Silvana Balbi de Caro & Gabriella Angeli

The new exhibition of the Numismatic Museum in Rome: Between innovation and preservation

Metal and coins on exhibition in Rome, Palazzo Massimo alle Terme, Museo Numismatico Permanent Exhibition

Proceedings of the ICOMON meetings held in Madrid, Spain, 1999.

[Madrid] : Museo Casa de la Moneda, [2001]
543 p. (Multilingual) pp.154-168

The new exhibition of the Numismatic Museum in Rome: Between innovation and preservation

Metal and coins on exhibition in Rome, Palazzo Massimo alle Terme, Museo Numismatico Permanent Exhibition

Silvana Balbi de Caro & Gabriella Angeli Bufalini

Museo Numismatico della Soprintendenza Archaeologica dl Roma, Italia

«*Rape, congere, aufer, posside: relinquendum est*»: «*grab, accumulate, extort, take possession: all this you must leave*»
(MART., Epigrammaton liber VIII, 44, 9)

Coin, this multiform Proteus that can transform the dreams and aspirations of both the rich and the poor into reality, has attracted the attention of the Latin poets on numerous occasions: turned into the divine or demonised, but never ignored. The merchant was thinking of it when he faced the risks of the sea in the hope of accumulating wealth in short order (IUV., Saturarum liber XIV, 275-278), while anyone who is breaking his back every day in humble work under a demanding taskmaster is thankful of receiving a generous tip. And often the craving for money leads men to lie shamelessly: the heir will swear not to have inherited anything from you (MART., Epigrammaton liber VIII, 44, 12), just as the dying one will keep the fortune hunter in line by promising to name him the sole heir (MART., Epigrammaton liber II, 26).

Coin, therefore, not as a precious antique but rather restored to more than its original function as a medium of exchange and measure of value, but also as a social indicator and propaganda tool, ably controlled by the political powers through the magistracy in charge of its mintage.

And precisely in order to more effectively emphasize these aspects of the numismatic document that the exhibition in Palazzo Massimo in the hall dedicated to «*Metals and Money*» is flanked by two additional exhibits entitled, respectively, «*Prices in Rome*» and «*Luxury in Rome*» which are charged with the task of illustrating aspects of everyday life in Rome.

A «Gallery of Bankers and Merchants» also serves as a vestibule to the great collection entitled «*Metals and Money*» destined to contain, as a modern coffer, the numismatic treasures that have come down to us from the entrails of time.

Here the visitor is shown, through nine sections and along a course of over two thousand years, the history of that special medium of exchange and measure of value which was the metal coin of real value. The site of this adventure is Italy, starting from the time in which, toward the end of the

fourth century B.C., the peoples who inhabited our peninsula, having abandoned the old system of weighing metals («at one time a person paying money weighed rather than counted it,» wrote Gaius, a second-century jurist, in his Instit., I, 122) began to use the first coins minted in bronze: «in the past,» Gaius continues, «only bronze coins were used and they were in many denominations; no gold and silver coins were in use at that time» (GAIUS, Instit., I, 119) (Section I).

The perfecting over time of the monetary instrument, the shrewd policy of the Roman ruling class, which always exerted strict control over metal money of intrinsic value, not sparing, at times, even the weakest groups of people, the continuous changes applied to the different monetary species in the search for the difficult balance between the value of the metals in bars and that of coined metals, are just a few of the topics that accompany the visitor until the threshold of the Middle Ages (Sections II-IV).

And here too, from Rome to Byzantium, from Ravenna to Benevento, from Pavia to Verona, from Bergamo to Arezzo, from Barletta to Syracuse, it is ever coin money that traces the course path of history: a coin which becomes a subtle tool of political pressure in the hands of a barbarian of the stature of Theodoric (Section IV) and becomes the malleable support of the difficult work of reconstruction, not just territorially, but of the empire that Justinian ventured out into (Section IV).

Between the Middle Ages and Renaissance there fits, like the meta in the arena of a Roman circus, a cylindrical piece to collect the coins of the Rome of the Popes, from the most ancient series (the so-called *antiquiores*) up until 1870: splendid pieces for an extraordinary earthly adventure which, from the issuances of the Pontiffs alive during the century of Charlemagne, extends until 1870, the year that signalled the end of the temporal power for the successors of Peter (Section V).

But coin was not just an instrument of power in government hands: it circulated about the market-places of a world that was becoming more vast, hidden in the saddlebags of merchants from Florence, Milan, Genoa or Venice or stowed in the ships of Italian fleets. And new horizons opened for Italian trade after the voyages of Columbus. The discovery of the new world across the sea in any case marked irremediably the end of some currencies that, through the long centuries of the Middle Ages, had dominated international trade: the ducat, the sequin, the florin, gold genovini, accepted and recognized even in the most remote regions of the old world for their absolute intrinsic purity, were forced, as a matter of fact, to make way for new coins like the gold French écu - which, while less pure, seemed more suited to the new historical reality (Section VII).

And, in effect, the period from the 16th century to the 18th century was an epoch of great transformations and profound contradictions: if, indeed, on

the one hand the Lords who governed Italy seem every more prone to ostentation by their political power and their wealth, deep-rooted troubles threatened the underpinnings of the structure of the old states. In addition, wars and famines tormented a people in some ways increasingly poor and exposed to the blows of misfortune. While coin, ever more splendid in its external form (its creation was entrusted to the top names in the arts of engraving and sculpture) and of greater intrinsic value, became removed from the people, seemed to nearly isolate itself from the rarefied world from which the only thing that could successfully remove it was the wind of revolution, which, between the end of the 18th century and beginning of the 19th century, blew in from beyond the Alps (Sections VII-VIII).

The adoption of the new system of weights and measures and the gradual introduction of a new lira based on a centesimal division, which reached Italy after the French experts, represented, during the course of the 19th century, for the peoples of Italy an uncertainty factor that, in conjunction with the increasing spread of paper currency, freely accepted or imposed coercively, caused a radical transformation in the circulation of currency in the country (Section VIII) and, over time, led to the disappearance of the metal coins of real value, a medium of trade in any case unsuited to the changed needs of the international market.

And it was thus that, in this, our 20th century, in the difficult years between the two world wars, in every country the coin died a slow but inexorable death, while metals, perhaps just in the form of precious ingots were hidden away in bank vaults, opening the way to new and ever less material types of «*coin*» (Section IX).

Design Choices

Giovanni Bulian

Architetto, Soprintendente per i Beni Archeologici, Architettonici e Atorici dell'Abruzzo

The exhibition was staged keeping in mind the need for flexibility and its eventual re-configuration or enrichment with additional material from the various collections housed in the facilities of Palazzo Massimo alle Terme. This flexibility is all the more a necessity in the case of a numismatics exhibition, where the small size of the items on display makes them difficult to stand on their own; moreover, the range of the contents and accompanying information embrace different fields, from the political to the historical, artistic and cultural, economic, social and so on, which are interesting but difficult to «*communicate*» without the proper structure.

Hence an «*exhibition strategy*» up to the challenge of the subject matter. The solution developed in the design contains the elements that can render the complex subject matter more comprehensible.

It was decided to emphasize the image (be it graphic, photographic or multimedia), supplemented by models, maps in relief, etc., whose advantages include ease of use in didactic activities that may even be conducted in other locations (schools, cultural institutions, etc.).

As may be seen from the general map of the layout of the «*Medagliere*» [Medal Displays] situated in the palazzo's basement floor, the public can enter either from the elevators located on the side street adjacent to Via Amendola (which should be considered a secondary access for the tour) or from the «*grand staircase*,» which is the main tour route.

The staircase, as a matter of fact, leads to the first vaulted room, which serves as the first information station and an area leading off to various exhibition rooms of the Medagliere. It contains a video describing the organization of the exhibition with a visual review of the objects on display and links with visual materials in other facilities in the museum system (together with computer designs of the project); here, as throughout the exhibition, multimedia elements are complemented by traditional «*static*» media (drawings, photographs, etc.).

The Medagliere exhibition space is divided into the following areas:

Multimedia Information Area: this first area designed for important activities is laid out into a first multipurpose area, for projections (offering various general views of the museum of the Piazza dei Cinquecento, illustrating existing sites and thematic contributions tied to the Medagliere exhibit, which can of course be modified and supplemented over time) and for temporary exhibitions on special topics.

Main Exhibition Area of the Medagliere: this is situated in a section of the facilities below the palazzo's courtyard and portico. It is composed of a hallway to the main exhibition hall featuring three high-security doors (thick steel doors) which are locked at the end of each day when visiting hours are over in order to protect the precious collections on exhibition.

The hallway, which leads to the vaulted area, borders on one side with an area that is divided into compartments for fire safety in front of a safety stairway, and on the other with a compartmentation area and fire escape stairway that also provides controlled access to the area for scholars of the Medagliere; it is divided into a waiting area, an area to store personal items, and study rooms. The area for scholars, which is also laid out in compartments and has an alarm system, is adjacent to the entry to the highest security vault situated on the second basement level.

Returning to the main exhibition hall, from the side facing Via Massimo d'Azeglio, plans call for another reinforced security door that connects with a service area and restrooms adjacent to a small room for preparing

numismatic materials both for the permanent exhibition and temporary exhibitions.

The Exhibition

The decision was taken to use the entry hall as an exhibition space too, despite its small size, utilizing pieces with a highly symbolic value and using slides that «*introduce*» the topic of coins (see for example the money changing scenes from historical representations and the Edict of Prices).

The main hall features four pilasters-columns situated along the room's longitudinal axis.

The objective of the design was to establish a route using two doors as the entrance to the exhibition and separating the space into two sections using several separating elements situated along the main axis: these also allow one to take in the entire space since they are not at full height and are partially «*transparent*. »

The pilasters-columns are used as the centres around which are disposed a series of alternating circular and straight items which provide surfaces where drawings can be hung, while providing semi-transparent separation and serving as display stands.

This series ends with a large circular structure that serves as something of a hinge, even in symbolic terms, between the Middle Ages and the Renaissance, where one would, of course, place Rome.

The circular shape provides, on the exterior side, a supporting structure for relief maps of the Mediterranean and Europe, showing trade routes, the spread of coins and so on, during the eras covered by the exhibition; on the interior side, in the lower section, there are display cases, while the upper section is used for a slide show to add further clarification to the exhibited pieces through the use of data, images and references of various kinds.

Areas are be organized by topic by positioning display cases and exposition panels so that their axes are perpendicular to the main one.

Special containers are situated in the two walls along the long sides of the hall; in some instances they are substituted with lighted panels showing magnified details of materials pertaining to the displayed objects taken from documents and art works from different periods.

The lighting along the upper part of the two longest sections provides a continuous strip that is used for a multi-vision projection of detailed images

of the objects on exhibit, placed in the historical context that produced them, with general references character to understand them better.

An advanced audio-guide system provides descriptive commentary on the images (using headphones provided to visitors during the tour) synchronized with the images in a number of languages using an infrared-signal audio system.

It is thus possible to fully appreciate the exhibited coins, including their artistic quality, which is difficult to achieve in a traditional exhibition given the small size of many pieces on display.

In the central area of the room, hidden in the dropped ceiling, is the projection equipment, which is controlled and synchronized through a control centre located in the exhibition space.

The modularity and ease with which the components making up the display cases and didactic materials can be put together and modified, together with the great potential for additions and changes to the programmes relating to the images, provide the exhibition and educational structure with true flexibility, while maintaining «*fixed*» composition elements characterizing the architectonic space.

The Hall of «Coins and Prices in Rome»

This small hall adjacent to the bank of public elevators is laid out with two large display cases containing numismatic material and descriptive items of an educational nature that is easily understandable, at the centre of which is a computer with a touch-screen monitor to encourage visitor interactivity. The room also contains more conventional non-interactive educational materials.

The Hall of «Luxury in Rome»

The spaces selected are configured to optimise the exhibition in light of the small size of the items on display and the particular topics covered. The mummy of Grottarossa and the tomb contents are displayed in a special way, so that a video screen divides the space, thus highlighting the more important pieces while projecting information on their discovery.

The mummy is exhibited in a case specially designed to preserve it (using fibre-optics and passive climate control systems) and to display it in an evocative manner: the case and its precious contents hang «*suspended*» in the air using special equipment (the hall is quite «*dark*» and the objects seem to materialize out of nowhere thanks to the stage-set use of light). The sarcophagus that held the mummy is exhibited beside it, in a niche created to evidence its importance; the other items found in the tomb are

exhibited in crystal reliquaries shaped like cubes that protrude from the wall using supports that seem immaterial and achieve an almost «*magical*» effect, emphasized by the special use of lighting from the dropped ceiling.

The famous and most precious Gemma di Aspasio is also exhibited in the same room, as well as numerous extremely rich tomb furnishings contained in display cases that fit into the walls, some of which are in relief, protruding beyond the cases so as to evidence the different typologies; in this way, the objects may be appreciated in their own special context.

As mentioned, this level contains both the exhibition space and areas for equipment, archaeological material storage, spaces for temporary exhibitions (situated between the exhibition space, the storage areas and above the maximum security vault containing the deposits of the Medagliere), rooms for scholars, situated in an area accessible directly (but equally carefully divided into compartments) — to the storage facility and offices of the Medagliere located on upper levels and vertically connected by elevators and hoists.

Hall of «Metals and Money»

Because of the special nature of the exhibition layout and the technological solutions employed, the lighting installations for the Hall of «*Metals and Money*» were developed taking primarily into account the need to maintain equilibrium between illumination in the various spaces and relative luminance, in relation among other things to the desired legibility of the multimedia projections on the upper coping of the walls.

The general illumination of the space (background lighting), which is fairly low, was achieved using:

- recessed units with directional adjustment situated around the large central circular pilasters, screened from normal sight lines in order to highlight and accompany the visitor along the tour route;
- recessed wall washer units for the central wire mesh divider, with a slight screening effect.

The illumination produced by both systems is controlled by a dimmer system.

Accent lighting, designed basically to enhance and bring out the displayed items was achieved through the use of:

- a track lighting system on wired tracks with numerous switch-on points. Such systems are characterized by illumination that is particularly controlled and indirect, by variability in the size of the beam in relation

to the specific spaces to be lighted, and by the possibility of calibrating individual lighting elements using local dimmers.
- a recessed wall washer system to illuminate large geographical relief maps placed outside the large central tambour.
- a system integrated with the display case structure to illuminate the coins using fibre-optic technology located inside the cases to ensure proper lighting levels.

From the «Gallery of the Bankers and Minters» to the Hall of Luxury

Off the main hall is the «*Gallery of the Bankers and Minters*» where tracks recessed in the dropped ceiling support low-voltage halogen spotlights which, with precise lighting, highlight the scenes constituted by ancient bas-reliefs showing mercantile scenes in the form of realistic shops.

Moving to the document hall, which is also equipped with monitors displaying didactic materials, the illumination becomes discreet, highlighting the contents of the display cases with solitary shafts of light and providing the space with gentle background illumination until the next exhibition hall, «*The Luxury of Rome*,» where the general light level is very low, mainly because of the need to preserve the mummy of the child of Grottarossa, illuminated inside its reliquary with fibre-optic lighting. The sarcophagus, jewels and precious implements of the Hall, contained in the cases, are illuminated either by spotlights on tracks or by units recessed in the ceiling, with a very localized accent effect and the capability of controlling the background level.

Halls for Temporary Exhibitions

Because of their specific intended use, the decision was taken to use a very versatile lighting system composed of a suspended metal structure with tracks equipped with low-voltage halogen spotlights with different lighting effects (silhouetting, medium, narrow and wide beams) that can be easily adapted to the display needs.

Display Cases: Technical Description

- steel structure and panels: this is a high-security construction featuring an aluminium framed glass opening and aluminium butting
- new micro-frames
- case with inert atmosphere
- suitable hinges and locks: a system of frames that seal so well that the display case panel can serve as the access door to the exhibition space.
- waterproof structure

- change of air every 15-16 days (that is, 60% higher than the standard set by the technical office of the British Museum for analogous structures)
- micro-frames in aluminium with a gasket sealing system with an internal, pulling, compression mechanism instead of the traditional outside compression system tightening screws—to put it another way, a true active gasket system.
- preventive conservation features: high level of air-tightness and security; system of wedged-in rods that completely «*brace*» the door.

Structure of the Display Case

1. Description of the Frame

The frame contains closing rods in places alternated with widened and narrowed sections and a variety of sliding bolts mounted on the door: every frame has a hole for the sliding bolt large enough to accommodate the thicker sections of the bolt; the holes have a lateral opening wide enough to let small-section segments of the bolts pass and block the larger sections.

2. Features of the Frame

- active mechanical sealing system;
- case has excellent sealing;
- change of air in the case every 15 days;
- high-security performance;
- sheet-steel with double door frame in aluminium.

3. Exhibition Space and Service Area

- exhibition space;
- glass door with hinged opening:
  - service area, for storing equipment for lighting, microclimate control and security;
  - spaces rigorously separated;
  - thick steel sheeting;
  - security features for objects;
  - drawers to hold boxes of silica gel.

4. Back-Plate and Bottom of the Display Case: Opening System

- hinged door that lifts up;
- security system;
- special Abloy cylindrical bolt locks.

Glass

- The kind of glass used in the cases is the type currently recommended for museum installations, both in terms of the excellent way it displays objects and in terms of security.

- extra clear double panes 10-11 mm thick are used.
- stratified glass is prescribed by the UNI 9186 and UNI 9187 regulations to protect against vandalism, criminal acts and bullets.
- extra clear glass, that is, glass with no green chromatic components resulting from the presence of ferrous oxide, which would interfere with the fine display of items in the cases.

Security Systems and Components

In the project design phase, the display case was designed to provide a high degree of security from attack or break-in. Each component of the case was examined and, whenever necessary, modified and reinforced.

- glass protects from acts of vandalism and criminal acts;
- extra thick steel sheets;
- electronic security system that promptly sounds an alarm when attacked.

Mechanical Protection

- special frame in aluminium;
- safety locks.

Electronic Protection

- device to detect breaking of glass on the hinged front panel;
- device to detect breaking of the metal frame;
- «*door ajar*» warning system for the hinged panel;
- «*door locked*» detection device;
- «*door re-locked*» detection device using the key.

Service Area:
- «*hinged door ajar*» device to detect opening of hinged opening

Safety Area:
- «*door frame ajar*» warning

Systems and Components to Control the Microclimate

High Level of Air-Tightness
The display case's air-tightness is a net improvement over normal structures. The seal is achieved using silicon lipped gaskets at metal-to-metal and metal-to-glass junctures which seal by compression. The sealing system yields an average change of air in the case of less than 0.2 per day.

Passive Stabilization
With such a good seal, silica gel is particularly effective in achieving passive stabilization of relative humidity.

Gas Filtering System
A system of filters that absorb airborne pollution is included.

Systems and Components for Fibre-Optic Illumination

- A fibre-optic illumination system is used. This is the most advanced system being used in museum exhibition spaces, since the fibre-optics provide a single source of «*cold light*», which solves all the problems associated with introducing heat into the exhibition space.
- New lighting system based on the reflection of light transmitted by fibre-optics.
- In both the upper and lower sections of the exhibition space there is a linear lens that collects the light from the fibre-optics, concentrates it on an appropriated angled mirror that, in turn, reflects it on the exhibition area. This system has the advantage of avoiding the «*torch effect*», where light and dark areas alternate.
- The light source is composed of two illuminators located inside the service area.
- Each illuminator is equipped with a glass fibre-optic strip of the «*extra*» type, «*step-index*» with attenuation of the fibre of less than 150 db/Km, protective sheathing and terminals for the insertion of opportune perforations in the directionally adjustable rods located inside the exhibition panel.

Treatments

Oven painting at approximately 200°C using heat-hardening epoxy powders. This type of painting is essentially non-polluting and practically inert, given the high baking temperature.

Systems

The electric and electronic systems installed in the case meet EEC standards concerning damaging electromagnetic interference and display an adequate level of intrinsic immunity from electromagnetic disturbances.

Patented System for the Magnified Viewing of Display Items

- System for the magnified viewing of coins and medals.
- The system is composed of a magnifying lens supported by two horizontal tracks, which are invisible to the viewer because they are situated along the upper and lower horizontal sides of the front of the

glass of the case, and by two vertical tracks: this allows the lens to move along the two axes, that is, right-left and up-down, in such a way that it can be placed over almost any object in the exhibition space defined by the horizontal and vertical course of the lens.

- The movement of the lens is controlled electrically. The system comes complete with a dedicated fibre-optics illumination system. The system of X and Y axes allows movement along the track in a horizontal direction and notched movement in the vertical direction.
- Within a certain period of time (which can be set at the control panel accessible only to service personnel) after the end of the operation set by the user, the lens returns to its default position.

Optical System

The lens, with the proper dioptre and having a diameter of approximately 80 mm, is set in a ring around the perimeter of which the four terminals of the fibre-optic cable are positioned, aimed to illuminate the coins.

Display Case Features

The exhibition space within the case is equipped with a slanted surface covered in fabric. On this surface there are modular metal supports (each of a width of approximately 7 cm) that can be arrayed in line and painted in the colour of the fabric, with the dual function of supporting the coin and displaying the card with its description. To make it easier for each coin to be held up, every support is slightly concave.

Computer Aided Design: Application of Information Technologies to Museum Design

Carmelo La Micela

Architetto della Soprintendenza Archeologica di Roma, Italia

One of the applications of information technology to design consists in visual and photographic support for the architectonic design. In the specific framework of museum design and exhibition in the service of archaeological pieces, Computer Aided Design (C.A.D.) and rendering (Visual Design) is widely used. This allows the architect-designer to verify and refine his or her work using the computer as a test bench, which is quite an effective means of understanding the relationship between the space, the design and the object to be displayed. The development of photomontages using real materials obtained using scanners and digital means makes it possible to visualize and test the design of the installation concept.

The procedure turns out to be even more useful for the archaeologist who often finds it difficult to comprehend an area represented by drawings: a preliminary visual analysis of the project in course is possible.

The development of visual and multimedia representations makes it possible for the archaeologist's to manage the scientific research phase, the restoration process and museum design at the same time, through the final stage of the educational experience offered to the public.

For this process, the Archaeological Office of Rome is equipped with personal computers and graphics workstations capable of handling the many activities involved in the protection and enhancement of our cultural patrimony. Without delving too deeply into technical details, the use of computers and dedicated workstations makes it possible to develop map themes with associated database extension (files) for documentary consultation. In terms of museum design, one starts by developing two-dimensional graphics that can be worked on in real time through the development of 3D models where the planner can move virtually all through the environment, specifically verifying modifications made.

Computerized design programs allow just such processes. Added to this is solid modelling and rendering software that dress the model by adding photomontage materials; in this way, real spaces are created with adjustable light sources (technical illumination study) and automatic shadowing. One thus achieves a design that is more visual, supported by the recent appearance of monitors and high-resolution graphics cards that allow images to be displayed with photo-like realism. The model can be animated by a succession of images or be the object of a route inside, allowing for stereo-metric analysis.

Photo retouching programs can process images and photographic documentation of finds using scanners and video cameras, all for the purpose of developing finer analysis of the spaces created and therefore better comprehension on the part especially of «*non-professionals*».

Of significant importance is the possibility, for example, of visually testing certain materials and shapes used in the display supports and structures.

The above-described techniques were widely applied in the design of the Numismatic Museum in Palazzo Massimo alle Terme; here CAD and planning provided the preliminary verification of the choices made, offering appropriate synergy among those involved.

The Multimedia Element

The multi-vision system is a fixed system of slide projectors controlled by computer that can send images to the nine exhibition sectors: the images

are projected on continuous screens situated along the upper section of the hall's side walls, in perfect synchrony with the «*infrared audio-guide*» system.

The infrared «*audio-guide*» for fixed installations allows the visitor equipped with a lightweight receiver (furnished at the entranceway of the exhibition zone) to receive, at a qualitatively high standard and in a completely automated way, information on the pieces exhibited, «*at the moment one is looking at them*». This system is supplemented by a fixed system, both by room and by sector, relative to the cases or containers.

In the «*Luxury of Rome*» hall there is a video screen showing educational material that illustrates in detail the objects, their provenance, their relation or similarities with other furnishings, etc.

Technological Facilities

The Numismatic Museum has the following facilities:

- Electrical
- Security lighting
- Climate control
- Closed circuit television system
- Burglar alarms
- Fire detectors
- Sprinklers
- Public address system
- Multi-vision
- Audio-guide
- Controlled access
- Patrols

The Medagliere hall is equipped with its own sub-control centre for air conditioning connected to the cooling centre of the entire building, which ensures that optimal climatic parameters will be maintained during the daytime.

It also has a special cooling unit for night time use to ensure climatic stability even during hours when the central system is turned off.

Such a system was needed because of the particular sensitivity of the displayed pieces, which are very sensitive to sudden variations in climatic conditions and which require moreover stability in terms of temperature and relative humidity.

The electrical and special systems are powered by electricity from the privileged section of the low-tension general grid and this guarantees functioning even when electrical power is cut off.

The hall is lighted using electrified double tracks with four on/off switches positioned across the hall and local low-tension security lighting dimmer units for individual adjustment of light intensity. The light flow from other light sources is controlled and adjusted from centralized dimmers located in the hall's main electric panel.

This system was adopted to achieve improved viewing of the video projections on the screens along the length of the walls.

The hall is equipped with the most modern security systems that are linked to a special control and command centre; this is also connected to the main control centre.

The security systems are equipped with generators that ensure they will function even in the case of power blackouts.