One of the most interesting moves in recent "embodied mind" cognitive science is the attention paid to "difference and development." By "difference" I mean "horizontal" variation in embodiment schemas – Iris Marion Young’s "Throwing Like a Girl" is the classic here. By "development" I mean two sorts of "vertical" dimensions: both phylogenetic development or evolution, and ontogenetic development or infant development studies. Putting them together we get a question of the "granularity " of focus on the bio-social "body politic" — the range of embodiments produced by (politic) different regimes of subjectification acting on plasticity of development (body). Where do we locate our analyses in the quadrants between the axes? How abstract should we be without simply saying something about a generic and adult human subject, unmarked either by difference or development? Conversely, how concrete can we go without being bogged down in the idiosyncracies of singular situations? To discuss "bodies politic" you need the right granularity, neither an unmarked generality nor a swarm of idiosyncratic singulars.

Looking here to infant development, researchers have paid special attention to the work on "primary intersubjectivity" by Andrew Meltzoff, Daniel Stern, and Colwyn Trevarthen. Shaun Gallagher often cites Meltzoff's work on neonatal facial imitation in developing the notion of an infantile body schema – which makes individuation a process of modulating a relation rather than breaking free of a fusion with the mother (Meltzoff and Moore 1977; Gallagher and Meltzoff 1996; Gallagher 2004). Stern's recent *Forms of Vitality* has some concise descriptions of "affective attunement," in which a caretaker matches the affective dynamics of the infant, but in another modality (e.g., voice rather than gesture), so that there is no mere imitation, but a "signature" indicating the matching of internal states (Stern 2010, 41; 113). But it is Dissanayake's (2000) and Trevarthen's (1999) interest in "communicative musicality" (to cite title of a new Oxford collection), that is, in the rhythmic interaction of caretaker and infant that makes the connection with Plato, specifically with his discussion of law, custom, and the skill of nurses in administering lullabies in the *Laws*. What we will see is the crucial importance for politics of the emotional control that the infants need to develop, coupled with the resistance to rational explanation of the work of the nurses.

First we will discuss recent work in the biocultural evolution of musicality, then we will discuss Plato's recognition in the *Laws* of the imbrication of social and somatic in the communicative musicality in infant development and its impact on political affect -- that is, the characteristic emotional character of the relation of citizens to social order.
Ian Cross argues that music is ancient and universal for humans; so ancient that here we can consider a significant genetic component. Against two recent claims, Cross holds that Steven Pinker is wrong about music being only a spandrel and that Geoffrey Miller is wrong about it being due to sexual selection, because they both think of music as contemporary Western music experience, as "patterned sound employed primarily for hedonic ends, whose production constitutes a specialised, commodified and technologised activity" (Cross 2003). Another member of the Cambridge school of thought on music and bio-cultural evolution, John Bispham, puts the contrary position as clearly as possible: "music is a culturally constructed phenomenon built upon universal biologically determined foundations" (Bispham 2004).

Studying music in an evolutionary framework does not yield a simple adaptive story. Rather, it seems that various "proto-musical" capacities evolved separately and later were stitched together to yield human musical capacities. Bispham proposes that musical rhythmic behavior "be viewed as a constellation of concurrently operating, hierarchically organized, subskills including general timing abilities, smooth and ballistic movement (periodic and nonperiodic), the perception of pulse, a coupling of action and perception, and error correction mechanisms;" all of these "subskills share overlapping internal oscillatory mechanisms" (Bispham 2006). These various capacities should be seen as "grounded in, and as having exaptively evolved from, fundamental kinesthetic abilities and modes of perceiving temporally organized events." In sum, Bispham is against a straight line evolutionary story: "complex behaviors such as music evolved in a mosaic fashion, with individual components emerging or evolving independently or for independent reasons at times, and / or reforming with other components at other times." This doesn't mean that any one mechanism wasn't selected for, just not the full combination as such, until much later, after independent evolution of the components.

The evolutionary pressures that have shaped the fundamentally rhythmic and social aspects of our being lead Cross (2003) to claim that "infants appear to be primed for music;" in support of this, he cites important studies on rhythmic mother-infant interactions which are crucial for "primary intersubjectivity," "emotional regulation" and "emotional bonding" (Trevarthen 1999 and Dissanayake 2000). In the same vein, Bispham classifies Dissanayake as looking for "the adaptive strength of rhythm and entrainment in the course of human evolution with reference to mother-infant interaction" (Bispham 2006, 125). (We will see the post-Roussean presupposition of focusing on "mothers" here when we examine Plato, who simply assumes that slave nurses do the bulk of child-rearing labor for citizen families.)

These early building blocks of musicality must come together to form our uniquely human rhythmic capacities. Cross (2003) insists that the cultural evolution of music cannot be about "memes" which are discrete and consist in "information transfer." The key here is "interpersonal musical entrainment" as the uniquely human musical capacity. What distinguishes human music from bird song is that our music is dialogue, group activity, involving changes in response to changes by others. Thus a key capacity for investigation is entrainment, or group movement with the same pulse (cf. McNeill 1995), which plays a major
role in Bispham’s analysis; entrainment is based on "internal oscillatory mechanisms [which] are attuned to external cues allowing us to build expectations for the timing of future events ... and to interact efficiently with the environment" (Bispham 2006, 128). Since there are internal oscillatory mechanisms in a variety of domains of human and animal behavior— in fact Arthur Winfree got a lot of this research going with work on biological entrainment or coupled oscillators in organic functions and in populations – this suggests that "entrainment in music constitutes an evolutionary exaptation of more generally functional mechanisms for future-directed attending to temporally structured events."

Bispham pushes the analysis as far as to entertain the notion that "interpersonal entrainment is the key rhythmic feature in [all] human interactions," both musical and non-musical. Such interpersonal entrainment ranges from "loose, subconscious use of pulse as a framework for interpersonal/turn-taking interactions in, for example, mother-infant or linguistic interactions" to "a strict adherence to pulse (groove) in group behavior and synchronicity of output where participants are aware of the pulse framework and desire to maintain a degree of temporal stability and group-coordination (e.g., music and dance)."

However, Bispham claims that it’s probably the case that the former precedes the latter ontogenetically and perhaps phylogenetically and is less complex in psychological and physiological. So in his search for what is unique about human musical rhythm, Bispham pulls back from the broad framework to focus on musical pulse and period correction as the keys here; we will deal only with the first of these.

Regarding musical pulse, we have to remember that for almost all of human history, music has had to be danceable, which sets up its capacity for group bonding (McNeill 1995). How does danceability come about? Bispham points first to "internal periodic oscillatory mechanisms overlapping with motor-coordination." The key for us is his conclusion that this provides "a mechanism to affect and regulate levels of physiological arousal." In other words, music allows groups to get on the same emotional wavelength: "providing a temporal framework, collective emotionality, a feeling of shared experience, and cohesiveness to group activities and ritualistic ceremonies;" indeed, "musical pulse is functional in regulating emotions and motivational states by means of affecting states of action-readiness" (Bispham 2006, 131). It’s important to stress that in an evolutionary perspective music is regulatory rather than merely expressive: music is "functional in regulating emotions and in communicating strategies for the regulation of emotion rather than as raw emotional expression per se."

Infant Development and Roots of Political Affect for the Greeks

Richard Shusterman has some interesting reflections on the social and corporeal roots of moral intuitions:

Much ethnic and racial hostility is not the product of logical thought but of deep prejudices that are somatically expressed or embodied in vague but disagreeable feelings that typically lie below the level of explicit consciousness. Such prejudices and feelings thus resist correction by mere discursive arguments for tolerance, which can be accepted on the rational
level without changing the visceral grip of the prejudice. (Shusterman 2007, 25)

After Hume and Nietzsche, as Jesse Prinz (2008) reminds us, we are used to the idea that one needs to consider bodily experience and emotional reactions in order to have a complete view of moral intuitions and moral judgments as they occur in flesh-and-blood humans. But there are also ancient philosophers who propose close links between emotions, bodies, and moral intuitions, and here we will briefly discuss Aristotle and Plato.

Both Plato and Aristotle agree on the emotional core of character development and on the shared emotional dispositions of people raised under one political regime or another. For Plato, ethical development entails an emotional reaction prior to any rational justification ("he will rightfully object to what is ugly and hate it while still young before he can grasp the reason": Republic 402a). For Aristotle the ethical virtues are constituted by the right disposition of emotions, and such dispositions are attained by consistent training of children's emotional relation to pleasure and pain (Nicomachean Ethics 2.3.1104b10-13). The widest context for the habitual development of ethical virtues is the customs and laws of the city, such that the character of the citizens is the most important task of the legislator (NE 2.1.1103b2-5; Politics 8.1.1337a10).

For Aristotle ethical behavior is not simply a matter of having controlled appetites; ethical excellence is not simply the psychic control of the corporeal. The intuitive faculty of the soul is understanding, nous, which can be both practical and theoretical; nous involves the perception, the immediate seeing (aisthesis) of particulars (Nicomachean Ethics 1143b5). The undemonstrated practical intuition of the properly trained person, his immediate grasp of the right course of action, is the standard in ethics, for experience has given them the eye with which to see correctly (b14). While intuition is a faculty of the soul, developing practical intuition is a matter of the body politic. While it may look like simply natural development (b6), the development of practical intuition depends on embodied political experience, the enmeshing of the social and the somatic, for the quality of practical nous achieved by the body politic is appropriate to one's age (b8).

Let's look at musicality in Plato for a look at such "political physiology" (Protevi 2009). Book 7 of the Laws begins with the Athenian saying that despite its importance the nurture and education of children can only be a matter of advice to heads of household rather than law (788b-c), even though habits of transgression from petty misdeeds can ripple up to bad effect in a polity (790b; 793c). So it can be hoped that citizens will take the advice to them on these matters as a law to them and to their households (790b). Political affect is of the utmost importance to Plato, but he must describe rather than prescribe its genesis.

The reason why Plato must describe, though he cannot prescribe, is two fold. First, in the Laws he foregoes the blank slate he gives himself in constructing the ideal city in the Republic. So he has to describe child-rearing that is realistically constrained by real geography and custom; he can't just prescribe what should happen. Second, he cannot prescribe in detail the singular inter-corporeal rhythms that lie at the root of emotional moral development; he can only
describe the irreducible singularity of relation between nurse and infant rhythms that blocks rational description.

Now the concern with reproduction begins before pregnancy. The matrons engaged by the State supervisors can investigate marital sexual relations—presumably frequency, timing, and so on—and what tips them off is the denunciation of a married but childless couple who is "paying regard to aught else than the injunctions imposed amid the sacrifices and rites of matrimony" (784a-d). Once pregnancy occurs, the Athenian recommends that pregnant women take walks so that the external shaking of the fetus help its body grow into robust health (789b-790b). And with regard to the soul we must pay the same sort of attention to imposed movement; analogous to the way dancing prescribed by priestesses will help those afflicted with "Corybantic troubles" (see Dodds 1951, 78-80, for a social and somatic functionalist / cathartic reading of this passage), so too will rocking and singing calm an infant (790d).

Continuing the discussion, the Athenian explains that "fright is due to some morbid condition of soul. Hence, when such disorders are treated by rocking movements the external motion thus exhibited dominates [kratei] the internal, which is the source of the fright or frenzy" (790e). The lawgivers must rely on custom for the most efficacious selection of these songs and on the caregiver's sensitivity and skill in delivering them at the proper time, with proper intensity, and with proper rhythm. The lawgiver can set the context for their use, but cannot discuss the details of the lullaby or its somatic/psychic effects. Now why is the Athenian so concerned here? It's because temper (the proper relation to fear) and moral excellence are so closely connected (791b-c). But then comes the admission at 792a that the harmonizing of the soul of the infant with regard to the placidity of its temper must rely on the "guesswork [tekmainontai]" of nurses, who are able to discern the proper course of action -- the right rocking motion, the right lullaby -- in placating a screaming child.

Once children are born, there is also supervision of the collective games of children in the public setting of the "local sanctuary" between the ages of three and six (794b-c). But note the difference between recommendations by officials to citizens for the citizens to oversee the lullabies of the nurses of infants at home and the direct supervision by public officials of nurses as they accompany the public games of children. The key point is that in the lullaby there's a singularity of bodily rapport between nurse and infant that is resistant to rational supervision, so that the nurses must resort to guesswork. But that guesswork is of fundamental importance to the corporeal development of proper emotional balance and hence moral intuition. Again, political affect is of the utmost importance to Plato, and the lynchpin of the system described in the Laws is the guesswork of slave women.
WORKS CITED


