NADIA MORO

ESTETICA TRASCENDENTALE IN MUSICA

La psicologia del suono
di J.F. Herbart e C. Stumpf
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«È questa la gnoseologia della musica»
Accordare la *spira mirabilis*

Summary

Nota bibliografica

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SUMMARY

Setting Kant’s ‘Transcendental Aesthetic’ to music. J.F. Herbart’s and C. Stumpf’s tone psychology

Tone psychology originates within philosophy in that the principles of psychology understood as a science, which depend on a philosophical theory of experience, are applied systematically to the basic relations of harmony in music. With this as a premise, Johann Friedrich Herbart (1776–1841) and Carl Stumpf (1848–1936) explicitly shared the aim of setting Kant’s ‘Transcendental Aesthetic’ to music, in which they address not the conditions of possible experience in general but, rather, the explanation of objective forms given in determinate experience. As well as space and time, considered by Kant in the Critique of Pure Reason, harmonic tone relations, like intervals and chords, count as various qualitative orders that progressively constitute or are phenomenologically presented in psychic activity. Acknowledging the importance of psychoacoustic experience, Herbart and Stumpf developed a psychology which they believed amends Kant’s transcendental approach and produces a more comprehensive philosophical theory of experience.

Yet Herbart and Stumpf radically diverged in their philosophical assumptions, methodology, and psychology. Herbart’s ‘science of comprehensibility of experience’ and Stumpf’s ‘neutral’ doctrine of ‘immanent structural laws’ (phenomenology) contain incompatible accounts on many questions: the legitimation of the given and its forms; the functionalist understanding of mind and phenomena; whole-part and fusion relations; the constitution of determinate gestalts of space, time, and sound; the opposition between atomism and holism; and the relations between psychology and aesthetics.

In my research I adopt a text-immanent perspective, focussing on Herbart’s and Stumpf’s writings and reconstructing the inner development of methodological and theoretical issues. The aim is to examine thoroughly the coherence and epistemological import of their assumptions, principles,
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and arguments in order to appreciate their contributions to the questioning of the Kantian approach, the establishing of a functionalist scientific psychology, and the putting forward of a cogent psychological theory of sound and music within a philosophical framework. One general result, overthrowing a commonly held view, consists in the holistic structure that can be ascertained in Herbart’s methodologically founded realism and in the irreducible atomistic components in Stumpf’s unresolved empiricism.

**Critiques of the transcendental.** 1.1. Kant provides a transcendental legitimation of knowledge by relating its sources (sensibility and understanding) to possible experience. His notion of experience, as determined by a priori forms of intuition and categories in a priori synthetic judgements, is challenged by later philosophers, who seek a more dynamic foundation of knowledge and reassess the relation between the metaphysical and the empirical. Herbart and Stumpf belong in this context as they support a psychological interpretation of the a priori and replace Kant’s transcendental approach by scientific psychology.

1.2. Herbart’s critique of Kant largely focuses on method. He maintains that Kant’s a priori forms and categories are inadequate abstractions, derived from descriptive concepts of faculties and lacking explicative value. Scientific psychology ought, instead, to specify its empirical and metaphysical principles, establish methods of inference, and formulate psychic laws by calculus. I argue that his declared Kantianism develops the critique of reason both into a methodology of valid inference, pertaining to general metaphysics, and into scientific psychology, unfolding the actual process of knowing.

Psychic activity depends upon time as the form of the inner sense or ‘successive presenting’ (distinguished from successively presented contents), which Herbart defines as purely intensive and determined by gradual presentational variations. The development of Herbart’s metaphysico-psychological investigation of the psychic measure of time between 1812 and 1839 is reconstructed; at least three stages—by hypothesis (variables), calculus, and mental experiment—can be differentiated, highlighting Herbart’s gradual refinement of time determination.

1.3. Stumpf’s genetic interpretation of the Kantian a priori as ‘original acquirement’ emerges in sharp contrast with Hermann Cohen’s functionalist stance. It is pointed out that Stumpf’s subsequent plea for psychology and theory of knowledge to concur in their common results disregards any difference between transcendental legitimation and empirical derivation. Likewise, Stumpf emphasises and then rejects the alleged genetic,
subjective, and formal nature of Kantian space, failing to recognise the methodological value of a priori forms of intuition. Apparently dismissing the form-matter and subject-object oppositions, he stresses the primacy of sensibility and immediate content apprehension: for him space becomes an absolute content just like qualities (colours, sounds, etc.) and, being a primitive extension with local properties, it is made to precede any ordering principle. The independence of absolute elements from relations and forms is a constant in Stumpf’s disquisitions, but its asserted evidence lacks for the most part justification.

Stumpf in the end rejects Kant’s synthesis a priori and grounds judgements on ‘analytic insight’: judgements are psychic acts proving to be necessary and analytic by virtue of ‘matter togetherness’ of sense phenomena. Phenomenology is the neutral science to which is assigned the investigation of all structural laws, appealing solely to empirical evidence. Such an approach implies that not only does knowledge begin with experience but even that it arises out of it.

1.4. Herbart’s methodological pluralism is usually thought of as an atomistic ontology followed by an associationist psychology, whereas Stumpf is held to have put forward an innovative model of dependence relations, showing the way forward in mereology. Both historically and theoretically, the evolution of whole-part conceptions is far more complex than often admitted and it is worth reassessing it through a systematic reconstruction of Herbart’s and Stumpf’s psychological theories of fusion—which are their alternatives to Kantian synthesis—both within their general philosophy of experience and in their interpretation of musical harmony.

The given, fusion, and Gestaltung: Herbart between psychology and aesthetics. 2.1. The aim of Herbart’s metaphysics is to legitimise knowledge, based on experience and the conceptual reworking of its forms within a methodologically directed framework, in which the primacy of relations is stated. According to my reconstruction, Herbart is seen to stick to experience as a twofold principle: in general metaphysics, the mere fact of anything appearing opens up reference to being and the establishment of ontology; in applied metaphysics, and especially in psychology, determinate empirical forms like harmonic relations or spatial shapes are explained in terms of how and under what conditions they develop.

Psychologically, forms arise by gradual qualitative contrasts in content, which can be quantitatively expressed by calculus; this is the premise that allows Herbart to go beyond abstract associationist models. Moreover, all presentational activity can be traced back to experienced matter and forms,
interacting in a mechanics of force, balance, and mass. As a function of presentation series, the Self is for Herbart only a blank position: it changes continuously, depends on the dynamics of content contrasts, and dispenses with all substantial substrata.

2.2. Unity, multiplicity, synthesis, and differentiation are major psychological issues that Herbart tackles with the method of relations and solves through serial forms. Inverting Kant’s approach and questioning determinate experience, he turns the problem of synthesis into one of discrimination. In this interpretation, it is first argued that from his general metaphysics derives the idea that the ‘soul’ is unique and simple, implying that presentations show the tendency to merge into undistinguished mental unity. Secondly, it is shown that psychic multiplicity, rather than unity, needs to be reviewed in psychology. In order to give it legitimacy, the dynamics of ‘impediment’ and ‘fusion’ is expounded, the lexical variations of ‘fusion’ between 1806 and 1839 are discussed, and multiplicity is explained as a functional system applying to the unity (‘punctuality’) of the soul and gradually constituting formal series. Further cognate explicative concepts, like thresholds and ‘striving to present’, are set forth to justify the ‘narrowness of consciousness’ and linked with the mathematical elaboration of Herbart’s psychological notions.

2.3. Stumpf’s criticisms of Herbartian fusion as a purely abstract term rest on a flimsy foundation because the systematic methodology informing Herbart’s metaphysics is overlooked. As to music theory, once again Stumpf stigmatises single statements, neglecting the much wider psychological context of Herbart’s remarks on harmonic relations, octaves, semitones, and equal temperament.

2.4. Herbart’s survey of the gestalt covers the constitution of determinate forms. It connects the synthetic and the analytic parts of psychology, linking methodologically and thematically the conceptual elaboration of presentational laws with the investigation into empirically attested cognitive and emotional operations. Presentational series evolve based on temporal sequences or degrees of qualitative affinity. They reproduce and interweave giving rise to abstract spatial structures—merely stating the relational character of psychic activity, not to be confused with space perception or intuition—delivering the general framework for any determinate manifold to develop; in particular, perceptual spaces, temporal metres and rhythms, and harmonic relations are examined. Variously articulated within each domain, ‘configuration (Gestaltung)’ is a special process governed by laws of reproduction, which occurs in formally similar presentational series and results in form recognition. Some obscurities and difficulties
notwithstanding, a careful reading of Herbart’s accounts of space, time, and acoustic relations prevents them from being denounced as atomistic or associationist. On the contrary, the ways in which the principle of serial forms is applied vindicates the thorough functionalist, holistic approach to perception and categories that Herbart had generally devised in his ‘Methodology’.

2.5. For Herbart, not only do tones illustrate the simplest case of quality-dependent relations (e.g. intervals, consonance, and dissonance), which are merely due to pitch and require no spatio-temporal distinction, they also serve as ‘synthetic principles a priori’ in the unorthodox Kantian sense that they are undeniable and therefore necessary forms. Their explanatory justification occurs in psychology, based on the one-dimensional continuous qualitative series of pitch: the ‘tone line’, endowed with determinate relations. Two stages can be distinguished in Herbart’s account of acoustic relations. First, Herbart lays down the general psychological conditions that must hold a priori for any one-dimensional qualitative continuum so that it can exhibit recognisable, commensurable serial patterns. Secondly, he proves that such an abstract construction applies empirically but to the domain of sound in the tone line, establishing the octave as the main interval and deriving further intervals and chords from it.

It emerges that, contrary to a widespread opinion, Herbart’s definition of the octave as the ‘interval of full opposition’ is entirely coherent with his general psychological vocabulary and approach. Besides, also for Herbart two octave tones are psychologically identical — since they define the limits of repeated tonal patterns — and harmonically consonant. Even more, this fact heuristically guides Herbart to devise at a conceptual level a more general theory, which applies to any one-dimensional qualitative manifold. Musical harmony thus serves Herbart as a means to unite abstract construction and empirical research in his general psychology of relations.

2.6. Herbart establishes the primacy and the objectivity of form in epistemology and aesthetics, that is in the methodological legitimation of valid inference and of value judgement. Tone psychology, and especially the investigation of octaves, intervals, and chords, at best illustrates the function of ‘accomplished presenting [vollendetes Vorstellen]’ as the ideal limit-case of unconditional apprehension and appreciation of concrete forms by an impartial spectator fully focussed on the object. It is argued that Herbart’s exploration of musical sound provides proof of his holistic approach and functionalist method, starting from multiple principles and ultimately converging in the results.
'Pieces of a theory': fusion, consonance, and concordance. 3.1. Stumpf’s best-known contribution is the distinction between partial and independent sensation contents, resulting in a theory of whole-part relations which is often assumed to overcome the traditional model of predicative judgement, the corresponding ontology of substance and attributes, and associationist psychology. Independent contents may be presented separately, whereas partial contents—like colour and extension—may not: they depend on one another and their distinction only occurs through mutual variation. Yet the idea of dependence relations, which Stumpf himself in fact ascribes to his mentor Franz Brentano, is fraught with theoretical and methodological difficulties in its multiple aspects. For instance, analysis is for Stumpf the psychological act of thought (and then of hearing) where previously experienced parts or relations are ‘inserted’ (Hineindenken, Hineinhören) into unitarily perceived wholes. What he does not explain is how the various psychic functions (e.g. memory, analysis, reciprocal variation) interact; moreover, in mixing physical, physiological, and psychological statements in his arguments, he hardly advances a tenable theory.

3.2. A complaint against Stumpf’s method of reciprocal variation is that it is dualistic when applied to fundamental questions like phenomena and functions or phenomenology and psychology. The atomistic assumption of absolute, constant elements (sensations, contents, phenomena, etc.) either conflicts with his otherwise strong notion of functional dependence or dissolves into untenable, void indistinction. Furthermore, Stumpf’s self-avowed metaphysical and epistemological neutrality, aimed purely at ascertaining the objectual domain of phenomena, ceases as soon as he finds himself (at least provisionally) committed to positive sciences like psychology or physiology. Mostly invoking immediate empirical evidence in support of his claims, not only does he elude methodological justification but also relies on an epistemological preconception. It follows that phenomenology cannot be such an immediate, neutral, and propaedeutic research field as he would like.

3.3. Stumpf planned for his Tonpsychologie to consist of four volumes dealing with the psychic functions involved in perceptual and aesthetic judgement in music. He interrupted the work after the second volume (1890), presumably for personal reasons, such as his disagreement with Brentano. Continuance was mainly hampered by conceptual difficulties, inducing Stumpf to substantially revise his views over time as revealed by his changing theory of fusion, which lies at the core of tone psychology.

3.4. Stumpf’s first concern in establishing empirical psychology is methodological and involves the reliability of sense judgement and
appropriate experimental design in a ‘measuring theory of judgement (messende Urteilslehre), where judgement is identified with noticing and apprehending contents, differences, or similarities. Difficulties arise from the very beginning. Stumpf omits to distinguish clearly between sensation and judgement or subjectivity and objectivity; he still assumes absolute sensations to be primitive, without then specifying how they connect in fallible judgement acts.

3.5. Tone and sound are seen to be treated atomistically in Stumpf’s investigation of psychic multiplicity in Tonpsychologie. Fusion is defined as the immediately evident relation of (a pair of) simultaneous sensation contents constituting a ‘whole’, implying that the corresponding ‘overall impression’ approximates to the impression made by a single sensation. It is worth remarking that fused contents do not merge, nor do they exemplify ‘matter togetherness’ like, say, extension and colour: two simultaneous tones are independent, distinguishable contents combining in an interval. Taking them from music theory, Stumpf adds a classification of several fusion grades (corresponding to octaves, fifths, thirds and sixths, etc.) and a number of fusion laws, ensuring tone transposability and the particularity of octave relations, which he otherwise rejects.

Provisionally, fusion and its grades count as psychologically, phenomenologically, and experimentally confirmed relations, replacing both Kant’s intuition forms and Hermann von Helmholtz’s physiological explanations. However promising they sound, Stumpf’s claims lack methodological consistency and theoretical cogency, for the most part referring solely to exemplary cases or extrinsically connecting music theory, phenomenological description, and psychological explanation. The gap between these levels even widens in experimental practice, where Stumpf does not test fusion directly but only the incapacity of musically untrained subjects to analyse simultaneous sounds.

3.6. In a statistico-mathematical study, Martin Ebeling recently accounted for consonance in intervals corresponding to both simple and approximate ratios by means of a generalised coincidence function. The model was then applied to modern neurophysiological knowledge on auditory information processing. Finally, Ebeling came to the assumption that his own study mathematically underpins the graph in which Stumpf represented his experimental results on fusion grades. Though converging in an approximate estimate of consonance ratios, the analogy between the two is untenable given Ebeling’s and Stumpf’s incomparable methods, objects and theses. What’s more, the curve on Stumpf’s graph is in itself
problematical in that it proves to be quite irrelevant, if not in many respects in conflict with his own theory.

3.7. Stumpf undertakes a bottom-up explanation of auditory perception, steadily progressing from the physiological and psychological towards the musical and emotive level, but in his *Tonpsychologie* does not go so far as to raise aesthetic questions proper. When he comes to connect psychological fusion grades with harmony, he considers tone fusion first as the essence of consonance but later as its mere concomitant *proprium* phenomenon. In his changing accounts, psychology and musical harmony generally run parallel, seem at times to coincide but in the end diverge. This is one major reason why *Tonpsychologie* as a comprehensive psychological survey of musical experience is doomed to fail, as the case of tone fusion demonstrates.

In later essays, Stumpf addresses the history of Western harmony and broaches new categories that make a marked contrast between fusion, as the psychological principle of consonance and dissonance in tone intervals, and harmonic constructs in chord ‘concordance’ and ‘discordance’. Again, what we have is a dual approach, on the one side maintaining invariant elements like intervals and, on the other, establishing functional dependence within more complex unities (chords). The same duality is then encountered in Stumpf’s late writings, *Die Sprachlaute* and *Erkenntnislehre*, above all in his theory of ‘complexes’ and ‘gestalts’, consisting of absolute contents and relations respectively. All levels of his ‘general doctrine of relations’ thus prove to be affected by the opposition of absolute elements and functional relations, reducing whole-part dependence to an abstract combinatorial theory.

3.8. Whereas the various aspects of Stumpf’s relations theory—partial and independent contents, fused tones, and complexes and gestalts—turn out to be untenable, there is a second investigative thread in his work that leads from tone psychology to historico-anthropological and ethnomusicological research. Through the interplay of sensation (perceptual facts), emotion, and ‘relational thinking (beziehendes Denken)’ in the development of musical hearing, Stumpf explores questions concerning evolution, heredity, and cultural history. The outcome is to weaken the constancy and absoluteness of sensation to the extent that it is made to depend on the evolution of a psychic cognitive function. The risk Stumpf now runs is that by searching for biologically and anthropologically determined musical structures, he will tend to dissolve theoretical questions into factual historicity.
Fully acknowledging the manifold of empirically given forms and pursuing a philosophical theory of determinate experience, Herbart and Stumpf agree in abandoning Kant’s transcendentalism and replacing it with psychology. Methodologically and epistemologically, however, they understand psychology in opposed ways, as is also the case with their genetic interpretations of Kant’s ‘Transcendental Aesthetic’.

Herbart’s system is founded on relational principles and issues from conceptual integration, and the same applies to his psychological presentation dynamics, above all regarding space, time, and harmony. The explicit functionalist approach informs all of Herbart’s philosophy, from its epistemological foundation (methodology) to the conceptual development of ontology, psychology, and even aesthetics (general evaluation theory). This approach is the underlying thread of continuity that closely links Herbart’s ‘critical realism’ with Kant’s transcendentalism.

Addressing whole-part and dependence relations empirically and theoretically, Stumpf attempts to exclude formality from the basics of experience and to neutralise epistemological questions. He provides an atomistic groundwork for his phenomenology and psychology, which are layered at the level of absolutely subsisting elements (places, tone pitch, sensation contents, etc.) and at the separate level of higher unities that connect them (matter togetherness, tone fusion, sense judgement). Mutual variation methodologically strengthens division, but also prevents Stumpf from providing an adequate rationale for elements to become functionally connected. Mostly invoking immediate empirical evidence in support of his claims, he eludes providing justification: this is the epistemological prejudice undermining Stumpf’s supposed ‘neutral’ phenomenology.

As to music, Herbart and Stumpf did no more than lay the foundations for the empirical study of the perception of harmony in intervals and chords by combining music theory and general psychology within a philosophical framework. Since then, valuable work has been carried out in various fields of research—for example, psychoacoustics, music psychology, musicology, and ethnomusicology—where tone fusion is still a debated topic.