PRESENTATIONAL RHETORIC IN CONCERT HALLS: BEING THERE.
"THE OBJECTIVE OF ACOUSTICAL DESIGN."

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1 INTRODUCTION

Some 25 years ago I pointed out that Physics is **necessary but insufficient** for a successful acoustical design[1] – heresy at that time! Nothing in the meantime has led me to change that view. Broadly speaking there is an horizon separating physical science and its derivatives (such as engineering) which succeed at a linear and reductive level, from design and political power which are notoriously non-linear and holistic. Nothing above the horizon is permitted to contradict physics but neither are design skills or political power comprehensible solely in terms of physical science.

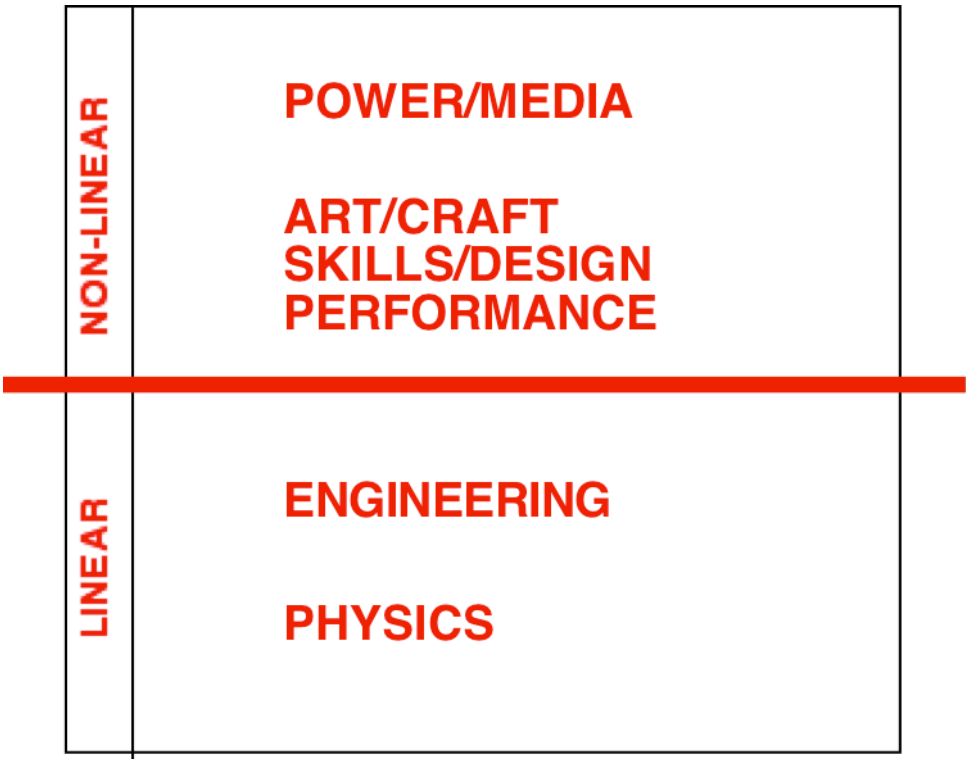

Figure 1: Hierarchy of knowledge and skill in concert hall design.

Previously I have spoken and written about **craft and design skills**[2] and I want to take that a little further in this lecture. I'm intrigued by the **objectives** in what we do. At the same time this diagram emphasizes the wholeness of the enterprise we are involved in. The **development** of the design, as you will see tomorrow calls on all the scientific rigour and engineering skill we can bring to bear in realising the design.

2 RHETORIC

So coming now to the title of this talk: what does Rhetoric have to do with design of a room for music?
Well, what is Rhetoric? The art of persuasion?

One writer[3] has it thus: *"the process of mutual influence that characterizes social exchange"* Note that this definition is careful to avoid limiting Rhetoric to words. "It is the basic human process in the sense that we are social animals who look to one another for cues…."
These cues, both verbal and non-verbal, condense into *meaning*:

2.1 Verbal Rhetoric

We are all familiar with verbal Rhetoric, as *persuasion*, where it "ranges from the bluntest quest for advantage as in advertising or propaganda[4] to the sublime…... " No doubt it is well known to the philosophers amongst you, but it was a surprise to me to discover the presence of the pervasive negative in most **verbal** discourse. Discursive meaning arises through structural negation and *difference*. Indeed I discovered a whole Theology – Apophatic Theology - the Via Negativa – approach to the Divine through negation, a commonplace of all mysticism, whether Eastern or Western. Some well known examples:
"This" and **not** "that". "The city is **not** a tree"[5], "the value of a cup is in its being – its usefulness is in its **non-being**". "The Tao which can be spoken is **not** the trueTao". *"Neti-neti"*, Sanscrit – not this and not that….[6]The theory of verbal Rhetoric reaches back through time for several thousand years, in both East and West…..to the Greeks at least. Their present dilemma probably illustrates its limitations.

Poetry is an exception – as one would expect in an art-form – there is an illustration of poetic language later in this talk……

2.2 Non-verbal Rhetoric

Non-verbal cues too, are familiar to all of us - body language, music, dance, our rituals - and the buildings in which they are realised. Each and every one of these, embodies and communicates *meaning*. That communication, particularly through art forms, **does not need negation** in its argument. It is different in kind from verbal discourse. It is *presentational***.** That is, its meaning occurs, not by discourse, but in the fact that the observer/auditor and the work are *present* to each other. This meaning is only accessible *in experience.* As Daniel Libeskind wrote of architecture[7], it is "not fully accessible to the abstraction of words". So it is in all art including architecture, music, and dance. [8]

2.3 Meaning in Architecture

Architectural meaning, to choose just one of these, may of course, be

- Banal
- Arbitrary or
- Profound

3 THE DESIGN OF MUSIC ROOMS

And so it is in the design of rooms for music. There is not much design required to follow a recipe! It is no accident that the "Shoeboxes", "Fans", "Vineyards" and so on were specifically excluded in the competition for PdP. A **Design** was required**.** And one of the most profound requirements in the acoustical brief for the design is that the **"presence of the source"** and **"the presence of the room"** should be actively controlled.

3.1 A conflicted task?

There are of course many pathways to the design of such a room – indeed some acousticians avoid any involvement in design, drawing only on precedent and limiting themselves to the physics of whatever the architect proposes. All too often this results in the classic conflict between acoustician and architect, expressed by the late Jean Paul Vian thus:" [9]"*When designing a new opera or concert hall, the architectural requirements for excellence are most of the times conflicting with the similar acoustic requirements for excellence. Good compromises have to be sought; with the well known difficulty that seeing mostly predominates on hearing.*"

3.2 Another way :

But there is another way which follows the track of *meaning* in architecture and holds that **shared meaning is the site for a meeting of minds.**

The acoustical designer seeks such a meeting with the architects. From long experience we expect that architects whose skills can obtain commissions as significant as opera houses and concert halls to be receptive to the underlying technology and excited by it. Our aim is a design milieu in which ***sound, space and performance*** **are one**. Presentational communication is the aim.

3.3 "Wanting to be"

So, where do the architects priorities lie? There are many ways to describe the imperatives that motivate architects - not all of them polite! The one that I like is that architectural design turns on a sense of a building **wanting to be**. [10] This idea embraces both the functional and the emblematic.

The question is, **can acousticians have the confidence to think like that**, that what "wants to be" in the context of a **new** building form includes the sound in the space. **That** would be *acoustical design*. You can *know* "what will work!" before the design is advanced enough for the metrics.

In illustration I offer two recent projects. The first is the Guangzhou Opera which we did with Zaha Hadid, Architects. The second is,

of course, this building (La Philharmonie.)

3.4 First Guangzhou:

The overt meaning of the exterior is two polished granite boulders on the bank of a mighty river.

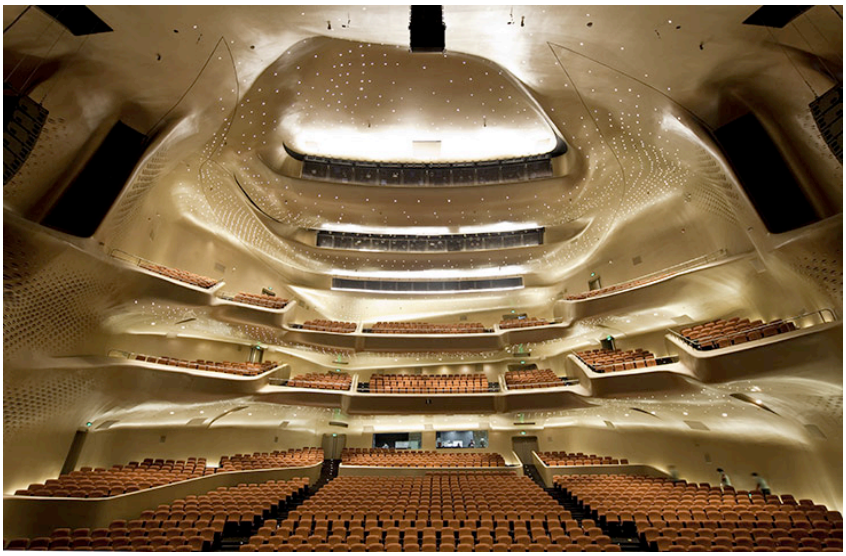

Figure 2: Guangzhou Interior

In the interior, in the words of Simon Yu the Resident Associate for Zaha Hadid, and largely responsible for realizing this great building,

"Reference was made to Cardiff and more emphasis on the asymmetry as we progressed - to our delight and excitement when we engaged Harold (I remember it so well) that he was 'one mind' with the architects and so began this labour of love.....![11]

In fact I too recall our first discussion about asymmetry and my suggestion of the reflecting surfaces from left and right as arms embracing the stage, within the established architectural idiom. This became the defining character of the space in the architects hands.

The room is a product of a common view between the architects and ourselves. You cannot look at this space and say "the acoustics begins here... or there."

Within that common view we have been able to predict the physical metrics of sound in rooms to ensure that the objective design guides are fulfilled. We value asymmetry - orchestras, after all are very asymmetrical in their radiation of sound.

3.5 Second, La Philharmonie:

To say again: There must be a meeting of minds between architect and acoustician. It is not a conflict. It is a meeting of minds, and preferably over lunch!

Figure 3: Lunch with Jean Nouvel

Figure 4: Initial sketch

Figure 3 shows Jean Nouvel speaking with me. He had just said to me,"But Harold will it work?" Here is the sketch I made at that luncheon in Biarritz showing the concept of the nested spaces, the richness of the architectural ambiguity, and the way in which the reflections might be distributed within them. The resulting interior in the competition design is recognizably the same room as this one. I shall say more about this room tomorrow.

Figure 5 The Competition design for La Philharmonie de Paris

You cannot look at this space either and say "the acoustics begins here... or there." Again the ideas underlying my sketch became the defining character of the space in the architects' hands during successive iterations.

3.6 "What will work" acoustically?

In other words what are the essential precursors of the acoustical dimensions of "wanting to be"? These are the "hard yards" to borrow a rugby metaphor! In the written text I have listed 9. I will mention only 4 here though all are necessary:

1. *Knowledge of the research that underlies known preference and the metrics.
   All such research has its limitations both spatial and harmonically when it comes to reproductions of orchestral sound. We have to know where the numbers in the various standards come from to go beyond the conventional wisdom.[12]
2. Openness to architectural thinking so that what we propose is not an affront to the architectural intention, yet without weakening the rigour of what we know.
3. Awareness of *acoustical scale* relating dimension to reflection bandwidth – must be second nature.[13]
4. Volumetric considerations for Reverberance.
5. Echo watch points
6. Awareness of the limitations of ray representations of sound fields.
7. *Ability to communicate with the architects in their chosen medium. For me that is drawing, but in the digital age my colleagues do this in real-time and 3 dimensions.[14]
8. A pallet of suitable materials.
9. *The aspiration to make a room in which space, sound and performance are present to the audience and each other. Integrated experience in which these rituals are enhanced.

So where in this scheme of things do the conventional metrics for room acoustics fit?

3.7 Conventional metrics:

We use all the resources that are available to verify and refine the acoustical designs made. The metrics prove the design, they are not the design themselves. At the very least they are a check that gross errors have been avoided. They also enable the results to be refined and allow us to present them with confidence to the client. We push ODEON to its very real limits for rooms of great complexity such as PdP in prediction of these metrics. MDA's new IRIS sytem has proved itself in this project to be a game changer – particularly for measurements of lateral fraction. [15]

4 CONCLUSION

I want to read you part of the review of the concert here in honour of the 90th birthday of Pierre Boulez. [16]
Tom Service the music critic for the Guardian writes this excellent description [17]of the effect of Presentational Rhetoric in PdP in this case by *Ensemble Intercontemporain* – one of the resident groups here. My earlier remark about poetic expression referred to this.

"The most scintillating shock of the evening was, for me, hearing Répons, Boulez's masterpiece of the acoustic-electronic universe, in the flesh for the first time. The bulk of the players and their conductor, Matthias Pintscher, were placed in the middle of the floor on the hall's lowest level, with six satellite soloists in balconies around them, and a halo of speakers surrounding the whole ensemble – a bespoke set-up that proves the remarkably flexible interior architecture of the Philharmonie – unique, in my experience, in a full-size concert hall.

4.1
Illustrations

- Here is Boulez own sketch of the required arrangements.
- And here a photo on the occasion.

"The effect was like being inside a gigantic sonic crystal, in which the same material is analysed from a kaleidoscopic infinity of different perspectives: the chords that keep returning in the piece, the way that each section seems to spring out of an initial impulse, the hyperreal bells and gongs of the electronic sounds, are all expressions of a bigger musical and expressive unity. The music is crystalline in its sheer beauty and in the mysterious network of quasi-neural connections that Boulez creates between every sound and moment in the piece."

4.2 Coda

"The coda: chiming chords in the soloists and a glow of those frankly gorgeous-sounding electronics, before a final constellation of notes in the harp, felt like the open-ended conclusion of a mysterious journey that all of us in the sold-out crowd, wanted to take again.……

Which is an upbeat to two other things: firstly, that the acoustic of this concert hall is up there with the best I have ever encountered, and it's certainly the finest of any recent hall I've heard, anywhere. The EIC's concert programme last night illustrated that the Philharmonie is a space that allows all of its 2000-plus listeners to feel in contact with the subtlest sounds the musicians can make ……..."

The objective remains the Presentational Rhetoric of a concert experience: Being there!

5 REFERENCES

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