



BRILL

‘Tuning the Lyre, Tuning the Soul’

Harmonia, *Justice and the Kosmos of the Soul in Plato’s Republic and Timaeus*

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Abstract

This paper will focus on Plato’s thought-provoking depiction of justice as special kind of *harmonia* (*Resp.* 4.443c–444a) that epitomises the best possible organisation of the soul, exploring his nuanced use of the model of lyre tunings in performative, theoretical as well as educational terms. By comparing Plato’s use of harmonic imagery with technical discussions of lyre tunings and their key role in educational settings, I will show how Plato exploited distinctive features of traditional Greek lyre *harmoniai* to give shape to his innovative understanding of the structure of the soul and the harmonious, but not strifeless, relationship between its individual components. In the second part of this paper, I will look at how the model outlined in the *Republic* sheds light on the musical structure that gives shape to the World Soul in the *Timaeus*, advancing a new interpretation of its elusive harmonic organisation.

Keywords

Plato’s harmonics – *harmonia* – justice – lyre tunings – musical education – *Republic* – *Timaeus* – Philolaus

Plato’s dialogues offer many revealing discussions of the ethical, political, psychological and educational importance that music had for the Greeks. This is especially true in the case of the *Republic* and the *Laws*, works which describe in detail the political set-up of two ideal constitutions as well as the lifestyle and ethical values embraced by their citizens. But Plato’s interest in musical matters was by no means limited to these works or topics. On the contrary,

musical—and especially harmonic—notions play a central role also in his discussion of the orderly, but not strifeless, organisation of the basic constitutive elements of nature, whose dynamic interplay generates the universe (*kosmos*) that we inhabit.

In this paper, I shall explore Plato's distinctive use of a long-established musical model, that of the lyre *harmonia*, to give shape to his innovative conception of the soul and its ethical excellence, focussing first on the definition of justice offered in the *Republic* and subsequently on the structure of the 'Cosmic Soul'—or rather the 'Soul of the Whole'¹—described in the *Timaeus*. This discussion will show how Plato was far from uninterested in, or worse unaware of, the strictly technical and practical implications of the musical notions he employed in his works—charges that were already levelled against him in antiquity and continue to thrive in modern scholarship.²

On the contrary, this paper aims at showing that technical and practical features of ancient musical concepts played two crucial and related roles in Plato's works. On the one hand, these musical concepts offered an inventory of complex but flexible ideas that Plato embraced to give shape to key elements of his own thought such as the structure of the soul, its counterparts in the city and the universe at large, as well as their workings as composite and dynamic systems. On the other, they represented a kind of shared cultural language that Plato acquired in the course of his own education, and subsequently exploited to express his innovative philosophical views in terms that

- 1 What is known as World Soul or Cosmic Soul in scholarly literature is actually called the 'Soul of the Whole' (*Tim.* 41d), the 'Soul stretched through the Whole' (*Tim.* 34b), or simply the 'Soul' (*psychē*, *Tim.* 34b-c) in Plato's text. Unlike its modern counterparts, Plato's expression puts emphasis on the unity of the *kosmos*, which is conceived as a unitary living being that integrates in itself a variety of elements and is brought to life by the Soul and its *harmonia*. English translations are mine, unless otherwise noted, and will at times favour fidelity to the original over idiomatic elegance.
- 2 See e.g. [Plut.] *De mus.* 1136e14-39b4, where Aristoxenus rebuts the accusation that Plato made his selection of musical modes 'out of ignorance' (cf. Barker 2012). See also Arist. *Pol.* 8.1343a-b, with Lynch 2016. For a recent example of this prejudice, see Wallace 2015, xxii, endorsing Koster 1944: 'such trifles (*scil.* musical technicalities) were unworthy of a philosopher'. This dismissive attitude has fortunately started to reverse in recent years—see esp. Pelosi 2010 and Prauscello 2014, who offer insightful discussions of the philosophical roles played by musical ideas in Plato's psychology and ethico-political thought. These studies, however, do not take into account much recently discovered evidence about Greek harmonic theory and practice (esp. Hagel 2010 and Barker 2007). This illuminating technical evidence makes it possible to reconstruct confidently key aspects of the tuning systems and harmonic models developed in Classical times (cf. Lynch 2018), allowing us to understand more fully the role they played in shaping Plato's musical experience and thought.

his readers could relate to on the basis of their own aesthetic, emotional and cognitive experiences.

1 Musical Images, Myths and the Divine Power of Beauty: a Few Methodological Clarifications

Before getting to the heart of the matter, a few words are in order concerning some hermeneutic principles that inform my work. Generally speaking, my work is based on the belief that delving more deeply into the technical and aesthetic implications of the musical notions used by Plato sheds new and valuable light on important aspects of his thought. Just as, for instance, contemporary musical and scientific theories informed and shaped the development of Hegel's or Descartes' thought, I believe that having an awareness of the practical, aesthetic and theoretical implications that specific musical concepts and images had in Plato's own cultural environment can help us better understand his sustained and deliberate use of such notions—as opposed to many other cultural or technical models that were available to him—to illustrate key elements of his thought.

But this does not entail that one should embrace a rigidly analytical mindset.³ A famous passage of the *Phaedrus* which concerns the nature of philosophical knowledge, and its fraught relationship with inexorably static written texts, cautions us precisely against trying to reduce the dialectical, life-infused reasoning of Plato's dialogues to a set of dogmatic and unchanging statements or 'theories'. The sad predicament experienced by one's defenceless 'children'/texts falling in the hands of such readers is significantly depicted by means of a musical expression:

Once it is written, the whole speech (*logos*) is tossed around equally to those who give ear to it and to those who, by contrast, do not care about it in the slightest; and it does not know whom it should talk

3 Broadly speaking, my work belongs to the family of the so-called 'literary contextualist' (Nails 1995, 24-6), or simply 'literary' readings of Plato's works (Blondell 2000, 2002; Rowe 2007), as opposed to e.g. modern analytical interpretations (for this definition, see Rowe 2015; cf. Pelosi 2010, who offers a broadly analytical interpretation of Plato's musical ideas). To put it simply, I seek to engage with Plato's texts on their own terms and in the light of their own cultural context, without imposing arbitrary criteria of truth upon them—a hermeneutic approach that is grounded upon the 'principle of charity or humanity' (Davidson 1984), and aims to give justice to the intrinsically 'exploratory and probing' character of Plato's texts (Halliwell 2002, e.g. 38, 56, 61).

to or not. And when its melody is struck up and made discordant (*plēmmeloumenos*), and it is unjustly reviled (*kai ouk en dikēi loidorētheis*), it always needs its father to come to the rescue: for it has no power to defend or help himself.

Phdr. 275d-e

Other passages of the dialogue similarly emphasise the need to preserve the inner harmony of a discourse, taking into account also its effects on the soul.⁴ This awareness, and the related need for a hermeneutically sensitive and flexible approach, turns out to be especially crucial to acquire a true understanding of *logoi* about justice—that is to say, the central notion discussed in the present article:

You speak of a wholly beautiful game, Socrates, [...] proper to a person who can play and amuse himself with discourses, crafting myths about justice and the other subjects you talk about (*dikaiosynēs te kai allōn hōn legeis peri mythologounta*).

Phdr. 276a-e

Precisely as we are told here, Plato consistently approaches the concept of justice, the nature of the soul and the ultimate structure of reality by means of ‘myths’ and ‘images’—including not only the harmonic depiction of the just soul offered in the *Republic* 4 and its hyperbolic counterpart in *Republic* 10 (614b-621d), but also the great mythical palinode of the *Phaedrus* (243c-257b), the ‘long myth’ on the immortality of the soul in the *Phaedo* (107c-114d), its shorter counterpart in the *Gorgias* (522e-527e), and the ‘likely story’ about the Soul of the Whole in the *Timaeus* (*eikota mython*, *Tim.* 29c, 59c, 68d; *eikota logon vel sim.*, *Tim.* 30b, 48c-d, 49b, 53d, 55d, 56a, 57d, *passim*). By their own admission, these myths do not aim to offer precise, fully rational and comprehensive accounts of the nature of the soul and its relationship with justice and other kinds of ethical excellence; but the essence of these notions is not entirely disconnected from such mythical representations either—a tension that is beautifully expressed by Socrates in the *Phaedo*:

It would not be fitting for a person of *nous* to vigorously claim that these things are precisely as I have just described them; but that such things, or something like them, are true with regard to these souls of ours and their

⁴ E.g. *Phdr.* 271b, 268d-e, and 277b-c, with Lynch 2013.

abodes, given that the soul appears to be indeed immortal—this seems to me both fitting and worth risking for a person who suspects it to be so: for it is a beautiful risk.

Phd. 114d-e

In other words, these mythical images are figurative—but *not* ‘purely metaphorical’—representations: they are literary but truly mimetic ‘likenesses’ that allow us to capture in human and finite words something of the essence of immortal and divine ideas.⁵ The musical references and concepts employed in these mythical depictions are to be taken in this sense too: they are defining features of the poetic ‘mental pictures’ which allowed Plato and his contemporaries to envisage his boldly innovative and dynamic conceptualisations of justice and the soul *by virtue* of the ‘earthly’ notions and practices they evoked in their minds, not in spite of them.⁶

The only way for us to get a step closer to recapturing their experience is attempting to recover these echoes—the theoretical-cum-practical characterisations that ideas such as *harmonia* and *symphōnia* had in the cultural world of the Greeks—and let them resonate in our own minds and souls in response to Plato’s beautiful *mousikē*. In fact, in Plato’s view, musical *harmoniai* offered perceivable aesthetic embodiments of different facets of the awesome and divine beauty of wisdom (*phronēsis*), which is invisible to human eyes (Plat. *Phdr.* 250d-e) and joins reason with emotions in *euphrosynē*.⁷

2 In the Beginning There Was Harmony: Tuning the Lyre, Justice and the ‘Strings’ of the Soul in *Republic* 1-3

Musical practices, and specifically lyre playing, feature already in the first book of the *Republic* as models of technical competence conjoined with ethical excellence.⁸ At 1.349e, for instance, Socrates observes that a true *mousikos*

5 Cf. Plat. *Phdr.* 246a (on the soul), 250b-e (on justice and temperance, which may be glimpsed by our senses through earthly *eikonas* and their perceivable beauty).

6 Dismissive attitudes of this kind are embraced by e.g. Koster (1944) and Wallace (2015, xxii); cf. n. 2 above.

7 Cf. Plat. *Tim.* 80b, and the Appendix below, on the ‘euphoric’ delight (εὐφροσύνην) that intelligent listeners feel when listening to ‘the mimetic representation of the divine harmony that takes place in mortal musical movements’ (διὰ τὴν τῆς θείας ἁρμονίας μίμησιν ἐν θνηταῖς γενομένην φοράϊς). On the musical definition of *sōphrosynē* in *Republic* 4, cf. Lynch 2017.

8 In other dialogues, *aulos* playing too is mentioned as a model of purely technical competence, albeit not as ‘precise’ as lyre playing (cf. *Phlb.* 56a, *Lach.* 194e, *Ap.* 27b); unlike lyre playing, however, the technical competence of professional auletes and *kithara* players is mostly

would not desire to prevail over another musician, or literally 'have more than his fair share' of honour when tuning his lyre, reserving these reproaches to 'museless' or 'a-musical' individuals.

At first glance, this passage might lead us to wonder whether Plato ever set foot in a music school or theatre: already in Hesiod we read that rivalry and envy were defining traits of the relationships between Greek musicians as much as they are nowadays, and other amusing passages hint at the ruinous consequences of strife among chorus members and musical performers.⁹ But we would be mistaken if we assumed that Plato was simply ignoring the behaviour of his contemporaries to produce an idealised image of perfectly virtuous, but ultimately fictional, musicians. A close look at the wording of this passage reveals that Socrates is in fact not talking about a musical contest or performance, but about its preliminary requirement: tuning the instrument—a procedure that hinges on the act of 'tending' and 'relaxing' its strings, mutually adjusting their tension until they are perfectly harmonised to each other.

What tells musicians apart from their 'museless' companions is their shared knowledge of a well-defined model, as well as their ability to turn it into reality: the model of the lyre *harmonia* which, as we shall see, entailed very specific technical as well as aesthetic and theoretical features. It is precisely this kind of shared knowledge that will prevent potential conflicts from arising among true *mousikoi*: for the correctness, or the inaccuracy, of the relative pitch of a set of lyre strings can be readily judged on the basis of a clear paradigm, which is both intellectually satisfying and perceived by the senses as beautiful and pleasant.¹⁰ Hence such knowledgeable musicians, and their lack of greed (*pleonexia*), represented a perfect model for the collaborative expertise and ethical excellence proper to the future Guardians of Plato's ideal city. This point will become even clearer in *Republic 4* where the central ethical principle of *Kallipolis*—justice—is defined as a special kind of psychological *harmonia*.

associated with ethically dubious goals (e.g. *Gorg.* 501d-502a), and not positive values such as justice and temperance.

9 Hes. *Op.* 25f.: 'potter begrudges potter, and joiner a joiner, a beggar is jealous of another beggar and a singer of another singer'. On the negative aesthetic effects of strife among chorus members, see [Arist.] *Pr.* 19.45.

10 The conciliatory role played by shared knowledge, which undermines *pleonexia* and brings about concord, political agreement and equality, is highlighted also in Archyt. fr. 3 Huffman: 'once logical calculation (λογισμός) was discovered, it stopped civil strife (στάσιν) and increased like-mindedness (ὁμόνοιαν δὲ αὖξηεν): for people do not want more than their share once this has come into being, and equality is born (πλεονεξία τε γὰρ οὐκ ἔστι τούτου γενομένου καὶ ἰσότηας ἔστιν).

But music acquired a central role in the *Republic* well before this ‘theoretical’ use of the notion of *harmonia*—a use which, as we shall see, is not merely decorative but is firmly grounded in contemporary musical practice. This practical grounding had already shaped extensive passages of Books 2 and 3 which explore the role that music will play in the cultural life of the future constitution and offer invaluable insights into the ethical and aesthetic implications of different tunings, instruments and rhythms. These intriguing questions go well beyond the scope of the present article and, for our present purposes, it will suffice to notice three key outcomes of Socrates and Glaucon’s discussion. First, they agree that both music and gymnastics must be pursued primarily for the sake of the soul, since they affect its two leading elements—the ‘flare-like’/‘spirited’ (*thymoeidēs*) and the ‘rational’ (*logistikon*)—by ‘tending and relaxing them until they are perfectly harmonised to each other’ just like lyre strings (ὅπως ἂν ἀλλήλοιον συναρμοσθήτον ἐπιτεινομένῳ καὶ ἀνιεμένῳ μέχρι τοῦ προσήκοντος, *Resp.* 3.412a).¹¹ Secondly, this all-important psychological harmony can be gained only through practical performances of pieces that employ specific modes (*harmoniai*) and rhythms; hence, they select the Dorian and Phrygian modes, in keeping with the models of ethical excellence to be embodied by the future Guardians.¹² Third, they select traditional stringed instruments such as lyres and *kitharai* for their early musical training, whereas *auloi* are not regarded as appropriate for this purpose (3.399a5–e2).¹³

Such early musical experiences are far from trifling matters, as Socrates clarifies in his subsequent remarks. Early musical nurture (*trophē*) is literally ‘the most important’ and ‘supreme’ (*kyriōtatē*) type of education to be received by the Guardians, because rhythms and *harmoniai* have a unique ability: they can penetrate into the innermost recesses of the soul, and shape it most powerfully

11 Cf. *Resp.* 3.410b–c, cf. 3.411a–b, 4.441e7–442a2; *Tim.* 74b–c. On the origin and technical meaning of the verbs ἐπιτείνειν/ἐντείνειν and ἀνιήμι in musical contexts, see Rocconi 2003, 13–21.

12 Cf. *Resp.* 3.398c–400c, with Lynch 2016. On the extraordinary nature of the future Guardians, ‘gentle’ as well as ‘flaring/fiery’, see *Resp.* 2.375c and *Tim.* 17d–18a. Before focusing on music alone, Socrates turned to the ‘traditional’ recipe that prescribed music and poetry to nurture the soul, and gymnastics for the care of the body (*Resp.* 2.376e1–3; cf. *Tim.* 18a); this educational regimen is interestingly identified as Pythagorean in a much-discussed fragment by Aristoxenus (fr. 26 Wehrli). Aristoxenus had first-hand knowledge of Pythagorean philosophy, as he was a pupil of the Pythagorean Xenophilus before joining Aristotle’s circle. Cf. Provenza 2016, 122–4, Zhmud 2012, 63–6, and Horky 2013, 41–9, 121–4.

13 The educational aims of Socrates’ musical selection are crucial, and losing sight of this context would significantly distort the meaning of this passage. Aristotle too rejects *aulos* playing from educational activities and extends this ban to professional *kitharai*; and his selection of musical modes to be employed for educational purposes is as strict as Plato’s (*Pol.* 8.1341a17–b8, 8.1342a30–b35).

by means of their emotional impact (*Resp.* 3.401d4-e1). For these reasons, musical matters must be handled with the greatest care: for a correct use of musical emotions can make the soul well-shaped and balanced (*euschēmona*), whereas regularly exposing children to random kinds of music would wreak havoc on the delicate organisation of their impressionable souls.

Hence being capable of tuning the strings of an instrument,¹⁴ or even identifying some basic features of different *harmoniai* and rhythms as Glaucon does in Book 3, represents only a preliminary step on the way to become a real expert in music.¹⁵ A truly accomplished *mousikos* must also be able to recognise the relationship that each of these technical musical means has with the fundamental forms (*eidē*) of the ethical values at the heart of the ideal society (temperance, courage, liberality and so on), as well as their mimetic representations in music and poetry.¹⁶ Only this complex knowledge—which combines technical, aesthetic as well as ethical elements—will allow the future Guardians of the city to employ musical means *correctly* to combine different psychological elements with each other, producing a truly harmonious *kosmos* in the soul.

3 *Republic* 4: the ‘Symphony of Temperance’ and the ‘Harmony of Justice’

Musical notions play a different, but related, role in *Republic* 4. In the light of the definition of musical expertise as knowledge of its different forms offered in Book 3, it is significant that musical images and concepts appear again precisely when Socrates and his interlocutors begin to define from a theoretical perspective the different forms (*eidē*) of the four basic kinds of ethical excellence, looking at the specific roles played by each of them in the dynamic workings of the ideal city they had previously founded ‘in speech’ (5.472e). And yet only two of them—temperance and justice—are defined in musical terms, a characterisation which mirrors a deeper feature that tells them apart from the other two: unlike wisdom and courage, temperance and justice will not be the exclusive preserve of a group of exceptional citizens but will be present to some degree in all the members of the ideal constitution, binding them together into a truly unified community.

14 Cf. *Phdr.* 268d-e.

15 Cf. *Phlb.* 17c-e, 56a.

16 *Resp.* 3.402b9-c8.

The inclusive nature of temperance, and its beneficial effects on the social and psychological order of the ideal city, are beautifully portrayed as the music performed by a harmonious choir in which all the citizens sing the same melody in octaves—a 'natural symphony' (*kata physin symphōnian*) that literally 'stretches through all' (*tetatai dia pasōn*) and joins the citizens together in an integrated, if diverse, whole.

As I showed in detail elsewhere,¹⁷ Plato fully exploited the technical and performative implications of the musical concept of *symphōnia* in crafting this compelling image, which is far from an abstract or wholly metaphorical depiction. Temperance should be conceived as a 'kind of symphony or harmony' because it creates an orderly *kosmos* (4.430e6) out of different, and potentially contrasting elements: the individual pleasures and desires that stem from the three faculties of the soul. But the psychological and social *symphōnia* produced by temperance does not achieve this goal by neutralising such naturally conflicting forces: it rather combines them in a broader harmonious system in which each element can flourish, playing its proper role and thereby contributing to the good of the community as a whole.

Plato's choice to represent this harmonious flexibility by means of the interval of the octave reflected contemporary musical practice in many meaningful ways. To begin with, the octave was the only interval employed in sustained choral polyphony because of the unique relationship of similarity, but not perfect identity, enjoyed by its two constituents. These notes were therefore identified as *antiphōna*, literally 'counter-voices'—a term coined to capture their distinctive aesthetic character: a perfect blend of opposites that combines the natural features of two distinct notes and makes them 'simultaneously the same and different' ([Arist.] *Pr.* 19.17), just like the citizens who give life to Plato's choir of temperance.

But Plato's use of harmonic imagery becomes even more pervasive in the case of the other 'diffused' virtue of the ideal city: justice. Indeed, his sustained use of musical notions in the only extended definition of the central ethical principle of the ideal constitution reveals, in my view, the full extent to which music represented a shared repertoire of cultural concepts that Plato could play with in order to give shape to his own philosophical theories, and make them more immediately understandable for his audience.

Building upon his earlier definition of justice as 'doing one's own job' (τὰ αὐτοῦ πράττειν, 4.433a8), Socrates now provides a fuller account of this ethical ideal and depicts it as a special kind of action that produces the most perfect form of *harmonia*:

¹⁷ Lynch 2017.

Τὸ δέ γε ἀληθές, τοιοῦτον μὲν τι ἦν, ὡς ἔοικεν, ἡ δικαιοσύνη, ἀλλ' οὐ περὶ τὴν ἕξω πράξιν τῶν αὐτοῦ, ἀλλὰ περὶ τὴν ἐντός, ὡς ἀληθῶς περὶ ἑαυτὸν καὶ τὰ ἑαυτοῦ, μὴ ἑάσαντα τὰλλότρια πράττειν ἕκαστον ἐν αὐτῷ μηδὲ πολυπραγμονεῖν πρὸς ἄλληλα τὰ ἐν τῇ ψυχῇ γένη, ἀλλὰ τῷ ὄντι τὰ οἰκεία εὖ θέμενον καὶ ἄρξαντα αὐτὸν αὐτοῦ καὶ κοσμήσαντα καὶ φίλον γενόμενον ἑαυτῷ καὶ συναρμόσαντα τρία ὄντα, ὥσπερ ὄρους τρεῖς ἀρμονίας ἀτεχνῶς, νεάτης τε καὶ ὑπάτης καὶ μέσης, καὶ εἰ ἄλλα ἅττα μεταξὺ τυγχάνει ὄντα, πάντα ταῦτα συνδήσαντα καὶ παντάπασιν ἓνα γενόμενον ἐκ πολλῶν, σῶφρονα καὶ ἡρμოსμένον, οὕτω δὴ πράττειν ἤδη, ἐάν τι πράττη ἢ περὶ χρημάτων κτήσιν ἢ περὶ σώματος θεραπείαν ἢ καὶ πολιτικόν τι ἢ περὶ τὰ ἴδια συμβόλαια, ἐν πάσι τούτοις ἡγούμενον καὶ ὀνομάζοντα δικαίαν μὲν καὶ καλὴν πράξιν, ἢ ἂν ταύτην τὴν ἕξιν σῶζῃ τε καὶ συναπεργάζεται, σοφίαν δὲ τὴν ἐπιστατοῦσαν ταύτῃ τῇ πράξει ἐπιστήμην, ἄδικον δὲ πράξιν, ἢ ἂν αἰεὶ ταύτην λύῃ, ἀμαθίαν δὲ τὴν ταύτῃ αὖ ἐπιστατοῦσαν δόξαν.

Resp. 4.443c9-444a2

In truth, justice seems to be something of this kind, except that it does not involve doing one's own things with regard to external action but concerns inner praxis, which truly bears on the self and are indeed 'one's own things'. For a just person does not allow any individual faculty in himself to perform some other part's task, nor the tribes (*genē*)¹⁸ in the soul to undertake many activities and meddle with each other. By contrast, he sets up well what truly belongs to him and is in charge of himself; he gives himself an orderly arrangement (*kosmēsanta*), becomes his own friend and harmonises the three parts with each other just like the three boundaries of *harmonia*—the lowest, the highest and the one in the middle—as well as any other elements that may happen to be in-between (*metaxy*) them. Having bound them all together and having become entirely one instead of many, temperate and harmonised, it is in this state that he acts, whether he is involved in earning money or takes care of the body, undertakes any political task or deals with private contracts. In all these circumstances, he considers and calls just as well as beautiful the action that would preserve this state of the soul and contributes to refining it further, and knowledge the science that presides over that action. Conversely, he considers and calls unjust the action that would invariably undo this state, and ignorance the belief that led to that action.

¹⁸ On the three 'tribes' populating the city and the soul, see *Resp.* 4.435b5 and 4.441a-c; cf. *Tim.* 54b-c, where the term identifies the four basic elements (*stoicheia*) of nature.

Right before introducing this strongly harmonic depiction of justice, Socrates explicitly recalled his earlier characterisation of temperance as a kind of symphony¹⁹—a subtle rhetorical move which foreshadowed the idea that these ethical values should be conceived as two faces of the same coin.²⁰

This hint is fully developed in this passage, which shows how the notion of justice is fundamentally based on the ‘simple’²¹ and ‘symphonic’ social agreement produced by temperance, and builds upon it to produce a more complex kind of *harmonia*. The emphasis put on the orderly organisation that a just person gives to his own soul (*kosmēsanta*) clearly evokes the inner *kosmos* that Socrates had previously identified with the harmonising effect of temperance,²² and the same applies to the importance attributed to the idea of establishing friendship and concordance between different parts of the city and the soul.²³

The overall outcomes engendered by justice and temperance are described in very similar terms too: both create a strong cohesive system out of radically different components, binding them together and making them part of one and the same whole by assigning a specific place and function to each individual element.²⁴

But Plato’s depiction of temperance and justice differs in a crucial respect. If temperance was primarily characterised as the pacified outcome of an orderly organisation (*kosmos*) of social, psychological and political relationships,²⁵

19 *Resp.* 4.442c9-d2: ‘won’t we call him temperate because of the friendship and symphony (τῇ φιλίᾳ καὶ συμφωνίᾳ) that exists between these same parts whenever the ruling element and the two subjects are of like mind (ὁμοδοξῶσι) that reason should rule, and don’t engage in civil war against it?’. Cf. *Resp.* 4.441e7-442a2, Lynch 2017.

20 On the closeness of justice and temperance, see also *Resp.* 1.351d, 4.430c8-d9 and 4.443e1-2.

21 On *sōphrosynē* as the result of musical ‘simplicity’, cf. *Resp.* 4.404e (ἡ δὲ ἀπλότης κατὰ μὲν μουσικὴν ἐν ψυχαῖς σωφροσύνην, κατὰ δὲ γυμναστικὴν ἐν σώμασιν ὑγίειαν) and 4.410a. On the ‘simplicity’ of the octave, see e.g. Porph. *In Ptol. Harm.* 96.16-20, 106.26-107.2.

22 Cf. also Plat. *Gorg.* 114e (κοσμήσας τὴν ψυχὴν οὐκ ἄλλοτριῶ ἀλλὰ τῷ αὐτῆς κόσμῳ, σωφροσύνη τε καὶ δικαιοσύνη καὶ ἀνδρεία καὶ ἐλευθερία καὶ ἀληθεία κτλ.), *Phdr.* 277c and *Gorg.* 82 B 11.1-3 Diels & Kranz (κόσμος πόλει μὲν εὐανδρία, σώματι δὲ κάλλος, ψυχῇ δὲ σοφία, πράγματι δὲ ἀρετή, λόγῳ δὲ ἀλήθεια τὰ δὲ ἐναντία τούτων ἀκοσμία).

23 Cf. *Resp.* 4.430e4-5 (κόσμος πού τις ... ἡ σωφροσύνη ἐστίν), 4.432a7 (ταύτην τὴν ὁμόνοιαν σωφροσύνην εἶναι), 4.442c9 (σώφρονα οὐ τῇ φιλίᾳ καὶ συμφωνίᾳ τῇ αὐτῶν τούτων); *Gorg.* 507e6-508a8. On the analogy between the city and the soul in the *Republic*, see Ferrari 2003.

24 *Resp.* 4.443e1-2 (πάντα ταῦτα συνδήσαντα καὶ παντάπασιν ἓνα γενόμενον ἐκ πολλῶν, σώφρονα καὶ ἡρμουςμένον) and 4.432a2-b1. Cf. *Leg.* 2.654a4 (ῥᾷδαις τε καὶ ὀρχήσεσιν ἀλλήλοισιν συνείροντας).

25 While some degree of temperance is required of all the citizens of the ideal city (at a minimum as an adhesion to, and acceptance of, its clear division of social and political tasks), this ‘hyperbolic’ definition of justice, and especially the *sophia* that informs it, does

Socrates' definition of justice focuses mainly on performative aspects and presents it as a specific kind of two-fold action (*praxis*). Firstly, justice consists in setting up a harmonious and well-tempered arrangement (*hexis*) between the different parts of the soul; secondly, it consists in acting in accordance with this inner arrangement, striving to preserve and reinforce it in all sorts of practical circumstances.²⁶ The first kind of action reflects the superlative, 'architectonic' justice of the ideal philosophers, who are capable of establishing a wholly correct organisation of the constituents of their own souls, as well as those of the city, on the basis of true wisdom and reason (*logos*). By contrast, the second kind of justice, which we may call 'performative', entails acting in accordance with this ideal model in everyday life and social interactions—a kind of justice that, in its individual components, might belong also to less exceptional characters.

This conceptual interplay is reflected by Plato's sophisticated use of a musical image which is certainly appealing in itself but, once again, is far from being merely decorative. On the contrary, as we shall see, Plato's musical depiction of justice plays upon some central aspects of the technical concept of *harmonia*, as well as its long-standing and prestigious cultural background,²⁷ to clarify his innovative understanding of the dynamic interaction between the three parts of the soul.

Deciphering Plato's use of these musical notions and their practical counterparts will allow us to achieve several goals. Firstly, making sense of the performative, aesthetic and technical implications of Plato's musical image will help us understand why he chose this particular trope to express his unique understanding of the notion of justice: a composite and flexible system that embraces the actions of naturally different elements within the framework of an elegant and stable organisation that is at once hierarchical and consensual, and mirrors the harmonious *kosmos* of the ideal society as well as the universe at large.

Secondly, this perspective will shed light on aspects of Plato's wording that are otherwise very difficult to make sense of. As we have seen above, Socrates

not necessarily belong to each and every citizen. See the detailed discussion offered in Prauscello 2014, esp. 28–34, with further bibliography.

26 A similar emphasis on the double nature of justice appears at *Resp.* 4.433e10–434a1: 'from this point of view too, then, justice should be regarded as a disposition (ἔξις) of what belongs to a person and is indeed his own, as well as the suitable action (πράξις)'.

27 In addition to the philosophical sources discussed below, see e.g. *Sol. fr.* 36.15–20 W², where the notions of harmony and justice are powerful political symbols of a system that brings together citizens of different ethical and social standing, and unite them under the rule of one and the same law.

mentions the presence of the three 'boundaries' in the *harmonia* of the soul but such an arrangement would produce a division into two parts, not three—a fact that seems very odd given that significant stretches of *Republic* 4 focus precisely on defining the tripartite nature of the soul. This problem could be partly solved if the three 'boundaries' of this *harmonia* were to be taken as figurative representations of the different parts of the soul; but how could we explain then Socrates' subsequent remark about other elements that may 'happen to be in-between (*metaxy*) them'?

4 The Harmony of Justice and the 'Three Boundaries' of a Lyre *Harmonia*

To make sense of this conundrum, we must start from the words that Plato employs to describe the three 'boundaries' of this particular tuning system, *nētē*, *hypatē* and *mesē*. These terms that originated in the realm of lyre practice and denoted the highest, the lowest and the intermediate string of this instrument. Rather counterintuitively for us, these labels did not indicate the pitch height of the notes produced by each string but reflected their physical disposition. So, just as happens in modern guitars, the string that was physically 'highest', and was therefore called *hypatē*, was actually the lowest in pitch (*c*). Conversely, the string that was physically 'lowest' (*nētē*) was tuned to the highest note (*c'*), while the 'intermediate' string (*mesē*) occupied a central position both spatially and in terms of pitch (*f*). This set of three notes constituted a stable framework of reference which, on the one hand, delimited the octave range traditionally employed by lyre tunings and, on the other, sketched the basic features of its internal organisation by means of the intermediate *mesē*, which divides the octave neatly into a fourth and a fifth (Fig. 1).

But Plato was not the first Greek theorist to describe this tuning system. It is first attested in a fragment by the fifth-century Pythagorean philosopher Philolaus who, just like Plato,²⁸ significantly labels it as *harmonia* without further qualifications, implying that it reflected a broadly recognised 'basic tuning' or 'the *harmonia*' par excellence:

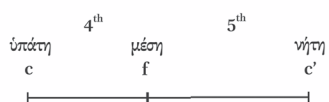
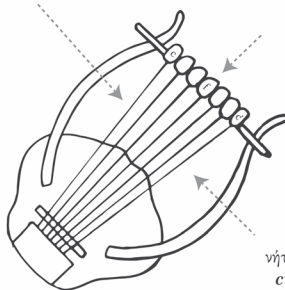
28 4.443d6: ὥσπερ ὄρους τρεῖς ἁρμονίας ἀτεχνῶς, νεάτης τε καὶ ὑπάτης καὶ μέσης. Cf. e.g. [Arist.] *Pr.* 19.44, where the unqualified word *harmonia* is employed again to indicate the octave arrangement characteristic of traditional lyre tunings, delimited by the three boundaries *neatē*, *hypatē* and *mesē*. Interestingly, both Plato and the author of the Aristotelian *Problem* use the uncontracted form *neatē*, and not the standard Attic *nētē*, perhaps under the influence of Philolaus' Doric form *neata*. On Philolaus' book and Plato, cf. Huffman 1993, 5, 12–16.

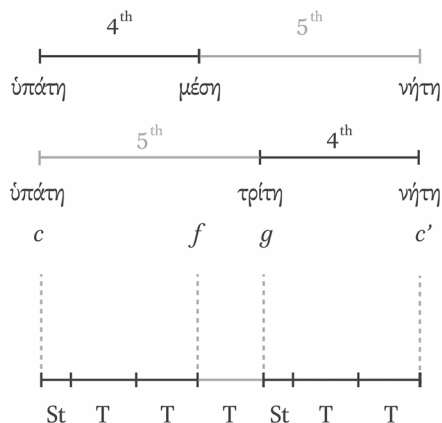


ὑπάτη = 'uppermost' string
c
(but lowest in pitch)

μέση = 'middle' string
f

νήτη = 'lowermost' string
c'
(but highest in pitch)





5 tones + 2 semitones

Exempli gratia Dorian tuning

FIGURE 2 Philolaus' lyre *harmonia*

Beneath its elaborate technical veneer, this passage offers evidence that is extremely valuable for our purposes. First, Philolaus defines the structure of his octave *harmonia* as system of interlocking fourths and fifths—that is to say, a tuning system whose essence consists in a combination of unequal, consonant intervals within a perfectly harmonious and balanced whole.²⁹ Secondly, many aspects of Philolaus' wording indicate beyond doubt that he is talking about a lyre tuning. For instance, he uses the rare terms *syllaba* (literally 'grasped together') and *di' oxeian* ('through the high-pitched [strings]') to indicate respectively the interval of a fourth and a fifth—terms coined by practicing musicians that will eventually be replaced by more abstract expressions coined by harmonic theorists (*dia tessarōn* and *dia pente*, respectively 'through four' or 'through five'). Finally, the expression *dia pasan* is employed to indicate the octave, reflecting its original meaning 'through all the lyre strings'.

Recently discovered cuneiform tablets show that this basic tuning structure had its roots already in Mesopotamian lyre practice,³⁰ a remarkable continuity

29 On the different status of the consonances of the fourth and fifth on the one hand, and the perfect concord of the octave on the other, see e.g. Porph. *In Ptol.* 107.15-108.34; Theo Sm. *Math. Plat.* 48.17-49.5.

30 Cf. Franklin 2018.

which was destined to remain unaltered until late antiquity.³¹ Yet the appeal that this tuning model exerted on Plato did not derive simply from its long tradition, but especially from its prestigious cultural pedigree. As shown in another passage by Philolaus, this musical structure played a crucial role in Pythagorean cosmic and metaphysical speculation, and represented nothing less than the basic model of the orderly organisation of the universe (*kosmos*) as a whole.³²

περί δὲ φύσιος καὶ ἀρμονίας ὧδε ἔχει· ἃ μὲν ἐστὼ τῶν πραγμάτων αἰδίου ἔσσα καὶ αὐτὰ μὲν ἃ φύσις θείαν γὰ καὶ οὐκ ἀνθρωπίνην ἐνδέχεται γνῶσιν πλάν γὰ ἢ ὅτι οὐχ οἶόν τ' ἦν οὐθὲν τῶν ἐόντων καὶ γιγνωσκομένων ὑφ' ἁμῶν γὰ γεγενῆσθαι μὴ ὑπαρχούσας τὰς ἐστούς³³ τῶν πραγμάτων, ἐξ ὧν συνέστα ὁ κόσμος, καὶ τῶν περαινόντων καὶ τῶν ἀπειρών. ἐπεὶ δὲ ταὶ ἀρχαὶ ὑπάρχον οὐχ ὁμοῖαι οὐδ' ὁμόφυλοι ἔссαι, ἤδη ἀδύνατον ἦς κα αὐταῖς κοσμηθῆναι, εἰ μὴ ἀρμονία ἐπεγένετο ὥτινῶν ἂν τρόπῳ³⁴ ἐγένετο. τὰ μὲν ὧν ὁμοῖα καὶ ὁμόφυλα ἀρμονίας οὐδὲν ἐπεδέοντο, τὰ δὲ ἀνόμοια μὴδὲ ὁμόφυλα μὴδὲ ἰσοταχῇ, ἀνάγκη τὰ τοιαῦτα ἀρμονίᾳ συγκεκλείσθαι, εἰ μέλλοντι ἐν κόσμῳ κατέχεσθαι.

Philol. fr. 6 HUFFMAN

Concerning nature and harmony, it is as follows. Being eternal, the essence of things, and nature itself, encompass divine and not human knowledge, with this exception: it would not have been possible for any of the things that exist, and are known by us, to have come into being if the stable essence (*tas estous*) of the things out of which the world-order (*kosmos*) is composed (*synesta*)—both the ‘limiters’ and the ‘unlimiteds’—had not already been in the beginning. But given that these origins (*archai*) existed as a foundation since the beginning (*hyparchon*), and were neither alike nor akin, it would have been impossible for them to be set into an order if harmony had not come upon them, in whatever manner it came to be. Things that are alike and akin had no need for harmony

31 See Figure 4 below; cf. Ptol. *Harm.* 8of., with Hagel 2010, 56–60.

32 Cf. Philol. fr. 1 (ἃ φύσις δ' ἐν τῷ κόσμῳ ἀρμόχθη ἐξ ἀπειρων τε καὶ περαινόντων, καὶ ὅλος <ὁ> κόσμος καὶ τὰ ἐν αὐτῷ πάντα) and fr. 6 Huffman, with Huffman 1993, 93–164. For a detailed discussion of Philolaus' fragments and their role in the history of ancient Greek harmonics, see Barker 2007, 263–86. More generally, on Philolaus' use of the musical notion of *harmonia* to depict the structure of the *kosmos*, see Horky 2013, 144–8, 154–5, 235–59; Barker 2014, 190; Palmer 2014, 222; on the notion of *kosmos* in ancient thought, see Horky 2019.

33 τὰς ἐστούς Badham: τὰς ἐντούς FGVME.

34 ὥτινῶν ἂν τρόπῳ Huffman: ὥτινι ὧν ἂν τρόπῳ FV: ὥτινι δν ἂν τρόπῳ GE: ὥτινι δν ἂν τρόποι M.

upon them; but things that are dissimilar, unrelated and not of the same speed—for such things it is necessary to be joined by harmony, if they are to be held together in an orderly universe (*kosmos*).

In my view, this passage powerfully condenses the key theoretical points that inform Plato's use of the concept of *harmonia*. As Heraclitus and Empedocles already emphasised, *harmonia* does not originate from a peaceful and orderly world. On the contrary, the fundamental need (*anagka*) for *harmonia* arises from the very existence of a natural and inescapable tension between elements that are radically different, but equally necessary, to give rise to the complex universe we inhabit.³⁵

35 An important antecedent of Plato's (and Philolaus'?) conceptualization of *harmonia* is Heraclitus' famous aphorisms 'the most beautiful harmony arises from diverging/conflicting elements' and 'everything arises from strife' (ἐκ τῶν διαφερόντων καλλίστην ἁρμονίαν καὶ πάντα κατ' ἔριν γίνεσθαι, Heraclitus 22 B 8 Diels & Kranz; Arist. *Eth. Nic.* 8.1155b5-6; cf. Plat. *Symp.* 187a, where Eryximachus refers to this model and ascribes it to Heraclitus). Empedocles exerted an equally important influence on Plato's interpretation of *harmonia* and its relationship to the cosmic principles of Strife (νεῖκος) and Friendship/Love (φιλότης)—see e.g. Empedocles 31 B 18, 23, 27, 71, 96, 107 Diels & Kranz, and Plato's characterisation of his theory as a 'gentler' development of Heraclitus' approach (*Soph.* 242d-e, where they are respectfully referred to as 'Ionian and Sicilian Muses'). Given the scantiness of the evidence, it is hard to tell whether the element of strife played a role in Philolaus' idea of *harmonia*, or whether he simply regarded the presence of these radical differences between the elements of nature as a neutral 'fact of life'. Philolaus is mentioned in Plato's *Phaedo* and was perhaps the originator of the theory that the 'soul is harmony', a view that is defended by his pupils Simmias and Cebes and refuted by Socrates (cf. Arist. *De an.*, *passim*, Dicaearchus frs 11-12 Wehrli and Macrobius *Somn. Scip.* 1.14.19 *Pythagoras et Philolaus harmoniam [scil. animam] esse dixerunt*, with Huffman 1993, 323-32). In the *Republic*, the soul is notably not defined as 'harmony' but as a compound entity that can be harmonised, so that different kinds of ethical excellence and their opposites can be conceived as types of harmony or disharmony. The same is true for the Soul of the Whole in the *Timaeus*, which is not identified with harmony per se but is presented as a separate entity that 'partakes in reason and harmony' (λογισμοῦ δὲ μετέχουσα καὶ ἁρμονίας ψυχή, *Tim.* 36e6-37a1). Hence the Soul of the Whole does not include only rational/cognitive elements, nor can it be reduced to *nous* alone (pace e.g. Pelosi 2010, 89-91): the shape of its basic harmonic framework is indeed perfectly rational (cf. §6 below), but this harmony comprises in itself both rational and 'irrational'/'emotional' movements and organises them within a complex, orderly but unitary system (cf. Appendix below). Human embodied souls are made of a less pure mixture of the principles of the Same, the Other and Being that originated the Soul of the Whole (*ta hypoloipa*, *Tim.* 41d). In human souls, this perfectly balanced *harmonia* of rational and emotional elements is at first temporarily perturbed (*Tim.* 44b), but not to the extent of undoing it entirely (*Tim.* 43c7-e4): this framework is 'distorted' only temporarily and only to a degree, for the complete 'loosening' of this foundational harmonic bond would lead to death (*Tim.* 41a6-b6). Such an equation between the harmonic model of the lyre *harmonia* and the foundational

In the absence of some sort of organising principle, it would be literally impossible (*adynaton*) for elements which are ‘neither alike nor akin’ to be integrated into one and the same whole, because the natural tensions produced by their differences would inevitably turn into destructive conflicts. But the vital organizing activity performed by *harmonia* does not work by eradicating or neutralising these irredeemable differences: it rather embraces and combines them with each other, assigning a specific place, time and function to each individual note and natural element.

This is how *harmonia* is able to create a unitary and dynamic system out of naturally divergent elements: just as Odysseus ‘harmonised’ different planks to build his raft,³⁶ a lyre *harmonia* ‘joins’ unequal intervals such as a fourths and fifths into an orderly whole that holds them together, and channels the energy produced by their natural tensions, turning them into productive rather than destructive forces. Likewise, Plato’s perfectly just individual is able to organise and combine the inner movements of the different elements of his soul, giving rise to a unified, dynamic, but not strifeless whole. In other words, the *harmonia* of justice is a balance, and not an absence, of tensions (*tonoi*), which are organised on the basis of well-selected, unequal but complementary relationships/ratios (*logoi*): the octave, which holds together the ‘highest’ and the ‘lowest’ strings of the soul, and its inner articulation into fourths and fifths, which is organised around its ‘central’ element *mesē*.

But Plato’s musical depiction of the inner harmony of justice does not simply hark back to Philolaus’ distinguished philosophical model. It also plays on key aesthetic and theoretical features that were associated with the intervals of the lyre *harmonia* in Classical times and long after, as we find out from a variety of sources ranging from the Pseudo-Aristotelian *Problems* to Porphyry’s commentary on Ptolemy’s *Harmonics* and the Aristoxenian musical handbooks.

All these authors unanimously tell us that the interval of the octave enjoyed a unique status among the Greeks, and was regarded as ‘the most beautiful’ and ‘most pleasant’ of all concords ([Arist.] *Pr.* 19.39) because of its unique aesthetic nature: an unmitigated blend of opposite but equal sounds known as *antiphōna* (‘counter-voices’). This striking term reflected the well-known fact that two strings tuned an octave apart naturally echo each other ([Arist.] *Pr.* 19.24)—a physical response that was literally labelled as a kind of

structure of life is presented also in the Hippocratic treatise *On Regimen*: cf. Barker 2007, 280–2 and Pelosi 2016.

36 Hom. *Od.* 5.246–8, 5.160–5 and 361.

'sympathy' by some Pythagorean theorists,³⁷ using the same term we still employ nowadays.

Plato already played on this natural 'sympathy' and quasi-identity between the notes of the octave in giving shape to his innovative understanding of temperance; and temperance in turn represents the starting point for the more complex *harmonia* of justice both on a philosophical and a strictly musical level. Philosophically speaking, it would not be possible to establish a correct organisation of the soul, or indeed the city, centred around the leading force of *logos* if its constituents did not agree that *logos* should exert political and psychological primacy—that is to say, the essential agreement or like-mindedness (*homonoia*) defined by temperance (*Resp.* 4.432a). Likewise, the musical model of *harmonia* that Plato employs to define justice—νεάτης τε καὶ ὑπάτης καὶ μέσης—begins by defining the basic symphony of the octave, which he had previously associated with temperance, and then turns it into a more complex system by adding an extra note: the intermediate *mesē*, the note that reveals how the octave naturally contains in itself two unequal but concordant intervals, a fourth and a fifth.³⁸

Plato's choice to assign such a key role to the note *mesē* is far from coincidental and, once again, reflects the essential role it played in contemporary musical theory and practice. As one of the Aristotelian *Problems* tells us, 'all effective melodies make frequent use of *mesē*, and all good composers have constant recourse to it; and when they get away from *mesē*, they come back quickly to it, whereas they do not act in the same way with any of the other notes' ([Arist.] *Pr.* 19.20). This uncontested aesthetic primacy mirrored the crucial structural function played by this note, which binds the others together in order to produce meaningful musical expressions and idioms: 'just as a Greek sentence would not exist if some of the conjunctions, such as *te* and *kai*, were taken away [...], likewise *mesē* is, as it were, a conjunction (*syndesmos*) of notes; and especially of beautiful notes, because the sound very often originates in it (*enyparchein*)'. Conversely, when *mesē* is out of pitch, the whole tuning sounds off and painful ([Arist.] *Pr.* 19.20).

37 Cf. Porph. *In Ptol. Harm.* 95.25-96.7, with Barker 2015 *ad loc.*; Theo Sm. *Math. Plat.* 50.22-51.4, with Petrucci 2012, 355.

38 According to Nicomachus, this notion is encapsulated in the very term *harmonia*, which reflects the fact that the octave is 'the very first concord to be fitted together (*hērmōsthē*) from concords' (*Ench.* 252.10-13; cf. Ptol. *Harm.* 50.12-51.3, Porph. *In Ptol.* 163d-64d). See also Plat. *Phlb.* 17d and Theophrastus fr. 717 Fort., with Barker 2015, 294-5: 'the Pythagoreans called *syllabē* the concord of the fourth, *dīoxeian* the fifth and assigned the octave *harmonia* to the system [of these two intervals], as Theophrastus says too'.

For these reasons, *mesē* was characterised as the 'origin' (*archē*, [Arist.] *Pr.* 19.44) or the 'leader' (*hēgemōn*) of the system of *harmonia*.³⁹ The very notion of 'being in harmony' was indeed defined as standing in a certain relation to *mesē* ([Arist.] *Pr.* 19.36), the common element that coordinates the whole and determines the specific functions (*dynamēis*) played by its individual notes.⁴⁰

And this is precisely the role that Plato attributes to the defining element of his notion of justice: reason (*logos*), the faculty that is capable of producing a truly unified system in the city and the soul by attributing a well-defined function to each individual part on the basis of its own natural talents and features. Just as *mesē* brings together a set of notes and turns them into an orderly and integrated scale by establishing and maintaining correct relationships (*logoi*)⁴¹ between their individual pitches and functions in the octave, reason is capable of binding different elements of the soul together into a cohesive psychological and political whole,⁴² building upon the shared agreement produced by temperance.

And just as the choristers of temperance were able to perform their simple, but beautiful, octave concord because they agreed to follow the lead of their 'chorus-leader', the inner *harmonia* of a just soul works only if *mesē* is given the leading role in the tuning. As Aristotle tells us, *mesē* played the same role in the tuning of *harmonia* as the chorus leader in a chorus: both stood in the middle of their respective groups and represented their 'origin', common point of reference and leading principle (ἐνθα μὲν γὰρ ὁ κορυφαῖος ἐνθα δὲ ἡ μέση ἀρχή, *Metaph.* 5.1018b28-29).

5 'Any Other Element That May Happen to Be In-Between (*Metaxy*) ...'

So far, our reconstruction of the harmonic model that Plato employed to give shape to the notion of justice has accounted for the relationship established between the three 'boundaries' of the lyre *harmonia* and their counterparts in the just soul. But another aspect of Plato's wording remains to be elucidated,

39 *hēgemōn*, e.g. [Arist.] *Pr.* 19.33, 19.36 ; Aristox. *apud* [Plut.] *De mus.* 1135a10; Dio Chrys. 68.7.

40 Cleonides *Isag.* 202.3-5 Jan; cf. Aristox. *El. harm.* 58.10-60.3 Da Rios on the role of *dynamis* in determining the identity of a note in a tuning system.

41 On the central role of harmonic ratios in the definition of the structure of the World Soul in the *Timaeus*, see *Tim.* 35b4-36b6 with §6 below, and *Tim.* 31c.

42 Cf. Plut. *Plat. Quaest.* 1009a, where *mesē* is identified with *logistikon*, *hypatē* with *epithymēton*, and *nētē* with *thymoeidēs*. See also *De an. procr.* 1029a.

namely his mysterious reference to 'any other elements that may happen to be in-between them' (*metaxy*).

This is a startling remark indeed, given that long stretches of *Republic* 4 focus on defining the tripartite nature of the human soul and its political counterpart in the state. To unravel this difficulty, we must turn once again to Philolaus' testimony on the structure of a lyre *harmonia* (fr. 6a Huffman), for this passage does not only give us the key to understanding the pitch-relations between the three boundaries mentioned by Plato but completes the picture by adding a fourth note, *g*, which stands a tone above *mesē*. Philolaus labels this note *trita* (literally the 'third string'). This revealing detail indicates that he is describing the traditional tuning system employed on seven-stringed lyres:⁴³ as shown in Figure 3, a scale that consists of seven notes but spans an octave must necessarily 'skip' one step, producing a gap that makes the note standing a tone above *mesē* the 'third' string from the top. In later musical practice and theory, most notably after the so-called New Music,⁴⁴ this gap was to be filled by an additional string—a change that gave rise to full octachord systems and caused a shift in the name of the notes too. In fact, the 'third' string from the top now corresponded to a different pitch, *a^b*, and for this reason the string corresponding to the note *g* was—very imaginatively!—renamed *paramesē*, i.e. the string 'next to *mesē*'.⁴⁵

Philolaus' addition of the extra note *g* to the three basic boundaries mentioned by Plato produces an elegant, symmetrical and tripartite organisation which includes two tetrachords separated by a tone—a structure that was to become the fundamental system of reference for all investigations into ancient Greek harmonic theory. In fact, this basic framework corresponds to what Aristoxenus would call 'immovable' or 'standing' notes,⁴⁶ an expression that indicates that the relative intervals formed by these notes were invariable. And indeed, as shown in Figure 4, this interval system was to remain a constant, basic skeleton that informed all lyre tunings from Philolaus' time until Ptolemy's, i.e. practically for the whole of ancient Greek culture.

In order to produce different modes on a lyre, it was therefore necessary to fit various sequences of intervals within this stable framework, adjusting the pitch of the intermediate strings without altering this essential structure

43 Cf. Arist. *Metaph.* 14.1093a14 (ἐπὶ τὰ δὲ χορδαὶ ἢ ἁρμονία), Alex. Aphr. *In Metaph.* 1093a13 and esp. [Arist.] *Pr.* 19.7, 19.32, 19.47.

44 Lynch 2018.

45 On Nicomachus' convoluted explanation of this development, see Barker 1989, 261f.; Huffman 1993, 152–6; Barker 2007, 275–8. I will justify in detail the choice of *a^b* rather than *b^b* for Philolaus' 'gapped' tuning elsewhere in due course.

46 φθόγγοι ἀκίνητοι, Aristox. *El. harm.* e.g. 28.10–12; φθόγγοι ἐστῶτες, Cleonides *Isag.* 185.16–19.

6 The Soul of the Whole in the *Timaeus* and the Model of the Lyre *Harmonia*

A renowned passage of the *Timaeus* describes how the Demiurge gave shape to the ‘Soul of the Whole’⁴⁷ by organising the foundational but immaterial ‘fabric’ of the Universe, which he had previously created out of the three basic ‘natures’ (*physeis*) of the Same, the Other and Essence/Existence (*Tim.* 34c-35b). The Demiurge mixes these three principles together into a perfectly unitary *idea*, which he then divides and distributes in accordance with a precise harmonic structure:⁴⁸

ἤρχετο δὲ διαιρεῖν ὧδε. μίαν ἀφείλεν τὸ πρῶτον ἀπὸ παντὸς μοῖραν, μετὰ δὲ ταύτην ἀφῆρει διπλασίαν ταύτης, τὴν δ’ αὖ τρίτην ἡμιολίαν μὲν τῆς δευτέρας, τριπλασίαν δὲ τῆς πρώτης, τετάρτην δὲ τῆς δευτέρας διπλὴν, πέμπτην δὲ τριπλὴν τῆς τρίτης, τὴν δ’ ἕκτην τῆς πρώτης ὀκταπλασίαν, ἐβδόμην δ’ ἑπτακαικικοσιπλασίαν τῆς πρώτης· μετὰ δὲ ταῦτα συνεπληροῦτο τὰ τε διπλάσια καὶ τριπλάσια διαστήματα, μοίρας ἔτι ἐκείθεν ἀποτεμένων καὶ τιθεῖς εἰς τὸ μεταξύ τούτων, ὥστε ἐν ἐκάστῳ διαστήματι δύο εἶναι μεσότηας, τὴν μὲν ταυτῷ μέρει τῶν ἄκρων αὐτῶν ὑπερέχουσας καὶ ὑπερεχομένην, τὴν δὲ ἴσῳ μὲν κατ’ ἀριθμὸν ὑπερέχουσας, ἴσῳ δὲ ὑπερεχομένην. ἡμιολίων δὲ διαστάσεων καὶ ἐπιτρίτων καὶ ἐπογδόων γενομένων ἐκ τούτων τῶν δεσμῶν ἐν ταῖς πρόσθεν διαστάσεσιν, τῷ τοῦ ἐπογδόου διαστήματι τὰ ἐπίτριτα πάντα συνεπληροῦτο, λείπων αὐτῶν ἐκάστου μόριον, τῆς τοῦ μορίου ταύτης διαστάσεως λειφθείσης ἀριθμοῦ πρὸς ἀριθμὸν ἐχούσης τοὺς ὅρους ἕξ καὶ πεντήκοντα καὶ διακοσίων πρὸς τρία καὶ τετταράκοντα καὶ διακόσια. καὶ δὴ καὶ τὸ μειχθέν, ἕξ οὐ ταῦτα κατέτεμεν, οὕτως ἥδη πᾶν κατανηλώκει.

Tim. 35b4-36b6

47 On its composite nature, see Appendix below: just as its human counterpart, the life-giving principle of the whole *kosmos* and its body (*sōma*) is not to be reduced to intellect/*nous* alone. This point is clearly outlined from the very first appearance of the Soul at *Tim.* 29e-30b; contrast with Atticus, *Against those who interpret Plato through Aristotle* fr. 7, *ap.* Euseb. *Praep. evang.* 15.9.1-14, in Boys-Stones 2017, 284f.

48 It is not immediately clear from Plato’s wording whether the sequence should be interpreted as an ascending or descending scale. However, as pointed out in Barker 2007, 322, smaller numbers should be identified with lower pitches, in keeping with Archytas’ acoustic theory—see n. 57 below.

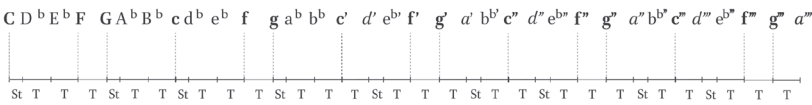
He started to divide as follows. He first took away one portion from the whole, and after that another portion that was twice as big as the first; then again a third that was hemiolic with regard to the second, but three times the first; and then a fourth that was double the second, a fifth that was triple the third, a sixth that was eight times the first and a seventh that was twenty-seven times bigger than the first.

1	2	3	4		8	9	...	27
C	c	g	c'		c''	d''		a'''

After these he filled out the double and triple intervals, cutting away still other parts from the mixture, and put them in-between (*metaxy*) the previous shares so that there were two means in each interval:⁴⁹ one of them exceeds and is exceeded by the same part of the two extremes (= harmonic mean), whereas the other exceeds and is exceeded by an equal number (= arithmetic mean).⁵⁰

	$\frac{4}{3}$	$\frac{3}{2}$		$\frac{8}{3}$		$\frac{9}{2}$	$\frac{16}{3}$	6		$\frac{27}{2}$	18	
1			2		3	4			8	9		27
C			c		g	c'			c''	d''		a'''
	F	G		f		d'	f'	g'			a''	d'''

Once these hemiolic, epitritic and epogdoic divisions took shape by inserting these bonds in the pre-existing divisions, he filled out all the epitritic distances [= fourths] with epogdoic intervals [= tones], leaving in each of them its own part—a part which is defined by the ratio 256:243 [= Pythagorean diatonic semitone]. In this way, the mixture from which he had been cutting these parts was now completely spent.



49 Cf. Arist. *Metaph.* 14.1093a25-30, where these two intermediate sounds are collectively identified as ‘two *mesai*’, and further discussion below. Theon of Smyrnae too points out that the harmony of the Whole ‘is composed with two *mesai* (δυσὶ συναρμολογῆσθαι μεσότησιν)’ (*Math. Plat.* 65.4). On the traditional association of these notes with the numbers 8 and 9, cf. [Plut.] *De mus.* 1138c-1139b, with n. 63 below, and Plat. *Epin.* 990e.

50 For the equivalences in parenthesis, cf. Archyt. fr. 2 Huffman on ‘the three means employed in music’, with nn. 52 and 62 below. These means play a significant role also in the Pseudo-Archytan treatise *On Law and Justice* (Huffman 2005, 170-8, 603-6).

The harmonic structure of the Soul of the Whole described above represents the fundamental fabric that underlies the *kosmos*; the common matrix that unites in itself all its individual parts and elements, their complex movements and individual relationships; what we might call a network of forces, such as those that regulate the movement of the planets (*Tim.* 38c-d), or the fundamental scale that offers all the notes needed to perform the great song of the life of the universe (*Resp.* 10.616e-617d).

This basic, underlying harmonic order is embedded in the *kosmos* but is not immediately visible or audible in itself, nor is it identical with any individual component.⁵¹ Yet human beings can observe and experience it by coupling perception with reason—for instance, by observing and studying the regular movements of the planets or the beautiful order of musical *harmoniai*.⁵²

From a musical point of view, the similarities between the basic harmonic skeleton of the Soul of the Whole and the structure of Philolaus' lyre *harmonia* leap to the eye. Both start by defining the basic intervals of the octave, fourth and fifth from their relative ratios (double, 2:1; hemiolic, 3:2; and epitritic, 4:3), and then reveal their inner articulation into tones and semitones, following a diatonic division.⁵³ The *Timaeus* scale, however, spans a gamut that is much larger than Philolaus' tuning and the *harmonia* of a just soul, and embraces

51 The overall harmonious fabric of the Soul of the Whole is envisaged as a strip, or more fittingly a string (cf. *Tim.* 34b3-4: ψυχὴν δὲ εἰς τὸ μέσον αὐτοῦ θείας διὰ παντός τε ἔτελλεν), that is subsequently divided into two parts lengthwise. These identical parts will be joined at a right angle and bent into concentric circles—the outer circle of the Same and the inner circle of the Different; and the latter will be in turn divided into several rings that regulate the movements of different planets (*Tim.* 36b-d). But these rings, and the circles themselves, are not identical to the planets, which appear later with the generation of the corporeal and time (*Tim.* 38c-d). These circles are 'made' out of the same 'fabric': the Soul's *harmonia*, a complex network of forces that encompasses all the *dynamis* of the *kosmos*—all the elements, motions, potentialities and energies it embraces and regulates. Cf. *Resp.* 10.616c-617d. Interestingly, the process of dividing a single 'string' into harmonic proportions and then bending it into a circle, as the Demiurge does in the *Timaeus*, is the mirror image of the process described by Ptolemy to illustrate the harmonic organisation of the zodiac, and the closeness of astronomy and harmonics (*Harm.* 102.4-13, with Creese 2010, 351-5).

52 See *Resp.* 7.530a-531e, on the role played by the 'sister sciences' (*adelphai epistēmai*) of astronomy and harmonics in revealing the fundamental order of the universe. Cf. Archyt. fr. 1, where they are called *adelphai mathēmata*—a difference in terminology that cannot be understated—and include also geometry and arithmetic; see also Archyt. fr. 4 Huffman, where the science of *logoi* (*logistikē*) is presented as the one that underlies all others (Huffman 2005, 68-89). A more elaborate version of this trope is offered at Ptol. *Harm.* 94.16-20.

53 Cf. Theo Sm. *Math. Plat.* 56.3-5 ('the diatonic genus is simple, noble and especially natural; for this reason Plato preferred it'), and 63.25-64.1.

more than four of such systems—an important point that will be addressed in detail below. But this discrepancy is readily understood if one keeps in mind the overarching goal of this passage, namely that the *Timaeus* scale does not aim at describing the harmonic structure of an individual soul, or a single tuning employed by a single performer: the creation of the Soul of the Whole is a ‘likely story’⁵⁴ that illustrates the hyperbolic harmony of the Universe as a whole, whose perfect beauty includes in itself a variety of living and immortal creatures (*Tim.* 92c), and to do so employs a combination of individual elements.⁵⁵

In keeping with this broader cosmological and physical outlook, it is noteworthy that the series of pitches defined by the first step of the Demiurge’s division—the basic series of double and triple intervals—are the same that we find in the corresponding steps of the series of harmonic overtones generated by any musical note (cf. Fig. 5): a truly natural *harmonia* which is hidden to the ear but is revealed by the inborn ‘sympathy’ of concordant strings.⁵⁶ This approach is also consistent with Archytas’ theory of sound, which underlies other key musical passages of the *Timaeus*.⁵⁷

54 An *eikos mythos*, and not a perfectly exact and comprehensive account: *Tim.* 29c-d, and §1 above.

55 As I will show below, however, this does not entail that the *Timaeus* scale is to be considered ‘musical [only] in an abstract, mathematical sense, in virtue of its perfect proportionality, completeness and integration’ (Barker 2007, 322); it incorporates various models taken from contemporary lyre practice and combines them to represent fully the pervasive, all-encompassing harmony of the *kosmos*.

56 On the octave, see above on [Arist.] *Pr.* 19.24, and cf. *Pr.* 19.7, 19.8, 19.12, 19.18, 19.23, with Lynch 2017, 26–32; more complex musical demonstrations (*epideixeis*) involving the monochord are discussed in Creese 2010, 131–77.

57 According to Archytas (fr. 1 Huffman), sounds arise from impacts (*plēgai*) that strike the air and reach our senses. If the movement of these impacts are quick, we perceive high-pitched sounds (ἃ μὲν ἀπὸ τῶν πλαγῶν ταχὺ παραγίνεται καὶ ὀξεῖα φαίνεται); if they are slow, we perceive low-pitched ones (τὰ δὲ βραδέως καὶ ἀσθενῶς, βαρέα δοκοῦντι ἡμῖν). The plural form of Archytas’ expression leaves some aspects of his theory unclear: is each sound caused by a single impact or by several? The latter option is clearly envisaged in [Arist.] *Pr.* 19.39, where higher sounds are said to produce more impacts on the air than lower ones, making their movement (*kinēsis*) ‘faster’ than the movement of lower notes. For example, the higher note of an octave produces twice as many ‘impacts’ as the lower one in a given unit of time; that is to say, what we would call the frequency of the highest note of an octave is exactly double the lowest. In keeping with this, at *Timaeus* 67a7–c3, sound is first defined as the ‘impact transmitted by air, through the ears, to the brain and blood until it reaches the soul’, and this impact produces a movement (*kinēsis*) that starts from the head and reaches the liver. If this movement is ‘fast’ (i.e. caused by many impacts close to each other in time), then the sound is perceived as high-pitched; if it is ‘slow’ (i.e. caused by fewer impacts in the same unit of time), then the sound is perceived

The first step of the Demiurge’s harmonic construction of the Soul of the Whole
(series of double and triple intervals, *Tim.* 35b-c)

1	2	3	4		8	9	...	27
C	c	g	c'		c''	d''		a'''

The natural harmonic series generated by C₁ (~33 Hz)
(numbers in italics indicate deviations from equal temperament in cents)

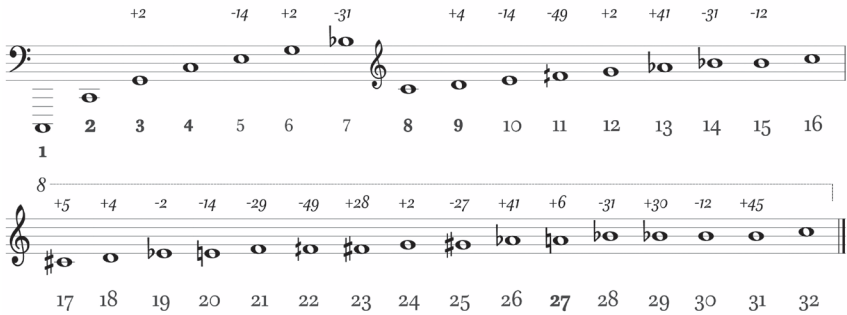


FIGURE 5 The first step of the harmonic construction of the Soul of the Whole and the natural harmonic series

The following steps undertaken by the Demiurge to ‘fill out’ the basic skeleton of double and triple intervals takes distance from the natural harmonic series, and defines a wide diatonic scale, which is discussed in a wealth of ancient *Timaeus* commentaries.⁵⁸ A remarkable example that is particularly relevant for our purposes is preserved in a section of the Pseudo-Plutarchan treatise *De Musica* (1138c8-1139b4),⁵⁹ which begins by showing that Plato in the *Republic* did not reject *harmoniai* other than the Dorian and Phrygian, and the *aulos* in favour of lyres, ‘out of ignorance or inexperience, but because they were unsuitable for such a constitution’ (1138c6-8).⁶⁰

as low-pitched. *Timaeus* adds two other features of this movement that determine other qualities of the perceived sound: if the movement is uniform, then the sound appears homogeneous and smooth, whereas it seems rough in the opposite case; finally, the sound will seem loud if the movement is mighty (*pollē*), soft if the opposite. Cf. Barker 2000.

58 These *Timaeus* commentaries, possibly originated by Crantor (ca. 335-275 BC), had a great influence on ancient culture, the Renaissance and beyond: cf. Barker 2003; Palisca 1985.

59 Cf. Barker 1984, 227-9; Barker 2007, 331f.; Rocconi 2011.

60 Cf. n. 2 above.

In order to defend Plato's musical competence from such unfair accusations, the author of the treatise turns to the 'generation of the soul' (*psychogonia*) described in the *Timaeus* to demonstrate that Plato was a 'true expert' in harmonic theory. Citing the relevant text, he points out that Plato illustrated the 'psychic *harmonia* of the four natural elements (*tōn tessarōn stoicheiōn*)⁶¹ and the cause of its consonance, which arises from unequal elements' (1138d9-e1) by applying the concepts of arithmetic and harmonic means;⁶² this process divides the octave into two tetrachords separated by a tone, notes that 'fall in-between' (*metaxy*) its wider limits.⁶³

As shown above, Plato's *Timaeus* indeed puts great emphasis on the role played by these intermediate notes (*ta metaxy*) in 'filling out' the basic series of double and triple intervals (*Tim.* 35c2-36a3), producing the same pattern that is first defined by Philolaus' lyre *harmonia* and informs the harmony of justice in the *Republic*.

The harmonic models and language that are employed so consistently in these texts allow us to shed light also on important point—the otherwise obscure reference that Socrates makes in the *Republic* to 'any other elements that may happen to be in-between' the three fundamental boundaries of the *harmonia* of the just soul, *hypatē c*, *mesē f*, *nētē c'* (*Resp.* 4.443c9-444a2, quoted in §3 above). Indeed, at least one additional 'intermediate' note—*paramesē g*—was necessary to set up the harmonic framework at the heart of traditional lyre modes; in keeping with this, both *mesē f* and *paramesē g* were collectively identified as *mesai* in Pythagorean parlance (*Arist. Metaph.* 14.1093a25-30).

But many more 'intermediate' notes are of course required to set up a full Dorian or a Phrygian lyre tuning—that is to say, the two modes selected in *Republic* 3 for the musical education of the future Guardians. As I showed in detail elsewhere, if we reconstruct these modes on the basis of the extant technical evidence, we are presented with a rather surprising correspondence: only the two *harmoniai* selected by Socrates and Glaucon—Dorian and

61 Cf. *Tim.* 31c-32d, 35b-36b, 55e-56e.

62 The intervals of the fourth and fifth are identified in this passage with two types of mathematical 'means'—a topic discussed in detail in Archyt. fr. 2 Huffman. Here we are told that the 'subcontrary' mean was also called 'harmonic', a terminological change attributed to various Pythagorean theorists including Archytas himself and Hippasus (*Iamb. In Nic.* 141f., 100.19-101.1 Pistelli), as well as Philolaus (*Nicom. Arith.* 2.26.2).

63 Cf. [Plut.] *De mus.* 1139a1-5: 'given that these are the numbers that fall in-between six and twelve, and that the interval of the octave consists of a combination of a fourth and a fifth, it is clear that *mesē* will have number eight, *paramesē* number nine' (τούτων οὖν τῶν ἀριθμῶν ὄντων μετὰξὺ τῶν ἕξ καὶ τῶν δώδεκα, καὶ τοῦ διὰ πασῶν διαστήματος ἐκ τοῦ διὰ τεττάρων καὶ τοῦ διὰ πέντε συνεστῶτος, δῆλον ὅτι ἕξει ἡ μὲν μέση τὸν τῶν ὀκτῶ ἀριθμόν, ἡ δὲ παραμέση τὸν τῶν ἐννέα).

‘ACCEPTED’ EDUCATIONAL MODES

CORRESPOND to the basic traditional
framework of Hellenic lyre *harmonía*

(C F G C’)

DORIAN

c d $\flat$ e $\flat$ **f** g a $\flat$ **c’**

PHRYGIAN

c d e $\flat$ **f** g b $\flat$ **c’**

‘REJECTED’ EDUCATIONAL MODES

DO NOT MATCH the basic traditional
framework of Hellenic lyre *harmonía*

(C F G C’)

MIXOLYDIAN

c d $\flat$ e $\flat$ **f** f $\sharp$? **c’**

SYNTONOLYDIAN

? ? e **f** g a **c’**

‘LOOSE’ LYDIAN

c d e f $\sharp$ **g** a/b? **c’**

IASTIAN

A B $\flat$ **c** d e **f** g

FIGURE 6 The modes of *Republic* 3 and the framework of *harmonía* (c f-g-c’, marked in bold)

Phrygian—are compatible with the basic lyre framework, whereas all the others miss at least one of the four ‘fixed notes’ c–f–g–c’ (Fig. 6). Conversely, the four modes rejected from the educational repertoire of the future Guardians are especially suitable for the *aulos* (Fig. 7)—a correspondence that matches their characterisation in early and classical Greek poetry.⁶⁴

In other words, Socrates and Glaucon gave preference to the two modes—Dorian and Phrygian—that could be played on traditional seven-string lyres without altering their fundamental *harmonía* framework: a choice that is perfectly consistent with their selection of ‘Apollo’s instruments’ (*Resp.* 3.399e1-2) over ‘those belonging to Marsyas’.⁶⁵ And the combination of these two lyre

64 See Lynch 2016. On the essential role of this harmonic framework, and its subversion in the ‘New Music’, see Lynch 2018.

65 Cf. Plat. *Lach.* 188d, where Laches presents the ‘simple Dorian’ (ἀτεχνῶς δωριστί) as ‘the only *harmonía* that is properly Hellenic’. He contrasts it starkly to the Iastian (ἀλλ’ οὐκ ἰαστί) and then adds a more nuanced rejection of the Phrygian and Lydian (‘and I believe not even the Phrygian or Lydian’, οἷμαι δὲ οὐδὲ φρυγιστί οὐδὲ λυδιστί)—implying that these modes had a different status from that of the Iastian. Technically speaking, this was indeed the case: unlike the Iastian and its lower register, the other three modes—Dorian, Phrygian and Lydian—could be fitted within the central octave framework of the lyre *harmonía* (cf. Lynch 2018). But this implied a significant conceptual change. In the basic Dorian lyre tuning, the middle string of the lyre (later known as ‘thetic *mesē*’) coincides with Dorian *mesē* f (see Figure 9 below). By contrast, producing a Phrygian

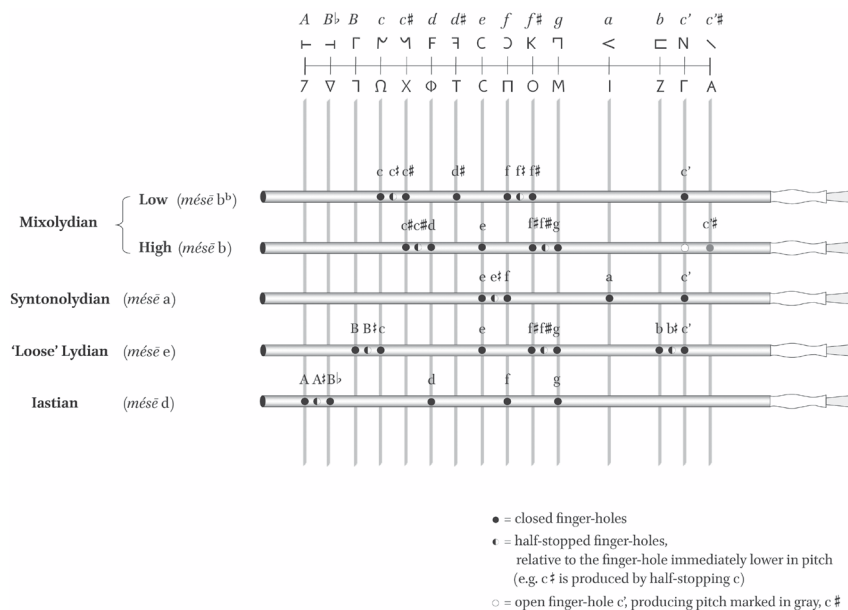


FIGURE 7 The 'rejected' *harmoniai* of *Republic* 3 as *aulos* modes, and the relevant notation signs by semitones (Aristid. Quint. *De mus.* 19-20 and 26.14-21 W.I.)

Note: This reconstruction corrects the one given in Lynch 2016, 283, fig. 3, setting each *harmonia* at its relative *mesē*; for the *aulos* version of the Dorian, Phrygian and Lydian *harmoniai*, cf. Lynch 2018, 296, fig. 1. Thanks are due to Stefan Hagel for providing the ancient musical notation fonts.

harmoniai allows us to provide a solution to another vexed question, namely how to make musical sense of the *Timaieus* scale. Far from being a wholly abstract construction, the harmony of the Soul of the Whole comprises two Dorian diatonic octaves followed by two octaves and a sixth based on the

or Lydian *harmonia* on a lyre implied separating the abstract notion of *mesē* from this physical lyre string, introducing the new notion of dynamic *mesē*: this made it possible to identify the 'tonic' of each scale (their 'dynamic' *mesē*) with different physical strings, respectively *paramesē* g for the Phrygian mode and *tritē* a for the Lydian mode (cf. Lynch 2018, 293-302). Even though this is a fairly simple process in practical terms, the conceptual process that informs this development would certainly not qualify as 'untechnical/simple' (ἀτεχνῶς): a coincidence of physical and theoretical terms that applies only to the Dorian mode. The selection of both Dorian and Phrygian tunings made in *Republic* 3 already pushes the limits of the austere Spartan model embraced by Laches, and accepting to identify *mesē* respectively with thetic *mesē* f (Dorian *mesē*) and with thetic *paramesē* g (Phrygian *mesē*). But this choice was far from revolutionary, given that both of these strings were already called *mesai* in the Pythagorean tradition (Arist. *Metaph.* 14.1093a25-30).

St-T-T, while the upper half of the system presents the Phrygian subdivision T-St-T.⁶⁷

The basic ‘building blocks’ of this scale are therefore consistent with known musical tunings. Yet this scale has an exceptionally wide range—a feature that has often been taken as sign that it did not reflect musical scales or attunements used in practical performances.⁶⁸ Such claims, however, are ill supported by ancient evidence: Aristoxenus, for instance, tells us that greatest concord available in any single instrument or voice is ‘two octaves and a fifth: for we cannot stretch up to three octaves’ (*El. harm.* 26.5-7 Da Rios). This range is already significantly larger than the basic tuning envisaged by Philolaus, for instance; but this is not the whole picture, as Aristoxenus clarifies in the subsequent lines of this passage:

τάχα γὰρ ὁ τῶν παρθενίων αὐλῶν ὀξύτατος φθόγγος πρὸς τὸν τῶν ὑπερτελείων βαρύτερον μείζον ἂν ποιήσῃ τοῦ εἰρημένου τρις διὰ πασῶν διάστημα [...]. ταῦτὸ δὲ καὶ παιδὸς φωνὴ μικροῦ πρὸς ἀνδρὸς φωνὴν πάθοι ἄν. ὅθεν καὶ κατανοεῖται τὰ μεγάλα τῶν συμφῶνων· ἐκ διαφορουσῶν γὰρ ἡλικιῶν καὶ διαφερόντων μέτρων τεθεωρήκαμεν, ὅτι καὶ τὸ τρις διὰ πασῶν συμφωνεῖ καὶ τὸ τετράκις καὶ τὸ μείζον.

El. harm. 26.8-11 Da Rios

For it is evident that the interval made by the highest note of the ‘girl’ *aulos* with the lowest note of the ‘hyper-complete’ *aulos* would be greater than the three octaves mentioned [...];⁶⁹ and the same applies to the voice of a small child in relation to the voice of a man. From these instances we get to know the greatest of the concords: for it is by looking at different ages and different sizes that we have observed (*tetheōrekamen*) how the triple octaves is concordant, and so are the interval of four octaves and what is bigger than that too.

67 Both Dorian and Phrygian are mentioned in later sources as models for the harmony of the *kosmos*, albeit often in their chromatic variant: see e.g. Plut. *De anim. procr.* 1028f-1029d (diatonic); Alexander of Ephesus *ap. Theo Sm. Math. Plat.* 138-141. Full references and useful discussions are provided in Reinach 1900; Richter 1999; Hagel 2010, 35, n. 96, and 46, n. 118. On the different approach that underlies the apocryphal work known as *Timaues Locrus*, see Hagel 2010, 162; Creese 2010, 264-82.

68 E.g. Barker 2007, 321.

69 Cf. Aristox. fr. 101 Wehrli (= Ath. 14.634e-f), reporting the classification of different *auloi* into *partheneioi* (‘girl pipes’), *paidikoi* (‘child pipes’), *kitharistērioi* (‘kithara pipes’), *teleioi* (‘complete pipes’) and *hyperteleioi* (‘extra-complete pipes’). Cf. Ath. 4.176f.

Aristoxenus’ testimony clearly indicates that ranges above four octaves were not only abstract concepts in Classical times: such wide intervals were heard and sung in musical performances, which audibly displayed their concordant nature (τεθεωρήκαμεν). But these performances did not feature a single musician or instrument. They involved a variety of instruments of different sizes and singers of different ages and sexes: a rather apt model for the all-encompassing harmony of the *kosmos* embodied in Plato’s *Timaeus* scale.

The widest possible concord (but not the widest range) that Aristoxenus labels as ‘what is greater’ than four octaves must be one of the concordant intervals smaller than five octaves, i.e. four octaves and a fourth or four octaves and a fifth. The interval of four octaves and a fifth—which corresponds to the number 24—is indeed mentioned elsewhere as the compass of the cosmic *harmonia* (e.g. Macrobius *Somn. Scip.* 2.1.24); and Aristotle too reports that Pythagorean theorists coupled the number 24 with an *aulos*-based account of the ‘whole system of the heavens’ (τῇ οὐλομελείᾳ τοῦ οὐρανοῦ, *Metaph.* 14.1093b4).⁷⁰

The widest *aulos*-based concord envisaged by Aristoxenus and Aristotle’s unnamed Pythagoreans, then, differs from Plato’s lyre-based representation of the harmony of the *kosmos* by a tone, identified by the ratio 24:27.⁷¹ This extra tone, which is repeatedly mentioned in ancient commentaries on Plato’s *Timaeus*,⁷² is also the interval that makes the upper sixth of the scale recognizably Phrygian: in fact it is the highest note of the scale, *a*′′, that identifies *g*′′ as Phrygian *mesē*, since *mesē* is by definition the note that lies ‘below the disjunctive tone’ (Cleonides *Isag.* 201.18–20).

70 Cf. Hagel 2005, who presents the relevant sources and advances interesting hypotheses about their relationship to practical *aulos* models; I shall offer a different reconstruction elsewhere in due course.

71 Cf. Plut. *De an. procr.* 1018e, where we are told that the Pythagoreans identified the number twenty-seven with the tone.

72 E.g. Theo Sm. *Math. Plat.* 63.25–64.1; Plut. *De an. procr.* 1029b–c. Plutarch’s observation that Plato ‘added this tone at the top’ (ἐπὶ τὸ ὀξύ προσλαμβάνων), as opposed to the widespread practice of ‘the moderns’ to add it to the bottom of the scale (οἱ δὲ νεώτεροι τὸν προσλαμβάνόμενον, τόνῳ διαφέροντα τῆς ὑπάτης, ἐπὶ τὸ βαρὺ τάξαντες κτλ.), is especially useful for our purposes, as it confirms that Plato’s *Timaeus* scale is to be conceived as an ascending one.

7 Conclusions: Musical Education and the Model of the Lyre *Harmonia*

This full agreement between the lyre modes selected in *Republic* 3 and the *harmonia* of the Whole described in the *Timaeus* becomes all the more noteworthy because the *Timaeus* is explicitly characterised as an ideal continuation of the *Republic*. Indeed, Socrates' opening summary of the key points established in the *Republic* (*Tim.* 17a-19a) singles out the crucial role that the lyre-based musical education received by the Guardians will play in the development of their double psychological nature, gentle with their fellow citizens and harsh with enemies: that is to say, precisely the two ethical traits associated with the Dorian and the Phrygian modes in the *Republic*.

The musical modes that the Guardians will learn to play on their lyres will literally make their souls 'well-shaped' (*euschēmōna*, *Resp.* 3.401d), moulding them to the 'befitting and inborn *schēma*' (*Tim.* 33b) that informs the fundamental *harmoniai* of the *kosmos*, and will resonate in them too when they will become suitably aggressive or gentle in different circumstances.⁷³ And it is exactly in the realm of practical musical education that Plato and his contemporaries would have encountered for the first time the basic shape of the *harmonia* that informs all lyre tunings, as well as the skeleton of the *Timaeus* scale. In fact this framework of two tetrachords separated by a tone—something that looks terribly abstract to modern readers—arises from what was probably the first, and most essential, practical notion learned by lyre students in antiquity: how to tune their instruments.

Many sources—including Philolaus, Aristoxenus and later technical treatises⁷⁴—indicate that ancient lyres were tuned 'by means of consonances' (*dia symphōnias*), not unlike modern string instruments. After setting the pitch of one string—most likely the intermediate note *mesē*, which as we have seen above was known as the 'origin' or the 'leader'—all of the other strings were tuned by intervals of fourths and fifths: starting from *mésē* = *f*, the performer

73 One can only speculate whether the slightly larger gamut occupied by the Phrygian octaves in the *Timaeus* scale has any wider significance; perhaps it could point to the need for the Guardians (and the universe at large?) to embody more often the peaceful model of temperance than the war-like attitude proper to the Dorian mode (*Resp.* 3.399a5-c6). More generally, cf. *Tim.* 44a-b on the natural *schēma* of the *harmonia* (43d) to which the inner motions of the soul are restored by means of education. On the Dorian lyre mode as a model of war-like virtue to be embodied in one's actions, cf. Plat. *Lach.* 188d. On the use of lyre music to shape the soul of young children, see Plat. *Prot.* 326a-c; cf. [Plut.] *De mus.* 1145d-f, with Raffa 2011.

74 E.g. Aristox. *El. harm.* 68.10-70.2 Da Rios; [Eucl.] *Sect. can.* prop. 17.

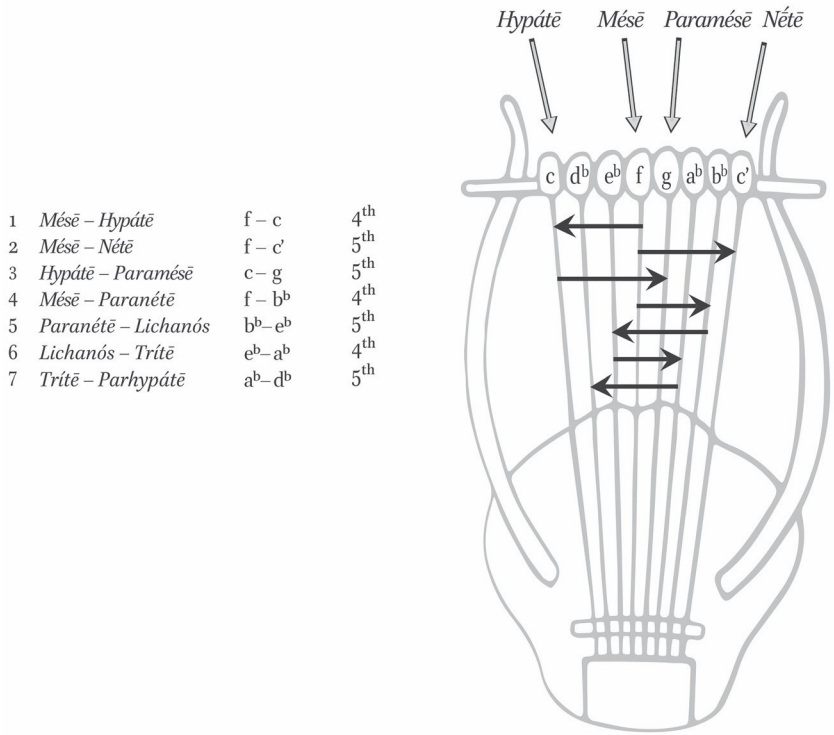


FIGURE 9 Tuning by consonances—*Exempli Gratia* eight-string lyre tuning, Dorian diatonic mode (cf. Franklin 2005, 16)

tuned *hypatē*, (*c*), *nētē* (*c'*), and *paramesē* (*g*). Once this basic framework was established, an interlocking series of fourths and fifths was employed to ‘fill out’ the whole tuning with ‘intermediate notes’ (*ta metaxy*) that define the interval sequence of a given mode. For example, in the case of the Dorian diatonic mode (St-T-T-T-St-T-T), the performer simply continued in steps of ascending fourths and descending fifths until the whole scale was set.⁷⁵

These observations allow us to understand better why Plato chose the model of the lyre *harmonia* over other possible images—musical or otherwise—in order to depict the orderly organisation of the parts of a just soul, as well as

75 Figure 9 represents the tuning cycle employed on an eight-string lyre; in the case of traditional seven-stringed lyres, passages 5 and 6 would not entail two separate strings (*paranētē* and *tritē*) but only one (*tritē*): this string would be first tuned to *b^b* and then adjusted to *a^b* after setting *lichanos* *e^b*.

the harmony of the universe as a whole. Based on simple and mathematically elegant relations, this model was familiar to well-educated Athenians such as Plato's original readers, who learned to tune and play the lyre since the very beginning of their liberal education;⁷⁶ at the same time, it evoked a prestigious cultural history that made it a symbol of the natural, but not strifeless, order of the *kosmos*.

In Plato's hands, the simple and flexible beauty of this *harmonia* became the perfect embodiment of the full correspondence between the essence of human souls and the natural, immutable *nomos* of the universe: an immortal order created and sustained by the central role of *logos* ('reason' and 'ratio'); a wondrous correspondence of opposites that embraces in itself justice, temperance and courage; an amazing natural order whose beauty can be readily perceived by the senses.

This choice reveals also how the musical discussions of *Republic* 3-4 and that of the *Timaeus* are based on a coherent musical and theoretical vision. The ethically oriented musical selection undertaken by Socrates and Glaucon in *Republic* 3 led them to choose the same lyre tunings that underpin the hyperbolic harmony of the Soul of the Whole in the *Timaeus*. And they had previously offered an evocative characterisation of the psychological effects of music and gymnastics as 'tending' and 'relaxing' the different parts of the soul until they are perfectly 'harmonised' to each other: that is to say, exactly the outcome envisaged for the ideal harmony of a just soul depicted in Book 4, and the foundation for the harmony of the *kosmos* at large.

Appendix: the Soul of the Whole Is Not Only *Nous*

This Appendix briefly sets out evidence from Plato's *Timaeus* and a few related dialogues that shows how, contrary to some widespread assumptions, the Soul of the Whole cannot be wholly identified with its rational component (*nous*) to the exclusion of any 'irrational'/'extra-rational'/'emotional' elements (*alogoi*), and does not entail exclusively cognitive activities.

Such 'hyper-rational', uncompromisingly dualist views underlie much of the scholarship on the *Timaeus*,⁷⁷ but seem untenable to me in the face of clear textual evidence

76 E.g. Ar. V. 959, where the expression 'he doesn't know how play the lyre' (καθαρίζειν γὰρ οὐκ ἐπιστάται) is identified with a lack of education and good manners; cf. V. 989.

77 E.g. Pelosi 2010, 68-113; but see the cautionary remark given in the introduction to the same book: '*mind* indicates a narrower domain than *psychē*, to which belong not only

to the contrary. These passages, set out below, unambiguously indicate that the Soul of the Whole does not include only *nous*, and is not a wholly ‘rational’ and strifeless entity to be sharply distinguished from any kind of ‘extra-cognitive’, ‘emotional’ or ‘irrational’ elements. On the contrary, as mentioned in some classic works on the *Timaeus*,⁷⁸ the Soul of the Whole is represented in Plato’s ‘likely myth’ (*eikos mythos*, *Tim.* 29c-d) as a complex whole, which comprises in itself the ruling principle of *nous* as well as other ‘emotional’/‘irrational’ elements.

This distinction between *nous* and *psychē* is explicitly outlined the first time that the Soul of the Whole is mentioned in this dialogue:

Thinking in this way he (i.e. God/the Constructor) found that, among the works which are visible by nature, none that is without *Nous* shall ever be more beautiful as a whole than a work which has *Nous*,⁷⁹ but *Nous* could not possibly come into being in separation from the Soul (νοῦν δ’ αὖ χωρὶς ψυχῆς ἀδύνατον παραγενέσθαι τῷ). Because of this very thought, having placed *Nous* in the Soul, and the Soul in the Body, he constructed the Whole (νοῦν μὲν ἐν ψυχῇ, ψυχὴν δ’ ἐν σώματι συνιστάς τὸ πᾶν συνετεκταίνετο), so that the work he fashioned would be most beautiful and the best by nature. Hence this is how we must tell the story in accordance with the likely *logos*: that the *kosmos* came into being as a living entity endowed with a Soul and with *Nous* because of the foreknowledge of God.

Tim. 30a-c

This passage could not be clearer: *Nous* is a crucial component of the Soul, but it is by no means the identical to the Soul as a whole. If Plato believed that the Soul of the Whole was simply identical to *Nous*, he would not have crafted such a complex image and phrasing: he would have said so in one simple sentence.

The same concept is stated again at the very end of the section that deals with the structure of the Soul of the Whole. This section comprises not only an account of the harmonic *logos* that informs its ‘fabric’ (*Tim.* 35b4-36b6, discussed above), but also a complex description of its subsequent division into a unitary external circle of the ‘Same’, which moves at a constant speed, and an inner circle of the ‘Different’, which

intellective, cognitive, emotive and perceptive processes but, more generally, the vital processes’ (Pelosi 2010, 2 n. 3).

78 E.g. Cornford 1935, 76, 176, 208, 361-64; Brisson 1974, 439.

79 I have capitalised the occurrences of *Nous* that are not accompanied by the article in Greek, presumably referring to the ‘universal’/ ‘cosmic’ *Nous*. Instances that are accompanied by the article in Greek, and seem to refer to individual *nous*, are not capitalised.

is itself divided into seven unequal rings moving at various different speeds.⁸⁰ After this intricate description, we are told that this intrinsically compound but well-divided Soul⁸¹ is harmonically attached to the Body of Heaven and brings it to life (36e-37a), remaining ‘invisible but partaking in reasoning and harmony’ (αὐτὴ δὲ ἀόρατος μὲν, λογισμοῦ δὲ μετέχουσα καὶ ἀρμονίας ψυχὴ). Through the metaphysically loaded language of *methexis*, this expression indicates once again that the Soul of the Whole ‘partakes in’ reasoning—i.e. it is not only or fully *logismos*, or only *nous*.

This preliminary indication is fleshed out in the subsequent description of the Soul’s inner responses to different kinds of stimuli:

αὐτὴ τε ἀνακυκλουμένη πρὸς αὐτήν, ὅταν οὐσίαν σκεδαστὴν ἔχοντός τινος ἐφάπτηται καὶ ὅταν ἀμέριστον, λέγει κινουμένη διὰ πάσης ἑαυτῆς ὅτῳ τ’ ἂν τι ταῦτόν ᾗ καὶ ὅτου ἂν ἕτερον, πρὸς ὅτι τε μάλιστα, καὶ ὅπῃ καὶ ὅπως καὶ ὁπότε συμβαίνει κατὰ τὰ γιγνόμενά τε πρὸς ἕκαστον ἕκαστα εἶναι καὶ πάσχειν, καὶ πρὸς τὰ κατὰ ταῦτά ἔχοντα αἰεὶ. λόγος δὲ ὁ κατὰ ταῦτόν ἀληθής, γιγνόμενος περὶ τε θάτερον ὃν καὶ περὶ τὸ ταῦτόν, ἐν τῷ κινουμένῳ ὅφ’ αὐτοῦ φερόμενος ἄνευ φθόγγου καὶ ἡχῆς, ὅταν μὲν περὶ τὸ αἰσθητὸν γίγνηται καὶ ὁ τοῦ θατέρου κύκλος ὀρθὸς ἰὼν εἰς πάσαν αὐτοῦ τὴν ψυχὴν διαγείλῃ, δόξαι καὶ πίστεϊς γίγνονται βέβαιοι καὶ ἀληθεῖς, ὅταν δὲ αὖ περὶ τὸ λογιστικὸν ᾗ καὶ ὁ τοῦ ταῦτοῦ κύκλος εὐτροχος ὢν αὐτὰ μηνύσῃ, νοῦς ἐπιστήμη τε ἐξ ἀνάγκης ἀποτελεῖται· τούτω δὲ ἐν ᾧ τῶν ὄντων ἐγγίγνεσθον, ἂν ποτὲ τις αὐτὸ ἄλλο πλὴν ψυχὴν εἴπῃ, πᾶν μᾶλλον ἢ τάλιθές ἐρεῖ.

Tim. 37a-c

Revolving around herself, whenever she (scil. the Soul) touches upon anything that possesses a dissoluble essence or an undivided essence, she speaks, being moved through her entire self, and says what this object is identical to and from what it is different, as well as in what respect it is so the most; and she says also in what way, how and when it comes to pass that each thing exists and feels/suffers (*einai kai paschein*), both with reference to things that become (*kata ta gignomena*) in relation to each other, and in relation to things that have always the same features (*ta kata tauta echonta aei*). This account/speech (*logos*) is indeed true according to itself (*kata tauton*), as it comes into being concerning both what is different and what is the same, and is carried on in what is moved by itself without tones or sounds.

80 For a detailed discussion of this passage, see Cornford 1935, 72-94 (esp. 76 on the nature of the ‘supremacy’ of the circle of *Nous* over the rest of the Soul). Plato was probably referring to a device similar to an armillary sphere: cf. *Tim.* 40d1-3, with Jones 2017, 239.

81 *Tim.* 37a4-5: συγγραθεῖσα μοιρῶν, καὶ ἀνὰ λόγον μερισθεῖσα καὶ συνδεθεῖσα.

But whenever this speech becomes concerned with what is perceived (*peri to aisthēton*) and the circle of the Different, moving correctly, announces itself to the whole Soul, opinions and beliefs (*doxai kai pisteis*) which are firm and true (*bebaioi kai alētheis*) come into being. Whenever it becomes a discourse about what is rational (*peri to logistikon*) and the circle of the Same, running smoothly, reveals these things, Intellect (*Nous*) and scientific knowledge (*epistēmē*) are brought to completion out of necessity. These two things come into being among the things that are; and if anyone ever said that this was something other than the Soul, he would be stating anything but the truth.

This passage describes how the Soul as a whole (*dia pasēs heautēs*) responds when it 'comes into contact' with different objects of thought and objects of perception, and produces an account of their theoretical features, their existence and their 'affections/passions' (*paschein/pathēmata*, cf. *Resp.* 7.511d7, *Phlb.* 39a) both in relation to ever-identical principles (*ta kata tauta echonta aei*) and in relation to the objects of the world of becoming (*kata ta gignomena*).⁸²

Just like the inner responses and thoughts of individual souls, the Soul's resulting 'speech' (*logos*) takes place within the Soul itself without perceivable sounds. As long as this inner *logos* concerns what is always 'the same', it is simply true. But the situation becomes more complex when it takes into account both 'what is different' and 'what is the same', and so the Soul responds differently depending on the nature of the object of her *logos*. When the Soul's discourse focuses on 'what is perceived' (*to aisthēton*), it is the circle of the Different that takes the lead and announces its verdict to the Soul as a whole: given that its movements proceed correctly, it produces 'opinions and beliefs which are firm and true'.⁸³ When the Soul examines objects of pure reasoning (*to logistikon*), it is the circle of the Same that responds and, continuing in its smooth circular movement, produces 'Intellect (*Nous*) and scientific knowledge (*epistēmē*)'.

This passage indicates clearly that *Nous* is just one component of the Soul of the Whole—the ruling and most excellent part (36c-d), which responds to purely rational considerations and offers invariably true answers. But the Soul of the Whole comprises also another kind of inner pronouncement which results from its coming into contact with, and responding to, 'what is perceived' and the world of becoming—in other words, not out of purely rational considerations.

82 Cf. *Tim.* 52a-e.

83 If these inner movements of the Different were to be 'incorrect', the resulting *doxai* and *pisteis* would be false: this event may occur in individual human souls (cf. *Phlb.* 39a-c), but not in the Soul of the Whole.

At the end of the revised account of the Soul of the Whole⁸⁴ we are told that this second *genos* 'is irrational' (τὸ δὲ ἄλογον), 'perceivable' (αἰσθητόν) and apprehended by 'opinion joined with perception' (*doxei meth' aisthēseōs*, *Tim.* 52a).⁸⁵ Hence an 'irrational'/'extra-rational' element (*alogos*) is explicitly comprised in the *harmonia* of the Soul of the Whole, alongside the perfectly rational and self-consistent one of *Nous*. The Soul of the Whole originates, and contains in itself, both of these movements which are necessary to give life to the *kosmos* as a whole.

The resulting epistemological picture is perfectly consistent with the one outlined in the famous image of the divided line given in the *Republic* (6.509d-511e, 7.534a-b): out of the four 'affections/passions that occur in the soul' (παθήματα ἐν τῇ ψυχῇ γιγνόμενα, 7.511d7), two belong to the 'higher' realm of *noēsis* (namely *epistēmē* and *dianoia*) and concern unchanging essence (*ousia*), and two belong to 'lower' realm of *doxa* (namely *pistis* and *eikasia*) and concern the world of becoming (*genesis*). On a psychological level too, the picture outlined in this passage of the *Timaeus* is consistent with the one given in the *Republic*: the element concerned with what is rational (*to logistikon*) produces purely rational *logoi* (4.439d, 10.602d-e), whereas the 'extra-rational'/'emotional' parts of the soul hold opinions (*doxein*, *doxazein*, e.g. 4.442d, 10.602e-603a).⁸⁶

This compound, rational-cum-emotional nature of the cosmic *Psychē* is further confirmed in the final part of the *Timaeus*' 'likely myth' about its creation by the Demiurge, which concerns the generation of individual human souls. These souls are created following the same 'recipe' as the Soul of the Whole, using the 'leftovers' of the same basic constituents (Same, Different and Being). These elements, however, are not perfectly 'unmixed', as in the case of the Soul of the Whole, but are 'second and third' in degree of purity. After combining them in keeping with the same *harmonia* that

84 This fuller account (*Tim.* 47eff.) is a revised version of the first, and introduces another element of complexity into the system: the crucial role played by the so-called 'wandering cause' (τὸ τῆς πλανωμένης εἶδος αἰτίας), which derives from the role played by Necessity alongside Reason.

85 It is significant that persuasion is given great emphasis in this second account: whereas *Nous* is not influenced by persuasion and arises through teaching and study (*didachē*), true *doxa* is said to be generated in us by persuasion (*Tim.* 51a). So this second part is *alogos* but not entirely deaf to the voice of reason—a distinction akin to the relationship between *logistikon* and *thymoeidēs* (see next note, and *Tim.* 69e-70d).

86 On the beliefs about justice held by the 'flaring/fiery part' (*thymos/thymoeidēs*), cf. Wilburn 2015, with further bibliography. See also *Resp.* 4.444a above, on the role of *epistēmē/sophia* and *doxa/amathia* in determining the behaviour of a just soul; and *Tim.* 71e on the fact that *epithymētikon* too occasionally has access to truth through inspired divination.

shaped the Soul of the Whole (cf. *Tim.* 43d-e), the Demiurge puts these newly-created souls into some kind of 'chariot'⁸⁷ in order to show them the 'nature of the Whole', and declares unto them the basic 'laws of destiny'. The last of these laws sets out what will happen to them after their embodiment:

But whenever they are implanted into bodies by Necessity, and some things get into their body and others get out of it, it is necessary for perception (αἴσθησιν) to come into being as one for all, born within them out of forceful passions (ἐκ βιαίων παθημάτων σύμφυτον γίνεσθαι). Secondly passional desire comes into being, mixed with pleasure and pain (ἡδονῇ καὶ λύπῃ μεμειγμένον ἔρωτα); next to these fear and flare (φόβον καὶ θυμόν) and all such things that follow them—as well as those things which, on the contrary, are naturally set apart from them. If they manage to rule these elements, they shall live in justice; if they are ruled by them, in injustice.

Tim. 42a-b

Shaped after the same pattern as the Soul of the Whole, these human souls are implanted into mortal bodies and begin to perceive the stimuli of *aisthēsis*; and their reactions to, and interpretations of, these stimuli produce different kinds of emotional responses. If such aesthetic-cum-rational experiences are managed correctly (i.e. they are set in the right balance, and not entirely suppressed—cf. *Tim.* 43c-44d), human souls will live and act justly; if not, they will live unjustly.

Interpreters who conflate Plato's account of the *Psychē* of the Whole with *Nous* alone are bound to regard this association of 'extra-rational'/'emotional' responses with the parts of the soul that individual human souls share with the Soul the Whole as 'a strange incongruence' (Pelosi 2010, 99). However, as we have seen above, neither the previous account of the Soul of the Whole nor the present passage are concerned with pure reason only. Both explicitly depict *Psychē* as a compound entity that combines *Nous* with *aisthēsis* in a unified living being, which experiences *pathēmata* in

87 As already pointed out by Cornford 1935, 144, this reference to chariots evokes the mythical image outlined in the *Phaedrus*, where 'disembodied' and immortal individual souls, both human and divine, are depicted as chariots that contain three elements in themselves: *nous*, the charioteer/leader, as well as the two 'passionate' and energetic horses (246a-250c). Hence individual 'disembodied' souls are not reason alone either, both in the *Phaedrus* and in the *Timaeus*.

response to cognitive and aesthetic experiences—just as the Demiurge⁸⁸ and ideal philosopher are filled with wonder and joy while observing the elegant movements of the planets or hearing the beautiful sounds of musical *harmoniai* (*Tim.* 80b5-8; cf. *Resp.* 7.529d-531c).

Unlike human individual souls, however, the Soul of the Whole is never mistaken in its judgements and responses—whether theoretical or aesthetic—because it is perfectly complete and does not lack anything in itself. The Whole that is brought to life by the Soul is ‘one living being that contains in itself all living beings, both mortal and immortal’ (*Tim.* 69c), including all ‘their forcible and necessary *pathēmata*, pains, fears and pleasures’ etc. (*Tim.* 69d; cf. *Leg.* 10.897a-b). Therefore, the evaluations and responses of this universal Soul are unfailingly correct, being based on a full and intimate knowledge of every aspect and component of the whole *kosmos*, as well as their orderly, if complex, *harmonia*.

But this *harmonia*, in keeping with a long philosophical tradition, is not a ‘static’ and ‘strifeless’ entity, a wholly peaceful or exclusively rational order that leaves no room for conflict or contrasts. On the contrary, the *harmonia* of the Soul is a complex dynamic system which organises and contains in itself such inherently contrasting natural forces, combining the movements of reason and emotions into a beautiful living Whole (ἐκ τῶν διαφερόντων καλλίστην ἁρμονίαν, Heraclitus 22 B 8 Diels & Kranz).

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88 At *Tim.* 37c-d, we are told that the Demiurge himself ‘was delighted and rejoiced’ (ἡγάσθη τε καὶ εὐφρανθεῖς) in observing the wonderful living being he created and its movements—a passage which clearly shows that, in Plato's view, divine souls feel emotions too. Cf. *Phlb.* 63e-64e (on true and pure pleasures, their divine quality, and the ‘most precious and beloved’ mixture of the good based on beauty and proportion) and 65a-67a (on the insufficiency and incompleteness of both pleasures and *nous* by themselves, as opposed to their well-proportioned, beautiful and correct mixture).

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