

Maria Michela Sassi

How Musical was Heraclitus' Harmony? A reassessment of 22 B 8, 10, 51 DK

Abstract: This essay provides a comprehensive and detailed analysis of a cluster of Heraclitus' fragments that revolve around an image of 'musical' harmony (B 8, 10, and 51 Diels-Kranz). The aim is to demonstrate that more numerous as well as more specific references to contemporary musical practice can be found in these fragments than is usually thought. In particular, it is argued that in his talk of cosmic *harmonia* Heraclitus might well know and exploit a musical sense of this word, namely, that of 'attunement', which was already developing at his time from the primary meaning of 'connection' and 'agreement'. Furthermore, it is shown that the investigation of musical patterns with which Heraclitus was clearly acquainted offered him a significant analogical ground for his reflection on the order and rationality of *kosmos*. He was not apparently interested in the numerical definition of musical patterns, and thus there is no need to assume any influence of earlier Pythagorean research on his theory of cosmic harmony: the other way round, this theory was likely food for thought for Philolaus.

Keywords: Attunement, Connection, Harmony, Heraclitus, *Kosmos*, Music, Pythagoreanism

DOI 10.1515/rhiz-2015-0002

I shall argue in this paper that the group of fragments B 8, 10, 51 of Heraclitus have a more coherent story to tell than we are used to thinking, as they cluster round an image of 'musical' harmony, conceived as particularly fit for illustrating the strict imbrication of unity and diversity of all things. However, I shall leave aside as much as possible all issues about the nature and role of the opposites in Heraclitus' thought, as I prefer to focus on a different question, which I find to be no less central to the philosophical landscape of the early fifth century – namely, whether the notion itself of musical *harmonia* might be enough 'in the air', at that time, to provide Heraclitus with such a powerful model of description.

I set out the fragments to be discussed according to a progressive order of complexity (let alone interpretative controversy), which happens to coincide, not

Maria Michela Sassi: Dipartimento di Civiltà e Forme del Sapere, University of Pisa, Via P. Paoli, 15, I-56126 Pisa, Italy, E-mail: michela.sassi@unipi.it

by chance perhaps, with the increasing density of the musical references I intend to shed light on in my reading – and with a three-step development of my argument.

I

B 8 (Arist. *EN VIII.2* 1155^b4–6): τὸ ἀντίξουν συμφέρον καὶ ἐκ τῶν διαφερόντων καλλίστην ἄρμονίαν [καὶ πάντα κατ' ἔριν γίνεσθαι = B 80].

Opposition brings together, and from differing tones comes the most beautiful attunement, [and all things come about according to strife].

In examining whether friendship is a ‘kind of likeness’ or the other way round, Aristotle has just quoted loosely a fragment of Euripides (fr. 898.7–10 Nauck) where the mutual attraction of the cosmic opposites is described. It is likely that Heraclitus’ words, too, are freely adapted to this context, and Aristotle seems indeed to compact in a unique paraphrastic turn three separate sentences, the last of them echoing the phrase *ginomena panta kat'erin* in B 80. However, in the first two sentences a few genuine elements do remain, which are of the utmost relevance to our discussion.¹

To start with *to antixoun sumpheron*, *antixous* is an Ionic word that occurs nowhere else in Aristotle,² and thus looks very much like having been used by Heraclitus to express the idea that ‘opposite things are in agreement’. Moreover, while we would expect *sumpheromenon* in the middle voice (as in B 10 and 51) instead of *sumpheron* in the active, the latter is confirmed by its occurring in the Heraclitizing section of *De victu*, 1.18.1 (a passage to which I return below).

Things get more complicated with *tōn diapherontōn kallistēn harmonian*. Kirk pointed out that *kallistē* could be accepted at best as a ‘decorative’ epithet, arguing that an aesthetic qualification would not be suitable to *harmonia*, as the only possible meaning of this term is ‘connexion’. (Despite the evidence of the meaning ‘agreement’ in the epic literature, Kirk strangely claims that ‘concord’ is

¹ Kahn (1979), pp. 62–3, put B 8 (LXXV K.) into brackets and supported in the commentary (p. 193) the then ‘general’ view that it is a paraphrase of frs. 80 and 51 (see also Marcovich 1978, p. 82); however, he was inclined to save as Heraclitean at least *to antixoun sumpheron*.

² By contrast, the uncontracted form *antixoos* occurs frequently in Herodotus (1.174; 4.129; 6.7, 50; 7.49, 150, 192, 218; 8.119). Cf. also Pind. *Ol.* 13.34.

'not a meaning Heraclitus would have known'.³ Moreover, he added, even admitting that *harmonia* may bear the meaning of musical 'scale', i. e., a succession of tones following a specified pattern of their intervals, saying that 'the fairest scale is formed out of different notes' would not make sense, for 'unless the notes are different it would not be a scale at all'⁴ – a nice point indeed, that actually encouraged me to develop a defence of the superlative voice *kallistē* I will propose below. In any case, in commenting on B 51 as he had previously done, Kirk had argued that the musical meaning, while attested in the early fifth century lyric, is too 'technical' for Heraclitus.⁵ No wonder he concludes that the second statement in B 8 must be an 'inaccurate paraphrase' of the words *diapheromenon sumpheretai palintonos harmoniē* (as he reads B 51).⁶

Now, it is true that 'joining', 'fitting together' is the primary sense of the word *harmonia*, derived from the root *ar-* ('fix', 'join', cf. *arariskō*), and the one it bears more often (so as the etymologically akin verb *harmozō*) in a few Homeric descriptions of works of carpentry and shipbuilding. However, there are no reasons to exclude (as Kirk flatly does) that Heraclitus might well know and exploit a musical sense of *harmonia*, which was already developing at his time from those of 'connexion' and 'agreement'. Not only is the semi-technical sense of 'musical composition' already attested for this word in Pindar and Sappho (Pind. *Pyth.* 8.68, fr. 140b.2 Snell-Maehler; Sapph. fr. 70.9 Page), but it is noteworthy that at the time of, or even earlier than, Heraclitus a few authors started investigating the effects of the different dispositions of intervals on the heptachord lyre (whose structure is the conjunction of two tetrachords), thus establishing such distinct 'scales' as the Lydian, the Phrygian and the Aeolian, and that *harmonia* was soon adopted as the term for 'scale', namely, scheme of attunement (Hippasus, 18 A 15 DK; Lasus, fr. 1.3 Page; Pratin. fr. 6.7 Snell, 5b.3 Page; see also Pind. *Nem.* 4.45 on a Lydian scale being operated on a *phorminx*). This choice is simply obvious in the light of the peculiar tendency of early Greek musical theorists to draw their lexicon from non-technical language, as scholars of ancient Greek

³ Kirk (1954), p. 220. While this view about the pre-Heraclitean meanings of *harmonia* is more or less *communis opinio* (see, e.g., the account otherwise enlightening of Gianvittorio 2010, pp. 120–26), it should be observed that what are actually found to express both the sense of 'joint' and that of 'agreement' are either the plural *harmoniai* (*Od.* 5.248, 361; *Il.* 22.255) or the allusive names, respectively, of the artisan *Harmonidēs* (*Il.* 5.60) and of the goddess *Harmoniē* (*Hymn. Apoll.* 195, *Hes. Theog.* 937).

⁴ Kirk (1954), p. 220.

⁵ Kirk (1954), pp. 204, 207–8.

⁶ Kirk (1954), p. 220.

music have recently insisted on.⁷ A little less obvious is the claim I am trying to make, namely, that the denotation of *harmonia* in B 8 is a feedback of the semantic development of this word in the field of musical theory, as this was fertile ground to Heraclitus for a number of analogies helping describe the particular unity-in-opposition that binds the diversity of nature.

I also think that the words *tōn diapherontōn kallistēn harmonian* may not only actually belong to Heraclitus, but give too a significant touch to the picture of a world of opposites. In this world, discovering how apparently discordant things harmonize into a deeper, universal order may well arouse both theoretical satisfaction and a kind of aesthetical appreciation – in the same vein Heraclitus may have spoken in B 124 of ‘the most beautiful order in the world’, *ho kallistos kosmos*, ‘arising from what is random heaped and profused’, so creating both here and there a typical oxymoron.⁸ And in this reading, we have to carefully consider the possibility that *harmonia* conveys the sense of ‘musical attunement’ as well – the entire line of my argument is actually based on the ‘density canon’ Charles Kahn applied to interpreting Heraclitus, which let him write that

on the view of Heraclitus’ verbal technique ... we expect to find *harmonīē* used in all available senses: as a physical fitting together of parts, as a principle of reconciliation between opponents, and as a pattern of musical attunement.⁹

Not only did Heraclitus not need to be a professional musician to be acquainted with the investigation of musical patterns; we do not need either to make conjectures on any Pythagorean influence to explain his attention to the musical phenomena, as he is not apparently interested to the mathematical description of the musical patterns, which was the focus of Pythagorean research – it may well be that in B 8 he is polemically echoing the Pythagorean *akousma* asking *ti kalliston*; the answer, of course, being *harmonia* (58 C 4, Iamb. VP 82). We have only to assume that he shared that widespread knowledge of the basic musical facts that was allowed by the top position music had since ancient times in Greek culture,

⁷ See for instance Rocconi (2003) and Barker (2005), both rich in information about early Greek musical terminology and concepts. It should be stressed that the ancient *harmonia*, as produced by a ‘sequence’ of sounds based on a certain attunement of the instrument, to which a definite pattern of relations between the notes and the intervals corresponds, is essentially different from the modern notion of harmony, that is, ‘consonance’ of voices and sounds. Simultaneous playing of several instruments had no place in Greek musical practice.

⁸ See the text of this fragment as edited in Mansfeld and Primavesi (2011), p. 288: τὰ ἀρξτ εἰκὴ κεχυμένων κάλλιστος, φησὶν Ἡράκλειτος, ὁ κόσμος.

⁹ Kahn (1979), p. 196 f. (in discussing fr. 51).

the ability to play such not professional instruments as the lyre being essential to education long before the fourth century, and certainly not only in Athens.¹⁰

That music was matter of general knowledge explains inter alia why the Greek musical lexicon developed, as I mentioned, through giving technical meaning to a number of terms of the current language. In this regard it is worth noting too that the couple *oxus/barus*, while pertaining primarily to tactile perception, were used from the Homeric poems onwards to describe respectively 'sharp' and 'deep' cries or other sounds, often charged with strong emotional effects (e.g., *oxus*: Hom. *Il.* 17.89, 17.256, 18.71, 22.141; *barus*: Hom. *Il.* 1.364, *Od.* 9.257), and thus were ready at once to function as specialist terms for the higher and lower pitches of the musical scale.¹¹ It would be not surprising to find that Heraclitus was keen on exploiting this opposition, and Aristotle seems indeed to confirm that he did so. In fact, when reporting in the *Eudemian Ethics* that Heraclitus reproached Homer for making Achilles pray that 'conflict might vanish from among gods and humans' (*Il.* 18.107), thus showing inability to recognize the role of strife, Aristotle relates this attack to Heraclitus' notion that there would be no harmony if there were no high and low pitches, nor animals without female and male, as opposites are necessary for engendering new units through combining (*ou gar an einai harmonian mē ontos oxeos kai bareos oude ta zōia aneu thēleos kai arrenos enantiōn ontōn*: *EE* VII.1 1235^a28–29, 22 A 22 DK).

From accepting Aristotle's opinion that Heraclitus' concept of harmony is closely tied to the high/low pitches opposition¹² an important consequence

10 While what most easily occur to one's mind are a few passages of Plato attesting that learning and playing the lyre was common practice for the well-bred Athenian youth of the fourth century, highly recommended as well under certain conditions in an ideal state (e.g., *Pl. Ly.* 209B, *Prt.* 312A–B, 326A–B, *Lg.* 810A, 812D–813A), several earlier literary sources and vase paintings confirm that this kind of learning was contemplated in aristocratic education from Homeric times to the fifth century (see Maas and McIntosh Snyder 1989, pp. 4–6, 36–39, 86–91). Further substantiation for other areas of the Greek world comes from archaeological evidence proving that both male and female members of the aristocratic elite used to play musical instruments (both stringed and auletic) at occasions for symposiastic entertainment or at religious ceremonies (see Bellia (2012a); Bellia (2012b), esp. pp. 51–83; Bessi (1997)). Ephesos was certainly no exception: see Beschi (2001), p. 175.

11 See Rocconi (2003), pp. 54–57.

12 While the biological example may be Aristotle's addition, perhaps reminiscent of the Pythagorean table of opposites where the couple male-female is listed (whereas it is absent in Heraclitus' fragments), it is unlikely he invented afresh the musical example. Cf. Mondolfo and Taràn (1972), pp. 171–77, exploiting the musical reference in Aristotle's testimony in their interpretation of B 10; Osborne (1987), p. 149; Osborne (2009) on Aristotle as a reliable source for Heraclitus (particularly on the harmony of opposites, see pp. 423–424); Sider (2009), trusting that Aristotle was one of the happy few (as were Plato, Theophrastus, and Sextus Empiricus) to quote Heraclitus from the original text.

follows for the wording *tōn diapherontōn kallistēn harmonian* in fr. 8. I guess that in the *Nicomachean Ethics* Aristotle simply dropped some adverb like *malista*, or *pleista*, which must have been there to specify that the ‘most beautiful connexion (harmony)’ is that produced from ‘the most different, i. e. opposite, things (pitches)’. Further emphasis on the distance between them would add effectiveness to the oxymoron I previously noted in this sentence,¹³ but also would restore into the statement the meaning Kirk complained that he could not find in it. I will try to explain in the next section which kind of *harmonia* from which kind of sounds is possibly involved here.

For now I simply want to argue that my conjecture may be substantiated in the light of two *loci paralleli* (as I venture to call them). The first and more compelling one is a passage in Book 1 of the Hippocratic writing *De victu*, a text on which Bernays’ recognition of a rich Heraclitean influence, while much limited by later scholarship, is still largely plausible in my view.¹⁴ In *Vict.* 1.11–24 the author gives a list of the *technai* that mimic human nature in bringing different things to agreement (1.11.1: *sumphora panta, diaphora eonta ... hupenantios ho tropos hekastōn homologeomenos*). So architects (1.17.1–2) build houses through combining different materials, namely, through drying wet elements and wetting dry elements, so that ‘all these different things are brought into concord’ (*tauta panta diaphora eonta sumpherei*), similarly to how doctors operate when restoring a healthy physical balance in the patient through a proper diet. Music is introduced at this point as a further instance of the converging in the harmony of nature of all things that are ‘different’, and, what is more, to clarify that the best accords consist of the ‘most different’ items.

Hipp. *Vict.* 1.18.1: ἁρμονίης συντάξεις ἐκ τῶν αὐτῶν οὐχ αἱ αὐταί, ἐκ τοῦ ὀξέος καὶ ἐκ τοῦ βαρέος, ὀνόματι μὲν ὁμοίων, φθόγγῳ δὲ οὐχ ὁμοίων· τὰ πλεῖστον διάφορα μάλιστα συμφέρει, καὶ τὰ ἐλάχιστον διάφορα ἥκιστα συμφέρει·

From the same notes come harmonic compositions that are not the same, from the sharp and from the deep, which are alike in name but not alike in sound. Those that are most different make the best concord; those that are least different make the worst.

My second, admittedly more problematic comparison is with the beginning of Eryximachus’ speech in Plato’s *Symposium*. While there is general agreement that

¹³ See p. 6 above.

¹⁴ Bernays (1885). In his recent reassessment of the issue, Barker (2005), pp. 75–95, goes so far as to suggest that *De victu* may be how Plato became acquainted with Heraclitus’ doctrine of the unity of opposites.

the section 187A1–C5 is a pastiche of the fragments B 10 and 51 of Heraclitus (who is even mentioned at 187A4), aimed at supporting the view that nature is founded on the dynamic tension and the unification of opposite items, in my reading the Heraclitean replay starts a few lines earlier, with echoes as well of the second statement of fragment 8.¹⁵ In fact, Eryximachus starts his praise of medicine by saying that the best doctor is the one who is able to make ‘the most hostile parts of the body into friends, making also sure that they love each other’, and that ‘most hostile are the most contrary parts’ (*esti de echthista ta enantiōtata*), the cold and the warm, the bitter and the sweet, the dry and the wet’ (Pl. *Symp.* 186D6–E1). The kind of contrary items mentioned in Eryximachus’ list suggests that the primary reference here is to Alcmaeon’s definition of health as *isonomia* of the various powers in the body, these powers including exactly wet and dry, cold and warm, bitter and sweet ‘and the rest’ (24 B 4). This is anything but unexpected in the speech of such a physician as Eryximachus, committed to forcing Heraclitus’ use of musical images, originally targeting the relation between opposites within the *phusis* of something, into a statement of the reconciling power of the musical *technē* itself, parallel to that of medicine – we have seen that a similar reading of Heraclitus is significantly at work in the *De victu*, whose author does not differentiate between nature, medicine, music in their being all activities that reconcile conflicting opposites. In any case, the superlative adjectives *echthista* and *enantiōtata* in Plato’s text seem to anticipate the discourse that follows on Heraclitus’ notion of the coexistence of concordance and discordance. In addition to this, the occurrence of these superlatives in this context could remind us of the possibility that the ‘most beautiful harmony’ mentioned in B 8 is that produced by the ‘most distant’ sounds on a musical scale.

The main point I have tried to make so far is that the musical analogy was fundamental to Heraclitus’ reading of the unity of opposites in nature and was related to the particular colour he gave to the concept of *harmonia*. In fact, Heraclitus’ notion of cosmic harmony seems not to be Pythagorean in style, since he apparently disregards, as we previously observed, the mathematical aspects of the issue, this being all the more significant because he shares with Pythagorean thought the crucial link of the notion of harmony with that of rationality and the ordering of relations between cosmic units.¹⁶ Furthermore, Heraclitus’ notion should be distinguished from that of Empedocles. While the concept of harmony is indeed equally crucial for Empedocles’ account of natural world, it does not convey any musical suggestions. In fact, Empedocles’ emphasis is rather on the

¹⁵ Cf. Wardy (2002), arguing for a Heraclitean reading of the entire dialogue.

¹⁶ This point is nicely made in Rowett (2013), pp. 11–16.

proportions between the components of the mixtures, so that the description of the craftsman's work of Love needs to play only on the material act of 'joining' the elements and 'fitting' them 'together', with that skill that is connoted effectively enough by the original meaning of the word *harmonia* (see esp. 31 B 23.4, B 96.4, and cf. B 22.5–7, as well as the participle *arērota* describing the confused connections operated by Strife in 31 B 35.17). As to Heraclitus, on the contrary, we are now well equipped to chase further musical references in the next fragment to be discussed.

II

B 10 is quoted in the pseudo-Aristotelian writing *De mundo* to support the argument that nature 'tends to the contraries, and from these, not from the similars, it attains consonance' (*to sumphōnon*, 396^b8).¹⁷ Instances of this process are shown not only in the world of the nature itself (the spontaneous union of the male and the female), but in the world of the *technai* as well, as these proceed by imitating the nature. So painters are used to mixing a definite set of pigments in order to obtain the most harmonious creations (an image going back to Empedocles' B 23), just as the musicians do in joining the high and the low pitches (this possibly referring to Heraclitus' concept, filtered through Eryximachus' speech), and as the men of letters do in combining vowels and consonants. We are told at this point that 'the same is said by the 'obscure', as he is called, Heraclitus', and B 10 is introduced.

B 10 ([Arist.] *Mund.* 5 396^b20–22): συλλάψεις¹⁸ ὅλα καὶ οὐχ ὅλα, συμφερόμενον διαφερόμενον, συνᾶιδον διαῖιδον, καὶ ἐκ πάντων ἔν καὶ ἐξ ἐνὸς πάντα.

¹⁷ *Sumphōnia* means the particular 'consonance' resulting from two concord notes (the one played on the instrument, the other modulated by the singing voice) blending in, and being perceived as, a whole. While common in fourth-century and later thought, this notion was unknown in Heraclitus' time. Therefore, when found in Eryximachus commenting on Heraclitus' sayings (see below, pp. 19 f.), it should be seen as an updated (and unfaithful) translation of *harmonia* (this is clear at Pl. *Symp.* 187B4–5: ἡ γὰρ ἄρμονία συμφωνία ἐστίν, συμφωνία δὲ ὁμολογία τις). As I said (see above, n. 7), *harmonia* meant instead for Heraclitus a combination of sounds according to a certain 'diachronical' pattern.

¹⁸ The manuscripts of the *De mundo* are here in notorious mess. While I share the reasons for (slightly) preferring *sullapsies* expounded by Marcovich (1978), p. 72, it should be noted that the alternative reading *sunapsies* would bear the same meaning, with a number of testimonies of its own.

Conjoinings: wholes and not wholes, convergent divergent, consonant dissonant, from all things one and from one thing all.

Sullapsies is a puzzling word I am going to dwell on later, yet it likely bears here the meaning of 'takings-together'¹⁹ or 'conjoinings' of items in the world, some general features of which are described in the antitheses that follow.²⁰ So a given set of things taken together covers a whole and at the same time it does not, as it is not inclusive of the universal totality; while blending in unity, it maintains internal diversity; finally, the one and the all are both constantly present in any sub-cosmos of things.²¹ The pair of participles *sunaidon/diaidon* works here most clearly as a musical image of the unity-in-opposition of all things, close yet not identical to the image of *harmonia*, as *sunaidon* means 'singing in tune', with reference either to the concord of many voices in a chorus, or to the instrumental accompaniment of a melody. The strength of the musical metaphor was caught a long time ago by Bruno Snell, who also argued that *diaidon* (a *hapax*) is coined by Heraclitus through analogy with *diapheromenon*, to express the meaning of 'singing out of tune' that the term *apaidon* would later have.²² I would like to suggest that the musical sub-text in this fragment is more extended than that.

Let us look first at the pair *sumpheromenon diapheromenon*. I find it likely that these words as well had a musical connotation, which the admirer of Heraclitus that I believe Plato to have been duly recognized and exploited in the *Sophist*, contrasting Heraclitus and Empedocles in respect to their different ways of relating unity and plurality.

19 The *nomen actionis sullapsis* cannot mean 'things grasped together' as proposed, e.g., by Snell (1941), p. 87 (wondering if *sullapsis* might mean 'Zusammengesetztes' next to 'Zusammensetzung'); Kirk (1954), pp. 167, 173 (= Kirk-Raven-Schofield 1983, p. 190); Robinson (1991), pp. 15, 81–83. Interesting comments on the meaning of the active sense are to be found in Shipton (1985), p. 113 n. 8, and Gianvittorio (2010), pp. 123–26 (although both of them prefer to read *sunapsies*).

20 The argument of Snell (1941), p. 87, on *sullapsies* being the subject and the succeeding pairs of opposites its predicates (against the contrary view prevailing at the time, and still shared by Marcovich 1978, pp. 72–3) has been generally followed. See, however, Dilcher (1995), pp. 112–16, for the proposal of a different punctuation of the fragment, implying a different relation of the three pairs of terms to the notion of "conjunctions" (with emphasis on the dialectical sense of the fragment, as referring to intellectual grasping, rather than to connections in the physical world as I prefer).

21 I agree on the whole with Kahn's account on this fragment (Kahn 1979, pp. 281–286), including the view that the final sentence 'one things from all, all things from one' should not be referred *exclusively* to alternating phases of cosmic change, as it is intended to describe 'the unity-in-opposition manifested by every system of rational structure' (p. 286, my *Italics*).

22 Snell (1941), p. 86.

Pl. *Soph.* 242E2–243A1: διαφερόμενον γὰρ αἰεὶ συμφέρεται, φασὶν αἰ συντονώτεροι τῶν Μουσῶν· αἱ δὲ μαλακώτεροι τὸ μὲν αἰεὶ ταῦτα οὕτως ἔχειν ἐχάλασαν, ἐν μέρει δὲ τοτὲ μὲν ἐν εἶναι φασὶ τὸ πᾶν καὶ φίλον ὑπ’ Ἀφροδίτης, τοτὲ δὲ πολλὰ καὶ πολέμιον αὐτὸ αὐτῷ διὰ νεϊκός τι.

Disagreeing always agrees, say in fact the more stretched Muses; those more relaxed, however, slackened the belief that this should always be the case, claiming that alternately the whole is sometimes one and friendly thanks to Aphrodite, sometimes instead it is many things and an enemy to itself, owing to some sort of strife.

For making the converging and the diverging of things simultaneous, the Ionian Muses (i. e., Heraclitus) are said to be *suntonōterai* than the *malakōterai*, Sicilian ones (i. e., Empedocles), that let the one and the many alternate under the cyclic rule of Love and Strife. While these comparatives are usually considered as essentially moral qualifications, and thus are translated as ‘more severe’ and ‘softer’, I suggest adding weight to this meaning by tying it closely to a ‘pragmatic’ level pertaining to the sphere of musical attunements, which should not get lost in translation.²³ In fact, *malakai* (or *chalarai*) is found describing the Ionian and the Lydian harmonies in a passage of the *Republic* (398E), where the characteristically languishing effect that these kinds of attunements cause in the soul is explained by the lower sounds produced through ‘relaxing’ the strings of the instrument, while, on the contrary, higher sounds would be produced by ‘stretching’ the same strings. As to *suntonos* as an attribute of the stretched string, it is found in place of the more common *eutonos* in a passage of Ptolemy (*Harm.* 1.12, p. 28.27–35 Düring), where the enharmonic *genos*, *malakōteron*, is contrasted to the diatonic one, *suntonōteron* — an opposition that significantly recalls the words of *Soph.* 242E2–243A1. Owing to the development of the Greek musical vocabulary from the non-technical language we mentioned above, we cannot exclude the possibility that the terms of this opposition go back to Plato’s reflection about the *ethos* of the various harmonies.²⁴ So we would not be wrong to see in the contrast between *suntonōterai* and *malakōterai* Muses a reference to opposite patterns of attunement, and thus translating these terms as, respectively, ‘stretched’, ‘tight’

²³ On the twofold meaning of the vocabulary of stretching and relaxing (both strings and characters) see Rocconi (2003), pp. 59–62, where, however, the passage in the *Sophist* is not mentioned. The presence of musical terminology in this passage may have been obscured (except for Wersinger 2008, pp. 132–33) by the fact that in the *Sophist* the Ionian Muses are said to be ‘more tense’, whereas in Greek musical tradition the Ionian mode is usually placed on the ‘relaxed’ side, as opposed to the Dorian mode. Yet in Plato there prevails of course the desire to toy with Heraclitus’ geographic origin.

²⁴ See Pelosi (2010), pp. 29–67.

and 'loosened', 'relaxed'. Therefore, I suggest that we extend identification of the musical allusion in the *Sophist's* passage to the sentence *diapheromenon ... sumpheretai*, as it conveys the idea that 'what sounds apart is consonant', and thus anticipates the description of the Muses as two different patterns of consonance. The same allusion, I would conclude, may also be read in the Heraclitean pair *sumpheromenon diapheromenon*, expressing in a broader sense the coexistence of convergence/divergence of all things, while, in a narrow sense, hinting at an opposition of musical pitches, working, again, as a striking example of this universal process, just like the couple *sunāidon/diāidon* that follows.

The last point I wish to discuss in this section is the meaning of *sullapsies*. The only meaning attested in Greek literature before Aristotle for *sullapsis/sullēpsis*, *nomen actionis* of *sullambanō*, is that of 'grasping' (even mentally), which would make sense enough. However, I guess that *sullapsis* may have in the fragment a musical resonance as well, as a possible early equivalent of *sullabē*. *Sullabē*, meaning literally 'fastening' (it is used for a buckle, for instance, in Aesch. *Supp.* 457), soon became specialized both in the grammatical sense of the combination of letters in the 'syllable' and in the musical sense of the interval of 'fourth'. The musical meaning of the word is interestingly attested in Philolaus' fragment 6, which is one of the earliest texts we have of Greek music theory as well as our most important source of Pythagorean harmonics before the fourth century.²⁵

Philol. B 6.15–6 [6a Huffman] (Stob. I.21.7d): ἁρμονίας δὲ μέγεθος ἐστὶ συλλαβὰ καὶ δι' ὄξειαν· τὸ δὲ δι' ὄξειαν μείζον τᾶς συλλαβᾶς ἐπογδοῖαι

The size of harmonia (fitting together) is the fourth and the fifth. The fifth is greater than the fourth by an epogdoic [the ratio 9:8] ...

It is noteworthy that in this text, famously describing the basic structure of the octave as comprehending the 'fourth' (*sullaba*) and the 'fifth' (*di' oxeian*), the 'octave' is designated precisely by the term *harmonia*. In fact, as Andrew Barker put it, 'Philolaus' expressions *sullaba* and *di' oxeian* seem to come from the language of musicians, rather than philosophers and scientists, and *harmonia* inhabits both spheres'.²⁶ Yet the issue about music terminology the text raises is even more interesting than that, as is shown by what the Neopythagorean Nicomachus of Gerasa says when he too cites Philolaus' fragment (*Ench.* 9) in order to confirm that 'the most ancient thinkers ... call the octave *harmonia*, the fourth *sullaba* (for it is the first grasp [*sullēpsis*] of concordant notes), the fifth *di'*

²⁵ Barker (2007), pp. 263–72, offers a full analysis of this passage.

²⁶ Barker (2007), p. 264.

oxeian (for the fifth is continuous with the first concord to be generated)'. First, this remark reveals that later music writers had considerable awareness of their vocabulary having developed from an earlier, semi technical stage. The same remark is actually found in Aristides Quintilian, saying in his *De musica*, a work in which several Pythagorean and Aristoxenian elements can be recognized, that the fourth (*dia tessarōn*) was called by 'the ancients' *sullabē*, the fifth (*dia pente di'oxeiōn*), the octave (*dia pasōn*) *harmonia* (Aristid. Quint. I.8, p. 15.8–10 W.-I.; see also II.12, p. 77.24 W.-I.).

In the second and more important place, it is noteworthy that Nicomachus derives the technical use of the current word *sullabē* from the act of the fingers 'grasping' the two strings forming the first interval of fourth. The scholars on ancient music tend to accept this as a plausible explanation, possibly going back (as with the similar testimony of Porphyry, in *Harm.* p. 97.2–8) to prior Pythagorean research, of which we find early evidence precisely in Philolaus.²⁷ Therefore I think we can't exclude that *sullapsis* was part, before or next to *sullabē*, of the musical vocabulary by the early fifth century, and that Heraclitus may have used it for alluding to the musical effect of the hand 'grasping' two distant strings on the lyre.²⁸ It is remarkable that *sullabē* occurs in *De victu* 1.8.2, where the embryo is described as meeting three *harmoniai* through its development, namely, the fourth (*sullabē*), the fifth (*di' oxeian*), and the octave (*dia paseōn*). While Armand Delatte rightly put emphasis on these being Pythagorean concepts for reconstructing this corrupted text, one would not be surprised to see here too a further clue of Heraclitus' presence in the *De victu*.²⁹

Let us go back now to Philolaus' fragment, to think about the fact that *harmonia* does not indicate here any pattern of attunement whatever, but the specific attunement attained through 'fitting together' the two most distant strings on the heptachord, namely, the octave. This explains why later writers would prefer for the octave the term *dia pasōn*, referring to the fact that the first musical interval 'comprehends all the scale'. In light of this, I would hazard the possibility that in Heraclitus' B 10 the expression 'wholes and not wholes' (*hola kai ouch hola*) conceals a further musical reference, namely, to the octave. A further step in our hunting musical references in Heraclitus might be provided by observing

²⁷ See Rocconi (2003), p. 23 n. 103.

²⁸ A similar case could be made if one were to prefer *sunapsies*. In fact, both Shipton (1985) and Wersinger (2008), pp. 129–35, insisted on this being a musical term equivalent to the later *sunaphē*, although they differed on the exact meaning to be assigned to it. One could add to this dossier the expression *harmonies suntaxies* occurring in *Vict.* 1.18.1, quoted above, p. 8.

²⁹ Cf. Delatte (1930), unaware of the similar intuition that Bernays (1885), p. 17, had previously had. See also Barker (2005), p. 91 with n. 8.

the metonymical use of *harmonia* in Philolaus' fragment, where the term occurs to indicate the most 'comprehensive' among *harmoniai*, that is, the octave. For its spanning the range whose notes are coordinated most excellently, the octave was also currently considered the 'most beautiful' interval, as it is referred to in a section of the pseudo-Aristotelian *Problemata* (XIX.35 920^a28), and later on in Ptolemy (*Harm.* 1.5.23 f., p. 7.25 Düring). This may offer an additional reason for accepting the expression *kallistēn harmonian* in Heraclitus' B 8. In sum, I would assume that when mentioning the 'most beautiful harmony' produced by the 'most distant' sounds on a musical scale, Heraclitus might be thinking precisely of the octave.³⁰

In any case, we have now reasons enough to reaffirm with greater confidence that Heraclitus, while not being interested in the mathematical speculations the Pythagoreans loved, shared their concept of harmony, inasmuch as he thought that the kind of relations exhibited in the range of musical attunements clearly illustrate the rationality and order (whose principle he calls *logos*) working at the deeper, universal level of the nature that 'loves to hide' (as he put it in B 123) – the musical analogy is also central, I think, to B 54, saying that 'the apparent harmony is better than the non-apparent' (*harmonīē aphanēs phanerēs kreittōn*).³¹ I assume that Heraclitus' theory may have helped Philolaus to focus on that non-mathematical meaning of *harmonia* which is famously found in the first section of his fragment 6, where we read that harmony is the eternal being of things (*estō tōn pragmatōn aīdios*), and that by harmony of contraries 'things are bonded together' (*sunkekleisthai*).³² It is also 'striking'³³ that Philolaus would establish in fr. 7 the same intertwining of structure and unification which is crucial to Heraclitus' universe, by claiming that the first part of the cosmos to be generated by the accord of limiters and unlimiteds (the central fire) is one.

³⁰ See above, pp. 4–5, 8.

³¹ Might this be seen as a precedent for Plato's reflection in *Republic* 7 (esp. 530E–531A) on the necessity of going beyond the sensible dimension of music? Significantly, Plato is critical here of the empirical approach shared by Pythagorean harmonics: see Pelosi (2010), pp. 128–51.

³² The notion of the contraries constituting harmony is most explicit in Philolaus' fragment 10 (in Nicom. *Arithm.* 2.19, p. 115.2): ἔστι γὰρ ἁρμονία πολυμιγέων ἔνωσις καὶ δίχα φρονεόντων συμφρόνησις. However, as noted by Huffman (1993), pp. 416–17, the authenticity of this fragment is in strong doubt, since both language and style show traces of the pseudo-Pythagorean tradition.

³³ So Huffman (1993), p. 228, who is positive on Heraclitus' influence on Philolaus (see also pp. 138–41). On Philolaus being close to Heraclitus in his concern with cosmic 'structure', see also Schrenk (1994), pp. 189–90. Of course a number of important differences as well should be taken into account, such as those highlighted by Huffman (2013): indeed, it is even more significant that Philolaus found in Heraclitus so much food for thought.

Philol. B7 (Stob. 1.21.8): τὸ πρᾶτον ἄρμωσθέν, τὸ ἕν, ἐν τῷι μέσῳι τᾶς σφαίρας ἐστία καλεῖται.

The first thing fitted together, the one, in the middle of the sphere is called the hearth.

To conclude on Philolaus, to the remark that his use of the concept of *harmonia* ‘seems to form a bridge between the musical and cosmological domains’,³⁴ I would add that Heraclitus’ theory may have helped over the need to build this bridge. Keeping this in mind, let us go to discuss our last and most controversial fragment.

III

B 51 (Hippol. *Haer.* 9.9, following B 50): οὐ ξυνιασιν ὄκως διαφερόμενον ἑωυτῷι ὁμολογέει· παλίντροπος ἄρμονίη ὄκωσπερ τόξου καὶ λύρης.

They do not understand how one thing differing from itself agrees with itself; it is a conjunction turning back on itself, like that of the bow and the lyre.

B 51 is reported by Hippolytus within a series of nineteen quotations from Heraclitus (B 1 and B 50–67 DK), in a section of the *Refutatio* (9.9.1–9.10.8) aimed at comparing the concept of unity-in-opposition of the pagan philosopher to Noetus’ monarchian heresy. As the reliability of Hippolytus as a source for Heraclitus has been sufficiently argued for by Catherine Rowett,³⁵ I will deal briefly with the notorious textual problems in this quotation, simply agreeing with Charles Kahn’s judgment on the ‘needless controversy’ that happened around it, so as to obstruct the philosophical interpretation of the fragment for a long time.³⁶

Although in a few citations of the fragment *palintropos* is substituted by *palintonos*, which is a standard Homeric epithet for the bow, and also expresses the idea of tension we expect here, for these very reasons *palintropos* is to be accepted as *lectio difficilior*, as Walther Kranz was the first to see.³⁷ Moreover, *palintropos* is

³⁴ Barker (2007), p. 265.

³⁵ Osborne (1987), esp. pp. 132–86. On Hippolytus having probably at his disposal an anthology, see Sider (2009).

³⁶ Kahn (1979), p. 195.

³⁷ See Kranz (1958), p. 253, pointing out a nice parallel with the phrase *dustropos harmonia* in E. *Hipp.* 161 (which bears, by the way, a musical meaning), and definitely warning (p. 250) against the temptation to compare Heraclitus’ use of the word with what one reads in Parmenides

fit for expressing the alternate states of tension one can see in the functioning of the bow and the lyre (more on this point later on).

Similarly, there is no reason to change Hippolytus' text by reading *sumphერთαι* instead of *homologeēi*. The main point for the scholars who prefer *sumphერთαι*³⁸ is that this verb is found in Plato's quotation of this fragment at *Symp.* 187A5–6, within Eryximachus' speech.³⁹ There are more reasons for careful examination of the full context, treating the harmonisation of opposites that is the goal of arts such as music, gymnastics and agriculture.

Plat. *Symp.*186E6–187B6: μουσική δὲ καὶ παντὶ κατάδηλος τῷ καὶ σμικρὸν προσέχοντι τὸν νοῦν ὅτι κατὰ ταῦτὰ ἔχει τούτοις, ὥσπερ ἴσως καὶ Ἡράκλειτος βούλεται λέγειν, ἐπεὶ τοῖς γε ῥήμασιν οὐ καλῶς λέγει. τὸ ἔν γάρ φησι 'διαφερόμενον αὐτὸ αὐτῷ συμφέρεσθαι, ὥσπερ ἁρμονίαν τόξου τε καὶ λύρας'. ἔστι δὲ πολλὴ ἄλογία ἁρμονίαν φάναι διαφέρεσθαι ἢ ἐκ διαφορομένων ἔτι εἶναι. ἀλλὰ ἴσως τόδε ἐβούλετο λέγειν, ὅτι ἐκ διαφορομένων πρότερον τοῦ ὀξέος καὶ βαρέος, ἔπειτα ὕστερον ὁμολογησάντων γέγονεν ὑπὸ τῆς μουσικῆς τέχνης, οὐ γὰρ δῆπου ἐκ διαφορομένων γε ἔτι τοῦ ὀξέος καὶ βαρέος ἁρμονία ἂν εἴη· ἢ γὰρ ἁρμονία συμφωνία ἐστίν, συμφωνία δὲ ὁμολογία τις – ὁμολογίαν δὲ ἐκ διαφορομένων, ἕως ἂν διαφέρωνται, ἀδύνατον εἶναι· διαφερόμενον δὲ αὐτὸ καὶ μὴ ὁμολογοῦν ἀδύνατον ἁρμόσαι.

To whoever lends just some attention to that, it is clear that music is in the same condition [as gymnastics and agriculture]. Heraclitus wants perhaps to say as much, since his words are not quite clear, when maintaining that 'The one differing from itself agrees with itself, as the harmony of bow and lyre'. It is completely unreasonable to say that harmony is discord or derived from discordant things. However, Heraclitus might mean this: that harmony is created by musical art from the high and the low [itches] that were previously discordant, but came afterwards to agreement. Surely there can be no harmony from high and low whereas they are still in discord, since harmony is a consonance, and consonance is a kind of agreement. It is impossible that agreement arises from discordant elements, so long as they are discordant, and it is impossible that what is discordant and does not agree is in harmony.

Let us note in passing that Eryximachus is 'taming' Heraclitus' conception of *harmonia*, which he considers 'unreasonable' for 'supposing the impossible', namely, that anything could be at once disagreeing and in agreement with itself. One should assume instead, he argues, that what were contrary things formerly

(*palintropos keleuthos* fr. 6.9). *Palintropos* is accepted, e.g., by Vlastos (1955), pp. 348–51; Kahn (1979), p. 195; McIntosh Snyder (1984), pp. 91–2; Osborne (1987), p. 152; Robinson (1991), p. 116; Mansfeld and Primavesi (2011), p. 264; Mouraviev (2011), p. 14. *Palintonos* is favoured, e.g., by Kirk (1954), pp. 211–15 (= Kirk-Raven-Schofield 1983, p. 192); Shipton (1985), p. 115 n. 17; Marcovich (1978), pp. 86–7.

³⁸ Among them, Kirk (1954), pp. 204–6; Vlastos (1955), p. 348; Marcovich (1978), p. 86.

³⁹ I discussed above, pp. 8–9, a few Heraclitean references in other sections of this speech.

are to reach final and peaceful agreement through achieving consonance. Quite significantly the word *sumphōnia*, meaning a ‘consonance’ resulting from two concord notes, occurs in this passage more often than *harmonia*, which conveys a stronger sense of dissonance. This is evidence that, despite his explicitly referring to Heraclitus, Eryximachus’ view of the universal reconciliation of opposites in nature through the workings of love is closer to the ‘more relaxed’ Muses of Empedocles, to borrow the phrase from the *Sophist*, than to the ‘more stretched’, Ionian Muses of Heraclitus.⁴⁰

Let us return now to the problem about accepting *homologeēi* or not in Heraclitus’ B 51. I think that in the text found in Plato, *diapheromenon autōi hautōi sumpheresthai*, *sumpheresthai* may be a reminiscence from B 10, intruding into what seems to be something like a paraphrase, freely combining Heraclitus’ fragments 10 and 51 (with an echo of B 8, as I argued before).⁴¹ In any case, the verb *homologeō* repeatedly occurs in the lines following the quotation (with the cognate noun *homologia*) as synonymous with *sumpheresthai*, and thus likely as a reminiscence of the original text of B 51. A further parallel no one has observed so far may be added to help prove that Heraclitus used here *homologeō* to express the concord of different things. In fact, this use is found in the Hippocratic writing *De victu* 1.11.1 (a Heraclitizing context, again), where a significant echo of fr. 51 can be detected. Here the statement that *diaphora* things are *sumphora* is specified by saying that this process goes ‘in opposite directions’ and, at the same time, it is ‘agreeing with itself’ (*homologoumenos*):⁴²

Hipp. Vict. 1.11.1: Πάντα γὰρ ὅμοια, ἀνόμοια ἔόντα· καὶ σύμφορα πάντα, διάφορα ἔόντα· διαλεγόμενα, οὐ διαλεγόμενα· γνῶμην ἔχοντα, ἀγνώμονα· ὑπεναντίος ὁ τρόπος ἐκάστων, ὁμολογούμενος.

For all things are like, though unlike, all compatible, though incompatible, conversing though not conversing, intelligent with no intelligence. The manner of each is contrary, though in agreement.

But it is finally time to tackle the central problem of this fragment, namely, what the *palintropos harmonia* of the bow and the lyre was intended to be by Heraclitus, such as to be exploited as a most effective example of the universal harmony of opposites. As I said at the beginning, I do not intend to dwell on asking how the concept of *harmonia* specifically works in Heraclitus’ deciphering of physical

⁴⁰ See above, n. 17, on the different kinds of ‘consonance’ entailed by *harmonia* and *sumphōnia*.

⁴¹ Above, p. 9.

⁴² See Osborne (1987), pp. 148–50, for other arguments in support of the reading *homologeēi*.

reality. However, I must mention here that *palintropos* is likely to allude to the *tropai* of fire mentioned in B 31, as it is confirmed by Theophrastus' comment, preserved by Diogenes Laertius IX.7 (22 A 1.7 DK: *panta de ginesthai kath' heimar-menēn kai dia tēs enantiotropēs hērmōsthai ta onta*).⁴³ It follows that the notion of *harmonia* occurring in B 51 could specifically allude to the alternating physical states which are to be seen in the course of the sempiternal life of the world, the overall cosmic balance comprehending, and being made up of, all the singular *harmoniai*.

This point has an important consequence for the interpretation of the image of the bow and the lyre, as it invites us to search an allusion in it to the 'process' implied in using the two instruments. In fact, as Catherine Rowett put it, 'in both bow and lyre the natural state is an equilibrium of opposed tensions which is disturbed and altered by the action of drawing the bow string and plucking the lyre string until the release of the string allows it to return to its original state'.⁴⁴ Several scholars have contested this sort of reading, based on an 'operational' similarity of the two instruments, arguing that the musical reference thus implied is far from being as appropriate for the bow as it is for the lyre. Jane McIntosh Snyder, in particular, preferred to insist on the 'structural' similarity of the objects. Based on an accurate survey of a number of representations of the bow and the lyre in Attic vase painting, she interestingly suggested that they could not share the attribute of *harmonia* unless the word has the root sense of material 'fitting together' of the different parts of the artefacts, and accordingly she claimed that *harmonia* is called *palintropos* because both the bow and the lyre are constructed in such a way that 'the opposite ends of each object, while apparently tending away from each other, nevertheless partake

⁴³ Cf., e.g., Vlastos (1955), pp. 348–51; Kahn (1979), p. 199; Robinson (1991), p. 116. *Kath' heimar-menēn* suggests a Stoic rewriting, and this is perhaps the reason why Marcovich (1978), p. 86, traces *palintropos* back to the 'fonte stoica di Ippolito'. Leaving aside the controversial question of Hippolytus' source (while Sider 2009, p. 453, claims a Stoic adaptation on the basis of D. L. IX.15, Osborne (2009), pp. 133–34 gives reasons for pleading a Sceptic source), the fact remains that Theophrastus may have based his interpretation on reading *palintropos*, which does not occur elsewhere in Hippolytus, neither seems to be characteristically Stoic.

⁴⁴ Osborne (1987), pp. 152–53. *Lura* is a generic term for all such stringed instruments (with strings of equal length) used to accompany song and recitation as the earlier *phorminx* (the instrument of Homeric *aidoi*), the *kithara* (also an instrument for professional musicians), the *barbitos*, and the *chelus*, whose sound box was formed by a turtle shell. The *chelus* is most often represented in the hands of free men of aristocratic circles, and is often referred to as *lura*. On *realia* in the world of stringed instruments see Comotti (1989), pp. 56–63; Maas (1974); Maas and McIntosh Schneider (1989).

of the unity of a circle' – the distinct curvature being seen of course from the side.⁴⁵

While McIntosh Snyder was certainly right in calling attention to the structural aspect of *harmonia* in Heraclitus' B 51,⁴⁶ I think that her account is far from excluding the operational meaning of the notion, as the outline of the flexible Scythian bow does appear to get close to a circle, thus acquiring its so-called 'Cupid's shape', when it is in the act of being drawn.⁴⁷ In favour of a musical reading I want to note besides that it is quite possible, conforming to the density of Heraclitus' writing, that the image of the *palintropos harmonia* contains a twofold allusion, namely, not only to technical ability in constructing *and* using (by tightening and releasing the strings) both instruments, but also to the effect, proper only to the lyre, of that 'consonance of dissonant sounds' that I insist to be central to Heraclitus' thought.⁴⁸ Let us remind ourselves of how the mechanism of strengthening and releasing the strings was fundamental to the production of different scales, something which explains among other things the fortune of the term *tonos*, derived from *teinō*, for meaning the 'sound' produced by the 'tension' of the string(s), or of the voice. On the other hand, the union of the material, root sense and the musical one in the term *harmonia* must not be limited to Heraclitus. By the date of Aristophanes' *Knights* (424 BCE) the word is used to refer to the (non-)adjustment of the strings of a musical instrument and the dreadful 'effect' of this on hearing (*Eq.* 532–33). Yet this combination of meanings was alive much earlier, as can be inferred from the tale of the 'invention' of the lyre told in the *Homeric Hymn* to Hermes, going back to the second half of the sixth century BCE, which I am going to comment on.

Let us recall how the story goes. Encountering a tortoise outside the cave where he is born, the infant Hermes kills it, then removes the animal inside in order to fashion the chelys-lyra. The detailed narration of how the god constructs the instrument with extraordinary skillfulness is of great help for reconstructing the way the lyra was actually produced:

⁴⁵ McIntosh Snyder (1984), p. 94. See also the opportune description of the lyre by Maas and McIntosh Schneider (1989), p. 97: 'The arms [of the instrument], as they leave the soundbox, ordinarily curve out, in a shape reminiscent of the antelope horns from which they may once have been made'.

⁴⁶ A fragment too of the tragic poet Theognis, saying that the bow is like a *phorminx achordos* (fr. 769 Nauck), shows that the two instruments were perceived as similar in structure.

⁴⁷ On the diffusion of the Scythian double-curved bow in Greece from the mid-seventh century on as well as on the shape and the skilled art of stringing it, see Snodgrass (1967), pp. 81–3.

⁴⁸ See Kahn (1979), pp. 198–99.

Hom. Hymn. Herm. 47–54

πῆξε δ' ἄρ' ἐν μέτροισι ταμῶν δόνακας καλάμοιο
 περιήνας διὰ νῶτα διὰ ῥινοῖο χελώνης.
 ἀμφὶ δὲ δέρμα τάνυσσε βοῶς πραπίδεσσιν ἔησι,
 50 καὶ πῆχεις ἐνέθηκ', ἐπὶ δὲ ζυγὸν ἤραρεν ἀμφοῖν,
 ἑπτὰ δὲ συμφώνους οἴων ἔτανύσσατο χορδὰς.
 αὐτὰρ ἐπεὶ δὴ τεῦξε φέρων ἔρατεινὸν ἄθυρμα
 πλήκτρῳ ἐπειρήτιζε κατὰ μέρος, ἦ δ' ὑπὸ χειρὸς
 σμερδαλέον κονάβησε· θεὸς δ' ὑπὸ καλὸν ἄειδεν

He cut stalks of cane in proper length and fixed them, fastening their ends across the back and through the shell of the tortoise. All around he stretched the hide of an ox by his thoughtful skill. Then he fitted the arms into place, connected a crossbar to both,⁴⁹ and stretched seven tuneful strings of sheep-gut.⁵⁰ As soon as he had made this he picked up the lovely thing and plucked the strings one-by-one with the plectrum. At the touch of his hand the instrument sounded wonderfully and the god improvised a sweet song.

There is significant emphasis here on the technical ability needed not only to build the basic structure of the musical instrument (the verb *ēraren* is of course particularly noteworthy for our discussion), but also to adapt and stretch the strings, presumably trying them out, so as to produce the most beautiful sounds. I find it very likely that Heraclitus had in mind this description when establishing the association of bow and lyre in view of their *modus operandi*.⁵¹ And on this point, I think, he had another important precedent in Homer's description of how Odysseus, provoked by the wooers to string the bow, displays an ability in tuning the strings that is compared to that of a lyre player (*Od.* 21.404–411). We see him stretching (*tanusen*, 409) his bow effortlessly, like the *phorminx* player who easily tends (*etanusse*, 407) the string around the crossbar of the instrument. Furthermore, after this operation and before shooting into the row of axes, Odysseus tries the tension of the string (410) so as to let the bow sing beautifully, although frightening the audience ...

Recently Philippe Monbrun pointed out through an acute analysis that the Greek iconography of the archer and the cytharist is like a 'living commentary' ('vivant commentaire') on the close relationship that links the bow and the lyre, whose opposite powers of bringing death and joyful life are both represented in

⁴⁹ The arms of the lyre (*pēcheis*), often made of horn, were normally joined together at the top by a horizontal crossbar, called *zugon* ('yoke').

⁵⁰ The use of seven strings is traditionally associated to Terpander (seventh century BCE).

⁵¹ If I am not mistaken, this passage is never mentioned in discussing the present fragments, with the notable exception of Fränkel (1962), p. 430 n. 3. Fränkel also mentions Thgn. Trag. fr. 769 Nauck (see above, nn. 4–6), yet just to remark the traditional association of the bow and the lyre.

that divine symbol of contradiction that is Apollo.⁵² Moreover, Apollo's oracle in Delphi is for Heraclitus a notorious paradigm of ambiguity (B 93). May it be that to Heraclitus' eyes the deepest secret Apollo hides but hints to mortals is precisely that coalescence of life and death that is embedded in his main attributes, the lyre and bow? It is likely that in B 51 Heraclitus attempts to provide a philosophical explanation for this apparently mismatched couple, by a kind of philosophical allegoresis showing that they belong together in terms of construction and operation, but above all in terms of how they express the nature of the god that most mysteriously represents at once death and peace.⁵³

In short, I think that the association of lyre and bow we find in Heraclitus' B 51 is mainly due to the way they were operated, through an accurate and alternate movement of tending and releasing the strings which is analogous to the equilibrium between opposing forces and elements in the cosmos. To resume the main issue of my essay, that is, Heraclitean harmony, this reading of B 51 is to confirm that the musical repertoire plays a major role in Heraclitus' account of how *logos* works in nature.

In conclusion, my argumentation as a whole is aimed to validate through a case study the role of music as a tool for analogies in Greek philosophy, which was well caught some years ago by Andrew Barker as follows.

Musical terms and concepts are used very commonly in Greek (and not only Greek) writings to convey thoughts about non-musical topics of every sort, theological, political, medical, ethical, legal, logical and many more. Often, perhaps usually, it is unhelpful to try to construe them as symptoms of a theoretical position that links music with other subjects in a systematic way. They are no more than imaginatively stimulating pieces of imagery (but also no less; the value of such devices even in philosophical or scientific writing should not be underestimated).⁵⁴

On the other hand, as specifically regards Heraclitus, suggesting a strong musical reading of B 8, 10 and 51 may contribute to a fresh appreciation of his theory on cosmic harmony, which may finally emerge as a product of independent and creative thought, comparable with and yet not less original than that of the early Pythagoreans.

⁵² Monbrun (2006).

⁵³ I would go so far as to see in the story of Hermes first talking to the tortoise of the pleasure it is going to provide as a 'charming toy' after death, then cruelly cutting and manipulating the limbs of it, a clue (actually the only one we can find) for the possibility that Heraclitus thinks of life and death being entangled in the very invention of the lyre itself and thus in its very nature, similarly to how life and death are entangled in the name and the *ergon* of the bow (B 48).

⁵⁴ Kindly retranslated for this occasion by the author himself from Barker (2005), pp. 187–8.

Bibliography

- Barker, Andrew (2005): *Psicomusicologia nella Grecia antica*. Naples: Guida.
- Barker, Andrew (2007): *The Science of Harmonics in Classical Greece*. Cambridge: Cambridge University Press.
- Bellia, Angela (2012a): *Il canto delle vergini locresi. La musica a Locri Epizefirii nelle fonti scritte e nella documentazione archeologica (secoli VI-III a.C.)*. Pisa: Fabrizio Serra.
- Bellia, Angela (2012b): *Strumenti musicali e oggetti sonori nell'Italia meridionale e in Sicilia (VI-III sec. a.C.)*. Lucca: Libreria musicale italiana.
- Bernays, Jacob (1848): *Heraclitea. Particula I* (Diss. inaug.). Bonn. Cited from: Bernays (1885), pp. 1–36.
- Bernays, Jacob (1850): “Heraklitische Studien”, *Rheinisches Museum Neue Folge* 7, pp. 90–116. Cited from: Bernays (1885), pp. 37–73.
- Bernays, Jacob (1885): *Gesammelte Abhandlungen*, herausgegeben von Hermann Usener, vol. 1. Berlin: W. Hertz.
- Beschi, Luigi (2001): “Frammenti di *auloi* dal Cabirio di Lemno”. In: Böhm, Stephanie and von Eickstedt, Klaus-Valtin, eds., *IΘAKH*. Festschrift für Jörg Schäfer zum 75. Geburtstag am 25. April. Würzburg: Ergon, pp. 175–81.
- Bessi, Benedetta (1997): “La musica nel simposio: fonti letterarie e rappresentazioni vascolari”, *AION* (archeol) n. s. 4, pp. 137–52.
- Comotti, Giovanni (1989): *Music in Greek and Roman Culture*. Baltimore–London: Johns Hopkins University Press (Translation of Giovanni Comotti (1979): *La musica nella cultura greca e romana*. Torino: EDT).
- Delatte, Armand (1930): “Les Harmonies dans l'embryologie hippocratique”. In: *Mélanges Paul Thomas*. Bruges: Imprimerie Sainte Catherine, pp. 160–71.
- Dilcher, Roman (1995): *Studies in Heraclitus*. Hildesheim–Zürich–New York: Olms.
- Fränkel, Hermann (1962): *Dichtung und Philosophie des frühen Griechentums. Eine Geschichte der griechischen Epik, Lyrik und Prosa bis zur Mitte des fünften Jahrhunderts* (4th edition). München: C. H. Beck.
- Gianvittorio, Laura (2010): *Il discorso di Eraclito. Un modello semantico e cosmologico nel passaggio dall'oralità alla scrittura*. Hildesheim–Zürich–New York: Olms.
- Gianvittorio, Laura (2012): “Sprechen und Verstehen bei Heraklit und Parmenides”, *Mnemosyne* 65, pp. 1–29.
- Hülsz Piccone, Enrique, ed. (2009): *Nuevos Ensayos sobre Heráclito. Actas del Segundo Symposium Heracliteum*. Ciudad de México: Facultad de Filosofía y Letras, Dirección General de Asuntos del Personal Académico, Universidad Nacional Autónoma de México.
- Huffman, Carl A. (1993): *Philolaos of Croton. Pythagorean and Presocratic. A Commentary on the Fragments and Testimonia with Interpretive Essays*. Cambridge: Cambridge University Press.
- Huffman, Carl A. (2013): “Philolaos' Critique of Heraclitus”. In: Sider and Obbink, eds. (2013), pp. 121–144.
- Kahn, Charles H. (1979): *The Art and Thought of Heraclitus*. An edition of the fragments with translation and commentary. Cambridge: Cambridge University Press.
- Kirk, Geoffrey S. (1954): *Heraclitus. The Cosmic Fragments*. Edited with an Introduction and Commentary. Cambridge: Cambridge University Press.
- Kirk, Geoffrey S., Raven, John E. and Schofield, Malcolm (1983): *The Presocratic Philosophers* (2nd edition). Cambridge: Cambridge University Press.

- Kranz, Walther (1958): “PALINTROPOS HARMONIË”. *Rheinisches Museum* 101, pp. 250–54.
- Maas, Martha (1974): “On the Shape of the Ancient Greek Lyre”, *The Galpin Society Journal* 27, pp. 113–17.
- Maas, Martha and McIntosh Schneider, Jane (1989): *Stringed Instruments of Ancient Greece*. New Haven-London: Yale University Press.
- Mansfeld, Jaap and Primavesi, Oliver (2011): *Die Vorsokratiker: Griechisch/Deutsch*. Ausgewählt, übersetzt und erläutert. Stuttgart: Reclam.
- Marcovich, Miroslav (1978): *Eraclito. Frammenti. Introduzione, traduzione e commento*. Firenze: La Nuova Italia. (Shortened and revised version of Miroslav Marcovich (1967): *Heraclitus*. Mérida: Los Andes University Press)
- McIntosh Schneider, Jane (1984): “The Harmonia of Bow and Lyre in Heraclitus Fr. 51 (DK)”, *Phronesis* 29, pp. 91–95.
- Monbrun, Philippe (2006): “Les gestes de l’archer et du cithariste: des «corps à corps» apolliniens: où l’esprit prend le relais”. In: Bodiou, Lydie, Frère, Dominique and Mehl, Véronique, eds., avec la collaboration d’Alexandre Tourraix, *L’expression des corps. Gestes, attitudes, regards dans l’iconographie antique*. Rennes: Presses universitaires de Rennes, pp. 329–46.
- Mondolfo, Rodolfo and Tarán, Leonardo (1972): *Eraclito. Testimonianze e imitazioni*. Firenze: La Nuova Italia.
- Mouraviev, Serge N. (2011): *Heraclitea. Quatrième Partie: Refectio. A. Liber Heracliti*. Texte, traduction et commentaire. Sankt Augustin: Academia Verlag.
- Osborne, Catherine (1987): *Rethinking Early Greek Philosophy. Hippolytus of Rome and the Presocratics*. Ithaca, NY: Cornell University Press.
- Osborne, Catherine (2009): “‘If all things were to turn to smoke, it’d be the nostrils would tell them apart’, or Heraclitus on the pleasures of smoking”. In: Hülsz Piccone, ed. (2009), pp. 415–41.
- Pelosi, Francesco (2010): *Plato on Music, Soul and Body*. Cambridge: Cambridge University Press.
- Robinson, Thomas M. (1991): *Heraclitus. Fragments. A Text and Translation with a Commentary*. Toronto-Buffalo-London: University of Toronto Press.
- Rocconi, Eleonora (2003): *Le parole delle Muse. La formazione del lessico tecnico musicale nella Grecia antica*. Roma: Quasar.
- Rowett, Catherine (2013): “Philosophy’s Numerical Turn: Why the Pythagoreans’ Interest in Numbers is Truly Awesome”. In: Sider and Obbink, eds. (2013), pp. 3–31.
- Schrenk, Lawrence P. (1994): “World as Structure: The Ontology of Philolaus of Croton”, *Apeiron* 27, pp. 173–90.
- Shipton, Kirsty M. W. (1985): “Heraclitus fr. 10: A Musical Interpretation”, *Phronesis* 30, pp. 111–30.
- Sider, David (2009): “The fate of Heraclitus’ book in Later Antiquity”. In: Hülsz Piccone, ed. (2009), pp. 443–58.
- Sider, David and Obbink, Dirk, eds. (2013): *Doctrine and Doxography. Studies on Heraclitus and Pythagoras*. Berlin-New York: De Gruyter.
- Snell, Bruno (1941): “Heraklits Fragment 10”, *Hermes* 76, pp. 84–87.
- Snodgrass, Anthony M. (1967): *Arms and Armour of the Greeks*. London: Thames and Hudson.
- Vlastos, Gregory (1955): “On Heraclitus”, *American Journal of Philology* 76, pp. 337–68.
- Wardy, Robert (2002): “The Unity of Opposites in Plato’s *Symposium*”, *Oxford Studies in Ancient Philosophy* 23, pp. 1–61.

Wersinger, Anne G. (2008): *La sphère et l'intervalle. Le schème de l'Harmonie dans la pensée des anciens Grecs d'Homère à Platon*. Grenoble: J. Millon.

Acknowledgement: I thank my audience on the occasion of the Symposium for several helpful comments. For further discussion in person or *per litteram* I am grateful in particular to Catherine Rowett and Malcolm Schofield (whose help was also invaluable in improving my English), Roman Dilcher, Stavros Kouloumentas, Jaap Mansfeld, Glenn Most, Malcolm Schofield, as well as to Francesco Pelosi for a wealth of suggestions in the field of ancient Greek music.