

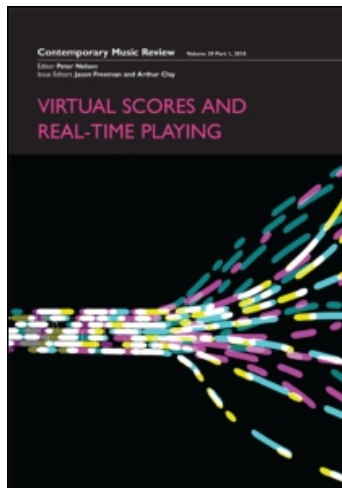
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Spectralism¹

Jonathan Harvey

KEY WORDS: Spectral Music; Electronic Music; harmony; timbre.

I would not want to echo Boulez's famous 'inutile' when he described those not acquainted with serialism; nevertheless, I find those composers working today who are completely untouched by spectralism are at least less interesting. History seems grand, for once; spectralism is a moment of fundamental shift after which thinking about music can never be quite the same again. Spectral music is allied to electronic music: together they have achieved a re-birth of perception. The one would scarcely have developed without the other. Electronic music is a well-documented technological breakthrough, spectralism in its simplest form as color-thinking, is a spiritual breakthrough.

Linguistics has made it abundantly clear that language is a somewhat limiting symbolic system: those, like Julia Kristeva, who have brought psychoanalysis into the picture, supplement the 'symbolic' world with the 'semiotic' world, a world prior to the dictates of the constitution of the speaking subject. The survival of the 'infant' within us can be seen in, amongst other things, certain literature such as the poetry of Mallarmé: 'Indifferent to language, enigmatic and feminine, this space underlying the written is rhythmic, unfettered, irreducible to its intelligible verbal translation; it is musical, anterior to judgment, but restrained by a single guarantee: syntax.'²

1. Material in this article has appeared previously in Jonathan Harvey: *In Quest of Spirit — my musical thought* (University of California Press, 1999).

2. Kristeva, Julia, 'Revolution in Poetic Language,' in *A Kristeva Reader*, trans. Toril Moi, Blackwell, 1986, p. 97.

Spectral music's equivalent for poetry's 'mysterious rhythm' is largely *timbre*, the non-discursive element underneath the discursive arguments of rhythmic form-shaping. Wagner too spoke of 'the sea of Harmony,' the 'Mother-element' an 'inmost dream... belonging to neither Space nor Time [which] remains the inalienable element of music, [whereas] through the *rhythmic* sequence of his tones in point of time the musician reaches forth a plastic hand, so to speak, to strike a compact with the waking world of appearances.³ The symbolic mediator of the semiotic world is 'rhythm' in Wagner and 'syntax' in Mallarmé.

Wagner the master of harmony himself developed into a proto-spectralist; for instance in *Parsifal*, where the real vision, it always seems to me, is one of timbre: the transcendence offered by the Holy Grail is not couched in terms of developed harmony (that is reserved for suffering, by and large) but of *timbre*, of orchestration based on chords magically transmuted to harmonic series, to spectra.

Here, for the first time, there is no distinction between harmony and timbre. Harmony is timbre; timbre is harmony.

Spectralism, like harmony, is in essence outside the world of linear time. In music time is articulated by rhythm, in psychology time is articulated by language, which separates us from the primary world and joins us to the symbolic order in which the linear movement of language chops up experience and places it in temporal sequence.

The tonal system, unlike spectralism, exists in a temporal context. The imperatives of a tonality confer a sense of temporal drive, however weak the rhythmic dimension, towards the goal of resolution, the goal of return after deviation. This is because the hierarchy of components is so compelling: the nature of dominant, subdominant, mediant is so easy to understand.

There is, however, a hierarchy of spectra — something that I have been composing with — but it is not quite so easy to understand and has yet to be taken on board by more than a minority of listeners. Its exploration, nevertheless, is one of the most exiting adventures of present-day music.

Using the 1994 IRCAM analysis-resynthesis program (in my work *Advaya*) it is very simple to analyze an instrumental pitch (or sequence of pitches) and re-synthesize it with up to 40 oscillators, which can subsequently be re-tuned or altered in any way. Working with pitches of the harmonic series (played by the cello in the case of *Advaya*) one has a basis for a cogent hierarchy: the natural series is an equivalent to the tonic in tonality: any child can hear it. Add the same number to each of the (first

3. Wagner, R., 'Beethoven,' in *Richard Wagner's Prose Works*, volume V, trans. W. A. Ellis, 1895, p. 75.

40) partials' frequencies and the series is distorted, compressed. If f = the fundamental frequency, then f added to each partial replicates the same harmonic series, but starting from the second partial, with the fundamental missing. Thus, in tonal terms, one has moved up an octave. Again, any child can hear it. So in between adding zero and adding f to all the partials there is an unlimited area between two firm poles. This area is chartable. The simple values, as in tonality, give the smoothest spectra, the most harmonious sounding, the closest to the natural series. Add $1/2f$ and an incomplete series whose fundamental would be an octave lower than the original's results — a very close relative, like a dominant in tonality, very smooth. Add $1/3f$ and an incomplete spectrum based one octave and a fifth below the original fundamental appears. Add $1/4f$ and a mediant-like fundamental is possible, on the major third. Outside the simplest ratios ($2/7f$, for example) the spectra sound less stable and more complex. All this is possible to hear (without training) and hierarchical like the tonal system. A measurable kinship distance is perceptible between a sound and its fundamental state, similar to that between the tonic and another degree.

In *Advaya* there are modulations from one spectrum to another by means of pivots — the 17th partial became the 5th partial, for instance. So one modulates to a new hierarchy of consonances and dissonances based on a new fundamental, a new center.

By *subtracting* the same frequency from each partial one expands the spectrum, of course, and the same criteria apply. In *Advaya* addition and subtraction are balanced, a concept which harks back to ring-modulation techniques. Ring-modulation produces pitches on either side of a central pitch which are equidistant in terms of frequency but, of course, a larger intervallic distance below the center and a smaller distance above. (Stockhausen's *Mantra* is a classic example of hierarchical structure in ring-modulation.)

To retrace my steps: this type of vertical sound-sculpture had its personal origins in *Mortuos Plango, Vivos Voco* for 4-track tape (IRCAM 1980). There, the spectrum of a bell was treated with Schenkerian hierarchical thinking by means of modulatory partial-pivots. Such manipulation are, of course, only possible with computer synthesis. In *Ritual Melodies* for 4-track tape (IRCAM 1990) computer-simulated instruments play entirely in one spectrum, the simplest, throughout. This was to reflect in the form of the piece as a whole the structure of the instruments' timbre. But it was curious that one easily lost the sense of spectrum in the discourse's melody and polyphony.

Indeed, the fascination of spectral thinking is that it can easily turn into melodic thinking: there is a large borderland of ambiguity to exploit. It is not a question for me of forsaking harmony and regarding everything as

timbre, rather than harmony *can* be subsumed into timbre. Intervallicism can come in and out of spectralism, and it is in the ambiguity that much of the richness lies. In several works, to take a simple example, violins provide upper harmonics to a louder, lower fundamental and at a given moment they cease to fuse, begin to vibrate, begin to move with independent intervals and then again return to their previous state. The images of union and individuation are powerful ones which have both psychological and mystical implications. 'The Many and the One.'

It is this aesthetic of hide and seek with spectralism that has preoccupied what I have written in recent years. For instance, in *One Evening* (WDR 1993) for two singers, instruments and electronics, the first movement is constructed intervallically — on the principle of symmetrical inversion round an axis. This principle gives a poised, floating stillness to the harmony, which changes but yet remains still around a central point. The music is then repeated with the addition of very deep, soft notes on a synthesizer. In these pitches I found the most plausible fundamentals for a reading of the (symmetrical) harmony as *partials*, i.e. spectrally. So the floating harmonies acquire a ghostly hierarchisation: intervallicism seen in a spectral light, the symbolic world seen in the larger perspective of the semiotic one, 'enigmatic and feminine.'

In a recent piano and tape work, *Tombeau de Messiaen* (1994) (homage to a proto-spectralist!) the tape consists of 12 pianos all tuned in harmonic series, each on one of the twelve pitch-classes. The solo piano itself remains normally tuned, but when the balance is good (so that taped and live pianos are indistinguishable) the piano has the role of providing the grit, the resistance to the spectra without seeming to be altogether outside them, partly because it often plays the same, or nearly the same, spectral pitches. The fact of partly not fitting makes the discourse interesting for me, as it changes constantly from spectral fusion to micro-tonal polyphony and back. Either of these principles without the other seems a less rich and attractive option for composition as I see it at this point in time.