

# Do Real Contradictions Belong to Heraclitus' Conception of Change? The Anti-cognate Internal Object Gives a Sign

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## Abstract

Heraclitus uses paradoxical language to present the relationship between opposites in his worldview. This mode of expression has generated much controversy. Some take the paradoxes as evidence of a contradictory identity of opposites (Barnes), while others propose a dynamic union through transformation without identity that avoids the contradiction (Graham). By examining B88 and B62, I seek to identify the stronger and weaker points of such readings. The contradictory identity reading thwarts the transformation between opposites. The dynamic reading offers a plausible alternative. However, it skips a characterization of how Heraclitus conceives of the transformation between opposites in physical terms. To fill this gap, I consider Heraclitus' use of what I call the anti-cognate internal object in B62. I argue that 'living the death and dying the life' is a case of change as mixture, a popular conception among the early Presocratics. Upon closer examination, the anti-cognate internal object suggests that real contradictions belong to Heraclitus conception of change. The details reveal a philosophically compelling view.

## Keywords

Heraclitus – Union of Opposites – contradiction – change – process

Continuity and non-identity are both at play in any talk about change. This is because for change to occur, something must become different from itself. For example, someone might say that a green apple has become red. The argument seems straightforward enough, but a deeper consideration of the process of change can lead to a potential contradiction. If the process of change is continuous, the previous and subsequent different states may overlap. As an apple is changing, there could be a transitional state where it is both green and red. Since Plato, most philosophers have tried to explain away this kind of contradiction. However, a few others have argued that inconsistency is an inevitable part of understanding change in its dynamic aspect.

In ancient Greece, Heraclitus used a paradoxical mode of expression to talk about the transformations underlying his so-called theory of the union of opposites. Plato and Aristotle seem to have taken this mode of expression to convey an ontological principle. Both assume that contradictions are part of Heraclitus' worldview. Modern interpreters, however, tend to disagree. In this paper I will explore how Heraclitus' description of the change between opposites can shed light on his conception of the process of change. Specifically, I will argue that the paradoxical expression 'living the death of those, dying the life of these' conveys a co-occurrence of opposing processes. If this is the case, Heraclitus is among those who believe that contradiction is necessary to make sense of change on the ontological level. This view is not as far-fetched for a Presocratic as it may sound. Such a co-occurrence is similar to the framework of change as a mixture, often used by the Ionians to explain transformation in terms of an interaction between ingredients.

The discussion of three fragments structures the text. B88, discussed in section 1, presents living and dying, young and old, and awake and sleeping as examples of the union of opposites. This fragment has been used to defend the most radical and literal reading of the union of opposites. Heraclitus' paradoxical statements would convey a strict identity of opposites leading to contradiction. However, it is difficult to see how a change between identicals could occur. Alternatively, others have relied on Heraclitus' evident interest in change to avoid the contradiction. To do so, they use B36. The fragment presents a cycle of elemental changes between souls, water and earth. The generation of one is said to be the death of the other and vice versa. According to structured mobilism, discussed in section 2, one stuff is already gone when the other comes into being. Heraclitus' mobilism guarantees the non-identity of the opposites and would thus save him from the charge of contradiction. However, I will argue that this conclusion depends on a hidden characterization of change

as a contiguous sequence of static discrete parts. Such a static conception of change jeopardizes Heraclitus's mobilism. The problem calls for a discussion of a more fundamental matter, a characterization of how the process of change occurs according to Heraclitus. I will argue in section 3 that B62 provides a Heraclitean description of change. His use, and perhaps invention, of the anti-cognate internal object to describe the general case of transformative change suggests a co-occurrence of the terms in play. The anti-cognate consists in using a verb and its object that have opposite meanings, such as living the death. If so, one should take Heraclitus' paradoxical mode of expression at face value and accept that real contradictions are a constitutive feature of his mobilism. Section 4 shows how this interpretation fits with Heraclitus' use of war to illustrate the process of generation and some other aspects of his worldview.

### 1.1 *The Identity of Opposites, or Mobilism Lost?*

Many fragments of Heraclitus relate opposites in a way that sounds paradoxical and even contradictory. This feature has led to the identification of what is known as the theory of the union of opposites. According to this theory, opposites, whatever they may be, are in some sense one and the same. The vague appositions are necessary for an initial definition. I will say more about the ontological status of opposites in section 3. For now, it is enough to acknowledge their broad scope. Heraclitus' examples include what Aristotle will call opposites, namely hot/cold, dry/wet (B126), but also a wider range of attributes such as young and old (B88), what the later tradition will take to be elements such as water and earth (B36), and many other items that remain in some relation of opposition to each other, such as day and night (B57).<sup>1</sup>

The present discussion is more closely related to the question of how the opposites are "in some sense" one. There have been many attempts to understand the sense in which the various types of opposites are one and the same for Heraclitus. The strongest and most paradoxical reading takes the relationship between opposites to be an identity. B88 is often presented as a paradigm for this reading.

There is the same within, what is living and what is dead, what is awake and what is sleeping, and what is young and what is old; for these, changing, are those, and those, changing in turn, are these.

DK B88; trans. LAKS & MOST

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<sup>1</sup> Given the focus on what happens during change, I will not appear in relation to different observers. For instance, the seawater for fish or humans (B61).

The series of pairs confirms that the relationship of opposition occurs across a wide range of items. Living/dying, the biological terms that will be the focus of this study, is just another example, on a par with awake/sleeping and young/old. These are said to be in some sense one and the same.<sup>2</sup> According to the unity-as-identity reading, one opposite being the same as the other should be taken literally to mean that they are identical.<sup>3</sup> Despite the appeal of a literal reading, some problems arise.

If the opposites are one and retain their status as opposites, their union will imply a contradiction, which is usually highlighted as a problem. Other things being equal, it would be better not to imply that any serious philosophical view is contradictory. A second difficulty is that if the opposites are in a relation of identity, no change between them will be possible. For transformative change cannot occur between identicals. If 'A is B' asserts a strict identity between A and B, then A cannot change into what it already is.<sup>4</sup> Hindering change would be problematic for Heraclitus' worldview. After all, the final part of the fragment uses the change between opposites to explain why one is the same as the other. In the case of B88, this may be an explanation provided by our source,<sup>5</sup> but other fragments confirm that Heraclitus uses reciprocal transformation to justify the union of opposites. Just as young is becoming old, hot is becoming cold in B126, or water becomes earth in B36.<sup>6</sup>

It seems that the only way to explain the problematic conjunction of identity and transformation between opposites is to attribute some slip to Heraclitus. Accordingly, interpreters tend to justify his position on the basis of an underdeveloped state of philosophy. For Heidel (2014, 93), the idea that unity and identity exclude difference is a contribution of the Eleatics. Barnes (1982, 42, 55) suggests that Heraclitus fell victim to a common equivocation among the

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2 It is not easy to establish the text of the fragment. The most relevant problem concern *g'eni* in manuscript O. Two other manuscripts  $\Phi$  and  $\Pi$  give *t'he* . Most editors avoid it because the  $\tau'$  requires something coming before it. The reading according to which these pairs are 'the same and one' suits the interpretation that will be presented in which the opposites are part of a mixture. However, I start with a less loaded reading by Laks and Most (2016).

3 See Stokes (1971), Vlastos (1955), Emllyn-Jones (1976), Barnes (19

4 See Arist *Metaphysics* (= *Met.*), 1010a34–37 on Anaxagoras' homeomerics. If everything already has a part of everything, there is no place for change.

5 Laks and Most (2016) following Willamowitz do not include the second part as a di quotation.

6 See also the more general fragments in which change plays a central role: B51, B10, B30, B90, B84a, B12, B125. I believe that the explanatory role of change is enough to avoid a certain tendency of over-emphasizing the union of opposites as a logical (Marcovich 2001) or conceptual (Mourelatos 2008) discovery.

early Presocratics: from the fact that B follows A, they were inclined to say that A is B, where the 'is' would convey identity.

Let me call this explanation the Ionian equivocation. After all, it fits with most readings of how Ionian monisms work. Ionian philosophers would observe that phenomenon B follows from phenomenon A, assume a causal relationship between them, and reduce the resultant phenomenon to the antecedent.<sup>7</sup> Heraclitus' union of opposites would be a particular case regarding opposites. Observation shows that one opposite tends to follow the other. Examples include growing old after being young, dying after living, and sleeping after being awake, but also water turning into earth, and hot turning into cold. This observation would have led Heraclitus to conclude that A is a necessary causal condition for the occurrence of its opposite B and, following the equivocation, to proclaim that A is B. Multiple observations of the same pattern and a preference for an oracular style would have motivated an induction to a general principle stating that opposites are one and the same.

The interpretive assumptions behind this kind of reading make sense. B36 confirms that Heraclitus was concerned with physical processes, and his use of living/death (B62) and generation (B36, B80) confirms an interest in causality. More specifically, the transformation of one opposite into another plays an explanatory role in his theory of the union of opposites. Thus, no purely conceptual reading of the relationship between opposites will suffice (see also note 6).

However, physicalism and causation are not sufficient to justify the main point of union-as-identity. Nothing in them requires that the opposites be identical, apart from the *ad hoc* assumption of an 'is' of identity which some scholars take as part of a formalized version of the Ionian equivocation, which does not appear in B88. In fact, statements of the type 'x is F and not-F' are rare, perhaps even absent, in Heraclitus' fragments.<sup>8</sup> More generally, if unity and sameness do not exclude difference, as Heidel claims, I do not see why we should think of them in terms of identity. A complex thing or process can have

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7 Ionian Equivocation suits traditional material monism readings. For Moravcsik (1991, 555) product and producer are in a certain way the same because something is supposed to be transferred from one to the other. It also encompasses more sophisticated versions in which there is transformation out of a basic substance as in Graham's General Substance Theory (Graham 2006, 85, 89).

8 For Rapp (2007, 73), it is unlikely that Heraclitus consciously violates the law of non-contradiction since, in most cases, he does not claim that one opposite is the other but only acknowledges that one follows the other.

different parts and still be the same one. In Part 3, I will explore Heraclitus' own way of expressing the relations between opposites during transformative change in order to understand how he envisaged their union without excluding their difference. Before doing so, however, it will be useful to explore another promising way of making sense of the union of opposites that takes into account physicalism and causation in the transformation between the opposites.

## 2 Structural Unity Without Identity, or Continuity Lost?

The motivation underlying the mobilist-focused alternative readings of the union of opposites can be stated simply. The union of opposites as identity of opposites leads to contradiction and hinders mobilism.<sup>9</sup> If so, why not rely on mobilism to avoid a reading of Heraclitus that leads to contradiction? Heraclitus' paradoxical mode of expression could then be explained away as a mere stylistic preference. To see the alternative, it is necessary to examine how Heraclitus conceives of the relationship between the items involved in transformative change. B36 will help.

For souls it is death to become water, for water death to become earth;  
but from earth water is born, and from water soul.

DK B36; trans. GRAHAM

Since Maximus, the fragment has been read together with B88 and B62 as an example of the union of opposites applied to elemental changes, and modern commentators tend to agree.<sup>10</sup> The similarities are evident. The reciprocity emphasized by *palin* in B88 appears in the chiasmic sequence of B36: souls water, water, earth, earth, water, water, and soul (AB BC CB B ).<sup>11</sup> The stuffs in the reciprocal chain are linked by a transformative change, as in B88 and B62.

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9 There is no need to adopt, as Plato did, a flux theory or radical mobilism, according to which everything is always changing in every aspect. A mild mobilism, which simply takes into account that change plays a fundamental role in Heraclitus' world view, is sufficient.

10 Maximus *Philosophical Orations* 41, 4) also adds the way up and down (B60) as a description of cosmic change. See Vlastos (1955) and Betegh (2007) for modern versions.

11 The use of *psyche* as cosmic stuff is unusual. See Guthrie (1962, 466) and Betegh (2007) for discussions.

In addition, in B36 and B62 Heraclitus uses a biological vocabulary to convey their generation.

The pattern of the transformative relationship in B36 can be generalized as follows: for A it is death to become B and vice versa. In this way, the text highlights two fundamental aspects of Heraclitean change, reciprocity and generation. These aspects provide the basis for seeing the union of opposites as a case of transformational equivalence. According to Graham (2006, 123), A is transformationally equivalent to B only if A can turn into B and B can turn into A. Furthermore, this relationship should be sufficient for Heraclitus to say that A and B are one and the same.

With regard to generation, the transformational equivalence framework fits the Ionian equivocation seen above. Instead of B coming out of A, it says that the death of A is the generation of B. However, it adds an explanatory role to reciprocity. B coming out of A without A coming out of B is not enough to make A and B transformationally equivalent. Taking reciprocity into account is an interpretive gain, since the reciprocal structure embodied by the chiasmus in B36 is a fundamental aspect of the Heraclitean change between opposites.

It is also noteworthy that transformational equivalence does not conflate being one and the same with a claim to identity. As such, this reading should also suffice to save Heraclitus from the charge of accepting contradictions. After all, since there is transformation – in which death is even emphasized – A should already be extinguished when B comes into being, at least according to this interpretation.<sup>12</sup> Once one acknowledges the extension of time required for a process of transformation between opposites to unfold, no contradiction will occur. However, I believe that the case may not be so straightforward.

The avoidance of contradiction will not be complete until one spells out how transformation is being conceived. This is required for any interpretation that wants to use mobilism to deny the occurrence of contradictions in Heraclitus. I focus on transformational equivalence because it provides an instructive case study. To avoid contradiction, it requires a hidden assumption about the nature of transformative change, namely that the sequence ABCBA should be composed of discrete intervals. A distinction between a contiguous and a continuous sequence will help to see why.<sup>13</sup>

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12 See also Nussbaum (1972, 155) on B36: “The fire simply ceases to exist, and is replaced by water.” She associates psyche with fire. The main problem is the implied creation *ex nihilo*.

13 Aristotle, *Met.* 1016a1, distinguishes mere contiguity from continuity per se, the case in which the limits of the pieces are one.

Contiguous sequence: an ordained succession of discrete parts. It can be represented as



Continuous sequence: an ordained succession of connected phases. The open-ended internal limits form a gradual transition.



Neither sequences assume a continuing substratum.<sup>14</sup> The contiguous sequence is characterized by successive parts that do not share a limit. The birth and death or beginning and end of each part are well determined and distinct from each other. Thus, A will be over when B begins. Since the danger of contradiction comes from the overlapping of different states, the discreteness of the parts in a contiguous sequence ensures that they will not overlap. This is why such a model must be assumed if transformational equivalence is to avoid the occurrence of real contradictions.<sup>15</sup>

There may be evidence for a contiguous sequence in Heraclitus. The difference between an infinitive verb for generation (*genesthai*) and a noun for death (*thanatos*) in B36 might motivate a distinction between generation an extended process and sudden extinction.<sup>16</sup> Thus one might claim that A is completely extinguished in the instant before the generation of B. But the evidence is weak. As a noun, *thanatos* tends to be treated by the Greeks as an extended process.<sup>17</sup> More importantly, a discrete reading of the change in Heraclitus's worldview raises serious interpretive problems at both the theoretical and the textual level. I will focus on the theoretical problems before turning to the text in section 3.

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14 The postulation of a substratum belongs to Aristotle's attempt to make sense of the continuity of change without implying a contradiction. The substratum would continue while one quality is substituted by its opposite. It was suggested that fire can play the role of an invisible substratum. However, the evidences are mild and require much interpretative work.

15 If the opposites are to form a unity, the union of opposites could be conceived as a four-dimensional continuant with abutting but non-overlapping spatiotemporal parts.

16 B88 and B62 indicate a symmetric treatment.

17 See Hussey (1999, 102), the word most often refers to the process of dying and not the state of being dead.



To avoid the overlap between different states, transformative change must be conceived as a sequence of discrete parts. The first problem that arises is that such discreteness (a) thwarts the physical continuity of the process. With distinct limits, the opposites are no longer physically one and the same. If this is the case, the continuous sequence fails to take account of Heraclitus' treatment of change as a unifying factor, as his use of change to explain the union of opposites seems to require. The problem is not insurmountable. One can appeal to a higher-order unifying factor. For example, a supervenient feature such as a reciprocal structure, clearly emphasized in the chiasmus (B36), could ground the union of opposites. If this alternative is taken, the 'transformational equivalence' in a contiguous view will turn out to be structural rather than transformational, but, at least, there will be a unity.

However, once there is no continuity and the union is only structural, it becomes difficult to understand (b) the causal relations within a discrete sequence. If the death of A is a sudden and discrete event in relation to the generation of B, then A will generate B without any interaction, which is not very intuitive.<sup>18</sup> This is a problem because generation is a fundamental aspect of Heraclitean change between opposites, as we have seen since the Ionian equivocation. More seriously, if A and B are discrete, it seems that on the death of A, A disappears into nothingness and, even worse, B comes into being out of nothing. Generation out of nothing was certainly not something the Presocratics were prepared to accept (Mourelatos 1981).

Finally, a contiguous model poses at least two problems for mobilism. In a discrete sequence, change is reduced to a sequence of static parts. If the (c) basic units of the process of change are static entities, then the whole should also be static.<sup>19</sup> Mobilism is lost, which was one of the reasons why the reading of union as identity was problematic. Alternatively, it could be argued that the sum of the parts is dynamic. If so, change will come out of what is static. But then it is difficult to understand how something that is static, and as such has no element of change, can bring about something that is dynamic.<sup>20</sup>

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18 See Priest (2006, 167). Alternatively, causation at a distance may be presupposed. The notion of divine can play this role among ancient philosophers. However, the conception of change as a mixture seems more likely.

19 Dupré & Nicholson (2018, 13) address this problem and propose a process-based approach to avoid it.

20 Chakravartty (2005, 14) argues that most causal theories fall into this problem as they accept that something dynamic can follow from a static state. He then proposes a processual solution. A Heraclitean response is proposed in section 3.2, an active-active model of change.

In summary, a contiguous view avoids contradiction, but it makes change static and discrete. It thus thwarts the (a) continuity, (b) causality, and (c) dynamicity that Heraclitus assumes in the relationship of transformation between opposites. In what follows, (a\*), (b\*) and (c\*) will show how a continuous sequence can provide a model that avoids most of the theoretical and interpretative problems of the contiguous sequence. The price is the acceptance of real contradictions.

### 2.1 *The Continuous Change*

In the continuous model, the successive parts of a sequence would share a limit. If so, both the notions of parts and limits will collapse. One can rather talk about phases going through a progression in degrees. Without the discrete limits, the two successive phases will then overlap, at least during a transitional period. Such a continuity ensures that (a\*) the process of change between opposites is physically the same. It will then be easier to argue that the opposites are one, especially for an ancient Greek. The continuity of an indivisible movement is one of the senses of 'being one' that Aristotle lists in *Met. Delta* (1016a5).<sup>21</sup> Thus, a continuous sequence can justify the union of the changing opposites without the need for a higher-order continuant such as a structure or an underlying substratum. The overlap, however, generates a real contradiction.

Since the different phases will intermingle in a continuous sequence, it also accommodates an intuitive version of (b\*) causality by interaction. In this model, a causal sequence proceeds along a gradual line, in which an antecedent state causes the next by having all the physical conditions to bring it about.<sup>22</sup> Such an account is not far-fetched for an Ionian. On the contrary, it is to be expected, since it presupposes a conception of change as a mixture (*mixis/ krasis*) that was widespread among the early Presocratics. Change, so conceived, is the consequence of the mixing and interaction of different ingredients, as opposed to a mechanistic view that became popular with the pluralists.<sup>23</sup> The use of a biological vocabulary in both B36 and B62 favours a view

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21 In *Physics* 227a15, Aristotle talks about two sorts of unity, a proper whole and a relational whole. The latter has different parts but parts in which the limits are one.

22 It is worth noticing examples of Heraclitus changing opposites are gradual changes with long transition periods such as young and old, day and night, and heating and cooling.

23 On *Krasis*, see Vlastos (1947). See also Heidel (2014), who uses an approximation to chemistry to clarify change as mixture. The realm of biological transformation offers a closer approximation to Heraclitus' treatment. Plato, *Theaetetus* (= *Tht.*), 157a describes Heraclitean change as an 'intercourse' (*homilia*) between active and passive elements.

of change as a mixture. The peculiarity of Heraclitus is that he presents opposites as the ingredients of such a process of change by interaction. Thus, for an opposite to have all the conditions for the next state, it must already have some of its opposite. Something hot that is cooling already has some cold in it. Accordingly, Heraclitus uses the metaphor of war to conceive of an interaction between opposite ingredients, as I will explore in section 4.

Finally, the continuous sequence offers a dynamic conception of change. In the contiguous sequence, the basic granularity of the interval of change consists of a sequence of homogeneous parts, for example, each block with a particular shade of gray in the representation above or the basic stuffs water, earth and psyche in B36. Within this contiguity, the 'process' is reduced to a sequence of static well-delimited parts. The continuous view, on the other hand, does not have limits. Thus, it does not matter how closely one looks, no static basic parts will be found. The process will then ( $c^*$ ) be composed of processes or processual phases, characterizing thus a dynamic occurrence. The absence of limits also implies that two successive phases overlap or, more precisely, spread into each other. In the change from A to B, both A and B are occurring. This is what is sometimes called a dense sequence (Von Wright 1968). This means that no matter how small the interval chosen in the change between two different states, there will always be a mixture of both states. Real contradictions are inherent in this scenario.

As with ( $a^*$ ) and ( $b^*$ ), it is not unreasonable to attribute a scenario like ( $c^*$ ) to Heraclitus. Such a characterization of a dynamic continuous sequence fits the reception of Heraclitus by Plato and Aristotle. For them, it was the indeterminacy of a state of change that led Heraclitus to support a view of the world in which contradictions occur. In short, because during change one cannot affirm whether an item is either A or B, Heraclitus would have concluded that it is A and B.<sup>24</sup>

In summary, a continuous sequence offers a physical model that can explain why Heraclitus would offer change as an explanation for the union of opposites. Moreover, it does so on the basis of a model of change as mixture that was prevalent among the early Presocratics. Finally, it may be the only position that allows for a truly dynamic conception of the transformation between opposites. However, the continuous sequence involves real contradictions. This could also be seen as another positive aspect, since this is how Plato and Aristotle interpret Heraclitus, and Heraclitus himself uses a paradoxical

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24 See Plato *Th.* 183a and Aristotele *Met.* 1010a1-16. Both seem to assume that Heraclitus would then have to accept that every contradiction is true. This would be their mistake. I discuss Aristotle's reception of Heraclitus' mobilism in Vieira (2022).

style that suggests contradictions. However, because accepting contradictions would imply a non-serious philosophical view, most interpreters either try to explain them away while interpreting Heraclitus' physical conception, or prefer to deal with the relationship between the opposites on a conceptual level only (Neels 2022; Begley 2021).

Accepting that every contradiction is true may well make a position unacceptable. But accepting a certain kind of real contradiction may be plausible and even necessary (Priest 1998). After all, the a priori denial that contradictions can occur in nature depends on the huge assumption that nature should follow the rules of discourse or logic. There is no certainty that such an assumption holds, so any natural philosopher should be open to accepting real contradictions if they better describe the phenomenon under investigation. Heraclitus' paradoxical style makes it clear that he does not use the rules of discourse to argue for his ontological positions. On the contrary, what we find in the fragments is a disruption of ordinary language in order to provide a faithful description of what happens in nature.<sup>25</sup> In section 3, I will argue that 'living the death' and 'dying the life' in B62 is an instance of such a disruption used to convey the way in which real contradiction occurs during the transformative change between opposites.

### 3 The Anti-cognate Internal Object

The examination of readings such as union-as-identity or structural unity (including the transformational equivalence) pointed to a desideratum that any interpretation of Heraclitus should seek to satisfy. Given the explanatory role of change, without a conception of what happens when change occurs, any interpretation will lack a fundamental component. One might reply that this is an overly precise requirement, since Heraclitus probably never thought about it.<sup>26</sup> In what follows I will argue that B62 offers a description of what happens during change that is as Heraclitean as it gets, to the point of even creating a new figure of speech.<sup>27</sup>

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25 Plato says that the Heracliteans would have to create a language to express their view (*Tht.* 183bc). See Vieira (2015).

26 Moravcsik (1991) remarks that transformation and transmission principles are left unexplained in most of the Presocratics who use the analogy of birth.

27 I will focus on the specific question of what happens in the transformative change between opposites as it occurs. Thus I will not deal with general questions such as the sense in which 'all is one' in Heraclitus (B10, B50). However, I believe that one cannot make

Mortals immortals, immortals mortals: living the death of these, dying the life of those.

DK B62; trans. LAKS & MOST

Again, it is easy to see the similarities in content and structure between B62, B36 and B88. The fragment begins with a paradoxical chiasmus. The paradox is reminiscent of that in B88, while the chiasmus repeats that in B36. The content, mortals and immortals, is different but not far from the previous fragments dealing with life and death.<sup>28</sup> The second part of B62 offers an explanation of the relationship between the opposites based on the transformative change between the terms, similar to the explanatory part of B88. Instead of “these changing are those and those changing are these”, one reads “living the death of these, dying the life of those”. The biological vocabulary and chiasmus are reminiscent of B36. Unlike B88, the paradoxical style that conveys the transformative change in B62 leaves no doubt that it is by Heraclitus.

The way in which the participle and object are presented in ‘living the death and ‘dying the life’ would certainly catch the attention of the trained ears of Heraclitus’ audience. To understand its effect, it is necessary to compare it with a common figure of speech in ancient Greek that has two names, cognate sative or internal accusative. Both dimensions – presenting a cognate root and being internal – will be important in understanding Heraclitus’ adaptation of this figure.

The cognate or internal accusative consists in the use of a pleonastic direct object which repeats and thus reinforces the meaning expressed by the verb. The verb tends to be intransitive, like live and die. Usually there is an attributive term such as ‘good’ to justify the repetition, but it can also be absent.<sup>29</sup> If presented in the traditional way, a Greek audience would expect something along the lines of ‘living the [good] life’<sup>30</sup> The attributive term does not fit Heraclitus’ broader use of life, which can also refer to cosmic processes. More importantly, Heraclitus twists this rhetorical figure in order to reveal the union

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sense of Heraclitus’ monism without knowing what happens during change. I therefore expect that this research will provide a basis for the interpretation of B10 and B50.

28 There is some debate about the referents of mortals and immortals. See Marcovich (2001, 240) for a restricted scope and Graham (2006, 125) for a wider one. For my purpose of investigating the description of change, the only requirement is that the changes in B62 comprise changes in living beings (mortals), including generation and death as in B88, and generative transformations between stuffs (immortals) as in B36.

29 See Smyth 1956, sec. 1563–1577.

30 Norwood (1952) provides many examples.

of opposites in the process of change. Instead of the cognate, he uses the root of its opposite, that is, an anti-cognate. In this way, by 'living the death' and 'dying the life', he achieves the surprising effect of a paradox, without losing the familiar internal relationship between verb and object of the expected pleonasm. To capture these two dimensions, opposition and internality, I will call this the anti-cognate internal object.

The creation (or adaptation) of a figure of speech confirms that Heraclitus was aware of the novelty of what he was describing. A paradoxical way of speaking was necessary to communicate how the transformative changes in his worldview occur. The strategy of creation reveals the intended novelty. The terms in the anti-cognate internal object find themselves in an internal and oppositional relationship. Presented in this way, the relationship of A living the death of B and B dying the life of A is highly suggestive of a co-occurrence of the opposed terms. As such, and in line with the previous investigation, the life of A and the death of B seem to be dense in each other<sup>31</sup> or, to use terminology more appropriate for an Ionian, opposing ingredients in a transformative change as a mixture.

A more precise understanding of what is physically happening in this interaction requires an interpretation of the role of its constituents. I will develop this in the next section. However, regardless of the degree of agreement with this more tentative account, taking the creation of an anti-cognate internal object as evidence makes it harder to deny that Heraclitus was aware that real contradictions were part of his worldview. I cannot think of a more Heraclitean way of conveying that the opposites occur within each other than the inverted presentation of the internal object through the use of the anti-cognate.<sup>32</sup>

### 3.1 *Co-extension and Simultaneity*

In order to arrive at a more precise interpretation of what the anti-cognate internal object describes, I will examine in turn (i) the individual terms involved: living, life, dying and death, (ii) their relationship in each clause: living the death, dying the life, and (iii) the whole expression: 'living the death and dying the life'.

(i) Living and life as well as death and dying are used interchangeably in the two clauses. The participle is substituted for a name and vice versa. This

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31 This means that no matter how small the interval chosen in the change between two different states, there will always be a mixture of both states.

32 Barnes (1982, 106, n.106) regrets not taking Heraclitus' style more into consideration. Graham (2006, 119) uses this remark as an introduction to his objection to Barnes' reading concerning contradiction in Heraclitus.

suggests that they refer to the same item. The distinction between an event and a going-on can help us to see what kind of item they are. Events and goings-on are processes. An event is a process seen as a whole, from its beginning to its end, as in ‘the life of Aristippus’. A going-on is a process seen in its unfolding aspect, as in ‘Aristippus is living the good’<sup>33</sup> More importantly, the relationship between an event and a going-on is analogous to that between object and matter. Objects are made of matter, just as events are made of goings-on. If this is so, then the noun ‘life’ refers to the whole event, while this event, when considered in its progressive aspect, consists of the process of living. The participle emphasizes its unfolding aspect.<sup>34</sup> Thus life and living have the same processual referent, but with a different focus. Given the mirrored structure, it is likely that the same should be the case for dying and death. Death should then be an extended process consisting of a progressive dying.<sup>35</sup> The conclusion fits Heraclitus’ mobilism. The ingredients of Heraclitean transformative change are extended processes.

(ii) The anti-cognate internal object appears in each clause and tells us that A is living the death of B and B is dying the life of A. According to (i), the living of A is constituted by the death of B and the death of B stands for the progressive dying of B. Thus, while there is the living of A, there is also the dying of B. If so, the opposite processes will be co-extensive. The symmetric construction, in which living/ death is mirrored by dying/ life, reinforces the suggestion of co-extensibility. So whenever one opposite is changing into another, there will be some measure of both opposites in the dynamic mixture. Of course, they will be in different amounts during the transformation. In the transition from white to black, there may be 61% black and 39% white at  $t_1$ , and then 62% black and 38% white at  $t_2$ .

(iii) Finally, I want to focus on the question of whether ‘A living the death of B’ precedes or is simultaneous with ‘B dying the life of A’. B36 proves that reciprocity is a relevant feature of Heraclitus’ worldview. It might then be tempting

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33 See the discussion on progressive nominalizations in Stout 2016.

34 One may point out that the participle is perfect. However, the use of the imperfective in almost all translations indicates that people are reading it is a case of *perfecta intensiva* (see Laks & Most 2016; Hussey 1999; McKirahan 2010, Graham 2006). Homer uses the perfect to describe situations such as ‘I am bleeding!’ much more pungently than ‘I’ve lost blood’ (See Kühner & Gerth 1992, sec. 384). Marcovich 2001 and Lebedev 2004 use ‘live’ instead of the participle. Thus they also emphasize the present and not the perfect as an already concluded process. If so, the participles in B62 do not indicate the present result of a finished action but rather an emphatic going-on.

35 As mentioned in the discussion of B36, the Greeks usually treated *thanatos* as an extended process.

to adopt a successive reading of B62, in which A living the death of B at  $t_1$  precedes B dying the life of A at  $t_2$ . After all, the chiasmic structure reappears. However, if this were the case in B62, the text would have to read ‘A lives the death of B and B lives the death of A’. That is, the process of ‘living the death’ that occurs in successive times is the same, while the order of terms change in a reciprocal fashion. First from A to B, then from B to A. Interestingly, this is exactly what we read in B77b, which is supposed to be an inaccurate rendering of B62.<sup>36</sup> However, B62 has a different structure and thus brings new information. The chiasmus is in the description of the process, not in the terms. The structure is ‘A lives the death of B and B dies the life of A’.<sup>37</sup> So if there were a sequence, Heraclitus would be saying that A lives the death of B, and in the sequence B dies the life of A. But if A has lived the death of B in the first clause, there is no B left to die in the second clause.<sup>38</sup> So it makes more sense to take what happens in both clauses as simultaneous. What we have in the whole construction is a description of the same process. The question then is what motivates Heraclitus to say ‘A lives the death of B and B dies the life of A’ instead of just ‘A lives the death of B’

### 3.2 *An Active/Active Model of Change*

The previous investigation suggests that the terms (i) life/living and death/dying are extended processes. Regarding each clause, (ii) it seems that the living of A is co-extensive with the dying of B. Finally, (iii) the consideration of the whole phrase suggests that A living the death of B is simultaneous with B dying the life of A. To see what this simultaneity might mean, I want to start with what seems to be the most natural reading of ‘living the dying’

Given the anti-cognate internal object, the living of A occurs together and interacts with the dying of B. A natural reading of this scenario is that the living plays an active role while the dying plays a passive role. The change as a mixture would then consist of an active ingredient acting upon a passive one. To say that A lives the death of B may still sound paradoxical, but the relationship

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36 See 77B “we live the death of those, those live our death” (trans. Laks & Most).

37 The use of *de* to connect both codas is not enough to make a decision. The particle is used to indicate an additional connection, which fits the simultaneous reading proposed in the sequence. However, it is hard to differentiate between the additional and the progressive senses. The latter would favour a reciprocal reading (see Denniston, 1954, xlvi).

38 Heraclitus did not use the most natural *houtos, ekeinos*, to indicate a precise distinct reference such as ‘this’ and ‘that’. Instead, he repeats the same ambiguous demonstrative *ekeinos* (see also B88). I believe that this ambiguous choice reinforces the reading of the two clauses having the same reference in a certain way. My suggestion is that they are the same as being constituents of a mix, as in the case of Heraclitus’ union of opposites.



of consumption offers an illuminating analogy. A consuming B means that an active process A increases at the expense of a passive process B. To take an ancient example (A30), the fire consuming wood could be understood as the living of the active fire coming from the passive dying of wood.

If this is Heraclitus' position, he would be in line with Plato and Aristotle, who sometimes describe change as a relation between an active and a passive item.<sup>39</sup> This reading is promising because it offers a physical model for the interaction between the two terms in the mixture that accounts for the generative aspect that is a central feature of Heraclitus's worldview. In this reading, however, the second clause, B dying the life of A, would be nothing more than a redundant way of expressing the same relationship. In the example, fire is consuming wood and wood is being consumed by fire. They would be the same only in the sense of being synonymous. Moreover, such a model is not sufficient to account for reciprocity, which, as we saw in the discussion of B36, is another fundamental aspect of the Heraclitean change between opposites along with generation. In change as consumption there is no explanation of why, at some point, the passive process will become active and the active will become passive.

I believe that the consideration of the relationship between the two clauses in the description of change in B62 may suggest a more satisfactory reading. The dying of life is a mirrored version of the living of death. The latter is clearly active, as the consumption reading suggests. Given the symmetry, the 'dying' in dying the life – which also appears in the active voice – should also play an active role. If so, dying could be seen as another active process rather than a passive one. Heraclitus' description of change in B62 would thus suggest the interaction of two active processes.

To assess the plausibility of the active/active model, consider the scenario of a rock sinking into the water. The active/passive interaction would describe this scenario as the rock pushing the water and the water being pushed by the rock. A Heraclitean active/active model provides a different description. The effect of the rock sinking is the result of the rock pushing the water and the water, while simultaneously pushing the rock back, losing out against the rock. The active/active interaction turns out to offer a better description. However the example is only illustrative because it focuses on discrete substances pushing each other mechanistically. In Heraclitus, the processes mix. In order to

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39 A more precise description of such a model is to see change as expelling. For instance, something becomes hot because the hot expels the cold in it (*Phaedo* 104c). If this is so there will be no real contradiction. However, this ends up being a mechanistic view with no interaction or transformation.

express this simultaneous interaction of two active and opposite processes, he needed the two clauses A is living the dying of B, while B is dying the living of A. The co-occurrence and interaction of two active processes is causally necessary for the whole process to go on.

Once the mixture consists of two active ingredients, the model can account for the embedded reciprocity. No change from active to passive state of either process is required. Given the interaction between two active processes, active A feeds on the activity of B to progress. As it progresses, it reduces the activity of B. Thus, after A has lived the death of B for too long, B will be scarce. If so, A will have no more resources to grow, while B will find plenty of A available. Then the chances are that B will begin to live the death of A. The direction of the whole process will reverse. So there is a physical reason for reciprocity.

The interpretation is consistent with what has been seen in the previous fragments. B62 offers a description of the process of change. B36 focuses on the structure. It does not take much imagination to imagine a unified reading of the description of change in B62 within the structure of B36. For example, “it is death for water to become earth” would be more accurately described as earth living the dying of water, while water dying the living of water.<sup>40</sup> This is a case of elemental change, but Heraclitus uses living and dying as general terms analogous to generation and corruption. Thus, as the pairs in B88 suggest, the model can be applied to many kinds of change.

B126 provides an example.<sup>41</sup> The fragment presents opposing processes presented in a chiasmic structure. Moreover, in each pair the subject and verb are anti-cognates, as in hot cooling and cold heating. Given the similarity, the fragment strengthens the proposed reading. Heating should be seen as heat living the dying of cold. Furthermore, cold should be seen as an active process rather than a privation of heat, so that cold can also live the dying of heat.

#### 4 War

On the basis of a detailed interpretation of B62, I have argued that transformative change in the union of opposites should be understood as the interaction of two active processes going in opposite directions. The result is a specific case

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40 B76, which is probably a corruption of B36, presents ‘earth living the dying of water’. The construction however falls into the common-sense and misses the need of the dying the life to present a proper description of the relation.

41 “Cold occurrences heat, hot occurrences cool, wet occurrences dry, dry occurrences moisten” (B126; my translation following the text as established by Dilcher (1994, 276–277)).

of real contradiction. I would now like to explore how Heraclitus' use of war to characterize generation provides a suitable image for the above interpretation.

One must know that war is in common, that justice is strife (*erin*), and that all things come about by strife and constraint.

DK B80; trans. LAKS & MOST

Homer said that war is common, in the sense that those who kill will end up being killed: "he that hath slain shall himself be slain" *Iliad* (= *Il.*), xviii, 309).<sup>42</sup> Equivalence by transformation from one opposite to the other fits Heraclitus' framework of the union of opposites. However, the transformation from an active killer to a passive being killed is incomplete. This would be one of the reasons why Heraclitus criticizes Homer (B42). Once dying is intertwined with living, generation should be added to the unifying picture of war. And this is what the last clause of B80 does. Everything comes to be through strife.

Even if the link between generation and war still sounds shocking, it is hard to find a more appropriate image for the interaction of two opposing active processes than the conflict between two opposing armies. One might reply that the interaction between two armies is closer to a mechanistic push-and-pull model than to a mixture. But this does not seem to be the case for the Greek imagination. Homer, for example, describes the clash of armies as follows

Trojans and Danaans, joined in fierce conflict. And as the East Wind and the South strive with one another in shaking a deep wood in the glades of a mountain...

HOMER, *Il.* 16, 764–765, trans. MURRAY

Armies are likened to winds, which are more processual than thing-like, and as such are capable of blending into a mixture. This is not a cherry-picked example. Homeric natural metaphors for strife such as a flood (*Il.* 17.750–755), a flock of starling (*Il.* 17, 756), and blazing fire (*Il.* 17, 246), confirm the processual tendency. The armies are also said to unite (*sun* ) in conflict, not unlike the opposites being one for Heraclitus. Moreover, both armies are active and move in opposite directions. Such an image, certainly part of Heraclitus' repertoire, offers a vivid visualization of the active/active interaction between the opposing processes. The winning army experiences the dying of the losing army in an interaction where the losing effort is also causally responsible for the resulting change.

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42 See also Archilochus (fr. 38 Diehl).

The metaphor of war can thus illustrate the description of transformative change as living the dying and vice versa. Conversely, the description of change in B62 can also provide a more determinate reading of the role of war in Heraclitus. The strife between A and B would mean that an active process A increases to the extent that it gains from an active process B, which is also trying to take something from A. B8 provides even more linkages with other central tenets of Heraclitus' worldview.

Heraclitus [scil. says] that what is opposed converges, and that the most beautiful harmony comes out of what diverges, and that all things come about by strife.

DK B8; trans. LAKS & MOST

Generation by strife is associated with the hidden harmony between opposing processes. In the reading above, the real contradiction provides a physicalist reading of this harmony, it consists of a physical interaction between the opposites, instead of a mere harmonic arrangement. Accordingly, most interpreters of B8 agree that we should read *harmonia* as a physical connection instead of the latter sense of a musical harmony.<sup>43</sup> The connection is then described as a convergence between divergences (see also B51, B10). War can easily be seen as the convergence of divergent armies, especially if these are seen as wind-like. They converge in the same strife. The opposite processes thus form one process. Their interaction as divergent ingredients feeds the dynamic. Thus, the reading above provides a suitable reading of the paradoxical text in B8. An even more precise model comes from considering the relationship between their actions.

The hidden harmony is often associated with the interdependent role of measures in Heraclitus. Roughly, what one side gains, the other loses. The most explicit case is the cosmos as a fire "kindling in measures and quenching in measures" in B31. An observational example usually alluded to is how the longer days of summer derive their preponderance from the shortening of the nights. In line with this dependence of measures, the active-active interpretation of A living the dying of B and B dying the living of A provides a model by which the quantities of dying B are gradually transported to living A. Thus, the gradual continuous change in the direction of the prevalence of A is a function of what is lost by the also dying of B. The same applies to the model of war as a mixture of two armies in a strife. Army A gains from what it takes from army B. Due to the transport of quantities, the scarcer B becomes, the less resources

are available for A to advance. As the losing or dying B is actively trying to win or live, the tendency is for the direction of transformation to be reversed.

I hope this is enough to show that the two characterizations of transformative change fit together. Both suggest a genuine dynamic mixture of opposites leading to a real contradiction. Heraclitus created a stylistic figure, living death dying life, and a shocking metaphor, war as generation, to conceive of the transformation between opposites. The detailed analysis of the description of change developed above promises to offer a determinate physicalist reading of several important motifs of Heraclitus' worldview, including the case of elemental change, hidden harmony, and the relationship between measures in a transformation. However, a more detailed investigation will have to wait for another opportunity. My aim here has been to present these motifs as reinforcing evidence for the reading of the description of change presented above.

## 5 Conclusion

I have argued that the most popular interpretations of the union of opposites end up attributing to Heraclitus a view in which there is no change or in which change is conceived as static. Alternatively, I suggested that the early Presocratics vision of change as mixture might provide the background for a dynamic reading of the transformative change between opposites in Heraclitus. Since the opposites are ingredients in the same mixture, the price to be paid is that real contradictions occur. This is how heracliteanism was received in the classical period by Plato and Aristotle. Heraclitus's paradoxical style suggests that he was aware of this feature. I have used the description of change in B62 as my main evidence. Living the death, a construction in which the opposite meanings of verb and object characterize an anti-cognate internal object, indicates the co-occurrence of opposite processes. An examination of the whole phrase 'living the death, dying the life' suggested its characterization as the simultaneous occurrence of two active processes going in opposite directions. This interpretation fits with other Heraclitean motifs, such as the generative power of opposites at war, the hidden harmony as a physical connection, and the inverse proportion of increasing and decreasing measures. It also offers a model capable of explaining the basic features of the Heraclitean change between opposites. The juxtaposition of opposite processes grounds the union of opposites without the need to postulate a substratum or supervening structure. Finally, the interaction of opposites in the mixture can physically explain how generation occurs and its structural reciprocity.

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