How “rational” is “rationality”?

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Abstract

By taking serious a remark once made by Paul Bernays, namely that an account of the nature of rationality should begin with *concept-formation*, this article sets out to uncover both the *restrictive* and the *expansive boundaries* of rationality. In order to do this some implications of the perennial philosophical problem of the “coherence of irreducibles” will be related to the acknowledgement of *primitive terms* and of their *indefinability*. Some critical remarks will be articulated in connection with an over-estimation of rationality – concerning the influence of Kant's view of human understanding as the *formal law-giver* of nature (the supposedly “rational structure of the world”), and the apparently innocent (subjectivist) habit to refer to experiential entities as 'objects'. The other side of the coin will be highlighted with reference to those kinds of knowledge *transcending* the *limits* of concept-formation – culminating in formulating the four *most basic* idea-statements philosophy can articulate about the universe. What is found “in-between” these (*restrictive*) and (*expansive*) boundaries of rationality will then briefly be placed within the contours of a threefold perspective on the *self-insufficiency* of *logicality* – as merely one amongst many more dimensions conditioning human life. Although the meaning of the most basic logical principles – such as the logical principles of identity, non-contradiction and sufficient reason – will surface in our analysis, exploring some of the complex issues in this respect, such as the relationship between thought and language, will not be analysed. The important role of *solidarity* – as the basis of critique – will be explained and related both to the role of *immanent criticism* in rational conversation and the importance of acknowledging what is designated as the principle of the *excluded antinomy* (which in an ontic sense underlies the *logical principle* of *non-contradiction*). The last section of our discussion will succinctly illuminate the proper place of the inevitable *trust* we ought to have in rationality – while implicitly warning against the *rationalistic* over-estimation of it (its degeneration into a rationalist “faith in reason”). Our intention is to enhance an awareness of the reality that rationality is embedded in and borders on givens which are not open to further “rational” exploration – givens that both *condition* (in a constitutive sense) and *transcend* the limits of conceptual knowledge. Some of the distinctions and insights operative in our

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analysis are explained in Strauss 2000 and 2003. Yet, most of the systematic perspectives found in this analysis of rationality are only developed in this article for the first time. Since a different study is required to discuss related problems and results found within cognitive science, it cannot be discussed within one article.

Introductory remarks

Inversely proportional to the frequency of its employment are the attempts to provide a truly penetrating analysis of the meaning, scope and limitations of *rationality as such*. Yet it is *at least assumed* that *rational agents* are *capable* of *reasoning (argumentation)* and therefore of providing *reasons* for *conclusions* drawn. Sometimes it seems easier to look at prime examples of rationality, exemplified in the legacy of a specific discipline, such as mathematics which used to be appraised as the acme of sound reasoning. But, even in the case of mathematics the spectre of doubt and uncertainty has entered the scene.[2]

On the basis of a few historical contours it soon appears that there is an outstanding multifariousness evinced in "rationality." Against this background a number of related issues will be explored and discussed.

Some historical contours

At the cradle of the Western legacy of metaphysics the Pythagoreans sought the core of rationality in the claim that the *essence* of everything could be expressed in *arithmetical terms*. Their famous statement is: "everything *is* number." The Pythagoreans surely discovered the fundamental role of our concept of number – something we still have to concede after more than 2000 years. Cassirer points out that amongst the "fundamental concepts of pure science the concept of number stands in the first place, both historically and systematically" (1953:27). He furthermore says that number enabled a *consciousness of the meaning and value of the formation of concepts* as such. Without number neither things as such nor their interrelations would have been accessible to rational contemplation. Yet the Pythagorean thesis went too far.

"The claim to grasp the substance of *things* in number has indeed been gradually withdrawn; but at the same time the insight that the substance of rational knowledge is rooted in number, has been deepened and clarified. Even when the metaphysical kernel of the object is no longer observed in the concept of number, it remains the first and truest expression of rational method in general. In it are directly reflected the differences in principle between the fundamental interpretations of knowledge. Through

2 "The developments in the foundations of mathematics since 1900 are bewildering, and the present state of mathematics is anomalous and deplorable. The light of truth no longer illuminates the road to follow. In place of the unique, universally admired and universally accepted body of mathematics whose proofs, though sometimes requiring amendation, were regarded as the acme of sound reasoning, we now have conflicting approaches to mathematics. Beyond the logicist, intuitionist, and formalist bases, the approach through set theory alone gives many options. Some divergent and even conflicting positions are possible even within the other schools. Thus the constructivist movement within the intuitionist philosophy has many splinter groups. Within formalism there are choices to be made about what principles of metamathematics may be employed. Non-standard analysis, though not a doctrine of any one school, permits an alternative approach to analysis which may also lead to conflicting views. At the very least what was considered to be illogical and to be banished is now accepted by some schools as logically sound" (Kline, 1980:275-276).

number the general ideal of knowledge gains a more definite form, in which for the first time it is defined with full clarity" (Cassirer, 1953:27).

The school of Parmenides, inspired by the impasse of the Pythagoreans manifested in their discovery of *irrational numbers* (cf. Von Fritz, 1945), switched to a different orientation, for in terms of a *static* (spatial) *metaphysics of being* this school affirmed the *identity* of *thought* and *being*.[3] Yet, via the thought of Descartes, Hobbes and Kant modern philosophy eventually witnessed the renewed attempt to complete the circle when Hegel took logic and dialectics no longer as an instrument to *know* reality, but rather to *contain* it in its fullness and totality – from whence it was brought forth. Hegel believed that this is the point where his "Wissenschaft der Logic" is located.[4]

The long-standing image of "universal reason" in the course of the further development of Western philosophy increasingly experienced the challenge of the *disintegrating* effect of diverging and often contradicting qualifications. Just think about *qualifications* such as "dialectical" reason (Heraclitus, Nicholas of Cusa, Hegel, Marx, Simmel, Dahrendorff), intuitive reason (Plato, Husserl, Weyl), "(self-)contemplative reason" (Aristotle), "pure" reason, "theoretical" reason, "practical" reason (Kant), "historical" reason (Dilthey, Troeltsch), "interpretative" reason (the *hermeneutical* tradition: Heidegger, Gadamer), "trustworthy" reason (Popper, Stegmüller), "silly" reason (Thévenaz), "embodied reason" (Lakoff and Johnson), and many more.

The basic concerns of a reflection on rationality

The quest to understand rationality is embedded in related issues, such as whether or not only *human beings* are rational, whether or not the thinking processes involved in reasoning are taking place with or without the employment of *language* (the question concerning the relationship of thought and language in general). These issues on the one hand border on considerations within the domain of *philosophical anthropology* and on the other are intimately related to the intricacies of rationality evinced in the inevitable human urge to *conceive, conceptualize, argue* and *understand.* Yet only *some* of these concerns will be addressed within the limited scope of this article.

It is significant that Paul Bernays, the co-worker of the foremost mathematician of the 20th century, David Hilbert, in his contribution to the *Festschrift* of Karl Popper remarks that any account of rationality has to pay attention to *concept-formation.* He states that the "proper characteristic of rationality" is "to be found in the conceptual element" (1974: 601).

Philosophers, special scientists and people engaged in everyday affairs without any hesitation constantly speak about "concepts". Yet it is not easy for them to explicate what concepts are all about. Most of the time they do not have a concept of a concept![5]

3 Diels-Kranz I, 231; Parmenides, B. Fragment 3: "For thinking and being are the same": (*τὸ γὰρ αὐτὸ νοεῖν ἐστίν τε καὶ εἶναι*).

4 Cassirer summarizes this legacy neatly: "Logik und Dialektik sollen jetzt kein bloßes Organon der Wirklichkeitserkenntnis mehr sein, sondern sie sollen diese in ihrer Fülle und Totalität enthalten und aus sich hervorgehen lassen. Damit erst schien der Kreis des philosophischen Denkens geschlossen und sein Ziel, das Ziel der Identität von Wirklichkeit und Vernunft, erreicht zu sein. An diesem Punkt glaubte Hegels 'Wissenschaft der Logik' zu stehen" (1957:10).

5 Hartmann (1957:101) remarks that Aristotle definitely did not have a concept of a concept ("Begriff des Begriffs"). Cf. also Strauss, 2002:165 ff.

The limits of concept-formation and definition

Thinking about the nature and role of concepts soon borders on the *limits* of rationality. Various disciplines in the course of their development had to realize (and concede) that the truly basic terms of their disciplines are conceptually *indefinable.*

Semantics as a sub-discipline of general linguistics had to accept 'meaning' as such *a primitive term.* For example, when the distinction drawn by Immanuel Kant between analytic and synthetic propositions (cf. Kant 1787:10 ff.) is pursued, an attempt can be made to *define* a typical semantic phenomenon such as *synonymy* in terms of *analyticity*. Two sentences have the same meaning only if each one of them entails the other one in an analytic sense. Yet Quine highlighted the *circularity* of such an attempt. Because *analyticity* is defined in terms of *meaning* (a sentence is supposed to be analytically true if it is true only on the basis of its meaning), whereas *meaning* (in this case: similarity of meaning = synonymy) is defined in terms of *analyticity*. Fodor provides a summary conclusion:

> The goal we have been pursuing is the traditional one of reducing meaning to some more basic and better understood entity. But analyticity is too intimately related to meaning to provide such a reduction. In fact, as far as anyone knows, there is no meaning-independent way of characterizing either analyticity or meaning (Fodor, 1977:43).

Similar to the way in which linguistics had to accept (assume) "meaning" as something basic and primitive, axiomatic set theory also had to accept primitive terms. For example, within Zermelo-Fraenkel set theory, "*element of*" is introduced as a *primitive term* [6] – and Gödel once remarked that as yet we do not have a satisfactory *non-circular definition* of the term "set."[7] Russell, in his logicistic approach to mathematics, claims that his *class concept* is purely *logical* in nature, without realizing the *circularity* entailed in his argumentation.[8] David Hilbert points at the circularity entailed in the logicist attempt to deduce the quantitative meaning of number from that of the logical-analytical mode. In his *Gesammelte Abhandlungen* Hilbert writes:

> Only when we analyze attentively do we realize that in presenting the laws of logic we already had to employ certain arithmetical basic concepts, for example the concept of a set and partially also the concept of number, particularly as cardinal number [Anzahl]. Here we end up in a vicious circle and in order to

6 In addition to primitive symbols taken from logic the only set theoretical primitive symbol employed by Zermelo-Fraenkel set theory is the binary predicate *epsilon* which denotes the membership relation (cf. Fraenkel *et al.*, 1973:22-23).

7 "The operation 'set of x's' (where the variable 'x' ranges over some given kind of objects) cannot be defined satisfactorily (at least not in the present state of knowledge), but can only be paraphrased by other expressions involving again the concept of set, such as: 'multitude of x's', 'combination of any number of x's', 'part of the totality of x's', where a 'multitude' ('combination', 'part') is conceived of as something which exists in itself no matter whether we can define it in a finite number of words (so that random sets are not excluded)" (Gödel, 1964:262).

8 "1 + 1 is the number of a class *w* which is the logical sum of two classes *u* and *v* which have no common terms and have each only one term. The chief point to be observed is, that logical addition of numbers is the fundamental notion, while arithmetical addition of numbers is wholly subsequent" (Russell, 1956:119). Russell speaks about the sum of "two" classes where each of them contains "one" element. This presupposes an insight into the quantitative meaning of the numbers "1" and "2"! Consequently, the number "2," which had to appear as the *result* of "logical addition," is presupposed by it!

> avoid paradoxes it is necessary to come to a partially simultaneous development of the laws of logic and arithmetic (1970:199).

Singh also states that Russell's attempt makes him a victim of the "vicious circle principle" (1985:76) and the same criticism is raised by Cassirer: "Now if we take this process of positing *(Setzung)* and differentiation as a basis, we have done nothing but presuppose number in the sense of the ordinal theory" (1953:51).

Another example of the necessity of acknowledging primitive terms is found in Zeno's arguments against multiplicity and movement. The solution of Zeno's problem of Achilles and the tortoise is not merely given in the claim that Zeno understood the "moving observer" metaphor in a literal way (see Lakoff and Johnson, 1999:157-158), since what is ultimately shown by this "antinomy" is that it is not possible to define *uniform motion* exhaustively in *spatial terms*.[9] Similarly, the dominant mechanistic and physicalistic trends in modern biology are not sensitive to the indefinability of the *biotic mode* (aspect or function) of reality. Vitalistic,[10] holistic and organismic theories[11] are indeed open to this state of affairs.[12]

Hans Jonas strikingly typifies the *monistic* forms of *vitalism* and *mechanicism*. Unlike dualists, *monists* do not attempt to reduce reality philosophically to *two* fundamental principles, but rather posit a *single all-inclusive* and *universally explanatory principle*. We may therefore just as well speak about *pan-vitalism* and *pan-mechanicism*. The initial *hulèzoism* (zoè = life; hulè = matter) of Greek philosophy comes to expression in one of the indirectly preserved aphorisms of Thales: *everything lives*. From this perspective it is unimaginable that 'life' may not be the universal rule. Jonas comments:

> In such a world view death is a riddle confronting one, a contradiction of the natural, self-explanatory and understandable, of the common life (1973:20).

Jonas here discusses *pan-vitalism* and the problem of *death* (1973:19ff). Pan-mechanistical thinkers, on the other hand, emphasize the notion that living phenomena are *peripheral* in an encompassing homogeneous *physical* world. Quantitatively negligible in the immeasurable expanse of cosmic matter, qualitatively an exception to the rule of material characteristics, scientifically inexplicable in an explicable physical natural reality, "life" becomes an insurmountable obstacle for *pan-mechanicism*:

9 The third B Fragment preserved from Zeno first grants the reality of movement but then immediately cancels it again by raising two options denying it: "Something moving neither moves in the space it occupies, nor in the space it does not occupy".

10 It should not be surprising that later representatives of neo-vitalism stopped to use the expression "vital force" so dominant in vitalistic thought since Aristotle introduced the notion of an "entelechie." The latter was supposed to be *immaterial*, contradicting the term "force" used in the expression *vital force*. Heitler, for example, simply prefers to refer to a "central instance" (*Zentralinstanz*) (1976:6).

11 Von Bertalanffy highlights the limitations of a physicalist approach: "These [biochemical – DFMS] processes, it is true, are different in a living, sick or dead dog; but the laws of physics do not tell a difference, they are not interested in whether dogs are alive or dead. This remains the same even if we take into account the latest results of molecular biology. One DNA molecule, protein, enzyme or hormonal process is as good as another; each is determined by physical and chemical laws, none is better, healthier or more normal than the other" (Von Bertalanffy, 1973:146; cf. Strauss, 2002:168-170).

12 Those biologists who further explored the neo-vitalism of Hans Driesch had to adjust their orientation after von Bertalanffy generalized the second main law of thermodynamics to cover *open systems* as well – compare the way in which Rainer Schubert-Soldern introduced an "instability factor" in order to account for the health (biotical stability!) of living entities (see Schubert-Soldern, 1959 and 1962).

> Life as problem here indicates recognition of its strangeness in the mechanical world, which is the real world; to explain it means – on this level of the universal ontology of death – to deny it, reducing it to a variant of the possibility of the lifeless (1973:23).

This paragraph explains pan-mechanism and the problem of life (1973:22ff).

Whereas biological *physicalism* (with the neo-Darwinian theory as one of its dominant representatives) aims at reducing the biotical aspect of reality to complex material structures and processes, biological *holism* aims at the opposite extreme. Needham gives the following explanation of the position taken by Meyer:

> Thus Meyer, in his interesting discussion of the concept of wholeness, maintains that the fundamental conceptions of physics ought to be deducible from the fundamental conceptions of biology; the latter not being reducible to the former. Thus entropy would be, as it were, a special case of biological disorganization; the uncertainty principle would follow from the psycho-physical relation; and the principle of relativity would be derivable from the relation between organism and environment (Needham, 1968:27, note 34).

Whenever an attempt is made to define what is truly *primitive* (and irreducible), the inevitable outcome is (*antinomic*) **reduction**. Historicism demonstrates this claim in a very lucid way.

The historicistic assertion "everything is history" eliminates the meaning of history, since only whatever is not itself historical in nature can *have* a history. If law, morality, art, and religion are *nothing but* history, then nothing can *have* a history (in principle cancelling the possibility of something like *legal history*, *economic history* and *religious history*).

Within the science of law Polak attempted to define 'law': according to him law is an *objective, trans-egoistic harmonization of interests.* Since this 'definition' does not contain anything specific belonging to the *jural* it misses the target – 'objective' intends something inter-subjective or universal (not distinctively jural); trans-egoistic has an *ethical* meaning; 'harmonization' stems from the *aesthetic* domain and 'interests' are non-specific and in need of a further qualification (such as "economic interests," "social interests," and so on). The result is simply a rule equally well applicable to the distribution of alms amongst the poor, as Dooyeweerd aptly remarks (1967:9).

In general we can therefore conclude that concept-formation and definition ultimately rests upon the acceptance and employment of *primitive terms*. In order to avoid a *regresuus in infinitum* this state of affairs ought to be respected. Cassirer writes:

> For a critical analysis of knowledge, in order not to accept a *regressus in infinitum*, has to stop at specific original functions which are not in need of genuine derivation and which is also not capable of it (1957:73).[13]

What we have learned from these examples is that the *key terms* involved in *rational* (*conceptual*) *understanding* are themselves *not* open to (rational) conceptual definition. Rationality in this sense does rest upon a non-rational (or: more than rational) basis – but it should not be confused with something *irrational*. We may designate this

13 "Denn die kritische Analyse der Erkenntnis wird, wenn man nicht einen *regressus in infinitum* annehmen will, immer bei gewissen Urfunktionen Halt machen müssen, die einer eigentlichen 'Ableitung' weder fähig noch bedürftig sind" (1957:73).

basis of irreducible primitives as the *restrictive boundary* of rationality. As such it reflects a *positive* awareness of one of the most fundamental perennial issues in philosophy: the quest to account for the *coherence of irreducibles* (and: '*indefinables*').

Rationality: the legacy of an over-estimated conceptual knowledge

However, unable to oversee its own commitment to reason, modern philosophy pursued the pretension of "universal reason" which led to the modernist Enlightenment conviction that the *world itself* has a "rational structure." In order to elucidate this legacy closer attention to the nature of concept-formation is required.[14]

The legacy of Western philosophical reflection highlights that concept-formation is made possible by *two* crucial conditions: (i) *universality* and (ii) the capacity to *bring together (synthesize)* a *logically objectified multiplicity* of traits into the *unity* of a *concept*.

A concept is not simply a *picture* or an *image* of something within reality or of some features of reality. In order to *discern* and *identify*, given possibilities of reality are analytically opened up and deepened through logical acts of a knowing subject. Opening up the "identifiability" and "distinguishability" of features of reality is only possible through (subjective) acts of *objectification*. Through logical objectification concepts emerge as the *unification* (bringing together, synthesizing) of a multiplicity of *universal* traits. The scope of a concept is universal in the sense that it applies to whatever conforms to the *conditions* intended by the concept concerned. A proper concept of a planet, a house, a chair, a human being, and so on makes it possible to place any individual planet, house, chair or human being within the (universal) category of planets, houses, chairs or human beings.

Karl Mannheim accounts for this insight in the universality of concepts in his own way:

> Everything subject to assertion is to be identical for everyone in every assertion of it: and the concept thus [must be] universally valid in two ways: referable to all objects of the same kind (the concept 'table' is thus applicable to all tables that have ever existed or ever will exist), and valid for all subjects who ever will utter it, and who accordingly always understand the same thing by 'table'. That this tendency inheres in every concept-formation cannot be doubted; and the creation of such a conceptual plane upon which one concept can be defined by others, with all concepts thereby forming an objective self-contained system, should not be denied (1982:196).

14 In explaining the views of Davies one finds various statements made by Van Huyssteen explicitly mentioning that the world is *rational*: "What is astounding, however, is to what a great extent our world is truly rational, i.e., in conformity with human reason" (Van Huyssteen, 1998:68); "It is indeed fascinating to see, precisely through the fact that the rational nature of our universe is reflected in its basic mathematical structure, that Davies ultimately comes to the point where he has to acknowledge the limits of this reasonableness" (Van Huyssteen, 1998:71). However, Van Huyssteen does not question the deeply rooted *rationalistic assumption* in this view of the "rational" (even: "mathematical") structure of the world – a conception that is indeed on a par with the Kantian view of human understanding as the formal law-giver of nature discussed below (see footnote 15 below).

What is known as Kant's so-called 'Copernican' revolution in epistemology – in ascribing the primacy no longer to the 'object' but to the (formal law-giving) subject[15] – reinforced the notion of things within nature as 'objects'. Someone inclined to defend the neutrality of observation normally would be willing to accept as the most general observation-term the notion of an 'object': all the different things in nature are to be seen as 'objects'. However, this observation-term in itself displays the tremendous *subjectivistic* assumption so deeply impregnated in our Western notion of science – as such causing the inability to appraise things in nature as genuine *subjects*, i.e. as being (in addition to other kinds of laws – such as quantitative laws, spatial laws and kinematic laws of motion) subjected to *physical* laws for their existence as material things.

In so far as physical entities are *material* they are not objects but *subjects* (subject to physical laws), and in so far as they are *objects* they are considered according to some or other *non-physical* trait – for example as something perceived (sense-object), as something analyzed (identified and distinguished from something else – logical-analytical object), as something bought or sold (economic object), and so on. Therefore, although things such as these could be *objectified* by humans, this objectification presupposes their primary existence as (physical) subjects. Speaking about them in all possible contexts as *objects* simply underscores the powerful *subjectivistic* (human-centred) legacy operative in Western thinking.[16]

Logical objectification, as a subjective analytical act of identification and distinguishing, does not leave "reality" untouched – it *opens up* and *deepens* its meaning. Yet concept-formation does not *exhaust* the meaning of *knowledge*. The mistaken assumption that knowledge coincides fully with *conceptual* knowledge, which dates back to Aristotle and Greek metaphysics, can best be designated as *rationalistic*. *Rationalism* accentuates universality at the cost of individuality – and thereby simply cancels the knowledge we have of whatever is unique, contingent and individual. Concepts are *blind* to what are unique, contingent and individual – yet it cannot be denied that we do have *knowledge* of what is unique, contingent and individual.

Concept-transcending knowledge

The kind of knowledge involved in approximating what is unique, contingent and individual transcends the limits of concept-formation and should be acknowledged for what it is: *concept-transcending knowledge*. Nicolai Hartmann once explained the Kantian notion of a "Grenzbegriff"[17] in a striking way. He says that the notion of an unknowable "thing-in-itself" ("Ding an sich") still requires a *thought-form* through which it is thought of as unknowable – and this is what a "Grenzbegriff" intends to

15 One only has to be reminded about Kant's conviction that human understanding is the formal law-giver of nature – according to him it does not derive its laws *from* nature, but prescribes them *to* nature: "understanding creates its laws (a priori) not out of nature, but prescribes them to nature" (cf. Kant, 1783 par.36:320).

16 Authentic artifacts are designated as *cultural objects* because their objectified status in human life is intended – but it does not cancel their *subject-functions* within the pre-physical and physical aspects of reality.

17 The translational equivalent usually given for "Grenzbegriff" is *limiting concept*. This is misleading because it gives the false impression that we deal with knowledge contained within certain limits or confines, whereas the actual intention of the German term is to refer to a kind of knowledge *transcending* the limits of concept-formation. For that reason we rather prefer to speak about "concept-transcending knowledge."

capture.[18] Without buying into the role of the so-called "thing-in-itself" in the philosophy of Kant (cf. the critical remarks made in Strauss, 1982:133, 141-143), it is important to leave room for a "form-of-thinking" accounting for knowledge transcending the limits of concept-formation.

The basic notion with which Aristotle started in his work on *Categories* is that of the *primary substance* – which was supposed to be strictly *individual*. In order to safeguard the possibility of *conceptual knowledge*, Aristotle had to introduce the so-called *secondary substance*, the *to ti èn einai* (*De Anima*, 412 b 16; cf. 414 a 9-11 and *Metaph*. 1035 b 32).[19] According to Aristotle a concept is always involved in conceiving what is general (universal).[20] For Aristotle true knowledge is therefore always knowledge of the *universal form*. The counter pole of form, namely *matter* (which lacks any positive determination – cf. *Metaph*. 1029 a 20-26) is therefore outside the reach of conceptualization. As such it is *unknowable*.[21]

The universal substantial form in Aristotle's thought is intended to make the transcendent *eidè* of Plato immanent – inhering within concretely existing substances. It relates to the *being-this* or *being-that*. For example, Aristotle holds that a concept (*logos*) is not subject to *coming into being* and *passing away*. It is not "house-ness" that comes into being, but only *this* house (*Metaph*. 1039 b 22-26).

These two stances, Plato with his transcendent *eidè* and Aristotle with his immanent universal substantial forms (secondary substances), informed the medieval speculation about the *universalia ante rem* (transcendent, seated in the "divine Mind" *a la* Plato) and *in re* (inhering within the created entities as their universal forms – *a la* Aristotle). The additional step in this realistic metaphysics is given in the postulation of universality within the human mind, *universalia post rem*. It also underlies the realistic (copy) theory of truth: truth is the correspondence between thought and being (*adequatio intellectus et rei*).

Aristotle actually discovered the (universal) *orderliness* (*lawfulness*) of entities within reality, whereas Plato wrestled with the (universal) *order for* concretely existing entities. The conditions for being an atom are given as the *order for* the existence of any given atom – the latter evinces that it is subject to these conditions (to this *law for* being-an-atom) in its *orderliness*, i.e. in its *being-an-atom*.

However, during and after the Renaissance the late Scholastic nominalistic movement (John the Scott, William of Occam) radically questioned Plato's *eidè* as well as Aristotle's universal substantial forms. The nominalistic orientation actually denies both the order for and the orderliness of entities and accepts universality only within the human mind – as it is clearly seen from the new concept of *truth* which it employs: truth no longer relates to a reality outside the human mind, but only concerns the *compatibility of concepts within the human mind*. However, the remarkable fact is that

18 Cf. Hartmann, 1957:311: "Denn bei Kant ist es nicht so, dass etwa das Ding an sich bloss Idee wäre; umgekehrt, da wir das Ding an sich nicht erkennen ..., wohl aber denken können, so muss es eine Denkform, eine Art des Begriffs geben in der es – eben als unerkennbares – gedacht wird. Das ist die 'Idee'."

19 An extensive analysis of Aristotle's view of a *concept* is found in Prantl, 1855:210-362. Prantl translates *ὅρος* with *concept*, *λόγος* with *articulated concept* and *ὁρισμός* with *definition* (Prantl, 1855:211 note 359; cf. 262 note 535). Also compare Prantl, 1851:38 ff.

20 *ὁ δὲ λόγος ἐστὶ τοῦ καθόλου* (*Metaph*. 1035 b 34 – 1036 a 1).

21 *ὕλη ἄγνωστός καθ' αὑτήν* (*Metaph*. 1036 a 2026).

both the traditional Scholastic metaphysics and the modern nominalistic reaction to it continue to adhere to the rationalistic restriction of *knowledge* to what is *universal*! Even Scholasticism was faithful to the conviction that whatever is individual is *inexpressible* (*omne individuum est ineffabile*). It will suffice to quote a well-informed and respectable 20th century philosopher from South Africa in order to illustrate the long-standing influence of this rationalistic restriction of knowledge to *conceptual knowledge*. De Vleeschauwer wrote a work on logic and epistemology and explicitly points at the "individual delimitation" (1952:213). He mentions the domain of the "individual" as one where our intellectual capacities must fail. Apparently without being aware of it, De Vleeschauwer adheres to the *nominalistic* perspective which holds that in reality there are only *individual* things and processes, clearly seen in his explanation that in spite of all similarities between entities and processes, there will always remain an irreducible kernel of individuality, which causes one thing to be different from another one. Science with its directedness towards the universal has serious difficulties with its inclination also to know what is individual – because "knowledge of what is individual is simply impossible" – something about which philosophy, according to De Vleeschauwer, had clarity since its inception.[22]

Given the awareness emphasized by many contemporary thinkers that we cannot deny die historical and linguistic conditions of being human one may expect philosophers to be skeptical or at least critical in respect of the acknowledgement of *universality*. As a stance against the long-standing domination of rationalistic notions this reaction is understandable. Yet one should not throw out the baby with the bath water, for acknowledging historicity and linguisticality does not exclude but rather presuppose logicality. Those (postmodern) thinkers inclined to deny universality abundantly demonstrates this point, because the best they manage to accomplish is to reject universality in the name of universality. Van Huyssteen, for example, writes: "Postmodernity challenges us to deal with the fact that we have been robbed of any general, universal, or abstract ways to talk about the relationships between religion and science today" (1998:2-3). The *key* word is "any": it operates as the *universal quantifier* of his statement, entailing that the proposition in terms of which "general, universal, or abstract ways" are questioned crucially depends upon the *universality* of its own claim.

What is required is not a denial of the *co-determining* role of *logicality* alongside historicity and linguisticality, but an acknowledgement of the inevitable and inescapable role also played by the *logical-analytical dimension* of being human, accompanied by the critical insight that one should not succumb to the rationalistic restriction of knowledge to (universal) conceptual knowledge.

At this point we may link our initial analysis of "primitive terms" with the nature of *concept-transcending knowledge*.

22 "Daar is nog 'n laaste gebied van begrensing en beperking van ons kennis met betrekking tot objekte wat binne die bereik van ons kenvermoë val, maar waar daardie vermoëns volstrek moet faal in die oë van 'n gees wat nie buitegewoon op begrensing en differensiëring ingestel is nie. Daardie gebied is dié van die individuele. Die werklikheid bestaan uit individuele dinge en individuele prosesse. Hoeveel gelykenis dinge en prosesse met mekaar mag vertoon steeds bly 'n onherleibare kern van individualiteit oor, wat maak dat die een ding nie die ander is nie. En al is die volstrek 'anders wees' van die individualiteite geen voorwerp van wetenskap, wat steeds op die algemene gerig is nie, tog bly die streng individuele 'n voorwerp van kennis waarvan die mens nie kan afsien nie. Maar die kennis van die individuele is eenvoudig onmoontlik. Die wysbegeerte was daar reeds van die staanspoor af diep van oortuig" (1952:213).

The original ontic domains of "primitive-ness" in which irreducible basic terms find their seat have a further fundamental and complementary side to them. In order to highlight this side we have to refer to conceptual clusters and the different *ontic domains* to which this complementary side relate (cf. Strauss, 2002:170).

Remark: *A rationalistic legacy in everyday language*

> The use of the term "ontic" instead of "ontological" finds its ground in the crucial distinction between what is given and what is the result of reflection on what is given. Living entities, such as plants, animals and human beings are not *biological* phenomena as we are accustomed to hear. They are simply *alive* and therefore at most the *datum* with which the discipline of biology may concern itself. Similarly, a young couple taking a romantic walk on a campus is not a *sociological* phenomenon but simply a *social* one. The rationalistic legacy, which identifies our ability to know with reality itself – evidenced in the mentioned belief in the "rational (mathematical) structure" of reality – is responsible for this identification of different kinds of phenomena with theoretical thinking about them, thus leading to the practice to employ words with the suffix "-logy" where they do not fit – like *ontological* instead of *ontic*, *biological* instead of *biotic* and *sociological* instead of *social*.

It will suffice to use the following domains: (i) the arithmetical domain, (ii) the spatial domain, (iii) the kinematical domain, and (iv) the physical domain, while keeping in mind that the concrete existence of no single entity, process or societal collectivity is exhausted by anyone of these (or other) *ontic* spheres or aspects of reality. For example, the existence of a chair is not exhausted by its function in the *quantitative* facet of reality – evident in our discernment of its number of legs – since it also exists as a *spatially* extended entity with its relative *movement* (around the axis of the earth, around the sun) and with its relative physical strength (suitable for a normal human being to sit on).

Applying our intuitions of number, space, movement and energy-operation in talking about the numerical properties of a chair, about its size and shape (spatial), about its relative speed and about its physical characteristics, in every instance inevitably employs notions or terms with a *universal* scope. This means that whenever any person looks through these different (ontic) points of entry (which are then at once elevated to epistemic modes of explanation) at a chair, the terms generated are used in a *conceptual way*. As long as we restrict the use of such terms to the respective ontic domains (modes of explanation) this conceptual focus will always be present – which is actually the case with all our entitary-oriented everyday concepts (just think about the concepts we have of entities such as those mentioned in an earlier context: planets, houses, chairs and human beings). If we designate such *functional terms* employed in describing the way in which entities function within various aspects of reality as *modal terms* (see Strauss, 2000:26-28, 32-36),[23] then the following distinction should be drawn. When modal terms are used to refer to entities that function *within the confines* of particular modes of being, they are employed in a *conceptual manner*. However,

23 Examples of modal (functional) terms are: quantity, unity, multiplicity (arithmetical); area, coherence, continuity, connectedness (spatial); uniform flow, continuing, constancy (kinematical); life, growth, adaptation, differentiation, integration (biotical); frugality, sparingly, avoiding excesses (economic), and

whenever a modal term is put in service of referring beyond the limits or boundaries of such an ontic domain, then we encounter a *concept-transcending* use of such a term – also designated as an *idea-use* of such terms.

For example, while merely exploring our quantitative intuition, one can speak about a chair in its totality, including all its properties. In language this is expressed by referring to its *individuality*, its *uniqueness*, its *being distinct*. The original quantitative meaning of number – captured as a "primitive" in axiomatic set theory as we have seen[24] – is evident in these affirmations and yet they are intended to refer to much more than the mere arithmetical aspect of the chair. They therefore indeed constitute *idea-usages* of modal *numerical* terms.

Similarly, instead of speaking about the sizes and dimensions of a chair, one may use our intuition of the original meaning of spatial extension to speak about all facets of the chair – in which case one may refer to the chair in its *totality*.[25] Once again it is clear that the term *totality* – in spite of its spatial descent – here refers to much more than merely the spatial aspect of the chair. It constitutes therefore – in terms of the distinction suggested by us concerning the twofold usage of modal terms – another example of an *idea-use* of modal terms, in this case *spatial* ones.

Modern phoronomy (pure science of movement) understands motion in its original sense as *uniform flow*, without the need of any causes (as Aristotle believed). This kinematic intuition of *constancy*, when used in an idea-context, provides us with the idea-knowledge of the *identity* of an entity – its relative constancy amidst all changes – where the latter term finds its seat in the physical aspect of *energy-operation*. The operation of energy always *causes* certain *effects* and in *that sense* never leaves anything the *same*, i.e., *identical*. Therefore, the word *change* can also be employed in an *idea-context*. But because the *idea-meaning* of *constancy* (consonant with the idea of *identity*) and the idea-use of *change* stem from two *irreducible* modes (detecting changes always presupposes constancy), it is not contradictory to use both these ideas.

Expanding our view we can even highlight the four *most basic* idea-statements philosophy can formulate about the universe – and once again we have to realize that these statements are not *contradicting* each other but rather entail and complement each other: (i) everything is *unique*; (ii) everything *coheres* with everything else; (iii) everything remains *identical* to itself; and (iv) everything *changes*. Only if these statements did not rest upon irreducible modal points of entry they would have been contradictory.

The very nature of (regulative) idea-knowledge, referring us beyond the limits of (constitutive) concept-formation, should be seen as the *expansive boundary* of rationality.[26]

so on. Functional terms such as these relate to the *how* of reality and not to its concrete *what* (see Strauss, 2003:69-74).

24 Just recall Gödel's reference to a "multitude of x's" which could be paraphrased but not defined because every definition would lean upon our awareness of a discrete quantity (distinct multiplicity).

25 In Strauss, 2002b it is explained why the meaning of *continuous extension*, by contrast, entails the awareness of a *gapless connectedness*, which is synonymous to the notion of *coherence* and the original meaning of the *whole-parts relationship*. If all the parts are *connected* (*cohere*) they constitute the *whole*/*totality*.

26 The term "constitutive" is meant in the sense of "building blocks," whereas "regulative" indicates the deepening and expansive function of concept-transcending knowledge.

What lies between the restrictive and expansive boundaries of rationality?

We have followed up the suggestion made by Bernays, namely that the meaning of rationality ought to be related to the nature, scope and limits of *concept-formation* and we have done that by highlighting the restrictive and expansive boundaries of rationality. But what is the status of the "in-between," of the *intrinsic domain* of rationality, the domain of *logicality*?

Our conjecture is that this domain of logicality evinces a threefold *self-insufficiency*: (i) it expresses its unique meaning only in coherence with all the non-logical domains of reality; (ii) it refers beyond itself to grounds transcending the realm of logicality; (iii) it can only function upon the basis of a direction-giving ultimate human orientation in life, an ultimate commitment.

Analyzing these conjectures in all their detail and consequences will by far transcend the scope of this article. Yet some brief outlines will be developed.

The generally accepted insight that the *validity* of an argument ought to be distinguished from its *truth* left many philosophers with the impression that as soon as one gets involved in the particulars of *logical inference* one has arrived in a world of *pure thinking*, stripped from any connection with the "outer world." Both predicate logic and propositional (formal) logic seems to be operating only on the basis of the logical principles of *identity*, (*non*-)*contradiction* and the *excluded middle*. For example, if one looks at the deductive syllogism in its four modes, while considering that there are four kinds of propositions involved – universal affirmative [A] and universal negative [E] / particular affirmative [I] and particular negative [O] – and then ask two questions: (a) how *many* inference patterns are there? and (b) how many of these constitute *valid* inferences? – then it is clear that of the 256 possibilities only a limited number are valid (if my recollection is correct, about 21). In order to differentiate between *valid* and *invalid* inferences an implicit or explicit use of the logical principles of identity and non-contradiction is required. Only on this basis is it possible to evaluate a particular inference as being *logically sound* or as being *illogical*. But this constitutes a *normative contrary* – only human beings with an accountably free will are able to act *in conformity with* logical principles or are capable of *violating* such principles. Also the domain of *propositional logic* pre-supposes the said logical principles.

The entire distinction between *subject* and *predicate* – in its *logical* sense – is dependent upon the nature of *concepts* and *concept-formation*. Predicates normally *explicate* traits brought together in the *unity* of a concept. Whatever property is *excluded* from the *logical unity* of the concept cannot afterwards be *predicated* of it, accept in an *illogical* way. If it would have been true that the concept "(material) body" *excludes* the property of *weight* (*mass*) to begin with[27] – as Immanuel Kant asserts in his *Critique of Pure Reason* (1787, B:10 ff.) – then the so-called "synthetic" proposition: "all

27 Since the discovery of irrational numbers the switch to space as theoretical point of entry to reality established a powerful and long-standing tradition which is still operative in the thought of Descartes (*res extensa*) and Kant – as it is clearly seen in their shared conviction that a *material body* is exhaustively characterized by *extension* alone. Cf. Descartes, *Principles of Philosophy*, Part II, II: "That the nature of body consists not in weight, hardness, colour and the like, but in extension alone"; and Kant: "So, wenn ich von der Vorstellung eines Körpers das, was der Verstand davon denkt, als Substanz, Kraft, Teilbarkeit usw., imgleichen, was davon zur Empfindung gehört, als Undurchdringlichkeit, Härte, Farbe usw. Absondere, so bleibt mir aus dieser empirischen Anschauung noch etwas nämlich Ausdehnung und

bodies are heavy" would be *illogical* since it violates the principle of non-contradiction.[28]

A *concept* is constituted as a *logical unity in the multiplicity of features* captured in this concept and every concept is subject to logical principles. The *meaning* of the logical principles of identity and non-contradiction brings to light the intimate connection between the original meaning of a *quantitative* unity and multiplicity and a *logical* unity and multiplicity (compare the remark of David Hilbert quoted above – Hilbert, 1970:199). Clearly, through basic similarities and differences the *meaning* of the logical mode intimately coheres with the arithmetical aspect. Within the logical mode of reality we find a *logical* unity and multiplicity (particularly exemplified in *concept-formation*), which analogically resembles an original *arithmetical* unity and multiplicity. This shows that logic cannot be "contained within itself," since it brings to expression its unique meaning only in *coherence* with non-logical facets of reality (in this case the coherence between the logical-analytical mode and the quantitative mode).[29]

Since the beginning of the 20th century the discipline of logic advanced significantly in elucidating the nature of logical inferences. But in spite of all the finesses and intricacies involved in this development, the mere application of the principles of identity and non-contradiction cannot assert the *truth* of any premises or conclusions. The fundamental logical principle referring logic beyond its concern with the validity of argumentation is the one that was discovered by Leibniz (*principium rationis sufficientis*). Schopenhauer subjected this principle of *sufficient reason* in 1813 to an extensive investigation. He called it the principle of sufficient ground of knowledge (*principium rationis sufficientis cognoscendi*):

> As such it asserts that, if a judgement is to express a piece of knowledge, it must have sufficient ground or reason (Grund); by virtue of this quality, it then receives the predicate true. Truth is therefore the reference of a judgement to something different therefrom. This something is called the ground or reason of the judgement (1813:156).

In connection with the nature of energy-operation we have alluded to the original *physical* meaning of the cause-effect relation (causality). Similar to the analogical appearance of numerical unity and multiplicity within the logical-analytical mode this physical meaning of causation is also analogically reflected within the logical mode in the distinction between *logical* grounds and *logical* effects (conclusions). Whenever premises and conclusions *contradict* each other, the application of the logical principles of identity and non-contradiction can only assert that *both* cannot be true – but they cannot establish which one indeed is true.

Yet, the moment an appeal is made to some or other "reason" or "ground" logic alone is robbed for ever to be the *final judge* of rationality! The battle field has now

Gestalt" (*Kritik der reinen Vernunft*, 1787:B-35). ["So, when I separate from the representation of a body what the understanding thinks about it, such as substance, force, divisibility etc., and similarly what belongs to sensation, such as impenetrability, hardness, colour and the like, then in this empirical intuition there is still something left, namely extension and form" (translation by the author).]

28 It is therefore significant that the prominent German logicians of the 19th century eventually turned this proposition into an "analytic" statement (Lotze, Windelband, Sigwart).

29 Because the status of the logical principle of the excluded middle is dependent upon the notion of infinity one accepts (the so-called potential or actual infinity), a more complicated analysis is required to account for it. Such an account is found in Strauss, 1991.

switched, since *divergent views of reality* are now suddenly emerging as the main actors on the scene of rational interaction. What a particular thinker may consider to be a "sufficient ground" may be viewed by another as an "insufficient ground"!

(i) Conflicting views of reality require a more than logical criterion of truth and (ii) it rests upon an important strategy in order to enable meaningful interaction between thinkers coming from divergent traditions.

Let us make a few brief remarks about these two issues in reverse order, commencing with the strategy required for rational interaction. Perhaps as an effect of the rationalist legacy of the West our shared intellectual tradition is highly appreciative of *critical* thinking. The Enlightenment period advanced under the assurance of the stance of critical thinking *par excellance*. Already in the Preface to the first edition of his *Critique of Pure Reason* (1781) Immanuel Kant appreciates his own time as the *true age of criticism*. This spirit of radically questioning everything resounded quite recently in the stimulating and thought-provoking final address delivered to the *Philosophical Society of Southern Africa* (hosted at Rhodes University in Grahamstown, January 2003), when Graham Priest (from Australia) addressed the final plenary session on the theme "What is Philosophy"? He made a well-argued plea for the view that the ultimate task of philosophy is to be radically critical in questioning whatever there is. But let us first return to Kant, who writes:

> Our age is, in every sense of the word, the age of criticism, and everything must submit to it. Religion, on the strength of its sanctity, and law on the strength of its majesty, try to withdraw themselves from it; but by doing so they arouse just suspicions, and cannot claim that sincere respect which reason pays to those only who have been able to stand its free and open examination (Kant, 1871:A-12 – translation F.M. Müller).

In order to be able to really benefit from the exercise of a critical spirit, one has to observe something more fundamental than critique: *showing solidarity*. It is indeed much more difficult to highlight what a particular thinker discovered, a state of affairs we still have to account for albeit in terms of a different perspective. In other words, if I want to criticize Plato, Aristotle or Kant, I have to be able to appreciate positively what they have unveiled *before* it is meaningful to criticize the way in which they have accounted for their discovery. For example, earlier in this article we have appreciated positively the fact that Aristotle correctly discovered that concept-formation is bound to universal traits *before* we have criticized his rationalistic restriction of knowledge to *conceptual* knowledge.[30]

On the basis of a genuine sense of *solidarity*, the second best thing to do in service of a meaningful and constructive critical encounter is to exercise *immanent criticism*.[31] This will prevent the conversing partners to end their interaction with the proverbial: "I say this and you say that, so what?" An inner contact of thought requires the intel-

30 Strauss 2000 does something similar in respect of the basic epistemological concern of the entire *Critique of Pure Reason* of Kant. The argument shows solidarity with the actual discovery by Kant of what is called *modal universality*, before it criticizes Kant's rationalistic elevation of human understanding to the level of the formal law-giver of nature and before it advances an alternative view on the ontic modal universality of the physical function of the world.

31 Immediately after his final presentation, I have asked Graham Priest about the role of *immanent criticism* in critical confrontations – and his response was that someone else at a different occasion also raised this point – and that he may have to consider it more seriously.

lectual integrity of immanent criticism. Its aim should always be first to show what is inherently untenable and only *then* to proceed with the formulation of an alternative perspective. At that point, in turn, the conversation partner first has to appreciate the inconsistencies pointed out by the *immanent criticism*,[32] then proceed to an appreciation of what is positive in the alternative account *before* renewed criticism could be raised.

This brings us to the first point: the requirement of a *more than logical* criterion of truth. Observing the logical principle of non-contradiction enables one to discern *contradictions*. Confusing two spatial figures – such as a "round square" – merely yields a logical contradiction. However, when a theoretical attempt is made to reduce two ontic domains to each other (just recall the example of Achilles and the tortoise) the clash between kinematical laws of motion and spatial laws leads to a real *antinomy*, i.e., to a genuine clash of laws. The literal meaning of the word antinomy is after all a *clash of laws* (anti = against; nomos = law). Every attempt to reduce what is irreducible inevitably ends in such antinomies – as we have showed above in connection with primitive terms and the limitations of concept-formation and definition.

Since a clash of laws concerns irreducible spheres (modes) of laws (or: law-spheres), an antinomy always relates to an inter-modal confusion (in the case of Zeno: a confusion of static spatial positions with uniform phoronomic flow). The stance taken by a marxist physicist, Hörz, indirectly demonstrates this issue in a neat way. Acccording to him classical physics (Newton and his successors) teaches that a moving body finds itself at a specific point in time at a specific place. But if this is the case, he continues, it will be impossible to gain an understanding of true movement. As an alternative Hörz therefore chooses for the conception of motion developed by Engels. In the dialectical-materialistic conception of the latter one can say that a moving body which is engaged in a *change of place* at the same time *is* and *is not* at a specific place. Hörz explains the inner tension ("dialectics") of this position as follows:

> insofar as the body changes from one place to another it moves, and it reaches, as a result of its movement, always at a specific time a specific place (1967:58).

This is, according to him, the "dialectical antinomy (Widerspruch)" of *change of place*. A formulation precluding every *logical contradiction* runs as follows: "as the result of movement a body finds itself at a specific place and with regard to the movement itself the body does not find itself at a specific place" (Hörz, 1967:58). The implicit assumption of this assertion of the "non-contradictory" relationship between movement and place is the irreducibility of the law-spheres of space and movement.

A mere appeal to logical principles does not safe-guard anyone from becoming a victim of (antinomically) reducing one of these two spheres to the other. Just consider the account given by Von Kibéd of the impossibility of motion in terms of the logical principle of identity.

> The principle of identity, according to which everything is only identical to itself, actually forbids every change, every becoming-different, every stepping-outside of a substance from its being-itself (1979:59).

According to Von Kibéd the classical metaphysical escape-route, namely to distinguish between *essence* and *appearance*, won't help us: "The difficulties accompanying

32 Or even, if possible, unmask the pretended immanent criticism as not hitting the target!

the concept of the changes of an unchangeable thing are side-stepped by dividing the entity into an essential and accidental part, thus producing the possibility to associate unchangeability with its essence and changeability with what is accidental" (Von Kibéd, 1979:60).

However, this is of no help either, because also the accidental features of an entity are subject to the law of identity: "according to the principle of identity also the accidental must remain identical to itself and cannot abolish its essence, which is given in its accidental nature" (1979:60). His conclusion is therefore to be expected: "The concept of change is therefore logically untinkable" (1979:60).[33]

What is absent in this argument are the sufficient grounds accounting for the irreducibility of *constancy* and *change*. Merely applying the logical principle of identity simply does not solve the problem and in addition, in the case of Von Kibéd, underscores the *antinomy* entailed in every attempt to reduce *change* and *constancy* to a static "unchangeability"![34]

The more-than-logical, inter-modal (cosmic) principle at stake in this context should be designated as the principle of the *excluded antinomy* since it finds its roots in a *non-reductionistic ontology*.

Trust (faith) in rationality?

In his *critical rationalism* Popper radically criticizes an uncritical or comprehensive rationalism which is based upon "the principle that any assumption which cannot be supported either by argument or by experience is to be discarded" (Popper, 1966-II:230). Popper argues that this kind of rationalism is demonstrably inconsistent, i.e., in terms of its own criteria. In a sense Popper formulated a critique on *foundationalism*: since "all arguments must proceed from assumptions, it is plainly impossible to demand that all assumptions should be based on argument" (Popper, 1966-II:230). Popper is aware of the fact that behind the idea of an "assumptionless" approach a huge assumption hides itself – something eventually also criticized by Gadamer in his mocking of the prejudice of *Enlightenment* against prejudices (cf. Gadamer, 1998:276).

His own position unequivocally demonstrates his insight in the *self-insufficiency* of "rationality." He knows that the rationalistic trust in reason is not rational itself and he explicitly speaks about "an irrational faith in *reason*" – which means that according to him "rationalism is necessarily far from comprehensive or self-contained" (Popper, 1966-II:231).

Stegmüller holds a similar conviction when he says that a self-guarantee of human thinking does not exist in any domain – one already has to believe in something in order to justify something else (Stegmüller, 1969:314). These viewpoints are supported from a different angle when De Vleeschauwer says:

33 What is needed in order to account for change, namely "the concept of causality, is logically seen non-transparent and shows the limits of logical explanation" (Von Kibéd, 1979:60-61).

34 Prinsloo has a clear understanding of the shortcomings of reductionism. He has a solid understanding of the fact that "we cannot explain movement by reducing it to rest or dynamism in terms of a static state" (Prinsloo, 1989:98). This issue is treated in more detail in the "Festschrift" dedicated to E.D. Prinsloo – my contribution is entitled: *"Dialectics and logicality: Between cultural diversity and ontical universality*."

> A science without any 'presuppositions' is therefore purely from a rational standpoint impossible. The last reality towards which epistemology drives us, is an act of faith in thinking ...[35]

The *trust* in the human capacity to think and to argue underscores that also from this perspective "rationality" does not have the first and the last word in die life of human beings. Human life indeed knows a multiplicity of relationships built upon trust and confidence. Derrida mentions a different instance when he refers to *credit* against the background of acknowledging the *universality* of "faith." He stresses that "faith is absolutely universal" (1997:22) and then continues to say:

> There is no society without faith, without trust in the other. Even if I abuse this, if I lie or if I commit perjury, if I am violent because of this faith, even on the economic level, there is no society without this faith, this minimal act of faith. What one calls credit in capitalism, in economics, has to do with faith, and the economists know that. But this faith is not and should not be reduced or defined by religion as such (1997:23).

That the various forms of trust in human life in the final analysis converge in a direction-giving ultimate commitment will be left at this mere hint.

Concluding remark

Our analysis aimed at bringing to light both the restrictive and the expansive boundaries of rationality – evinced in the "coherence of irreducibles" and the entailed awareness of primitive terms in their indefinability on the one hand and in those kinds of knowledge transcending the limits of concept-formation on the other. We have only briefly paid attention to the place of logical inferences but had to mention that even the most basic logical principles point at the self-insufficiency of logical thinking. The principle of sufficient reason adds weight to the dependence of logical argumentation upon the grounds (reasons) which stem from a more-than-logical reality.

Our analysis did not enter into a more refined discussion of the way in which the logical-analytical mode expresses its meaning in coherence with other modal domains of reality and therefore also did not pay attention to the crucial issue regarding the relationship between *thought*, *language* and *metaphoricity*.

What did clearly surface is the awareness that rationality is embedded in and borders upon givens which are not open to further "rational" exploration – givens that both *condition* (in a constitutive sense) and *transcend* the limits of conceptual knowledge. In the last section it was succinctly argued that the rational faculty of the human being rests upon *trust* – converging in an ultimate life-commitment which also guides and directs other forms of trust in human life.

Taking into account the many-sided connections with "more-than-rational" *boundaries of* and *conditions for* rationality, we have to conclude that rationality as such appears not to be all too "rational" after all. Its meaning only comes to expression in its coherence with a more-than-rational (given) cosmic diversity. The constructive capacity of human thinking, its ability to acquire knowledge through *normed* subjective acts of objectification, constitutes its *creative calling* which should not be appreciated as

35 "'n Volstrekte '«voraussetzungslose' wetenskap is derhalwe reeds vanuit 'n suiwer rasionele standpunt beskou, onmoontlik. Die laaste realiteit waartoe die kennisleer ons dryf, is 'n akte van geloof in die denke" (1952:244).

the *ultimate source* of order and certainty in the world, but as an *accountable response* to those normative conditions making possible its own *important* but *limited* operation as such.

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