Illusions in Sight and Sound

Reflections on Melody, Perception, and Raga.

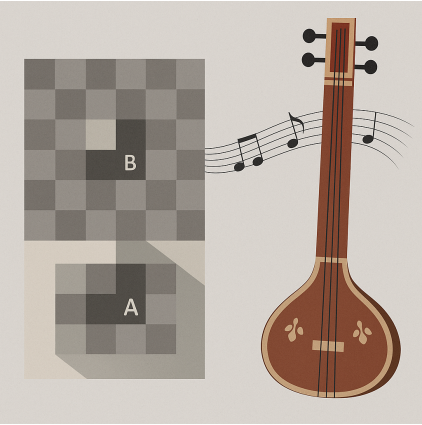
by **Rajan Parrikar**

Prologue

Why does the same element appear or sound altered by its environs? The eye reveals it: an optical deception sets before us two grey squares, identical in fact, yet one seems dark and the other light because one lies in shadow while the other stands in radiance. The ear works likewise, most strikingly in the ragas of Indian classical music: our perception of sound depends on its antecedents, aftermath, and surrounding tones. This essay briefly explores the visual–aural analogy and what it reveals about the delicate interplay of our senses.

Raga and Swara in Indian Music

Raga is the fundamental melodic form in Indian classical music. The Sanskrit word ***raga*** literally means colour, and in music it refers to the living matrix of melody that colours the mind. A raga is neither a scale nor a tune. It is better thought of as a blueprint for melodic conduct, animated only in spontaneous performance, through improvisation.



Beneath it lies the elemental unit: the ***swara***. The temptation to equate swara with ‘note’ is natural, yet it is the cardinal error. A swara is not a single fixed pitch-point. It has a centred core and, equally important, a shaded field around it, a penumbra. Integral

to it are microtonal graces, subtle inflections and intonation, the direction of approach, and the presence of neighbouring swaras. Together they form a microcosm, the source of a swara's life.

A raga draws on a specific set of swaras, distinguished by characteristic phrases, tonal molecules, and sanctioned patterns. These stipulations give the raga its signature and govern how it moves in melodic space. Within these conditions there is ample room for imagination and improvisation.

Comparison with Western Classical

The commonplace distinction says that Indian music is melody-centric while Western classical is harmony-centred. There is truth in that, but a deeper divide matters here. In Western practice the basic unit is the note, conceived as a fixed pitch within the tempered system. Ornamentation exists, such as trills or portamento, but these are typically embellishments rather than the essence of the tone. To be sure, modern Western composers have explored microtonality and fluid pitch, but these remain exceptions, not the ground of the tradition.

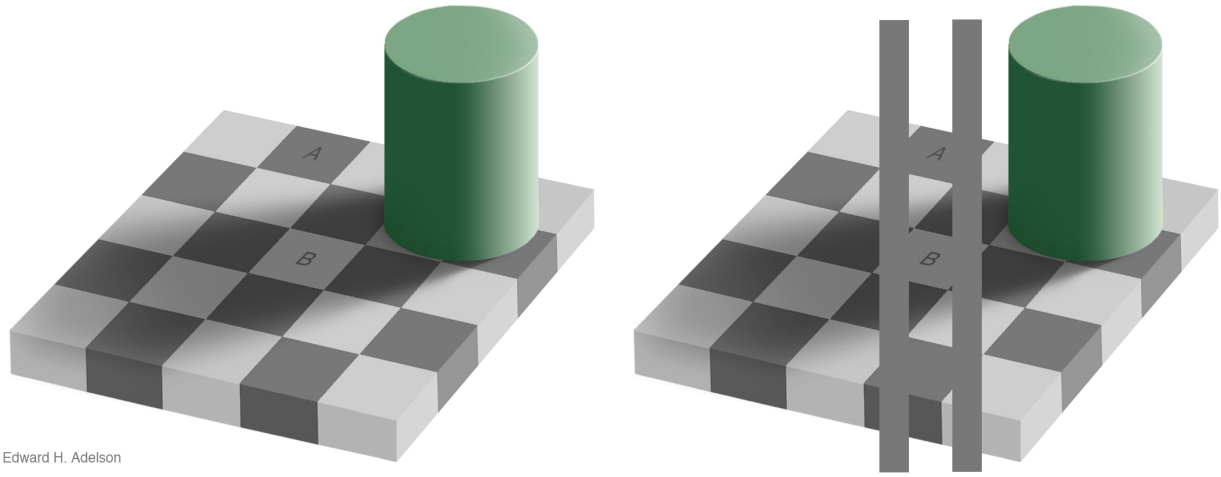
In Indian practice the swara is a tonal field, a shaded presence. Devices such as *meend*, the continuous glide, blur the edges between pitches. A raga line flows as if poured; one swara dissolves into the next, and identity resides as much in movement and relation as in the point of arrival. To the attuned Indian ear, even the majestic Western symphonies may seem discrete, hewn from blocks of pitch rather than woven from unbroken tonal threads.

Visual and Aural Analogues

With these preliminaries in place, we can address the central theme: perception of swara, without which raga could not be raga. Vision offers a

precise analogue. Perception is shaped not only by a patch of colour but by its surround.

Edward Adelson's Checker-Shadow illusion[1] shows two squares, labelled A and B, that appear to be different - one dark, the other light. In fact, they are exactly the same shade of grey. The surrounding pattern employs genuinely lighter and darker squares to create the look of a checkerboard, and a cast shadow falls across part of it. Our visual system "corrects" for the shadow and misreads B as a light square. The implication is clear: perception hinges less on the intrinsic patch than on the field that contains it.



Edward H. Adelson

This principle is exploited in photography, as good photographers instinctively harness such interactions to achieve a desired visual and emotional effect.

Remarkably, the sages of ancient India discerned the same law in sound, where it is far less obvious. **They saw that a swara does not live in isolation, that its true identity emerges only through its neighbours,**

its approach, and its resolution. It was a singular vision to divine in sound what in sight demands contrived demonstration.

The aural analogue can be illustrated. A swara is heard through its intonation, ornament, volume, and direction of approach, and through the tonal landscape around it.

Consider the *komal gandhar* (nominally the flattened third in Western terminology) of Raga Darbari. The upward gandhar is perceived very differently from the downward. The nucleus is unchanged, yet its course and company transform the experience.

In the clip below, my guru Pandit **Ramashreya Jha “Ramrang”** (1928–2009) renders this with rare precision: the same tone unfolding as two distinct lives. For those not conversant with Hindi, he reveals how the flattened third in Raga Darbari is heard differently in its upward and downward movements.

This relational life of swara is the reason Indian music cannot be captured by scale or bare notation. A swara cannot be abstracted from its living context, any more than a patch of colour can be perceived apart from its frame. To grasp this is to see that a raga is not a mechanical construction but a living organism.

Musical Reality?

It is often said that integers in mathematics have an independent reality, discovered rather than invented. Might the great ragas belong to the same order: fundamental patterns of tone and perception sensed by the ancients? Who first discerned their contours in sound? Tradition gestures toward the *Sama Veda*, the great corpus of chant written down around 1200 BCE, as the earliest source, and to **Bharata**'s *Natya Shastra*, committed to writing around 200 BCE. The genesis may be lost in antiquity, yet the discernment endures and the revelation abides.

Raga stands with the great discoveries of civilisation, alongside number and language. It is not merely a cultural artefact but a fundamental reality of the human sensorium. That the swara lives only in relation, and that the raga arises from this living tissue, only adds to the depth and mystery of human perception.

Epilogue

I have touched on only one facet of a vast subject. A fuller treatment would take us into neuroscience, into how the brain binds and integrates sensory information across modalities. My aim has been modest: to illuminate how the perception of swara shapes raga, to hint at its optical parallel, and to

suggest why this insight merits a place among the great discoveries of civilisation.

[1] The Checker-Shadow is one of many such demonstrations in vision science. Others, like the Chubb illusion, likewise show that identical stimuli can appear radically different depending on their context. The principle is universal: perception is shaped not by the isolated signal, but by the field in which it lives.

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