

## Paul J.E. Dekker

### Heraclitean Oppositions

The Greek philosopher Heraclitus (5<sup>th</sup> century B.C.) is attributed a theory of oppositions. His philosophy has been rendered epistemologically as concerned with paradox and ontologically as focused on the flux of nature. We think Heraclitus' philosophy is best understood pre-logically, as displaying the distinction as a fundamental logical form of all acting, thinking, and being. Heraclitus surely did not mean his 'logos' to guide inferences in the way we understand logic nowadays, but the logos that, in his words, in itself and by itself underlies and escapes our understanding can be seen to generate logical systems we have become familiar with. The distinction can be seen to generate a categorial, Aristotelian, logic, as well as a Boolean or propositional logic. The ensuing unfolding of such a logical space proceeds, perhaps surprisingly, in a spirit akin to that exposed in Ludwig Wittgenstein's *Logisch Philosophische Abhandlung*.

#### 1 The Distinction

Quite a few of the just about a hundred fragments that have been delivered of Heraclitus' sayings, or writings, put different terms in mutual opposition. The fragments present opposites in various categories, for instance: unexperienced and experienced (ἀπείροισιν / πειρώμενοι, DK22b1), symphony and diaphony (συνᾶδον / διᾶδον, DK22b10), expectation and the unexpected (ἐλπεται / ἀνέλπιστον, DK22b18), day and night (ἡμέρην / εὐφρόνην, DK22b57), up and down (ἄνω / κάτω, DK22b60), life and death (ζῶντες / θάνατον, DK22b62), hunger and satisfaction (λιμός / κόρον, DK22b111). *Apparently* none of any two opposites is real without the other. There is no sense of being unexperienced if there is no experienced, and vice versa; there is no life without death, and no death without life; no day without night, etc. The significance of any term *A* resides in the possibility to distinguish something *A* from something that is not *A*. The intimate relation between opposites renders them exchangeable.<sup>1</sup> It has thus been assumed that Heraclitus, paradoxically, claims opposites to be the *same*. However, they are better conceived to be *one*, in the sense that they form a unity in essentially being distinct from one another.<sup>2</sup>

Such a distinction is dynamic, and, hence, recursively applicable. A distinction can be made in a distinguished area, or subject.<sup>3</sup> A distinction can also be opposed itself.

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<sup>1</sup> ὁ θεὸς ἡμέρη εὐφρόνη χειμὼν θέρος πόλεμος εἰρήνη κόρος λιμός· ἀλλοιοῦται δὲ ὅκωσπερ ὁπότεν συμμῆ θυώμασιν ονομάζεται καθ' ἡδονὴν ἐκάστου (DK22b67) (*God is day night, winter summer, strife peace, satiety hunger; it changes according to each one's taste as when mixed with herbs.*) ταὐτό τ' ἐνι ζῶν καὶ τεθνηκός καὶ τὸ ἐργηγορὸς καὶ τὸ καθεῦδον καὶ νέον καὶ γηραιόν· τάδε γὰρ μεταπεσόντα ἐκεῖνά ἐστι κάκεῖνα πάλιν μεταπεσόντα ταῦτα (DK22b88) (*The same is living and dead and awake and asleep and young and old; because the one turns into the other and the other turns into the one.*)

<sup>2</sup> συλλάντες ὅλα καὶ οὐχ ὅλα συμφερόμενον διαφερόμενον συνᾶδον διᾶδον· καὶ ἐκ πάντων ἐν καὶ ἐξ ἐνὸς πάντα (DK22b10) (*Conjunctions, wholes and non-wholes, joining and disjoining, symphony diaphony; and one out of everything and everything out of one.*)

<sup>3</sup> πόλεμος πάντων μὲν πατήρ ἐστι πάντων δὲ βασιλεύς· καὶ τοὺς μὲν θεοὺς ἔδειξε τοὺς δὲ ἀνθρώπους· τοὺς μὲν δούλους ἐποίησε τοὺς δὲ ἐλευθέρους (DK22b53) (*Strife is father of all, king of all; these he*

In (DK22b62, cf. below) the opposition between life and death itself is opposed to immortality. Heraclitus' fragments sometimes present rather involved oppositions, but in whatever form, they have in common that they all generate from a distinction.

The distinction also figures more abstractly, for instance in the figure of a road or circle.

ὁδός ἄνω κάτω μία καὶ ὡυτή (DK22b60)  
*The path, up and down, one and the same.*

A road consists in the disjoint but inherently related possibilities of going up and down. The more one goes up, the more one can go down; if there is no up or down, there is no road. Likewise, the remote opposites beginning and end coincide on the circumference of a circle.

Ξυνόν ἀρχὴ καὶ πέρας ἐπὶ κύκλου περιφερείας (DK22b103)  
*Common are beginning and end at the periphery of a circle.*

No matter where one starts on a circle, it will be the end of a loop, and if there is nothing in between, so no beginning and no end, there is no circle. Opposites obviously oppose, and, hence, presuppose one another. They exist in their jointly making a distinction. Ludwig Wittgenstein's pupil George Spencer-Brown once deemed the distinction the root of all cognition. In the next section we show that it at least provides for a logical form according to which a logical space develops.

## 2 The Algebra of Distinctions

A distinction divides a space, any type of space, in two parts. It draw a line so to speak, observing that what is here, on one side, is not there, on the other. Distinguished areas can be labeled  $A$  or  $B$ , ..., and we can express a distinction saying, if  $A$ , then not  $B$ , or, equivalently, if  $B$ , then not  $A$ . We can render this, formally, as  $(A | B)$ , a format that naturally suits Heraclitus' oppositions. (*Day | Night*) applies to what, if a day, is not a night; (*Immortal | Mortal*) holds of what, if immortal, is not mortal, and vice versa.

With hindsight, we can see modern logic emanate from the distinction. Adopting present day terminology, we can take  $(A | B)$  to apply to all those that, or the set of things that, if  $A$ , are not  $B$ . Obviously, this is the same as the set  $(B | A)$ , since both apply to precisely that which is not both  $A$  and  $B$ . As has been pointed out by Henry Maurice Sheffer, this operation on terms, or sets, by itself generates nowadays familiar Boolean operations on sets, since, e.g., the complement  $A'$  of  $A$  is given by  $(A | A)$ .  $(A | A)$  applies to what is not both  $A$  and  $A$ , so to what is not  $A$ . A simple computation also reveals that  $((A | B) | (A | B))$  applies to precisely that which is both  $A$  and  $B$ . The other familiar Boolean operations can be derived from these two. Likewise, if we conceive of the terms  $A$  and  $B$  as propositions,  $p$  or  $q$ , the distinction generates propositional logic. Thus,  $(p | q)$  can be shorthand for the maybe more familiar  $(p \rightarrow \neg q)$ , equivalent with  $(q$

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*appoints Gods and those men; these he makes slaves, and those free men.)*

$\rightarrow \neg p$ ), or even better  $\neg(p \wedge q)$ . With the single operator  $( | )$  propositional logic is generally known to be functionally complete. For instance,  $p' = \neg p$  can be taken to abbreviate  $(p | p)$  and  $(p \wedge q)$  is short for  $\neg(p | q) = (p | q)'$ .<sup>4</sup>

The distinction thus can be seen to be a fundamental logical operation or act. Surely, in none of his fragments, Heraclitus addresses anything like logic as a science or art of reasoning. But he does consider the logos, the distinction, to be universal. According to fragment (DK22b1, cf. below) everything is becoming according to the logos. Like it underlies anything else, the logos also underlies the understanding. Heraclitus observes, not so much the logos *in* the understanding, but rather the logic *of* or *under* it.

τοῦ λόγου δ' ἐόντος ξυνοῦ ζώουσιν οἱ πολλοὶ ὡς ἰδίαν ἔχοντες φρόνησιν (DK22b2)  
*The logos being common the many live as having insight themselves.*

While, or better because, the logos is universal, the understanding is distinctive. This fragment actually hosts a number of oppositions surrounding the living of the many (ζώουσιν οἱ πολλοὶ). The distinctive having insight is literally mirrored, and opposed, by the common being of the logos. Even though the distinctive (ἰδίαν) having (ἔχοντες) insight (φρόνησιν) is opposed to it, the common thing (ξυνοῦ) is (ἐόντος) the logos (τοῦ λόγου) of it. What is common is the distinction from, the opposition with, the common. Again, this is no logical analysis in a modern sense. Rather, we witness the logos, the distinction, as a form, which, following it, is hard if not impossible to follow.

οὐ ξυνιᾶσιν ὅπως διαφερόμενον ἐωυτῷ ὁμολογεῖ·  
 παλίντροπος ἀρμονίῃ ὅκωσπερ τόξου καὶ λύρης (DK22b51)  
*They do not follow how the disjoined agrees with itself*  
*re-turning harmony as of bow and lyre.*

Those who do not follow (οὐ ξυνιᾶσιν) are themselves drifting away (διαφερόμενον), and hence conform. Notice that the agreement (ὁμολογεῖν) is being like the logos. Fragment (DK22b8) simply observes the beauty of this.

τὸ ἀντίξουν συμφέρον καὶ ἐκ τῶν διαφερόντων καλλίστην ἀρμονίαν (DK22b8)  
*The opposing joins, and from the disjunction most beautiful harmony.*

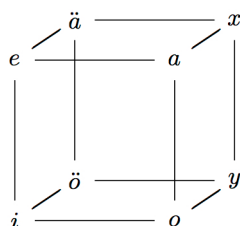
### 3 The Distinction and the Square

The distinction also invites a fresh take on the Aristotelian square of opposition and the associated system of syllogisms, which properly conceived constitutes a fragment of propositional logic. A distinction  $(A | B)$  corresponds to the negative universal  $AeB$ , and  $(A | B')$  to the positive Aristotelian  $AaB$ . We can turn Heraclitean oppositions into

<sup>4</sup> Actually, Sheffer, and also Russell, Wittgenstein, and Quine, have suggested a dual, effectively equivalent, operator as basic, one that can be rendered as  $(\neg p \wedge \neg q)$ . The generative power of this operator has already been acknowledged by Charles Sanders Peirce.

categorical propositions ( $A \parallel B$ ), reading this as “everything is, if  $A$ , not  $B$ ”. Obviously, ( $A \parallel B$ ) states that the  $A$  and  $B$  are disjoint, and equals the Aristotelian  $AeB$  (“no  $A$  are  $B$ ”). The other three propositions from the square of opposition then can be represented as ( $A \parallel B'$ ) ( $AaB$ , “all  $A$  are  $B$ ”), ( $A \parallel B$ )' ( $AiB$ , “some  $A$  are  $B$ ”), and ( $A \parallel B'$ )' ( $AoB$ , “not all  $A$  are  $B$ ”).

Looking at the square of oppositions this way, the fundamental proposition is not the universally affirmative  $AaB$ , but the ‘negative’  $AeB$ . If we are allowed a somewhat metaphysical take on the issue, the logic is not built around a notion of  $B$  (essentially, observably) belonging to  $A$ , but just around a notion of  $A$  and  $B$  being distinct. This slightly changed perspective naturally instigates, not a quest for preservation of truth, which logic, after all, seems to be heading for, but, rather, a quest for exceptions, opposites, that is, distinctions, like we find in Heraclitus’ work. And further distinctions suggest themselves. For one can continue with constructing a proposition ( $A' \parallel B'$ ), which amounts to saying that  $A$  and  $B$  exhaust the universe. We render this proposition as  $AxB$ , saying that (everything is) “ $A$  unless  $B$ .” The negation of this ( $A' \parallel B'$ )' states an exception, something that is distinct from both  $A$  and  $B$ , and we can abbreviate this as  $AyB$ . The logical landscape then can be completed by adding the converse of  $a$ , abbreviated as  $\ddot{a}$ , so that  $A\ddot{a}B = (A' \parallel B)$  (“only  $A$  are  $B$ ”). The converse of  $o$ , abbreviated as  $\ddot{o}$ , is the negation of  $\ddot{a}$  so that  $A\ddot{o}B = (A' \parallel B)'$  (“not only  $A$  are  $B$ ”). The four new types of propositions complement the square of opposition ( $e, a, i, o$ ) with another square ( $\ddot{a}, x, \ddot{o}, y$ ), and the two together form a logical cube.<sup>5</sup>



(The top of this cube hosts the general propositions, the bottom the particular ones.) This is not the place to show, but, rather, to simply observe that the cube is logically speaking complete. With the connectives from the cube we obtain 24 (valid) syllogisms of the so-called first figure. Interestingly, perhaps, there is precisely one that, besides Barbara ( $BaC, AaB / AaC$ ) derives an affirmative universal conclusion:  $BxC, AeB / AaC$ . In a medieval fashion this syllogism can be called Xena, after the three connectives employed. By means of so-called *conversions*, always possible in the cube, syllogisms of all figures are derivable from those of the first. If in addition we employ inversion—the cube is also inverse-complete—and contraposition, the validity of *all* syllogisms can be reduced to that of one only. Barbara can of course be the designated one, but Xena may do the job as well.

It is tempting to call upon Xena to shed a light on Heraclitus' fragment (DK22b62), which has been deemed utterly cryptic.

<sup>5</sup> To my best knowledge, the eight categorical propositions were first identified, for elementary logical purposes, by Augustus De Morgan in 1846, and the cube by Hans Reichenbach in 1952.

ἀθάνατοι θνητοὶ θνητοὶ ἀθάνατοι·  
ζῶντες τὸν ἐκείνων θάνατον τὸν δὲ ἐκείνων βίον τεθνεῶτες (DK22b62)  
*Immortals mortal, mortals immortal; living their death and dead of their life.*

For the fragment starts with what seems to be an exclusive or exhaustive opposition (*IxM*, “everything is immortal or mortal”), and seems to conclude with an affirmative universal (*LaM*, “the living are mortal”). We only need to supply an opposition as a minor premise, a negative universal *LeI*, “what lives is not immortal”, to yield a perfectly valid inference: *IxM, LeI / LaM* (Xena). However, like we said, Heraclitus does not engage in logical reasoning, and it would be misguided to construe (DK22b62) as consisting of categorial propositions in the first place.

Instead, fragment (DK22b62) displays two oppositions which are obviously related. The first, (*Immortals | Mortals*), is mirrored by the equivalent (*Mortals | Immortals*), and suggests exchanges, like those between (*Night | Day*), and (*Asleep | Awake*). The second opposition in addition to the first relates life to its opposite death, so that living (ζῶντες) involves opposing, facing, death (θάνατον). It is indeed *their* death (τὸν ἐκείνων), that is, that of the mortals (θνητοὶ). Conversely, death (τεθνεῶτες) puts an end to *their* life (τὸν ἐκείνων βίον), that is, again, that of the mortals (θνητοὶ), and renders immortality. Immortality may turn to life, engaging in the opposition between life and death, hence becoming, being, mortal. Mortality, the opposition between life and death, is opposed to immortality. No life without death, and vice versa, and without this distinction no immortality. Once more, Heraclitus is not engaged in reasoning, but in stating the oppositions that can be taken to precede it.

#### 4 Differential Import

Herakleitos’ fragments involve distinctions. They describe them or, better, make, or actually *are*, distinctions. In Aristotelian logic it is natural to assume, as is often indeed done, that any distinguished term has an *instance*. (This is known as a presupposition of ‘existential import’.) In the Herakleitean conception the most natural assumption is that any distinguished term *A* makes a *distinction*, so that it serves to properly distinguish *A* from non-*A*. Moreover, for a categorial statement involving *A* and *B* to be distinctive, we may have to furthermore assume that something distinguishes both *A* and non-*A* from *B*. (And, consequently, from non-*B*.) Such an assumption, already formulated by Hans Reichenbach, is labeled the assumption of *differential import* here. According to the assumption of differential import, a categorial proposition involving *A* and *B* presupposes that there is *A*, non-*A*, *B*, non-*B*, and a difference between them. (Obviously, differential import thus subsumes existential import.)

When the assumption of differential import is imported into the cube of oppositions, we find that *AeB* presupposes *AoB*, *AöB* and *AyB*, as is easily checked. Similarly *AaB* presupposes *AiB*, *AöB*, and *AyB*, and we actually find that differential import makes any top corner in the cube of opposition presuppose the three bottom corners which it does not contradict. Therefore, the four top corners are all *contraries*: any one of them contradicts what another presupposes, so no two of them can both be true. Analogously, any two bottom corners cannot both be false, hence, the four bottom

corners are all *subcontraries*. Thus, all corners of the cube are logically related.

Besides invoking proper distinctions, their differential import, categorial propositions generally have content, or truth conditions, the preservation of which logic is normally taken to be about. Now some propositions fail such content. Thus, so-called tautologies  $AaA$  (“all  $A$  are  $A$ ”, or, equivalently,  $AxA'$ , “all is  $A$  unless not  $A$ ”) are vacuously true, but besides the fact that they make a distinction between  $A$ ’s and non- $A$ ’s, they do not state anything and fail to satisfy differential import. Likewise,  $AiA$  (“some  $A$  are  $A$ ”) is vacuous because it asserts what it presupposes. In his *Logisch Philosophische Abhandlung* Ludwig Wittgenstein has deemed some such propositions, tautologies and contradictions, although syntactically well-formed, semantically deviant, because meaningless.<sup>6</sup> But even though such propositions are pointless, Wittgenstein takes them to show the logic of the world.<sup>7</sup> Heraclitus’ oppositions, not by themselves stating something distinctive, and failing differential import, do display distinctions, and thus show the logos. A term  $(A | A')$ , which is  $(A | (A | A))$ , applies to anything and, hence, is vacuous. (It relates to the categorial proposition  $AeA'$ , which is tautologous.) Yet it can be taken to reveal a distinction. Thus, while a true opposition “mortals immortals,” rendered as  $(M | M')$ , is indeed void, that is, universally applicable, it fails to satisfy differential import, while it *shows* the distinction it makes.

Heraclitus and Wittgenstein here report a like impression of the logos. It is not what is said, but what shows. Although logic of itself sets the limits of the thinkable, it is unlimited.<sup>8</sup> But while this logos displays itself, it does not let itself be represented or understood.<sup>9</sup> For Wittgenstein logic is a form presupposed by, or in, experience or knowledge.<sup>10</sup> (Actually, it is form and substance (LPA2.022-025).) Analogously, fragment (DK22b1, sometimes presented as the opening statement of an alleged book) presents the logos as what comes before the understanding, and that goes beyond.

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<sup>6</sup> Der Satz zeigt was er sagt, die Tautologie und die Kontradiktion, daß sie nichts sagen. (...) Tautologie und Kontradiktion sind sinnlos. (LPA4.461) (*The proposition shows what it says, the tautology and the contradiction that they say nothing. (...) Tautology and contradiction are without sense.*)

<sup>7</sup> Die Logik der Welt, die die Sätze der Logik in den Tautologien zeigen (...). (LPA6.22) (*The logic of the world which the propositions of logic show in tautologies (...).*)

<sup>8</sup> Die Logik erfüllt die Welt; die Grenzen der Welt sind auch ihre Grenzen. (LPA5.61) (*Logic fills the world: the limits of the world are also its limits.*) Die Tautologie läßt der Wirklichkeit den ganzen – unendlichen – logischen Raum (...). (LPA4.463) (*Tautology leaves to reality the whole infinite logical space (...).*) ψυχῆς πείρατα ἰὼν οὐκ ἂν ἐξεύροιο πᾶσαν ἐπιτορευόμενος ὁδὸν οὕτω βαθὺν λόγον ἔχει (DK22b45) (*The borders of the soul you will not find in going, traveling each path; so deep is its logos.*) ψυχῆς ἐστὶ λόγος ἑαυτὸν αὐξῶν (DK22b115) (*The logos of the soul is self-expanding.*)

<sup>9</sup> Der Satz kann die gesamte Wirklichkeit darstellen, aber er kann nicht das darstellen, was er mit der Wirklichkeit gemein haben muss, um sie darstellen zu können – die logische Form. (LPA4.12) (*Propositions can represent the whole reality, but they cannot represent what they must have in common with reality in order to be able to represent it – the logical form.*) ὁκόσων λόγοις ἤκουσα οὐδεὶς ἀφικνεῖται ἐς τοῦτο ὥστε γινώσκειν ὅτι σοφὸν ἐστὶ πάντων κεχωρισμένον (DK22b108) (*Whomever logos I heard, nobody comes to see that wise is separate from everything.*)

<sup>10</sup> Die Logik ist vor jeder Erfahrung – daß etwas so ist. Sie ist vor dem Wie, nicht vor dem Was. (LPA5.552) (*Logic precedes every experience – that something is so. It is before the How, not before the What.*)

τοῦ δὲ λόγου τοῦδ' ἐόντος αἰεὶ ἀξύνετοι γίνονται ἄνθρωποι καὶ πρόσθεν ἢ ἀκοῦσαι καὶ ἀκούσαντες τὸ πρῶτον· γινομένων γὰρ πάντων κατὰ τὸν λόγον τόνδε ἀπείροισιν εἰκόασι πειρώμενοι καὶ ἐπέων καὶ ἔργων τοιούτων ὁκοίων ἐγὼ διηγέσθαι κατὰ φύσιν διαίρων ἕκαστον καὶ φράζων ὅπως ἔχει· τοὺς δὲ ἄλλους ἀνθρώπους λανθάνει ὁκόσα ἐγερθέντες ποιοῦσιν ὅκωσπερ ὁκόσα εὐδοντες ἐπιλανθάνονται (DK22b1)

*The logos being always men become ignorant, both before hearing as well as when hearing it first; everything becoming according to the logos they remain unexperienced, experiencing words and works as I explain analyzing each according to nature and saying how things stand; the others remains hidden what they do when awake like what they forget when they sleep.*

Like Wittgenstein's 'logische Sätze', Heraclitus' oppositions *show*, or *are*, the logos, the form of the universe, a distinction. We have already witnessed (DK22b8, 51) the beauty of such joined opposition.

## 5 Distinctive Morals

The distinction is dynamic. It drives one, intellectually, to both finding opposites and, hence, finding the unity opposing the oppositions. The logos of thinking and being, the distinction, is also the logos of action.<sup>11</sup> Without any need for anything like a categorical imperative, the logic suggests one should distinguish oneself.<sup>12</sup> Such a distinguished attitude seems to be at odds with the much more Stoic stance that Heraclitus also promotes.<sup>13</sup> One has to acknowledge the fact that everything is one and to act according to nature.<sup>14</sup> There is only an apparent, not insurmountable, paradox here, though, not a real one. For the logic of distinction has it that to distinguish oneself *is* to comply with nature.<sup>15</sup>

As indicated above, the distinction also governs our understanding. The fact that each of us has private understanding is a fact common to all of us, and in our understanding we move away from what we are acquainted with. The understanding itself is un-understandable, and that is somehow also the logos of the central fragment (DK22b1). However, there is a positive twist to this. Notwithstanding, or better: just because of, our paradoxical situation, according to the distinction things fall into place.

<sup>11</sup> κόσμον (...) ἦν αἰεὶ καὶ ἔστιν καὶ ἔσται πῦρ αἰεζώνον· ἀπτόμενον μέτρα ἀποσβεννύμενον μέτρα (DK22b30) (*The universe (...) was always and it is and it will be everlasting fire; enflaming and extinguishing to proportion.*)

<sup>12</sup> αἰρεῦνται ἐν ἀντὶ ἀπάντων οἱ ἄριστοι κλέος ἀέναον θνητῶν· οἱ δὲ πολλοὶ κεκόρηται ὅκωσπερ κτήνεα (DK22b29) (*They, the best, choose one thing against everything, eternal fame of the mortals; the many are satisfied like cattle.*) εἷς μύριοι ἐὰν ἄριστος ᾦ (DK22b49) (*One out of thousands if he is the best.*) τίς γὰρ αὐτῶν νόος ἢ φρήν· δῆμων αἰδοῖσι πείθονται καὶ διδασκάλῳ χρεῖωνται ὁμίλῳ οὐκ εἰδότες ὅτι οἱ πολλοὶ κακοὶ ὀλίγοι δὲ ἀγαθοὶ (DK22b104) (*What is their spirit or insight? They follow the people's singers and as teachers they have the common, not seeing that the many are bad, and the few are good.*)

<sup>13</sup> ὕβριν χρὴ σβεννύναι μᾶλλον ἢ πυρκαϊήν (DK22b43) (*Hybris ought to be extinguished more than a blaze.*) ἦθος ἀνθρώπῳ δαίμων (DK22b119) (*His nature is man's fate.*)

<sup>14</sup> ἐν τῷ σοφὸν ἐπίστασθαι γνώμην ὅτι ἐκυβέρνησε πάντα διὰ πάντων (DK22b41) (*The one wisdom to follow the insight that everything is ruled by everything.*)

<sup>15</sup> σωφρονεῖν ἀρετὴ μέγιστη καὶ σοφίη ἀληθέα λέγειν καὶ ποιεῖν κατὰ φύσιν ἐπαίοντας (DK22b112) (*Well-thinking greatest virtue and wisdom, speaking truthfully and acting listening to nature.*)

In fragment (DK22b50) Heraclitus does what he says: he shows the logos. It is wise to agree, ὁμολογεῖν i.e., be logos-like, to listen to it, to the logos, making a distinction.

οὐκ ἔμοῦ ἀλλὰ τοῦ λόγου ἀκούσαντας ὁμολογεῖν σοφόν ἐστὶν ἐν πάντα εἶναι  
*Not listening to me but to the logos, wise is to agree one to be everything.*

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**Paul Dekker** goes back to the pre-Socratic philosopher Heraclitus of Ephesus, and develops an understanding of Heraclitus' notion of a logos. Heraclitus' philosophy of opposites is not rendered unilaterally epistemological or ontological, but as it is called pre-logical. Modern logics can be construed on the basic notion of logos, conceived of as a notion of distinction, and the same notion of distinction inspires towards a generalization of the Aristotelean square of oppositions into a cube. Heraclitus' presentation of the logos is shown akin in logico-philosophical spirit with the way in which Wittgenstein exposed logical form in his *Tractatus Logico-Philosophicus*.