

STAGE DESIGN: VISUAL OR PROJECT?

A FLEXIBLE STAGE FLOOR INVENTED BY LUCIANO DAMIANI

Excerpts from interview, model and photo taken from degree thesis “Il piano flessibile di Luciano Damiani” by Matteo Fianchi - Accademia di Belle Arti di Brera, Milan - Supervisor: Prof. Daniele Paolin.

Construction is a science, but it is also an art; in other words, the constructor requires knowledge, experience and natural intuition.

Eugène Viollet-le-Duc

While a technique can exist without art, there has never existed an art without a technique.

René Berger

The notion that every division between science, technique and art is absolutely superfluous has for centuries prejudiced culture and vocational training. In the case of stagecraft, this uncertainty is even more ingrained. The habitual separation between Stagecraft and Stage Design now seems to have increasingly blurred and hazy boundaries in contemporary theatre, when still extant. This division could perhaps have made sense when, to paraphrase Luciano Damiani, the scenographer and author of sketches was the “provider of images” which then became scenery by the hands of skilled craftsmen (painters, carpenters, sculptors, technicians, etc.) who were responsible for developing and constructing the sets, making them three dimensional and operative for the area of the stage.

Contemporary stage design, by contrast, always seems more inclined towards processes that become integrated, guided by a dramaturgical, poetic, expressive and aesthetic scheme, the only true aim to which to aspire. Such integration incorporates knowledge bases in fields increasingly diversified and specialistic, driven by both formal and functional needs in a continuous interaction. One therefore sees perpetual scenographic inventions proliferate, extraordinary prototypes that would often represent by themselves the fulfilment of dreams that the scenographer has harboured right throughout history, but only twentieth-century technology has enabled him to make possible. One of these inventions is undoubtedly the so-called “flexible stage floor” invented by the scenographer, Luciano Damiani.

Why a flexible stage floor?

The “real” and the imaginary “below” and “above” are spatial “entities” that were characteristic of Baroque theatre in Italy – clearly with some exceptions – but not only: the Elisabethan stage of public theatres, for example, was already ideally divided into three areas that were poetically well defined. There was in fact a stage area, probably situated at audience head-height; not only did this afford good sightlines, but it also allowed for sufficient space below the level of the stage for the positioning of hell, from which devils and other demoniacal apparitions sprang out from one or more hidden traps. The stage was partially covered by a roof known as heaven: here was where the machinery was probably stored for the supernatural descent of divinities. The stage represented “reality” while the other two spaces could be compared to the “imaginary” below (hell) and above (heaven).

For the purpose of clarification, with the use of the gauze in the auditorium (a transparent veil suspended from the stage into the house, above the audience), Damiani devised this to represent the “imaginary above”, but he did not have occasion to experiment with the “imaginary below” until the city council of Milan approached him for the staging of Orfeo by Poliziano, first staged by Leonardo Da Vinci (Milan, Castello Sforzesco, Corte delle Armi; 1983). “That was a ‘lucky’

chance” -Damiani wrote - “because I discovered the element that allowed me to complete the Theatre ‘machine’ that I wanted: the ‘imaginary’ below”.

In reality, Damiani wasn't keen on the idea of staging an unimaginative revival of Leonardo's mise-en-scène: Da Vinci, in his project, had designed a hill like a half-dome: this “opened up” to reveal the underworld within. Damiani resolved the problem of the hill by designing a custom-built stage floor which, when flexed, became an arch, thus enabling the creation of an upper space and its lower counterpart. Moreover, the arch could revert to being part of a normal stage floor when required, by counteracting the propelling force of its upthrust. It was the fulfilment of an age-old dream that many scenographers throughout history had likely coveted: a level that flexed to form an arch, from within which could be glimpsed a seething underworld, an infernal “below”, a veritable hell. Damiani picked up the gauntlet of his own challenge, as a smart, obstinate “egocentric” man, as he likes to define himself...

He designed a flexible structure that measured 17 metres in length by a little over 5 metres in width, formed of bendable tubes of thermosetting polyester reinforced with 60% glass fibre, purchased from a specialist firm in Munich.

Damiani had a stroke of genius: by arching itself, the level would become perspectival, for which the front part, nearer to the audience, would curve upwards more than the rear part. It is, however, important to dwell on the fact that, when in an arched position, the flexible structure is in perspective: subjected to unequal pressures and curving itself in different ways, the structure was stressed to a greater extent and this meant dealing with additional problems linked to static and dynamic forces, and yet Damiani, aware of all this, deliberately chose to design a perspective flexible stage floor. In fact, not designing it in this manner, the malleable structure would have resulted in a simple bridge, a kind of self-moving variation on a raised level (even though a journalist actually defined it as such) rather than the singular form that it was – suggestive of a strip of earth's crust which, driven by a mysterious force, rose upwards.

The solution devised for the creation of two equivalent wooden surfaces was perhaps the most complex and was the last to be reached. A metallic structure was designed in such a way as to allow it to be fixed to the flexible rods. The steel elements were positioned along the entire length of the tubes, at a distance of a metre between them, and there were twelve in all; the strips of wood were six millimetres thick. The real floor, that is, the treadable part, comprised two layers of plywood placed one on top of the other; the lower part of the floor, not being practicable and having the sole function of hiding the structure from view, consisted of just one layer of plywood.

To the double layer of plywood flooring, two layers of dance-floor matting were glued: one acting as a sound-deadener while the other layer on top, made of felt, was suitable for treading on. The function of the sound-deadener was to limit the noise caused by dancing; one imagined dancers leaping or running across the flexible stage floor: without a “silencer” it would have been like banging on a drum skin. The felt, covered with resilient vinyl flooring material, not only had the same anti-noise effect but it essentially provided dancers with an anti-slip surface and acted as a cover for the metal tracks that housed the plywood panels. As already illustrated, it is vital for dance to have an anti-slip surface, likewise flooring which is completely free of any element that could cause injury, or worse, to the dancers' feet. To conclude, Damiani also studied a solution for the insertion of projectors within the flexible structure; these were very useful for illuminating the part beneath the floor when it was in an arched position. The interior height of the flexible structure was 16.4 centimetres and, even though rather narrow, small projectors could easily be placed within its interior. Clearly, where the beam of light shone outwards, there was no wooden panel to impede its ray.

Initially, the first tests that followed the design phase, that were carried out in 1981, revealed a massive structural defect: the tubes, not being adequately fixed to the trussed wedge-shaped frame of solid metal (jack), with the hydraulic thrust system broke free from their housings, causing the flexible floor to collapse. Imagine a seventeen-metre length floor, which needs an upthrust equivalent to several tons in order to form an arch that, due to a structural defect, suddenly crashes

to the ground: this was a very serious problem, especially from the safety point of view. The design phase had been extremely accurate, and the firm that manufactured the metal parts of the flexible stage floor had worked in conjunction with engineers from the nuclear power station in Latina. Despite all these precautions, the question was raised as to how such a problem came about.

In truth, there were far too many variables involved in the process. If the floor had arched in a symmetrical formation, with the front and rear raised in equal measure, it probably would have been easier to calculate its breaking points and its thrust, etc. Having instead an asymmetrical curvature, the positioning of the solid metal frames (jacks) at each end of the flexible structure complicated things enormously.

If, after six long months of toil, the hoped-for results were achieved, it was solely thanks to the numerous and vitally important tests carried out. Damiani confesses that, if he had not had recourse to adequate financial resources and enough space in which to test the solutions integrated into the design process, the whole project would probably have been shelved.

It should be mentioned that the flexible stage floor already had a slight natural curvature, which was built-in during the construction phase, to facilitate the floor's arching mechanism. But this did not suffice to overcome the floor's initial resistance to arch so, in order to trigger the movement, the horizontal hydraulic compression was combined with a vertical thrust provided by a ramp placed beneath the flexible floor.

The flexible stage floor had just one defect, if it could be called such: as already detailed, it was practicable in both a horizontal and an arched position. If a large group of dancers all entered from the same side, for example, from the right, the structure tended to list and sway towards the left.

This type of "reaction" that the flexible stage floor had to stresses is considered normal: the fact that the floor measured 17 metres in length and arched to a maximum height of 3.2 metres should be borne in mind. In any case, the problem was sidestepped by having the same amount of people appear from both sides simultaneously.

Damiani himself says: "...this flexible stage floor is the culmination of all the research that I have carried out over the last thirty or forty years. But this is the outcome of an attempt to create a modern variation on Baroque theatre, I mean: legs, raked stage, traps and headers. Dealing with the imaginary below was still an unresolved issue. There were no other means available. And then came the fortuitous proposal from the city authorities in Milan to stage the production designed by Leonardo. But I said: 'I'm not repeating the same thing, I'm not making a model for the Science Museum. I'll do it differently!' and there and then I said: 'I'll do a flexible stage floor', but how to go about this, I had absolutely no idea whatsoever. Actually, I said to the mayor of Milan: 'I have something else in mind', and from here the idea naturally took shape and was gradually developed, tried and tested prior to that initial spectacular failure. But in the end the whole thing worked!"

It is easy to think that the difficulties inherent in, and the importance attached to, the design and construction of a flexible stage floor were not fully appreciated. When Damiani used it for the first time in the staging of *Orfeo*, the press didn't give much weight to this innovation of scenic design. From reading the various newspaper articles, it's almost as if Damiani's creation of a seventeen-metre length floor that rose to form an arch on which ballerinas performed dance movements was to be taken for granted. The comments were rather curious: "Damiani, for his part, has used the Leonardesque hills as a figurative base, constructing, however, a kind of taut arch to separate the earth from the underworld"; and again: "Leonardo is a difficult nut to crack, [...] if even an artist such as Damiani was stuck for a solution". Even those critics who seemingly appreciated the solution didn't stick their necks out too far: "The set design [...] is rather eye-catching".

Quite apart from the technical difficulties involved in realizing such a stage floor, from these comments one can assume that not even the poetic requirements were understood, not least the importance and the uniqueness of this ingenious solution. And they are certainly not of minor importance: he himself has confessed that the flexible stage floor is the culmination of an entire research carried out over thirty or forty years... of a lifetime.

