulding, 1955). He also points to the problem of distinguishing between

signals and random events. Choo defines signals as the "sights, sounds, and other sensory phenomena to which the human actor is exposed" (Choo, 2006, p. 132). Signals represent our elementary connection to the world.

From the vast amount of signals reaching a person, only a small number is selected or noticed. This noticing typically involves grouping or delimiting signals into packets of 'data' (marks on paper become words, pixels become images, and so forth). This first ordering process is conditioned by the material itself but also influenced by the observer's in-born attention mechanisms, past learning and beliefs about what signals to expect. Data are symbols that represent properties of objects, events and their environments. They are products of observation that have no value until they are processed into a useable and functional form. 'Metadata' are usually not listed in DIKW-hierarchies and in a sense occupy uncharted territory in-between objective data and user-oriented information. Metadata emerged as a new element in the last two decades, and focus on the provision of semantic descriptions of a diverse kind to digital resources (Sicilia, 2006). Coupled with infrastructures for knowledge representation (such as ontologies[194]), metadata form the basis of a Semantic Web.

Within the DIKW-context, 'information' is data that are processed to be useful. Meaning and significance are added to data by means of cognitive structuring and interrelating data so that information can provide answers to 'who', 'what', 'where', and 'when' questions. 'Information as meaningful data' is an approach put forward by information philosopher Luciano Floridi (2005). Floridi advances two varieties of information according to their semantic content: a red light that is flashing can be considered either as a "piece of factual information, representing the fact that the battery is flat" but also as "a piece of instructional information, conveying the need for a specific action, e.g., the re-charging or replacing of the flat battery" (Floridi, 2016) .

Next in the DIKW-model is the category of 'knowledge'. Knowledge is generally considered as information that has been organized and understood by a human brain, forming justified, true beliefs about the world. Knowledge originates and is applied in the minds of knowers and also serves as a framework for allowing the evaluation and incorporation of new experiences and information (Davenport & Prusak, 1998, p. 5). The often quoted insight by economist Fritz Machlup (1902-1983) that "information is acquired by being told, whereas knowledge can be acquired by thinking" (quoted in Case & Given, 2016, p. 75) points to the messaging character attributed to information and the autonomous function of knowledge producing. Another eminent 'knowledge-scholar', Nico Stehr also points to the transfer-quality of information versus the embodied situatedness of knowledge:

[194] In computer science and information science, an ontology does not fully equal the philosophical meaning of the term. It refers to the a shared and formal representation of a domain or discourse, with a focus on the formal definition of the types, properties, and interrelationships of the entities that pertain to that particular field.

> Knowledge, as we define it, constitutes a capacity for action. Knowledge is a model for reality. Knowledge enables an actor, in conjunction with control over the contingent circumstances of action, to set something in motion and to structure reality. Knowledge allows an actor to generate a product or some other outcome. Knowledge is thus knowledge about processes. […] The function of information, in our view, is both more restricted and more general. Information is something actors have and get. Information is about a product. […] In its compacted form, information can migrate more easily. […] For information to be useful there is no need to master the conditions of its implementation, as is the case for knowledge. Information is more general. […] Information travels and is transmitted with fewer context-sensitive restrictions. Information can be detached from meaning. […] Information is not as situated as knowledge. (Stehr & Ufer, 2009, pp. 8–9)

DIKW-pioneer Russell L. Ackoff (1989) adds 'understanding' as a category that supersedes knowledge. When memorizing information, useful knowledge is amassed but it does not provide for, in and of itself, an integration that infers further knowledge. 'Understanding' involves the appreciation of why things are as they are. It is the process by which one can take knowledge and synthesize new knowledge from the previously held knowledge.

Finally, 'wisdom' as an ultimate category can be viewed as evaluated understanding; it is the process by which we discern, or judge, between right and wrong, good and bad. "As previously noted, information, knowledge and understanding all focus on efficiency. Wisdom adds value, which requires the mental function we call judgement" (Ackoff, 1989, p. 9). Akin to Kant's notion of genius, Ackoff asserts that wisdom has no logic which can be specified and programmed. An act of judgement is never independent of the actor. Ackoff refers specifically to the field of aesthetics as an example of the these unique and personal non-efficiency evaluations.

Although theorists have serious doubts concerning the validity and profoundness of the DIKW-differentiation scale, its common-sense quality has nevertheless inspired policy-makers to apply it in a real-life context. In an influential 2005 UNESCO world-report, entitled *Towards Knowledge Societies,* the distinctions that we just mentioned are readily used and validate the impact of the framework.

> A piece of information, "enhanced" though it may be (to eliminate noise or transmission errors, for example), does not necessarily make sense. As long as vast swathes of the global population lack equal opportunity in terms of access to education – in order to master the available information with critical judgement and thinking, and to analyse, sort and incorporate the items they consider most interesting in a knowledge base – information will never be anything but a mass of indistinct data. (UNESCO, 2005, p. 19)

3.4.4 What about imagination?

Information's journey in this fourth form of life is related to decisive changes in science, culture and society, but what about its fellow traveller, imagination? Notwithstanding the quote attributed to

Albert Einstein (1879-1955) saying that "imagination is more important than knowledge", and that "knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand", the position of imagination in an age of overwhelming information is precarious. 'Images' undergo the consequences of reproduction and availability (Benjamin, 1935/2003), and akin to the fragmentation and specialization of knowledge and information, the authentic imagination possessed by a single genius seems to fall apart in a collage of influences and fragmentary contributions. Imagination is a complex field in the 20th and 21st centuries and it is daunting to extract any unifying thread in the diverse usages of 'imagination' that emerge in the history of the term. In the context of our overview we sketch three seminal evolutions which are related to the trajectory of information. The first element concerns the emancipation of the term 'imagination' from the realm of visual 'imagery'; the two other evolutions connect to major trends in the history of the idea of imagination, identified by Kearney as 'existential' and 'parodic' imagination (Kearney, 1988)[195].

3.4.4.1 Imagination and imagery

In this fourth form of life, imagination seeks to break free from its ties with visual images and imagery. Philosopher Amy Kind (Kind, n.d.) distinguishes between the image-based and non-image theories of imagination and situates the former well before the 20th century (Descartes, Hobbes, Berkeley) and the latter in more contemporary considerations (Ryle, 1949; Scruton, 1982; Walton, 1990). In *the Language of Imagination* (White, 1990), Alan R. White (1922-1992), a philosopher with special interest in the philosophy of mind, regrets the assimilation of imagination and visualization in the history of the concept; he sees no fundamental difference between the imaginative capacities of a theoretical thinker and the ones of the painter. According to White, to "imagine something is to think of it as possibly being so" and "is linked to discovery, invention and originality because it is thought of the possible rather than the actual" (White, 1990, p. 186). It is not the same as merely forming an image, as in imagery.

The evolution of the differentiation between imagery and imagination is also present in the field of psychology. James dedicates chapter XVIII of the *Principles of Psychology* (James, 1890) to 'imagination'; he unties imagination from visualization and distinguishes between visual and auditory imagination, and the imagination of movement. From a simple word-count, it can be deduced that

[195] In the *Poetics of Imagining* (Kearney, 1998a), Kearney extends the range of imagination-types into: phenomenological (Hussserl), ontological (Heidegger), existential (Sartre), poetical (Bachelard), dialectical (Merleau-Ponty), hermeneutical (Ricoeur), Post-modern I – a labyrinth of mirrors - (Lacan, Althusser, Foucault) & Post-modern II – towards a post-modern hermeneutics (Vattimo, Kristeva, Lyotard). For the sake of overview, our discussion will be limited to the two main attractors, with a additional note on the work by Paul Ricoeur (1978; 1955/1977).

James prefers the word imagination over imagery (without making clear distinctions however). After James, the behaviourist school of psychology shows little interest in vague concepts such as imagination but in Neisser's *Cognitive Psychology* (Neisser, 1967/2014), a clear distinction between imagination and imagery is made: 'imagery' is considered to be a factor that can be studied and controlled (it is used 122 times in the book) whereas imagination has a more generic meaning (with only 5 hits in the book). In an anecdotal section on the effect of mind-expanding drugs, Neisser refers to a testimony by writer and novelist Aldous Huxley (1894-1963) who seemed to be disappointed on the effect of hallucinogenics and reports to have seen only very few images during the experiment. Neisser comment is technical: "If he [Huxley] lacked imagery, he did not lack imagination" (Neisser, 1967/2014, p. 155), referring to the flowery language used by Huxley to verbalize his experience. Neisser's use of vocabulary implies that imagination is term that pertains to the arts and poetics, and that imagery is a technical term that relates to develop mental images without the presence of an external stimulus.

In spite of the attempts to settle the semantic confusion, the *Dictionary of Psychology* (Colman, 2014) is still very nuanced, and unclear in differentiating between the two categories.

- 'imagination': 1. The act or process of imagery, especially of generating mental images of stimuli that are not being or have never been experienced in perception; more generally creative ability or resourcefulness. 2. In approaches to literary criticism: a creative joining of active and passive perceptual elements that imposes unity on poetic material;
- 'imagery': The act of process of forming mental images without stimulation of sense organs, or the mental images formed by memory and imagination, including not only visual images but also images from the other senses, such as hearing, taste, smell, and touch.

A consequence of this state of confusion, is that every volume on imagination and imagery, has to include a chapter on terminology. In *Musical Imaginations* (Hargreaves, Miell, & MacDonald, 2012), the editors declare: "musical imagery is the recreation of sounds in the mind when no audible sounds are present, and it differs from musical imagination in that the latter involves invention—whereas musical imagination involves the mental creation of new sounds, musical imagery involves the recreation of existing ones" (Hargreaves et al., 2012, p. 4) ; 'musical imaginations' in plural is dedicated to musical creativity and its relations with concepts such musical invention, improvisation, generation, composition, arranging, performance, and listening (Hargreaves et al., 2012, p. 2).
In chapter one of *Musical Imagery* (Schneider & Godøy, 2001), the authors explore the semantic field of 'imagery' in philosophy and psychology and conclude that musical imagery is "a composite or

'impure' phenomenon in the sense that comprises many things at the same time" and therefore ideally suited to function at the intersection of musicianship and several scientific disciplines.

3.4.4.2 Existential imagination

Starting in the mid-nineteenth century and lasting until the mid-twentieth century the concept of imagination comes under the influence of phenomenological (Husserl) and existentialist thought (Søren Kierkegaard, Friedrich Nietzsche, Martin Heidegger and Jean-Paul Sartre). The three decisive claims made by phenomenology are that imagining is a productive and intentional act of consciousness, not a mere reproduction of objects in the mind; that imagining cannot be reduced to mediating between body and mind but performs an original synthesis between the sensible and the intelligible; and finally that imagining is not an ornamental side effect but an instrument of innovation. (Kearney, 1998, p. 6). Existentialism builds upon these premises. It shares with romantic idealism the framework of a subjective humanism[196] and holds on to the idea of imagination as a productive power. However, it distances itself from the abstract affirmations and redemptions that transcendental idealism affords and promotes within a context of modern bourgeoisie culture. Existentialism's focus is on the factual world of the daily struggle for existence rather than on the realisation of freedom, happiness and beauty in a superior and affirmative world of culture.[197]

As an exponent of this line of thinking, Jean-Paul Sartre (1905-1980), dedicates two essays to the topic of imagination. The first, published in 1936 is a short introductory work, entitled *Imagination* (Sartre, 1936/2007), which critically overviews the work of previous philosophers and psychologists. The second study, *L'imaginaire* (Sartre, 1940/2004), follows four years later and is subtitled *Psychologie phénoménologique de l'imagination*[198] [199]. Crucial in Sartre's approach is that he considers the image not to be a thing but rather to constitute an (intentional) act of consciousness[200] which provides some kind of 'intuition' of the presence of an object without it actually being present (as in perception). Imagination also differs from perception and understanding in that it negates the real world in terms of temporality and spatiality, and presents its intentional object as 'not being'[201]. By this absolute independence from the objective constraints of the perceptual world, imagination discovers its freedom with regard to the organisation of our experiences and the creation of an existential self. This

[196] *L'Existentialisme est un Humanisme* (Sartre, 1946).
[197] This analysis is analogous with the one that is developed in Critical Theory (Kearney, 1988, pp. 196–201; Marcuse, 1937/2009).
[198] Also published in English as *The Psychology of the Imagination* (Sartre, 2001).
[199] The brief discussion hereafter is based on the consultation of the primary sources and on secondary literature (Abrams, 1953; Kearney, 1988a; Levy, 2014; Perna, 2001; Stokes, 2016).
[200] Referring to Brentano's phenomenological concept of intentionality.
[201] *L'être et le néant* (Sartre, 1943).

imagining of the world in ways different from its factual condition forms can be acted upon with a view to change. Sartre situates the imaginative and creative potential not in a separate and elevated realm, but in everyday activities and presents the case of reading a novel as an instance of creative activity.

> When we are reading a poster or a phrase isolated from its context we simply produce a sign consciousness, a *lexis*. If we are reading a scholarly work, we produce a consciousness in which the intention adheres to the sign at every instant.[…] But if the book is a novel, everything changes: the sphere of objective signification becomes an irreal world. (Sartre 1940/2004, 64)

The reader intends an irreal world and does not merely restore or represent absent objects. When one reads a novel, there is a series of explicit statements describing the characters and events of the story which are provided by the author. But the story is not exhausted by these descriptions. Rather, the author will rely upon the reader to 'fill in' details left out of the explicit descriptions. The author's creative act is only an incomplete and abstract moment in the production of a work.

> If the author existed alone he would be able to write as much as he liked; the work as object would never see the light of day and he would either have to put down his pen or despair. But the operation of writing implies that of reading as its dialectical correlative and these two connected acts necessitate two distinct agents. It is the joint effort of author and reader which brings upon the scene that concrete and imaginary object which is the work of the mind. There is no art except for and by others. Reading seems, in fact, to be the synthesis of perception and creation. (Sartre, 1948/1988, pp. 51–52)

Philosopher Paul Ricoeur (1913-2005) is not a representative of the existential school but explicitly critiques and extends Sartre's views on imagination in an article entitled *Sartre and Ryle on the Imagination* (Ricoeur, 1981). In the *Poetics of Imagining* (Kearney, 1998), Kearney labels Ricoeur's views on imagination as 'hermeneutical' but given the topical connection with Sartre, a brief excursus into Ricoeur's views seems to be in place here.[202]

According to Ricoeur, the history of Western thought – with the principal exceptions of Aristotle and Kant – is one of the priority of the original over the copy and Ricoeur's project is directed toward the development of productive imagination as opposed to one of reproductive imagination. Within this context, Ricoeur critiques Sartre's perspective on imagination, which is based on the absence and 'not being' of something or someone and is therefore unable to develop a genuine theory of fiction; the absent person or thing in Sartre's illustrations is still and always an analogue of an original. Ricoeur's idea of a radical, productive imagination, however, necessitates a *utopia*, a 'nowhere', a place that, unlike an image, is not determined by an original. The utopia is not only an escape from reality, but it

[202] The following paragraph is primarily based on an article by George Taylor (Taylor, 2006) who transcribed Ricoeur's Lectures on imagination, which were delivered at the University of Chicago in the fall of 1975.

has its own ontology and points to a new kind of reality, thereby expanding our sense of reality and reality's possibilities.[203]

> The imagination has a prospective and explorative function in regard to the inherent possibilities of man. It is, *par excellence*, the instituting and the constituting of what is humanly possible. In imagining his possibilities, man acts as a prophet of his own existence. […] By changing his imagination, man alters his existence. (Ricœur, 1955/1977, p. 127)

Notwithstanding the strong claims about the *utopia*, Ricoeur understands that the 'nowhere' cannot be completely uninformed by what has gone before. He argues, against the romantic view on imagination, that his productive imagination is not something irrational, it must be categorial in order to be trans-categorial. To be effective, the productive imagination must transform existing categories; it cannot exist totally outside and separate from them. From this it follows that any transformative fiction must have elements of reproductive imagination, must draw from existing reality sufficiently so that its productive distance is bridgeable (Taylor, 2006, pp. 97–98).

The specific attention to imagination by French authors is not without societal significance. The slogan "*l'imagination au pouvoir*" that characterizes the protest-movement of May '68, explicitly appeals to the power of imagination to deconstruct traditional structures of power and influence and to create a new ontology.

3.4.4.3 Parodic imagination

What is called by Kearney (1998), the 'parodic imagination' further undermines the romantic idea of imagination by calling into question several fundamental tenets of the modern imagination. It is strongly linked to Postmodernism and to a 20th century context in which mechanical reproduction becomes the creator of images, leading to the degeneration of the idea of the modern subject as authentic and creative producer.

> The modern subject then, at least in part, has been transformed from an active, creative subject, to a passive subject bombarded by prefabricated images. […] Talk of authentic expression becomes precarious to the extent the image itself usurps that reality it was intended to represent. Yet since the postmodern imagination is acutely aware of this irony, its paradigm is best described as a labyrinth of mirrors. The image of the labyrinth is meant to convey a mimesis gone wild, a reflection of reflection, a pure reflexivity without origin. This hyperbolic self reflective tendency and intense self-awareness' leads to a wilful self parody. In this sense the postmodern imagination is a parodic imagination. (Scribner, 2001, p. 186)

[203] Ricoeur envisages different domains in which imagination can work its magic. Within the domain of epistemology, the theoretical model provides a new description of reality. In poetics, the metaphor is presented as a means to unfold new dimensions of reality. It helps us go beyond the world of objects and opens a larger pre-objective dimension (Taylor, 2006, p. 97).

The parodic imagination refers back to the premodern paradigm where imagination was tied to the metaphor of a mirror which reflects the light of a metaphysical origin beyond itself (Abrams, 1953). The postmodern paradigm is typified by the metaphor of an interplay between multiple looking glasses which reflect each other interminably and dissolve into self-parody (Kearney, 1988, p. 253). This brings us back to mimesis model, but not full-circle since it is a return that implies a self-parody. The parodic imagination is not concerned with the imitation of pre-existing Forms but is an imitation of an imitation with no original beyond itself (Kearney, 1988a, p. 255).

Philosopher Michel Foucault (1926-1984) provides arguments for the postmodern debunking of the humanist imagination by declaring the 'death of man' implying the dissolution of the philosophy of creative imagination as promoted by modern idealism and existentialism. Literary critic Roland Barthes (1915-1980) considers images as no more than surface signs of an unconscious language and treats the imaginary as a mere myth. He concludes that we no longer know what truth is in a time in which myths of bourgeois humanism have been destroyed and to which the demythologizer cannot return. Deconstruction philosopher Jacques Derrida (1930-2004) explicitly revisits Plato's idea of mimesis in his essay *The Double Session* (Derrida, 1972/1981b). Derrida juxtaposes a short prose work by Stéphane Mallarmé, *Mimique*, to a fragment from Plato's *Philebus* thereby organising an encounter between two long-standing adversaries: philosophy and literature. The former is devoted to the pursuit of an original and authentic truth, the latter forced to use second-hand copies of truth, thereby representing the false, the fictitious and the counterfeit. Derrida's reading locates in *Mimique* the question of mimesis. As we saw earlier, in the traditional, ontological concept, mimesis has been conducive in establishing a pejorative attitude to poetry, literature or the arts because of its reference to a more original presence of reality or truth. In Mallarmé's *Mimique* however, the mime mimes nothing but the mimetic itself, and thus refers to no imitated truth or presence. Here, Derrida observes a play of mimesis which completely explodes the traditional notion of imitation. In *Mimique*, there's a mime which has no original, it is pure mimicry. Derrida comments:

> There is no imitation. The mime imitates nothing. And to begin with he does not imitate. There is nothing prior to the writing of his gestures. Nothing is prescribed for him. No present has preceded or supervised the tracing of his writing. His movements form a figure that no speech anticipates or accompanies. They are not linked with logos in any order of consequence […] We here enter a textual labyrinth panelled with mirrors. (Derrida, 1981b, p. 194)

From the denial of any essence that would distinguish the imaginary from the real, Derrida concludes that imagination becomes an empty and superfluous concept. The opposition between imagination and reality (information) dissolves into the textual play of inescapable indecisiveness. The world

becomes a never-beginning, never-ending inter-referring text. This implies that literature becomes an empty concept:

> We can no longer speak of a decidable being of literature, one which might be distinguished from some notion of 'truth' which it is supposed to imitate (as copy) or create (as origin). Literature is both true and false. And following the deconstructive logic of undecidability this also means it is neither true or false. (Kearney, 1988, p. 290)

It seems then as if, at the end of this fourth life, both information in imagination can be characterized by the notion of abundance. In the world of science and scholarship there is an abundance of information looking for an endpoint or end-structure in which all that information can converge.

> Thanks to science and technology, access to factual knowledge of all kinds is rising exponentially while dropping in unit cost. It is destined to become global and democratic. Soon it will be available everywhere on television and computer screens. What then? The answer is clear: synthesis. We are drowning in information, while starving for wisdom. The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely. (Wilson, 1998, p. 294)

In the realm of literature and the arts, the abundant proliferation of images is looking for an origin and its derivative: 'originality'. A glimpse at the future of information offers at least two interesting routes: more information, as in 'big data', where the sheer volume of data interact in ways that automatically lead to the emergence or knowledge, or as Weizsäcker proposes the (re-)involvement of imagination in order to see *das Ganze.* The latter option would confirm the futurist's vision of an 'age of imagination'.

3.4.5 Section summary

Within the context of this fourth life, information's connection with subjectivity and meaning is shattered by Shannon & Weaver's technical understanding of information as an objective quantity. The technological realisations that the mathematical approach to information allows, posits it right at the centre of post-war society. Suddenly, information is everywhere (technology, biology, psychology, music theory, etc.) indicating the overall flexibility and usability of the term. Still, by its linkage to crucial humanistic factors such as freedom, uncertainty, expectation, new definitional approaches are in order.

Activity-based definitions in particular reposition the impact of information by interposing personal knowledge (the image) between information and action; it is the central personal depository or agency that processes and assesses informational elements to which it is exposed either intentionally or unintentionally. This perspective automatically implies a differentiation between knowledge and information: information is 'out there', 'in the cloud', within reach of any individual knower who can

potentially assimilate the information into her/his image of the world or the self and develop it into knowledge. This flexible and information-prone image functions as the pivotal link between information and imagination. Imagination is not the mere reproduction of visual images but the faculty that creates fictional worlds and ontologies that are always and to a certain degree depending on the categories that humans develop in the course of their prehistory in relation to information from the ecological environment. The confrontation with global information on existential problems raises doubt with regard to the role of creating ideal worlds, and next to that, the proliferation of images in an information society leads to a labyrinth of mirrors that undermines the notion of authorship and creation *ex nihilo.*

3.5 Chapter summary and discussion

In this chapter, we aimed at exploring the semantic spectrum of information with a view to contextualize the panoply of intuitive and often *status quo* driven opinions with regard to the role of information in artistic practice; a second objective was to scan the genealogy of information and imagination for insights that can contribute to proposing a conceptual space for an informed performership in the 21st century. We did not opt for a standard dictionary-based approach but for a broad-spectrum history of words and ideas because of our interest in a wider-ranging, memetic[204] context of the concept of information and its relation to the field of imagination. The linkage between information and imagination is one that unfortunately has quasi no precedents in studies on the history of ideas, probably because it is a specifically artistic concern. This explains and justifies the attention that we gave it here, in the context of Artistic Research.

In the context of premodern thought, our analysis indicates that Plato's seminal view on the relation of an original to a copy of it, does not go unchallenged. Alternative configurations between information and imagination are available which: 1/ bypass the standard epistemological route via the inclusion of inspiration-affiliated terms such as *enthousiasmos*; 2/ redirect the information process from an ontological level to a psychological, pedagogical and communicative plane; 3/ overturn the hierarchical order by prioritizing an imagined world over a factual one – and thus foreshadow the concept of creative imagination; 4/ adopt a pragmatic/rhetoric approach whereby imagination amplifies and fortifies the communication of knowledge; or 5/ reverse the sequence of direction of information (*s'informer*).

[204] 'Memetics' is not to be confused with 'mimetics'. In the theory of memetics, the meme is a replicator of a unit of culture and "just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation" (Dawkins, 1976/2006, p. 192).

The modern period (from 1600 onwards) is marked by a radical transformation. Following the subjective turn in rationalism and the break-down of phenomenological unity by empiricism, imagination's role can be metaphorically subsumed under the metaphor of a lamp rather than a mirror (Abrams, 1953). Humankind stands as its own source of light, enlightening a chaotic, fragmented and formless world which is in need of organisation and order. The imaginative and creative genius, is said to reach a noumenal realm by using the lamp as a creative, productive tool to come to an original, authentic expression of a second nature.

In the 19th century the balance between the two fields shifts again when imagination and information go their separate ways: information gets more and more linked to transpersonal objectivity whereas imagination plays the card of an intimate subjectivity.

From the twentieth century on, the dividing line between information and imagination wanes and loses its ontological meaning. Both information and imagination deal with a condition of abundant proliferation and while the former concept looks for an integrated and systemic destination and endpoint, the field of Imagination seems to operate in a labyrinth of mirrors and struggles to find an authorial origin.

We can infer a number of insights from the genealogy presented above as far as contextualizing current practices is concerned.

Firstly. The scholarly critiques on the information-imagination compatibility, as formulated in the opening chapter by Weizsäcker (1973), Benjamin (1955/2007), and Kivy (2002), can be traced to very selective and historically contingent understandings of the terms thereby discarding the alternative options and positions: Weizsäcker refers solely to the doctrine of Platonic idealism present in the first life; Benjamin's critique is based on an empiricist model of information that considers information as fact; and Kivy digs up the archaic meaning of information as 'giving form to' in order to dismiss the role of information in the context of music performance.

Secondly. With regard to the use of information in the discourse of musicians (Chapter 2) several memetic influences can be observed such as the role of cybernetica in sensorial feedback, or the influence of Kant's notion of *Nachahmung* in the appraisal of teachers as the main route for forging a connection with genius. Most interesting however is how the central role of the score as a primary source of information can be related to the paradigm-shift that information undergoes in its second form of life and to the development of Western Art Music as an autonomous Art practice.[205] Within

[205] "The separation of composition from performance and the survival of the products of composition as written texts independent of performances are the two defining features of art, as opposed to popular music. Popular music exists in real time, in performance; its mode of existence might be called a process. Art music exists in this way too, but it also exists as an object that may be independently surveyed, as a written text that is the result of

the epistemic contours of the second life, the focus of musical thought shifts from speculative ideas and the study of antiquity to particular cases of outstanding musicianship that are embodied in a musical work. Writing and enquiring about actual pieces instead of developing a discourse on composition or theories about the scientific or philosophical origins of music can therefore essentially be considered as a form of empiricism with the score as a fact-containing object. From this perspective, and to a certain extent, the score makes all other sources of information superfluous (Weber, 1994, pp. 492–493).

Thirdly. From this large-scale contextual investigation, also a number of non-mutually exclusive, archetypical distinctions within the category of imagination can be inferred; they each relate to a differential appraisal of and focus on certain privileged information sources:

- Mimetic Performative Imagination: mimetic imagination is at stake when the score is considered as an exact representation of the ideal world as it is created by the composer. The composer is here a creative agency akin to Plato's demiurge or the Christian God; the performer's imagination is limited to contemplating, re-creating, and acting within the perfectly ordered cosmos. "Conductors, singers, pianists, all virtuosos should know or recall that the first condition that must be fulfilled by anyone who aspires to the imposing title of interpreter, is that he be first of all a flawless executant. The secret of perfection lies above all in his consciousness of the law imposed upon him by the work he is performing" (Stravinsky, 1947, p. 122).
- Parodic Performative Imagination: parodic imagination appears in instances when the performer's imagination is informed by a model: the work of peers, master-performers, etc. To a certain extent Historically Informed Performance also pertains to this category since HIP models the imagination on historical performance practices.
- Creative Performative Imagination: creative imagination conforms to Danuser's concept of *Aktualizierender Modus* of interpretation. The score has the status of a basic script but the imaginative powers of the performer are the central source of information. This orientation relates to research projects such as *Experiment21* (Orpheus Institute) or the *Centre for Musical Performance as Creative Practice* (Cambridge University). "For performance does not exist in order to present musical works, but rather, musical works exist in order to give performers something to perform" (Small, 1998, p. 8).

composition; that is, it has its own peculiar mode of existence that at least since the fifteenth century has been called a 'work'" (Berger, 2000, p. 118). See also Lydia Goehr (1992).

- Pragmatic Performative Imagination: pragmatic imagination is involved in cases where the primary interest of the performer is in 'convincing' an audience by highlighting and rethorically rendering the musical text. In Carl Philipp Emmanuel Bach's *Versuch über die wahre Art, das Clavier zu spielen* (1753), we find a passus that combines a mimetic and pragmatic imagination: "The keyboard player himself has to sense the same passions as the ones the author felt when composing a new piece. In certain cases, the keyboard player can dispose of many excellent ways to win the hearts of his audience by means of improvised fantasies" [CPE Bach *Versuch* I,3 §13][206].
- Interpretative/Hermeneutical Imagination (Sartre, Ricoeur): a type of imagination that is activated in relation to coded texts and attempts to restore what has been lost in the process of coding.

Next to contextualizing an existing situation, our interest was also in finding perspectives that allow for an actualization and specification with regard to the role of information in a performers' practice of the 21st century. Four observations stand out here.

Firstly, the compatibility of information and imagination does not fare well in dual-world ontologies in which superiority of a separate, *noumenal* world of forms is asserted over an everyday, phenomenological and informed one. Plato's worldview downgrades imagination to an important extent in favour of the ideal Forms (see Weizsäcker's comment); in romantic idealism (and some of it forebears in antiquity), an inverse position is advanced, leading to a separation of science (information) and the arts (imagination) which is from a memetic point of view probably even more influential than the dualism in antiquity. Quasi-inevitably, these two-world settings are in need for alternative and ineffable routes by which artists are granted privileged access to the metaphysical realm either by a top-down process of inspiration and illumination (*enthousiasmos*), or via a bottom-up capacity such as genius, or by a combination of the two (see Kant: genius + *Geist*). The inclusion of privileged access is a quasi-systematic characteristic of dual world views and it relieves artists from the burden of accountability, which is the case in 'regular' epistemic processes such as induction or deduction.
Secondly, information seems to always involve a quality that relates to its earliest meanings as 'the giving of form' to something ('first form of life'). In the OED, this definition is labelled with 'rare' but already in the introduction we noticed that Kivy uses this archaic meaning to disqualify the notion of

[206] *Er [der Clavieriste] muß dieselbe Leidenschaften bey sich empfinden, welche der Urheber des fremden Stückes bey dessen Verfertigung hatte. Besonders aber kan der Clavieriste vorzüglich auf allerley Art sich der Gemüther seiner Zuhörer durch Fantasien aus dem Kopfe bemeistern*.
http://www.koelnklavier.de/quellen/versuch/kap1-3.html consulted November 2016.

an informed musicianship (see 1.1). As such, information as the 'giving of form', is perfectly compatible with having an image of what is to be formed. The problem arises when, in an ontological context, a direct relation between 'form' and materialisation is implied (as in the wax metaphor). In such one-on-one relation there seems to be no space for any intervening capacity (imagination) and the only thing that is left is a post-factum contemplation or copying of a perfect unity. This determinative quality of information can also be detected in the mathematical understanding of information (fourth form of life) where the 'bit' provides only an answer in terms of 'yes' and 'no' without a 'maybe' or a 'perhaps' or 'possibility'. When, however, the archaic meaning of information as 'giving form to' is discussed in a psychological a pedagogical context, it does seem to be conducive to a fruitful and even necessary cooperation with imagination. As the unitary dimension of information decreases, the role of imagination matures in the course of history from a mediating (Aristotle) to a constitutive (Kant) element.

Thirdly, in the twentieth century, activity-based models come to the fore in which the role of information is related to the notion of knowledge. Within such a framework, information's role is not constitutive but rather contributory and allows for freedom and personal development.

Fourthly, the humanist, phenomenological and existentialist traditions contribute to the information-imagination dialectic the notion of 'freedom' as a non-dualist element that counters the determinism of a totally informed world. It is a freedom to operate and to act within an actual world but also one that facilitates the creation of possible worlds.

Finally, if the plurality of terms for imagination mentioned in this chapter – *yetser, mimesis, phantasia, imaginatio, Einbildungskraft, fantasy, fancy, imagination* – all seem to refer, in their diverse ways, to the human power to convert absence into presence, actuality into possibility, what-is into something-other-than-it-is (Kearney, 1998b, p. 4), the semantic field that surrounds information points exactly to these starting points of imagination, namely 'actuality' and 'what-is'. It is only when this actuality claims full constitutional status that imagination is suffocated. As Bateson claims, information is not determining but rather 'a difference which makes a difference', information is not the same as subject-related knowledge and unlike knowledge it possesses the quality of being transferrable. Especially in psychological and pedagogical context, information has the potential to make a difference to our image(s) of the world, transform it and by that also potentially influences, more distally, the activities that act upon those images. "Information typically takes the form of discrete and small-sized items that have been removed from their original contexts and made available as 'morsels' ready to be rearticulated" (Blair, 2010).

With these considerations in mind we are at a point to have a first attempt at revisiting our initial question: what could be the semantic contours of information in an artistic setting? If we take Bateson's very inclusive, yet punctual definition of information as a point of departure and specify it

according to activity-based approaches (Bates, 2010b; Boulding, 1955,1961; Pratt, 1977, 1998) we can come to a provisional working definition and a 'translation' (Gadamer, 1960/2004, p. 552) that is still very broad in its spectrum and in need of further refinement in the course of our enquiry:

In an artistic context, information constitutes a difference that (potentially) makes a difference with regard to our personal and collective *Image* related to art production and reception, and the actions and imaginations that build upon that *Image*.

Definition 1: Information in an artistic context.