



reproduction of any text or image is forbidden unless authorized

若无授权，禁止复制任何文本或图片

in copertina on the cover:

in copertina 封面:

illuminare la luce,

点亮光明

basilica di san pietro in vincoli, roma

圣伯多禄锁链堂，罗马

italiano/english

italiano/英文

printed on paper that contains fibers from forests managed in a responsible manner

free copy at the reasonable price of €2

cod. GR.002.39.IT

印刷纸张所用纤维来自

以环保方式管理的森林

免费索取，合理成本价2欧元

代码GR.002.39.IT



我走了进来 我留下礼物 **i step in, i leave my present,**
我走了进来 我留下礼物 **i come into your past.**
我进入你的过去 **the light goes along with me, she follows me.**
影子走在我的前方，带领着我走向你的工作 **my shadow precedes me, she guides me towards your work.**
她充满担忧和崇敬的伸展着 **she stretches herself worried and respectful,**
随着太阳西下 **while the sun goes down to west.**
我靠得更近，用投入的双眼聆听这个地方 **i come closer, i listen to the place with my eyes full of devotion.**
你，雕塑家、画家、建筑师、诗人、受困的天才 **you, sculptor, painter, architect, poet, troubled genius,**
美的探寻者 **great beauty researcher,**
你，生来为了工作，为了自娱自乐而工作 **you, that were living to work and were working for your own pleasure.**
你从大理石上开凿出一片片大理石，释放光明 **you that were taking marble away from marble to let its light free.**
你，创造出拥有柔软迷人线条的巨人 **you, creator of giants made of soft and seductive lines,**
充满了实力 **strength held in the matter.**
我想着你，在昏黄的油灯下 **i think of you, while with tallow's enlightenment**
你彻夜工作直到黎明的曙光爬 **you were working all night long waiting for the light of the dawn**
上东方的窗口 **seeping in the east window.**
锤子的开凿声悠远绵长 **the beats of the mallet were resounding loud and lengthy,**
而你则精心研究胡须的阴影 **while you were studying the shadows of the beard**
围绕庄严的脸庞旋转 **twisting around the solemn face**
照见永恒的光明 **of who met the eternal light.**
不确定翻译是否正确 **you that brought into existence who shed the light on men,**
而你又是是否曾被启蒙? **an you be lighted up?**
让我的光明收集你开凿下的碎片 **let my light be the gathering of your chiseled shapes,**
所有的不眠之夜得到奖励 **the summons of all wakefulness rewarded.**
自然光与人造光互相对话 **natural light and artificial light create a dialogue,**
融化在神圣之光的精髓之中 **melting themselves in a spiritual principle of divine light**
躺在柔软曲折之中 **laid down on soft turns**
智慧的勾画充满吸引力 **and seductive recesses, wisely painted.**
锉刀留下的细节 **the details you left to the rasp's scar**
掩藏在光线的轻盈中 **conceal themselves to the lightness of the light**
在铅锤的重力下彰显打磨后的形状 **which glorifies polished shapes under the weight of the lead.**
我们走向未来而美丽则留在 **we move towards the future while beauty remains,**
永远的现在 **eternal present.** *Maria's Mamma*



点亮光明 illuminating the light

主题 subjects	
点亮光明 illuminating the light	
儒略二世陵墓的故事 story of the tomb of julius II	
事实情况 the state of fact	
研究 the study	
修复 the restoration	
看着我 look at me	
灯光的修复 the restoration of the light	
设计项目 the project	
工程 the work	
结果 the result	



让我们赞美古代，学习如何在现代生活

本期Viabizzuno报告将整本介绍儒略二世墓穴照明装置的修复工作，此次施工无与伦比，能够重新整合我对动态灯光的研究并将其具体化，同时还能为未来的发展指出某些可能的方向。

儒略二世纪念陵墓的故事值得探讨和进行对话。摩西本身就象征着对话；他是三大单神教——基督教、犹太教和伊斯兰教——的象征性人物，因此能够在不同信仰之间构建一条关系纽带。那么，米开朗基罗的《摩西像》则是神圣与世俗之间的对话，是文艺复兴时期至高无上的教宗与该时期最闪耀的艺术家之间的对话，是创意天才与神圣之地之间的对话。米开朗基罗的雕塑，来自实体与光线之间、历史与记忆之间的对话。跨越时代。同样地，雕塑整体的修复工作也充满聆听与发现。

大理石会散发出多少光？这个命题看似自相矛盾，但随着探索，它却变成了空间与空间中进行的工作之间的对话，藏在长袍的褶皱、飘动的胡须和晶莹剔透的皮肤中，但是，最重要的是，它体现在时间的折痕里。在聆听罗马圣伯多禄锁链堂历史的时候，我猛然了解到这个因探寻美感而备受困扰、从未满意的人，他的工作中蕴含的光明、强度和情感，而我们依然能够激起这样的美感。开始修复工程的时候，最好的工具就是记忆与技术的结合。米开朗基罗的《摩西像》是一个容易但不简单的工程，需要这位文艺复兴巨匠在他充满折磨的创意生涯中所用的一样的方式和方法。四十年中，陵墓跟随艺术家的生活变化而发展，地点和空间尺寸、图像志设计与外观发生变化，即使在最后即将完成时依然会因不断的思想变化而变化，例如将摩西的面庞转向日落的阳光，而不是祭坛。面对由他亲自选出的未开凿的巨型大理石，米开朗基罗已经能够看见藏在其中的艺术品。他用锤子和凿子将艺术品释放出来，为它们赋予生命，更加接近神圣的光。在这个绝不简单的“剔除”过程中，为了让摩西重见光明，必须清除多余的材料，而先进技术的使用，则能够让这件雕塑杰作重现辉煌。在摩西中，米开朗基罗用日光工作：在工作室昏暗的油灯下，他想象温暖的太阳如何拥抱雕塑，他处理阴影的方式如此具有绘画感，以至瓦萨里在描绘其艺术品时说“更像是刷出来的，而不是凿出来的”。重新设计太阳在空间中的移动、恢复这件文艺复兴杰作的光亮，让我们沉思的双眼能够再次看到最初的忧愁，恢复地点与作品、空间与时间的对话。在我的作品里，我没有照亮摩西，我只是为他带来阴影。

let's praise the ancient times to learn living in ours

I dedicate this entire issue of Viabizzuno report to my work of restoration of the lighting fixture of the masoleum of julius II, an extraordinary work which worth a specific focus because of its capacity to reunite and materialize my search of a dynamic light, because it sketches out some potential lines of future development.

the story of the memorial tomb of julius II is one of encounter and dialogue. mooses himself embodies the dialogue: he is a symbolic figure in the three monotheistic religions - christianity, hebraism and muslim religion - who is therefore able to establish a relationship between the different faiths. michelangelo's mooses, then, is the result of a dialogue between the divine and the earthly, between the supreme pontiff of the renaissance and its most brilliant artist, between its creative talent and a sacred place. buonarroti's sculpture is generated by the dialogue between matter and light, between history and memory. across the ages. in the same way, the restoration of the sculptural complex is a project of listening and discovery. how much light does marble emit?

I've searched an answer to this apparent oxymoron into the conversation between the space and the work contained within it, hidden as it was in the drapery, the flowing beard and the skin but, above all, in the folds of time. listening to the history of the roman basilica of san pietro in vincoli I discovered its light, its intensity and those emotions created by the work of a man, troubled and never satisfied in his research of beauty, that it is still capable of arousing.when approaching a restoration project, the best tool is memory. combined with technology. the project for michelangelo's mooses was simple but not easy, which has required the same approach and the same methodology adopted by the renaissance artist during its tormented creation.during its forty-years development, the masoleum went along with its creator's life, seeing places and dimensions changing, iconographics plans and appearances, with continuous afterthoughts also within the imminent completion, as testified by turning mooses' face towards the sunset light, instead of the altar. michelangelo was able to see his artworks when they were still into the huge marble blocks which the artist personally selected at the mine: using mallet and chisel he was giving them freedom from the matter to bring them to life, closer to divine light. in a far from easy "removal" process, our restoring the mooses' light required stripping away the excess material and, with the use of advanced technologies, has return the sculptural masterpiece to its former glory. in his mooses, michelangelo worked with the sun's rays: under the light of his workshop oil lamps, he imagines their embracing warmth and he creates their shadows with an approach so pictorial to the point that, in speaking about the artwork, vasari called it more 'brush work than chisel'. redesigning the sun's movement in space, the restoration of the lighting for the renaissance masterpiece restores the sculpture to our contemplative eyes with its original pathos, recovering the dialogue between the location and the work, space and time. in my work, I did not illuminated the mooses, I gave him his shadows.



儒略二世陵墓的故事

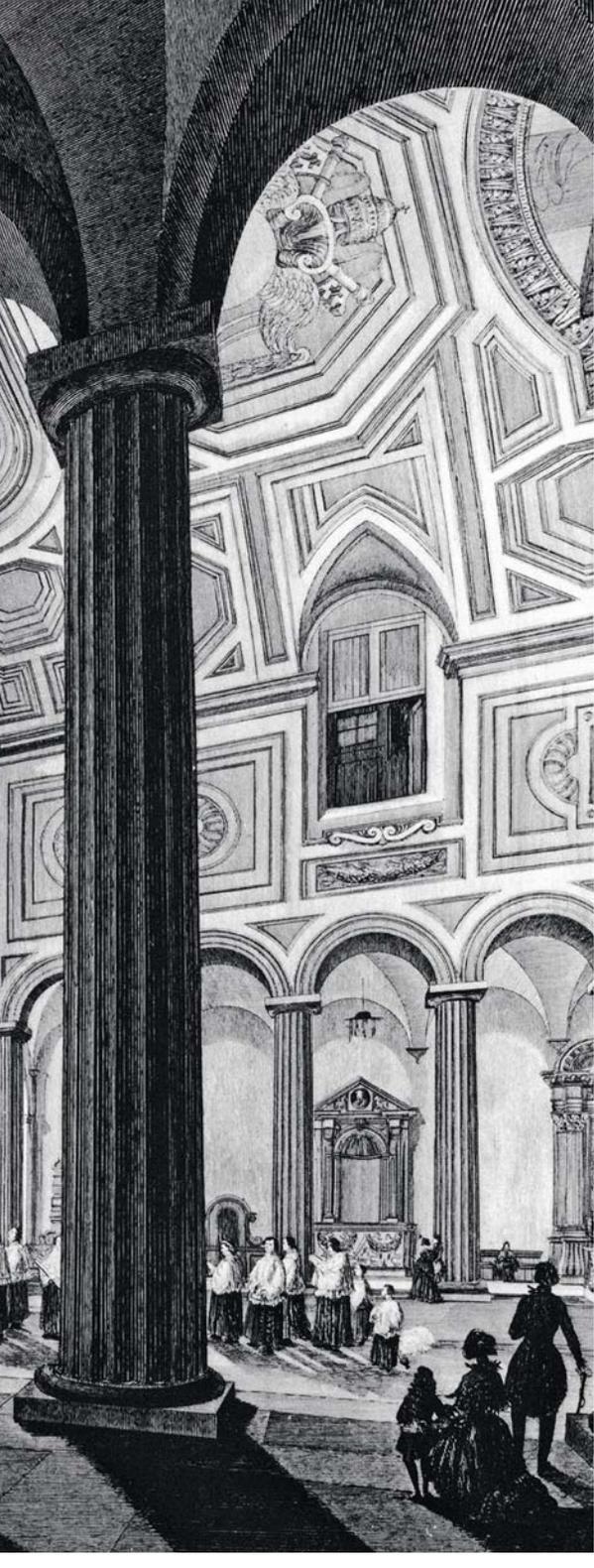
1505年3月，当时只有三十岁的米开朗基罗在新教宗儒略二世·德拉·罗韦雷（1503年当选）的召唤下来到罗马，在梵蒂冈圣伯多禄大殿修建巨大的陵墓。重修大殿的任务刚刚被交给了多纳托·伯拉孟特。收到一大笔预付金之后，米开朗基罗前往卡拉拉，以便亲自选择雕像所用大理石。如今藏于纽约的一副日期不明的素描似乎展现了米开朗基罗最初的想法，其上描绘了一个高墙围绕下的陵墓，十米多高，中央摆放着一个仿古石棺，石棺上有天使托起的教宗。第一层的壁龛以及第二层的角落里摆放着主题不明的大雕塑。第二年，大理石被运到罗马，但是，教宗此时已经改变了想法，可能出于经济原因考虑——事实上，儒略二世正在意大利中部兴兵收复教会的领地——或者就像米开朗基罗所怀疑的，这位艺术家的敌人成功的说服了教宗，让他不要在有生之年修建陵墓。两人之间发生了激烈的争论，艺术家未经教宗许可便离开了罗马，于是，教宗命令佛罗伦萨掌旗官皮埃尔·索代里尼（Pier Soderini）把艺术家带回罗马。米开朗基罗被皮埃尔·索代里尼说服，屈服于教宗的命令，在博洛尼亚与教宗相会，为他铸造了一座铜雕，放在圣白托略大殿门上。回到罗马之后，米开朗基罗成功获得绘制西斯廷礼拜堂的许可，在这里一直工作到1512年。西斯廷礼拜堂穹顶完工之后几个月，教宗于1513年2月去世，米开朗基罗与其继任者签订了新的合同，开始修建庞大而昂贵的纪念建筑，耗资16500达克特，其中一部分立刻支付给艺术家，而他则承诺在未来七年中只参与该工程的施工。该工程包括一个两层平台、其中一部分嵌入圣伯多禄大殿的墙体，塑有数十座雕塑。这次教宗位于二层中心，由两个天使托起。角落里是一些坐像，包括摩西、西比尔、及其它先知。下面一层是十二个奴隶，壁龛里则是对胜利的寄寓。1513年春天，签订新合同后不久，米开朗基罗将工作重点放在大理石上，群雕的任务交给了托斯卡纳雕塑家安东尼奥·达·蓬塔谢韦（antoniodapontassieve），而他自己则在主要雕塑上工作。但是，新教宗利奥十世·美第奇并不喜欢米开朗基罗，几乎认为他是一个叛徒，因为在1494年的佛罗伦萨政治叛乱中，米开朗基罗离开了美第奇家族。1500年起，米开朗基罗为皮埃尔·索代里尼掌领的共和国工作，为他雕塑了大卫，称为共和国自由的重要标志。在此期间，毫无疑问，米开朗基罗雕塑了摩西、西比尔和如今陈列在卢浮宫的两个奴隶。

雕塑放在儒略二世继承人为米开朗基罗准备的工作室兼住房里，位于macello dei corvi，图拉真圆柱附近，他在这里修建了一个熔铁炉，用来打造工具。1516年，米开朗基罗在利奥十世的人名下，开始修建佛罗伦萨圣老楞佐大殿的正立面，于是离开了陵墓的修建工作，这一点让旧教宗的继承人——莱昂纳多·格罗索·德拉·罗韦雷（leonardo grosso della rovere）很是不愤怒。米开朗基罗不顾公爵和红衣主教合情合理的抗议，开始修建圣老楞佐大殿的正立面，并于1516年7月，与德拉·罗韦雷的继承人签订了新合同，缩减了纪念陵墓的规格。雕塑数量从三十八个减少为十二个，而米开朗基罗则获得了六年的延期交工。修建圣老楞佐大殿正立面的工作以失败告终，这恐怕是因为米开朗基罗过于乐观，从托斯卡纳山中开采的石柱过大，以至于运输途中便已断裂。尽管儒略二世继承人不断催工，但在1520年，米开朗基罗依然从美第奇家族接到了另一个工程：圣老楞佐大殿墓葬礼拜堂的修建，他一直在这里工作到1532年。为了安抚儒略二世继承人，艺术家决定在家乡佛罗伦萨展开与陵墓有关的工作，但是，实际上，他在佛罗伦萨的十五年里，仅研究过四个奴隶的草图——如今藏在佛罗伦萨学院美术馆里——以及“胜利精灵”的雕塑——如今藏在旧宫美术馆里。尽管乌尔比诺公爵弗兰西斯科·玛利亚·德拉·罗韦雷提出抗议，但米开朗基罗完全不顾儒略二世陵墓的工作，他受到美第奇家族新教宗克勉七世（1523-1534）的保护，因为后者希望不惜一切代价的完成圣老楞佐大殿家族墓葬礼拜堂的修建。1527年，由于教宗克勉七世和神圣罗马帝国皇帝查理五世之间的严重政治危机，佛罗伦萨组建了共和国政府，米开朗基罗称为城市堡垒主管。1530年的长期围城之后，共和国政府倒台，死伤无数，而米开朗基罗则被迫多日躲在圣老楞佐大殿地板活板门下，以躲避教宗侄子——嗜血的亚历山德罗·德·美第奇（Alessandro de’ Medici）——所引领的复辟怒火。被克勉七世原谅之后，这位艺术家同意回到罗马，在西斯廷礼拜堂的墙壁上绘制《最后的审判》，同时他也被劝说完成儒略二世陵墓的工作，因为乌尔比诺公爵威胁起诉他，控告他收取了一大笔钱但却几乎什么都没做。1532年4月26日，为了给这个痛苦的篇章画上句号——他自己将其称为“陵墓的悲剧”，米开朗基罗与弗兰西斯科·玛利亚·德拉·罗韦雷签订了新的合同，亲自为陵墓制作六座雕像，同时将建筑装饰的制作转包给别人。陵墓如今的规模缩减不少，已经变成了一个墙壁墓穴，而米开朗基罗本人则决定将其搬迁至圣伯多禄锁链堂新址，这座教堂与德拉·罗韦雷家族的名字紧密相连，此外还有另一座教堂人民圣母圣殿更加重要且礼拜人数更多，但米开朗基罗却认为这里光线条件不够好。米开朗基罗认为他很快就能完成陵墓的工作，只要将他在1516年前往佛罗伦萨时在macello dei corvi房屋中留下的那些几乎完工的旧雕像安装起来就可以。他本打算将目前藏于卢浮宫的两个奴隶安装在下层，而西比尔和先知则安装在上层，这两个雕像也已几乎完工，然后他再雕塑一个新设计的教宗雕像和一尊圣母雕像，这两尊雕像的尺寸都已大幅削减。早在1533年，米开朗基罗已经开始了圣伯多禄锁链堂袖廊的准备工作。在右袖廊修士唱经楼的旁边，他开凿了一个巨大的拱门，光线从后方窗户中照进，将墙壁坟墓变成了一个有深度的三维结构。光线透过两个高窗从后方照在坟墓上，一个从左边，一个从右边，后来当教堂与临近建筑改造时，右边的窗户消失。第一层的中央壁龛留空，作为墓葬礼拜堂的入口，两侧装饰着四个矮浮雕，由米开朗基罗在三十年代末安置于此，此外面板中央还有一个黄铜矮浮雕，

描绘了吗哪从天而降的场景，这里的吗哪以橡子的形象呈现，是儒略二世的纹章标志。但是，工程再一次不行停止，因为米开朗基罗在保禄三世·法尔内塞（1534-1549）的命令下必须为《最后的审判》独家工作，1536年他签署了一份自己动手书约，将艺术家从其它工作中解脱出来。仅在1541年11月绘画工作结束时，米开朗基罗才回到了陵墓的修建工作，但是，1541年11月23日，保禄三世却告知新乌尔比诺公爵古伊多巴尔多·德拉·罗韦雷（guidobaldo della rovere），他将任用米开朗基罗取完成梵蒂冈保林纳礼拜堂的装饰工作，同时，米开朗基罗为儒略陵墓所制作的雕像也将被放在礼拜堂里。此时，无论是对儒略的继承人还是对米开朗基罗而言，情况都相当严重，他当时已经明白整个意大利宫廷都对他收取大量金钱却什么都不做这一件事批评不少。而他本人对他最重要的保护人毫无感激之情的做法也让情况更加严重。当时意大利情况紧急，人们害怕查理五世皇帝可能回再次入侵亚平半岛并引起国家之间的战争，于是在签订政治协议的同时，古伊多巴尔多·德拉·罗韦雷反抗保禄三世的傲慢，于1542年3月与米开朗基罗签订了另一个方案。新方案中，米开朗基罗安排同事拉斐尔·达·蒙特卢波菲（raffaello damontelupo）完成三座即将完工的雕像——西比尔、先知和圣母，而他本人则再完成三座：即将完工的奴隶以及一座摩西。米开朗基罗的第四座雕像——教宗——已经完成并安装。从六座增加到七座是因为需要为蒙特卢波菲的工作付费，此外，不再由米开朗基罗签名的雕像也会价值下降。摩西像将被放在唯一一个能够容纳其尺寸的空间里：中央壁龛中，米开朗基罗已经在这里安置了四个矮浮雕，因为雕像的存在而无法被人们看到。此时，似乎所有的事情只需几天便能完成，但是，米开朗基罗却突然改变了整个纪念建筑的图像志方案，取消了奴隶，因为，用他的话说“与设计格格不入”。他在摩西像两侧摆放了劳作生活与沉思生活的雕像。这一变动标志着艺术家大举进入当代宗教讨论的开端，之后多年他积极参与，与维多利亚·科罗娜（vittoria colonna）建立了深厚的智慧与情感链接。1542年7月20日，米开朗基罗提出了新的倡议，由他本人独家完成摩西像，而劳作生活与沉思生活的雕像则由拉斐尔·达·蒙特卢波菲完成。艺术家的新提案没有被接受，米开朗基罗继续两座新雕塑的工作，同时承诺修改教宗雕像的面孔，但是他并没有这样做，胡须一直没有完成。1545年1月，所有的雕塑均摆放就位，漫长的“陵墓悲剧”终于完结。米开朗基罗的作品是教宗像、摩西像、劳作生活与沉思生活的雕像，而拉斐尔·达·蒙特卢波菲则完成了由米开朗基罗设计草图的雕像：圣母与圣子、西比尔、先知。目前，对于第一层的装饰元素而言，人们尚不清楚其作者是谁。



in march 1505, the then thirty year old michelangelo was summoned to rome by the new pope julius II della rovere (elected in 1503) to build a grand tomb in st peter’s basilica in the vatican. the architectural renovation of the basilica had just been entrusted to donato bramante. having received a reasonable advance, michelangelo moved to carrara in order personally to choose the marble for the statues. michelangelo’s initial idea seems to have been as seen in a drawing of uncertain date now in new york, in which he sketched out a very high wall tomb, a little over ten metres high, with a central antique sarcophagus on which was the pope supported by angels. large statues of uncertain subjects were located in the niches of the first level and on the corners of the second level. the marble began to arrive in rome the following year, but in the meantime the pope had changed his mind, perhaps for financial reasons - indeed, julius II was facing a serious military campaign in central italy to retrieve the states of the church - or perhaps, as michelangelo suspected, because he had been convinced by the artist’s enemies not to build his own tomb in his lifetime. a fierce exchange took place and the artist left rome without the permission of the pope, who commanded the gonfalonier of florence, pier soderini, to make the artist return to the city. convinced by pier soderini to yield to the demands of the pope, michelangelo met the pontiff in bologna where he cast for him the bronze statue placed on the door of san petronio. on his return to rome, michelangelo succeeded in obtaining the commission to paint the ceiling of the sistine chapel, where he worked until 1512. a few months after the completion of the sistine ceiling and the pope’s death in february 1513, michelangelo signed a new contract with his heirs for a grand and very expensive monument, 16,500 ducats, part of which was paid immediately to the artist who undertook to work exclusively on this project for the next seven years. this project involved a platform with two levels, backing onto one of the walls of saint peter’s basilica and populated by dozens of statues. once again the pope was at the centre of the second level, carried in glory by two angels. at the corners were some seated figures including mooses, the sibyl and other prophets. on the lower level were twelve slaves, and in the niches, some allegories of victories. immediately after the signing of the new contract in the spring of 1513, michelangelo began to work intensively on the marble, entrusting the tableau work to the tuscan sculptor antonio da pontassieve, while he himself began work on the major statues. however the new pope leone x medici did not like michelangelo, considering him almost a traitor because he had abandoned the medici in the political upheaval of 1494. from 1500 onwards michelangelo had served the pier soderini republic, for which he had carved his david, which became the most important and beloved symbol of republican liberty. during that period michelangelo undoubtedly worked on his mooses, the sibyl and the two slaves now on display at the louvre. the statues were in the house-cum-workshop put at his disposal by the heirs of julius II at macello dei corvi, close to trajan’s column, where he had built a forge to temper the work tools. in 1516, michelangelo received a commission from leone x to build the façade of the church of san lorenzo in florence and he abandoned work on the tomb, infuriating the heirs of the pope, cardinal leonardo grosso della rovere and the duke of urbino, francesco maria della rovere. heedless of the legitimate protests of the duke and the cardinal, michelangelo undertook the construction of the façade of the church of san lorenzo and, in July 1516, entered into a new contract with the heirs of della rovere to reduce the monument to a less imposing scale. the number of statues was reduced from thirty eight to twenty and michelangelo obtained a six year extension to the monument’s delivery date. the project to build the façade of san lorenzo failed, maybe also because michelangelo was too ambitious in trying to carve out from the tuscan mountains gigantic blocks for the columns that broke during transportation. despite the persistent requests of the heirs of julius II, in 1520 michelangelo accepted a new commission from the medici: construction of the funeral chapel in san lorenzo, on which he was to work until 1532. to placate the protests of the heirs of julius II, the artist undertook to carry out work on the tomb at his home in florence, but in reality, during the fifteen years he was in florence, he only worked on the drafts of the four slaves - today in the accademia gallery in florence - and on the sculpture ‘the genius of victory’ - today in the palazzo vecchio. despite the protestations of the duke of urbino, francesco maria della rovere, michelangelo made no effort to complete the tomb of julius II, emboldened by the protection of the new medici pope, clement VII (1523-1534), who wanted at all costs to complete his own funeral chapels in san lorenzo. in 1527, as a result of the deep political crisis that developed between pope clement VII and emperor charles V, a republican government was established in florence in which michelangelo took on the position of governor of the city’s fortresses. after a protracted siege in 1530, the republican government was overthrown with loss of life and michelangelo was forced into hiding for many days behind a trap door under the floor of the church of san lorenzo, to escape the fury of the restoration led by the nephew of the pope, the bloodthirsty alessandro de medici. pardoned by clement VII, the artist agreed to return to rome to paint the last judgement on the wall of the sistine chapel but he was also persuaded to complete the tomb of julius II, since the duke of urbino threatened him with a strong legal action, accusing him of having pocketed a huge sum of money without having yet produced anything. deciding to close this painful chapter, which he himself called ‘the tragedy of the tomb’, on 26 April 1532 michelangelo entered into a new contract with francesco maria della rovere, undertaking to provide six statues for the monument by his own hand and to contract out to others the production of the architectural decoration. the monument, now much reduced in size, became a wall tomb and it was michelangelo himself who chose its new location in the basilica of san pietro in vincoli, a church linked to the della rovere name like the other more important and frequented santa maria del popolo where, however, according to michelangelo, the light conditions were not good. michelangelo thought he could complete the tomb quickly, by installing some almost finished statues there that he had left in the macello dei corvi house before he left for florence in 1516. he intended using the two slaves that are now in the louvre on the lower level, the sibyl and the prophet on the level above, these also almost completed, and to sculpt a new design of a statue of the pope and one of the madonna, both of which would have had to be adapted to the now greatly reduced space. already in 1533 michelangelo had started the masons working to prepare the transept of san pietro in vincoli to accommodate the tomb. at the end of the right transept, by the choir of the friars, he opened a large arch that receives light from the window behind it transforming the wall tomb into a three-dimensional structure with spatial depth. the light struck the tomb from the rear from two high windows, one to the left and one to the right, the latter later being removed when the church and the adjacent buildings underwent restructuring. the central niche of the first level was to remain empty as an ideal entrance to the funeral chapel, decorated on its sides by four bas-reliefs that michelangelo placed there at the end of the thirties and a bronze bas-relief in the central panel with a representation of the fall of the manna from heaven, where the manna is in the shape of acorns, the heraldic symbol of julius II. once again, however, the works were unfortunately destined to remain incomplete because michelangelo had to work exclusively on the last judgement at the command of the new pope paul III farnese (1534-1549) who in 1536 issued a motu proprio to free the artist from all other tasks. only at the end of the grand pictorial enterprise in november of 1541 was michelangelo able to go back to working on the tomb, but on 23 november 1541, paul III told the new duke of urbino guidobaldo della rovere that, not only did he intend to use michelangelo to decorate his new chapel in the vatican, the pauline chapel, but



that he intended to place the statues produced by michelangelo for the tomb of julius in that selfsame chapel. at that point the situation appeared extremely dire both for julius’ heirs and for michelangelo himself, who was conscious that he was being criticised in the italian courts for having pocketed the money for executing a grand monument without having produced anything. the fraud was made worse by the perception of a lack of gratitude on his part towards his greatest protector. thanks to a political agreement undoubtedly made possible by the difficult situation at that time in italy, during which it was feared that there would be another invasion of the peninsula by emperor charles V and new wars between the states, guidobaldo della rovere stood up to the arrogance of paul III and contracted a different solution that took shape in march of 1542 in the form of a new agreement with michelangelo. the agreement provided for michelangelo to arrange for his colleague raffaello da montelupo to complete three statues, which were already at a very advanced stage of completion - a sibyl, a prophet and the statue of the madonna - while he himself would complete three more: those of the slaves, which were almost finished, and the one of mooses. a fourth statue sculpted by michelangelo, the one of the pope, had already been completed and installed in the work. the transition from six to seven statues is explained by the need to pay for the work carried out by montelupo and, therefore, the consequent loss of value of the statues that no longer bore the name of michelangelo. the mooses would be positioned in the only space compatible with its size: the central niche where michelangelo had already placed the four bas reliefs now made invisible by the statue. at this time, when everything could have been concluded in just a few days, michelangelo decided to radically change the iconography of the monument, eliminating the slaves that, in his own words, ‘don’t fit into this design’ and placing on either side of mooses the two statues of active life and contemplative life. this change marked the artist’s powerful entrance into contemporary religious debate, in which he participated for years through his deep intellectual and emotional bond with vittoria colonna. on 20 july 1542 michelangelo proposed a new tentative agreement that provided for his exclusive commitment to mooses, entrusting the completion of the two statues of active and contemplative life to raffaello da montelupo. the artist’s new requests were rejected and michelangelo resigned himself to completing the two new sculptures too, promising to remodel the face of the pope’s statue, something that did not happen because the beard has remained uncompleted. in january of 1545 all the sculptures were placed in the work and the long ‘tragedy of the tomb’ finally came to its end. the works by michelangelo are those of the pope, mooses, active life and contemplative life, while raffaello da montelupo completed those already sketched by michelangelo: the madonna and child, the sibyl and the prophet. as far as the items of the first level are concerned, there is still no credible critical hypothesis about their authorship.



事实情况 the state of fact

每年，来自全世界的数百万游客参观访问儒略二世雕塑组，特别是摩西像，它代表了文艺复兴文化的最高象征和艺术价值。当纪念建筑刚完工的时候，袖廊东侧和西侧都有光线从窗户照入，但是1860年右侧走廊上方修建了一个新的建筑物，堵住了西墙上的窗户，如今的工程装置便藏在该建筑物中。十九世纪后半叶起，米开朗基罗的作品开始腐化，一开始是因为时间的洗礼，之后则是因为应急的修补工作。事实上，西墙窗户封闭之后，陵墓失去了最初为米开朗基罗在首次参观教堂时带来灵感的照明条件，他正是因为这样的照明才做出了最佳选址的选择，并由此设计出整个雕塑组。意大利当局的干预总是不尽如人意，他们为雕塑安排了蹩脚的正面照明，不但光线过强，同时极为平面，破坏了人称“明暗雕塑”的米开朗基罗对表面的戏剧性和张力处理。此外，不当的照明也时导致米开朗基罗杰作物理状态老化的原因。

the sculptural group of julius II is an artwork visited by millions of tourists from all over the world and, in particular its mooses, it's a statue that embodies the highest symbolic and artistic values of renaissance culture. at the time of its completion, the monument received light from the east but also from a window located in the west wall of the transept that was blocked up in 1860 for the construction of a new building that rests above the right aisle of the building which today hosts the faculty of engineering. from the second half of the nineteenth century has begun that slow decline process of michelangelo's artwork which continued under the hint of time first, and secondly for a remedial work due to the urgency. the aforementioned blocking up of the window on the west side of the transept in fact has stolen the mausoleum of its original light which inspired buonarroti since his first visit to the church, orienting him to the choice of the best location of his artwork, encouraging the conception and the following realization of the sculptural group. as often happened to some delicate monumental contexts due to the intervention of the Italian authorities, an awkward attempt was made to overcome this with frontal illumination, which was as violent as it was flat, that destroyed the tension and dramatic effect sought and created by buonarroti's treatment of the surfaces that could be referred to as 'sculptural chiaroscuro'. adding to this the fact that the inappropriate lighting was coin operated, it is certainly clear the physical state of degradation into which michelangelo's masterpiece had fallen.

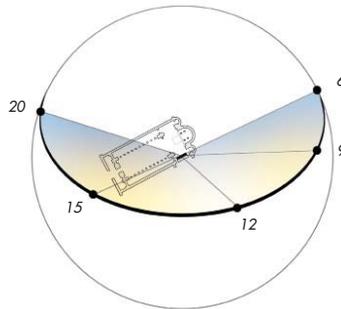
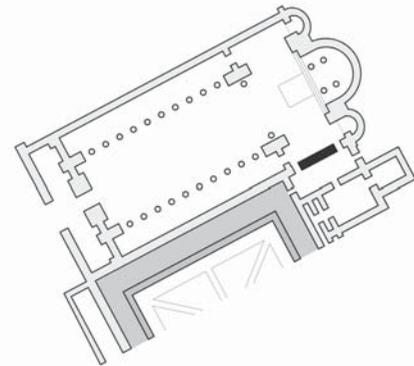




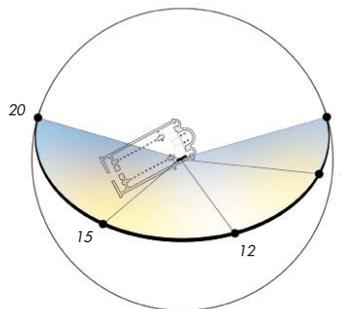
研究 the study

持久激情与超级敏感度让我们倾听这个地方的声音，将如今最先进的探测工具与最传统的古文献研究相结合。在其中，我们发现了米开朗基罗写给朋友的一封信。在信中，艺术家驳斥了在罗曼式人民圣母圣殿中修建陵墓的可能性，因为那里缺少合适的采光。米开朗基罗对光线的意识恰恰始于此处，他认为光线是构造其作品的关键元素之一。最初，在圣伯多禄锁链堂里曾经有两扇窗户，分别在建筑物的两侧。根据米开朗基罗的作品研究，毫无疑问，当他雕刻大理石的时候，他考虑到了雕塑组右侧窗户所照进的光线以及雕塑本身的阴影。事实上，摩西的视线看向日落的方向，明亮的光线照在面庞上，称为救赎的象征。从艺术品的最初状态出发，考虑米开朗基罗时期的构思条件，这是非常重要的一步，这样才能“轻松”还原艺术品的光影，而不是简单的打光。我们精心研究了一天中从日出到日落不同时刻教堂内部的自然光条件，检查其强度、温度和色彩，这样才能为大理石赋予生命和振动，展现米开朗基罗期望的色彩和明暗效果。摄影技术价值无限，能够记录冰冷不变的大理石与不断变化的日光色温之间的关系，它们之间产生出无穷无尽的形状与色彩，这些珍贵的光线碎片是照明设计项目的灵感来源。

with constant dedication and extreme sensibility, we listened to the place, combining today's leading instrumental surveys with the most traditional study of ancient documents. among these, one of the findings was a letter from michelangelo to his friend. in the letter, the artist refuted the possibility of setting up the funeral monument in the roman church of santa maria del popolo because it was lacking [...] appropriate lighting. from here originated the awareness that, for buonarroti, light was the essential element around which to build its own work. originally, in the basilica of san pietro in vincoli there were two windows on the walls at the sides of the monument. according to the study of the work by michelangelo, there is no doubt that as he was sculpting the marble, the sculptor took into account the light that was filtering through the window positioned to the right of the sculpture group as well as the shadows cast by the sculpture itself. indeed moyses was sculpted with his gaze turned to the light of the sunset, to let his face struck by the luminous rays, symbol of salvation. restarting from the artwork's initial conditions, which allowed michelangelo to shape it properly, it has been a fundamental step of the activity, indispensable to 'simply' give back to the artwork its light and its shadow instead of an easy lighting practice. we have carefully studied the natural light inside the church at different hours of the day, verifying the intensity, warmth and color of the light path, from the dawn to the sunset, in order to bring back to life the marble and give it vibrations, revealing the colors and the chiaroscuro effects that michelangelo wanted to convey. photographic techniques have been invaluable in recording the relationship between the still coldness of the marble and the changing light temperature of the sun rays, composing a suggestive mosaic of shapes and colors, precious fragments of light that inspired the lighting design project.

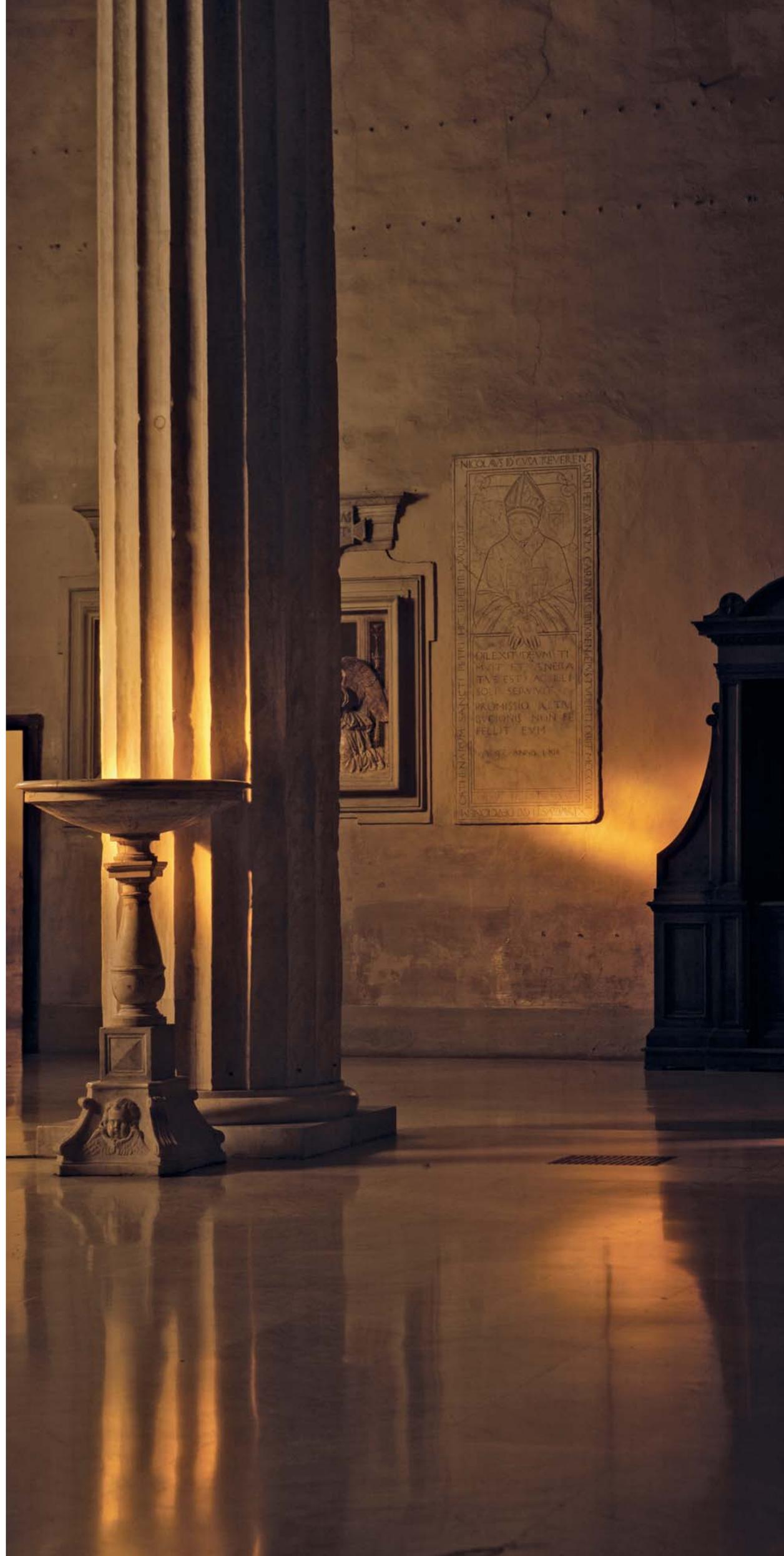


1544年4月21日
破晓 05:40
日出 06:10
日落 20:06
黄昏 20:36



2017年4月21日
破晓 05:52
日出 06:21
日落 19:58
黄昏 20:27

一天当中不同时刻
日光与圣伯多禄锁链堂
的光线交角弧
(1544年与2017年对比)
solar arch incidence on the basilica
of san pietro in vincoli
during the main hours of the day
(comparison between 1544 and 2017)



修复 the restoration

修复米开朗基罗的作品时，不仅需要目光与大理石接触，同时还要身体接触。

当双手滑过雕塑表面时，视觉与触觉相结合。双手先于眼睛发现米开朗基罗所

创造、完成并雕刻的表面的不同。双手滑过某些细节，就像冰冷的丝绸。凿

子、浮石、铅块相继使用，将大理石变成最纯粹的石头，镜面般反射出太阳的

光芒。在其它点上，双手好像被卡住，表面粗糙，因为米开朗基罗使用工具的

加工较少，因此在日光下形成阴影。米开朗基罗在大理石上塑造出的光芒需要

与另一束光线——阳光——相遇，而阳光就像是神的标志，让一切变得栩栩如

生。因此，我们的所有努力不仅是为了重新点燃米开朗基罗的凿子所创造的大

理石的光芒，同时还为了重现封起的窗口所漏进的日光。虽然效果不比米开朗

基罗所看到并喜爱的那样神圣，但至少比之前更为真实。antonio forcellino

and not just visual contact with the marble. the hands that slide over its surface

complete vision with touch. hands realised, before eyes, that michelangelo had

created, finished and sculpted the surfaces of his sculptures differently. the hands

slid over certain details, like over cold silk. the chisel, followed by pumice and then

lead, had transformed the marble into the purest stone, a stone which reflects light

like a mirror when the sun shines into it. in other points, the hand gets stuck, the

flesh becomes rough because michelangelo stopped sooner with his tools, creating

a shadow in the matter which would also have taken shape under the light in the

sun. the light is created by michelangelo in the marble, but only when caught by

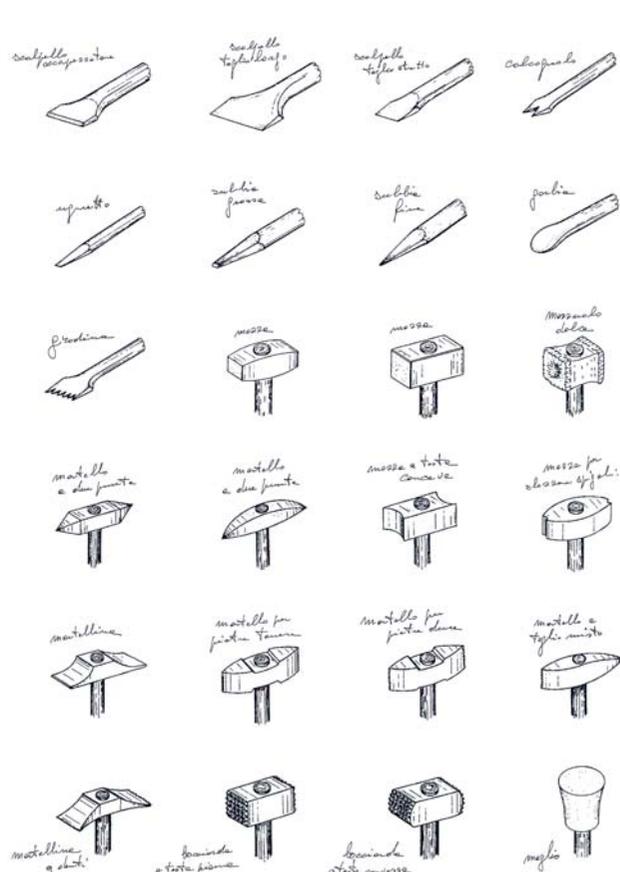
the other light, that of the sun, as if it was a symbol of god, that light comes alive

and shines brightly. this is why our every effort has been aimed at reigniting not

only the light of marbles created by michelangelo's chisel, but also the other light,

that blocked out by closing the windows. possibly less divine is that seen and

loved by michelangelo but, at last, it is slightly more truthful. antonio forcellino



石材加工工具：铁锤、软铁破片锤、木槌、方头双头榔头、角落开槽榔头、软石直切锤、硬石开口锤、混合开口锤、平头凿、凹头凿。旁边是精整所用工具，例如细凿或宽凿，此外还有subbia、scalagnolo、gradina、ugnetto、gorbia（又名“圆铁头”）等名称的工具，能够为暴露表面带来宜人的外观。

tools for stone working: hammer, soft iron hammer for chipping, mallets, two-point socket head to square, slotting head for corners, straight shear hammer for tender stones, notched cut hammer for harder stones, mixed-cut hammer, flat head chisel, convex head chisel. next to them, the tools to refine the process, such as fine or large chisels and other similar tools named as subbia, scalagnolo, gradina, ugnetto, gorbia (also named 'round iron') to give the exposed surface a pleasant appearance.



看着我 look at me

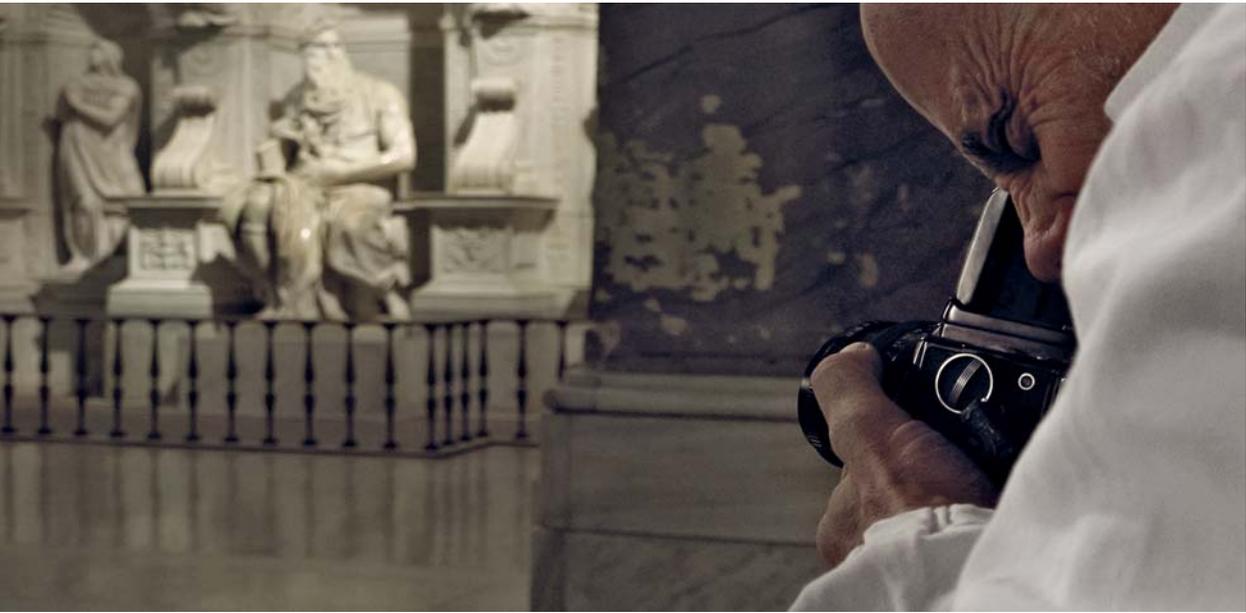
视频《看着我》描绘了儒略二世陵墓“照明修复”和清洁过程中的一些片段，突出展现技术手段和雕刻细节。这是antonio forcellino和mario nanni长期合作的结晶：它展现了研究过程中的所有考量和成熟想法，通过视频的方式向参观者展示。因此，这并非纪录片，而是通过修复师和技术人员的眼睛和双手对米开朗基罗作品的触感解读。我既是摄影师也是建筑总监。我的工作总是在这两极之间摇摆不定，同时兼具两种敏感度：这两个视角不可避免的汇集在此次工程之中，是对米开朗基罗作品无可争议的解读。我从现场勘察（圣伯多禄锁链堂）和特色描述（空间、照明、历史）开始了解这件作品及其独特性。为此，最关键的第一个步骤是创建一个时间条，用以记录袖廊中的光线条件，观察全天中日光的变化。对于我们所有人而言，这都是一个重要的工作和思考工具。光是创造，是原则。这是我开始思考米开朗基罗作品的前提条件，所有的工作都以此为基础。因此，视频也从圣伯多禄锁链堂内自然光的不断变化开始。在视频中，光线定义体积、空间、实体，米开朗基罗的作品由明暗对比组成，同时加上智慧的雕塑技巧使用，非常具有表达性。大理石在艺术家的意愿下发生变化，在antonio forcellin及其团队的耐心工作下，重现最初的完整性。

大师作品逐渐显现出来，展现出被时间所遗忘的独特的细节与前所未有的视角，通过复杂的诞生过程攫取参观者的目光。镜头靠近裸石，调查并穿透基石上的褶皱，停留在不同的石块砂洗阶段上：这些细节具有不同阴影所带来的不透明度，在光线投射下令人惊奇的耀眼。摄影机记录了这里的光线变化，追随它们，与音乐和漂浮的琴弦相遇。四肢、身体、灵魂的动作，都被光芒所探索和定义。在mario nanni的工作下，光线回到其最初状态。重新发现的艺术品需要被观看和观察：《看着我》这部视频以三条不同的时间线所构成的布景效果作为结尾。第一条时间线展现摩西严肃的望着他前方的参观者人流，令人吃惊的转变两者的角色。剩下的两条则记录袖廊中光线根据日光弧的发展变化，见证了还原最初的照明条件之前教宗儒略二世陵墓的照明条件（天然和人造）。光影互相追随，不断变化，节拍器般的拍打着时间。enrico ferrari ardicini

the video artwork ‘look at me’ depicts some passages of the clean-up and of the ‘restoration of the light’ of julius II mausoleum, through an edit able to highlight gestures and sculpted details. the video is the result of the long-lasting collaboration with antonio forcellino and mario nanni: it reflects all the considerations, the insights and reflections matured during this period of study and research, returning them to the viewer through the medium of the video. it is therefore not a documentary work, but a tactile reading of the work of michelangelo, quietly accomplished, through the conscious and composed gestures of restorers and technicians. I am a filmmaker architect and an architect director. my works always oscillate between these two poles, between these two sensibilities: two visions that inevitably converge in this work, which originated from an undoubtedly architectural approach to the work of michelangelo. starting from the place examination (the church of san pietro in vincoli) and its characteristics (space, lighting, history), I left myself discover the work and its peculiarities. in order to accomplish this, the first and fundamental step has been the creation of a time-lapse able to record the lighting conditions inside the transept, observing the evolution of the solar dish throughout a whole day. this proved to be an important working and reflecting tool for us all. light is creation, is the principle. this is the premise from which I started to reflect on the works of michelangelo and carry on my work. the video thus opens on the inside of the church of st. peter in chains’ natural light. inside the video, light defines volumes, space and bodies, the conditio sine qua non elements of michelangelo’s work, made up of studied contrasts in light and shade, enhanced by the clever use of the sculpting technique, here taken to the extreme of its expressive possibilities. marble bends to the artist’s will, returning to its original integrity, thanks to the patient cleaning work carried out by antonio forcellino and his team. the master’s work is gradually revealed, uncovering unique details and unprecedented viewpoints behind the coat of time, able to grasp the viewer with the complexity of its own genesis. the lens approaches the bare stone, investigates, penetrating into the folds of a drapery left at the gradin stage, pausing on different stone sanding: deliberately opaque in its shadowed portions, and though so incredibly brilliant in the projecting ones. the camera records the light changes within the field, chasing them, meeting the music and floating on its strains. members, bodies, motions of the soul, investigated and defined by light. light which returns to its original state thanks to mario nanni’s work. the rediscovered artwork, now asks to be watched, observed: look at me the video ends up with tritico, a visual choreography consisting of three different time-lapse. the first time-lapse sees mooses’ look settling severe on the constant flow of visitors standing before him, in a sort of surprising role reversal. the remaining two, recording the evolution of lighting inside the transept, according to the solar dish, bear witness to the lighting conditions (natural and artificial) of pope julius II mausoleum, before the original lighting conditions were restored. lights and shadows chase one another in a ceaseless succession and, like a metronome, beat the time. enrico ferrari ardicini



灯光的修复 the restoration of the light



在雕塑组的修复过程中，antonio forcellino注意到，随着光线与所需情感的不同，米开朗基罗使用不同的工具加工大理石，间齿凿、狗齿凿或

其它工具，沾有童子尿的草酸钙、松石、铅块，由此产生不同的抛光效果，以不同方式吸收或反射光线。在他的工作中，光线是一个重要元素。

因此这位文艺复兴艺术家为雕塑带来明暗效果，与他在绘画中使用白色所带来的效果相同。这与保林纳礼拜堂中撒乌耳皈依中光线的作用一样

照明的修复工作恢复了建筑物所需的光线，重新发现指引米开朗基罗灵感的光亮环境。在研究米开朗基罗的作品时，我们发现了他由此而意识到的一些主意，并逐步修正之前的许多严重错误。

我们恢复了最初的环境条件，由于袖廊东侧窗户被封死而在如今彻底消失，此外，目前的人造光完全扭曲了本来的明暗效果，让三维效果变得平面，使得人们无法正确诠释作品。

during the restoration of the group sculpture, antonio forcellino noticed that, depending on the light and the emotions sought, michelangelo

worked the marble with different instruments, by using a gradina, a chisel with the tip in the shape of a dog's teeth, and other methods, from

calcium oxalate with children's urine to pumice and up to lead sheets, obtaining different degrees of polishing to absorb or reflect light in

different ways. light is in fact an essential element in his works. the renaissance artist thus gave the sculpture a chiaroscuro effect similar to the

one in his paintings when he used the color white. It's enough to think about the role of the light in saulo's conversion of the pauline chapel.

the restoration project of the lighting aims to give the monument the limelight it deserves, through the recovery of that luminous

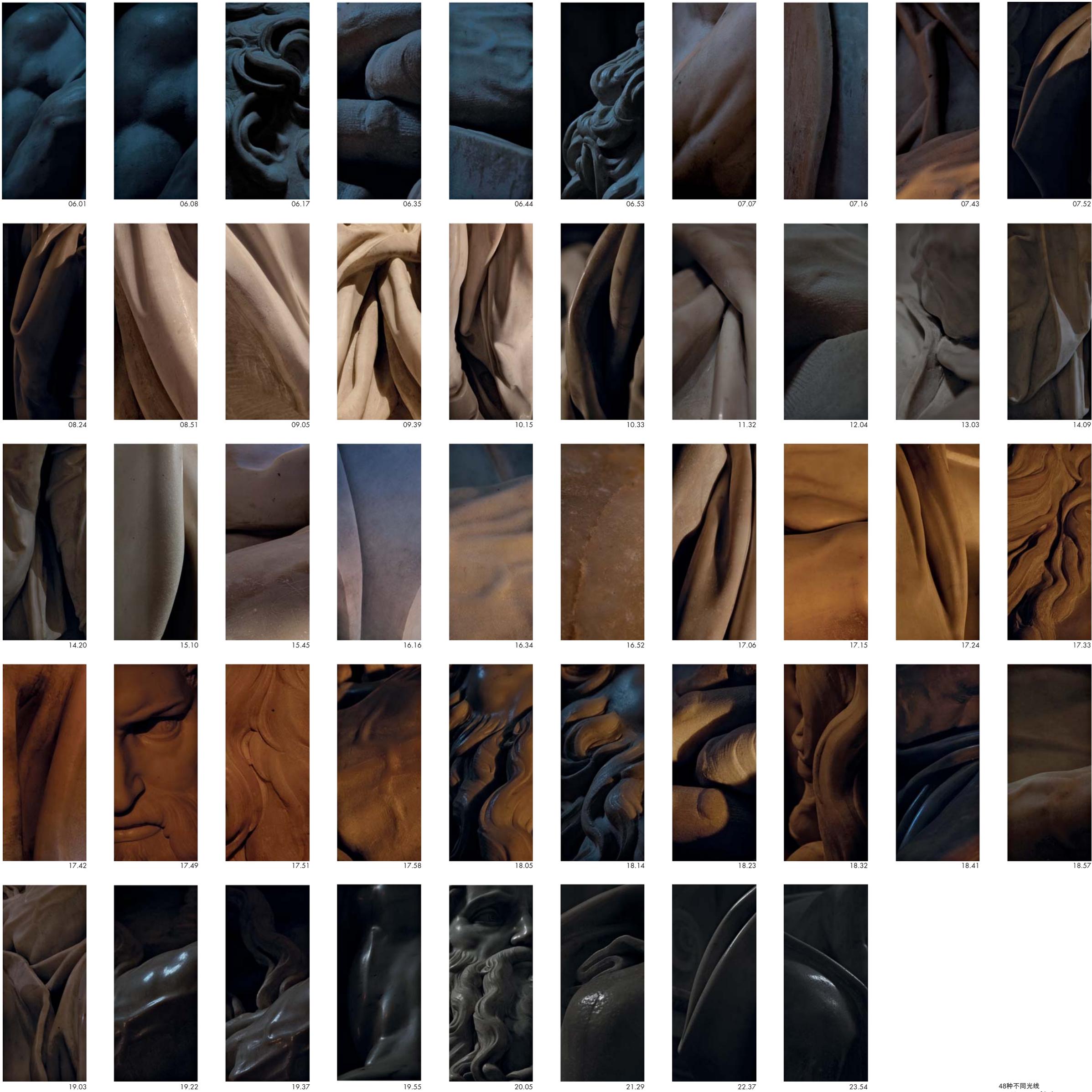
atmosphere that inspired and guided the work of buonarroti. studying michelangelo's artwork we understood the idea that

generated the forthcoming realization and, in that way, we worked in order to fix the many serious mistakes made time by time.

we restore the original environmental conditions, today totally changed both by closing the window on the east side of the transept, as much as the current

artificial lighting, which distorts the chiaroscuro effects of the matter, flattening its three-dimensional effect and preventing the correct interpretation of the work.





设计项目 the project

我们的工作可以称得上是对最初照明条件的语义学复原，好像重新打开了摩西所注释的左侧窗户，让质感、含义、灯光和符号学含义重现在人们面前。

研究地点和雕塑组本身时，我们质问石材如何对自然光发生反应，考虑石材本身的光亮度。

由于无法从建筑学角度工作，因此必须开发一个能够深度解读作品的工程项目。由于长期的忽视和无知，我们之前无法理解米开朗基罗穷尽终生的天才手法：雕刻光线的能力。

故事总是从昏暗开始：我们仔细观察并研究从东西两侧照进教堂的光线，将时间定格在1546年4月，当时米开朗基罗的雕塑交工。随着从破晓到黄昏照进的光线的不同，它在大理石上留下不同的效果，而米开朗基罗则是唯一一个能够根据太阳光线雕刻石材形状的天才。

就像照明布景一样，此次工作中将照进教堂的自然光分成四个部分：破晓、日出、日落和黄昏。人造光模拟日光路线，在色温和强度上不断波动，从橙色到红色呈现不同显色度，与环境自然光整合。

光线似乎来自摩西像本身，左臂和面庞的抛光如此精湛，日落时分的阳光最初落在上面，从实体上和象征意义上照亮先知。

该建筑群的每一个雕像都被互相隔离开来，在一天中的四个不同时段获得不同的光线。

本项目提升了空间深度和质感，让参观者们能够看到米开朗基罗最初设计的摩西像。

our intervention is a real philological restoration of the original light conditions, in which we put ourselves at disposal of michelangelo's artwork

through the metaphorical reopening of the left side window to which mooses turn his gaze, in order to enhance matter, meaning, light and symbolism.

the study of the location and the sculptural group itself led to questioning of how the stone would have reacted to natural light, considering the stone itself had its own luminosity.

as it was impossible to operate from an architectural point of view, a project was developed, which could tell the profound meaning of the work. this ended a continuum of indifference and ignorance, which potentially obscured the touch of genius to which michelangelo had consecrated his entire life: the ability to sculpt light.

from darkness always begin a story: we carefully examined and studied the light that came into the basilica through the windows in the east and in the west

on the chosen day of april 1546, the agreed term for michelangelo to deliver his sculptures. following the path of the light throughout the day, from dawn to dusk,

and its effect on the marble, it has been recreated a lighting mindful of the genius of the only artist in the world able to give shape to stone through the rays of the sun.

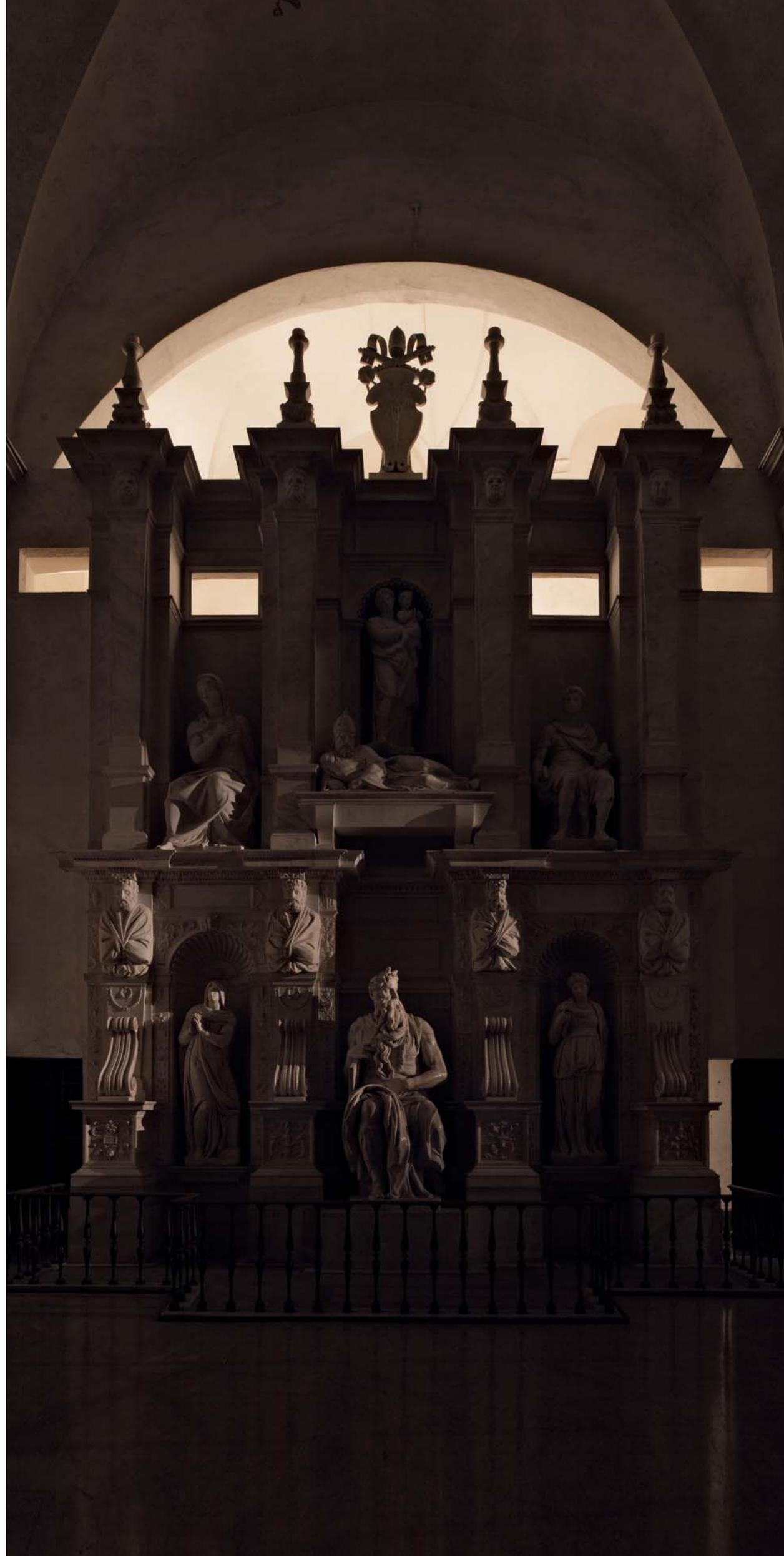
as in a luminous choreography, the intervention understand the natural light spilling inside the church and divided it into four acts: dawn, sunrise, sunset and dusk.

the artificial lighting mimics the solar light path, with a regular gradual fluctuation of both the color temperature and intensity, with a color rendering that shades from the orange to the red, integrate itself with the ambient natural light.

the light seems to come from mooses himself, thanks to the notable polishing of the left arm and of the face, on which originally the sun shone at sunset, illuminating the prophet both physically and symbolically.

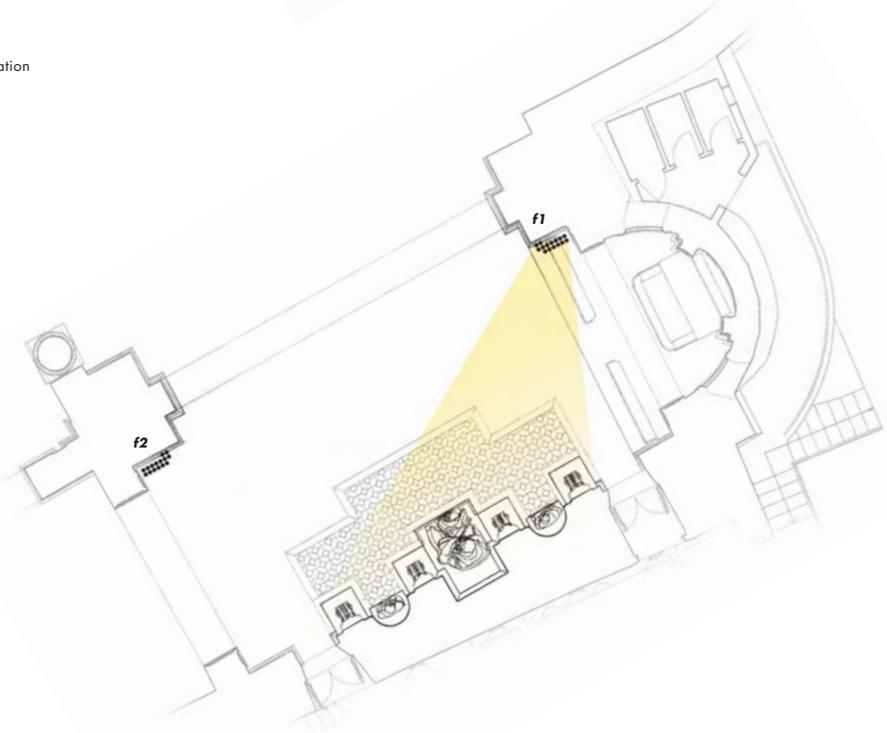
each statue of the monument has been isolated and enhanced by different light beams that brig it to life during the four different parts of the day.

by highlighting depth and texture, the project lets the viewer to meet michelangelo's mooses truly the way the author had intended it.

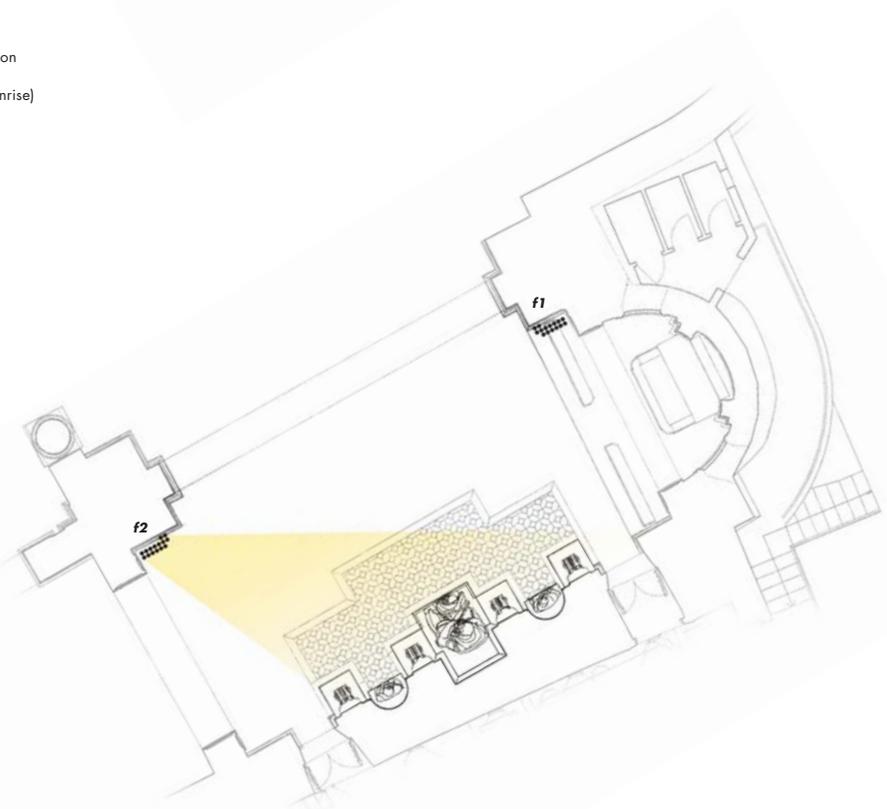




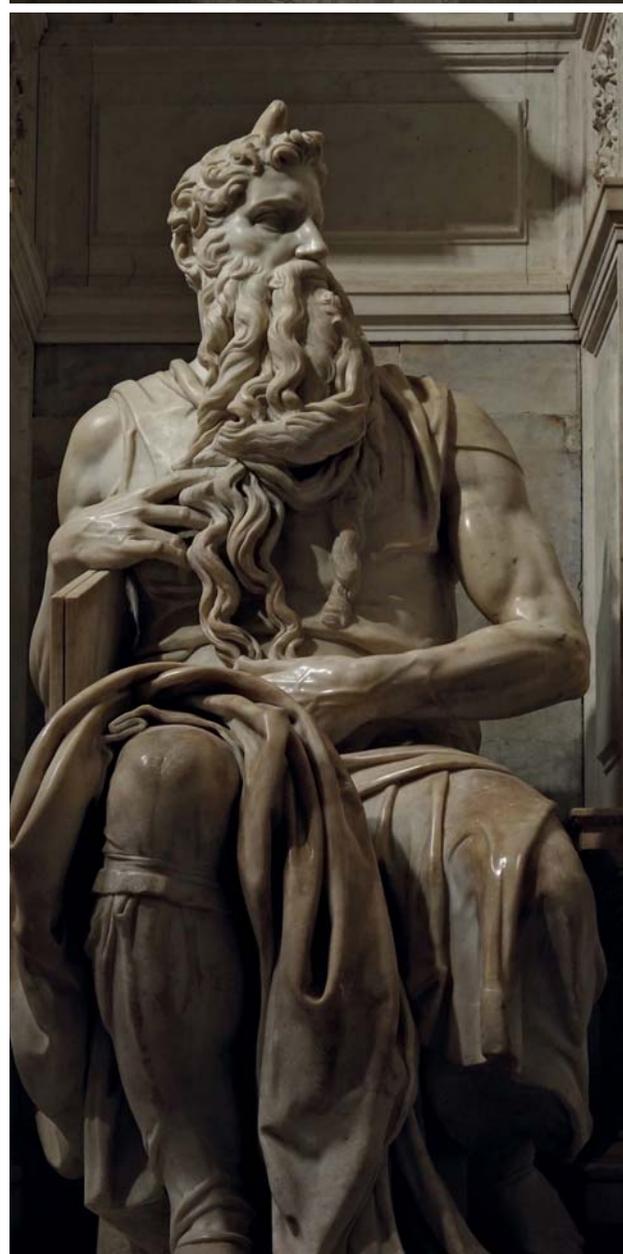
干预地点
intervention area localization

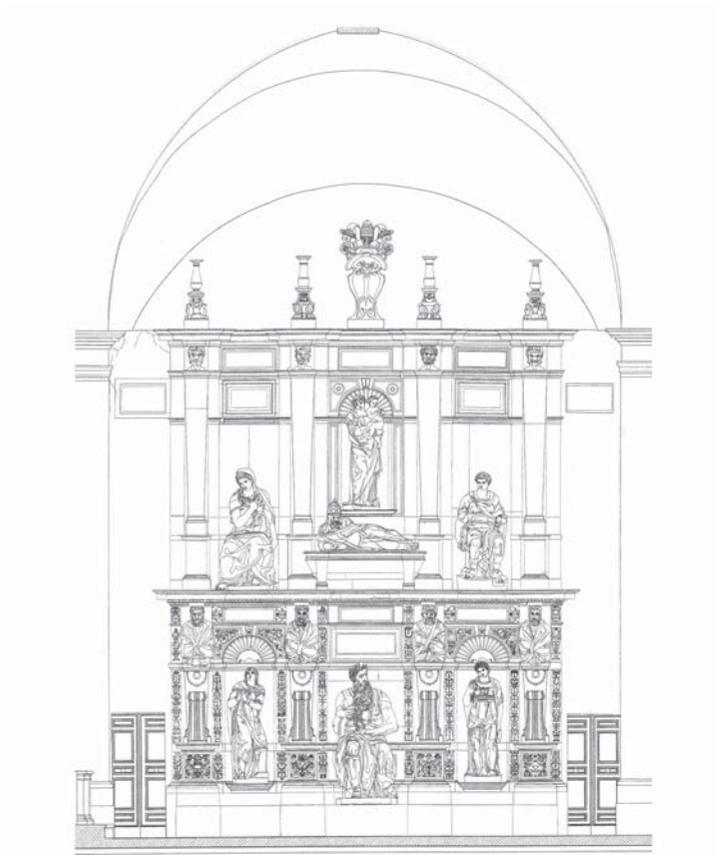


f1
n55灯具分布
n55 light fittings distribution
东北方向 (日出)
north-east direction (sunrise)

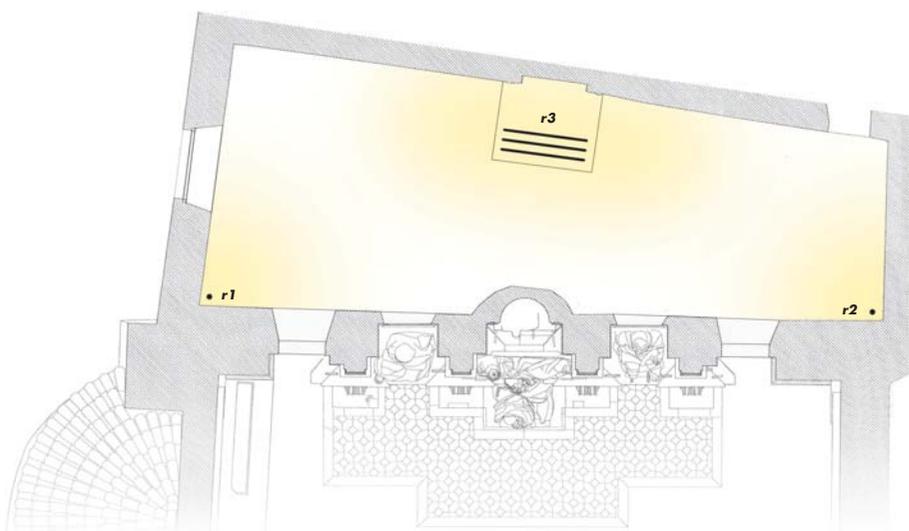


f2
n55灯具分布
n55 light fittings distribution
西南方向 (日落)
south-west direction (sunset)

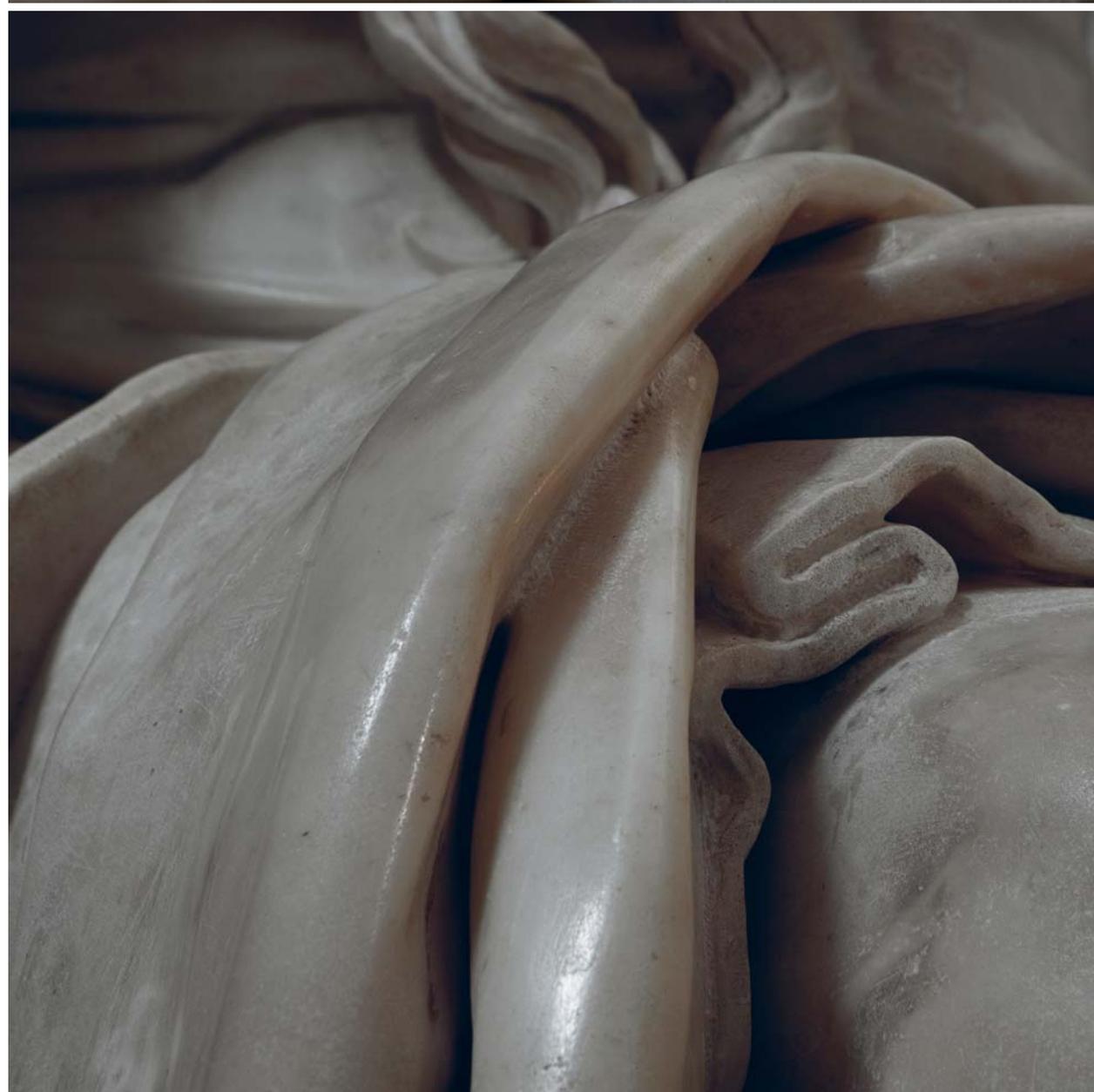




雕塑组视图
prospect of the sculpture ensemble



r1 r2 r3
雕塑组后方唱经楼，f50灯具分布
choir behind the sculpture ensemble, f50 light fittings distribution





“马里奥！我们用你的光线保护教宗，
'mario! we saved the pope with your light,
另一个人物得以显现！’
another person has shown!’
antonio forcellino

工程 the work

儒略二世陵墓的干预工作需要将动态照明与二十四小时自然光结合。

n55 led灯具的专利技术和Viabizzuno独家灯泡系统重现自然光及其变化，

提升了光线的质地以及大理石细腻与粗糙表面之间的对比、建筑物的三维品质、阴影和图像细节，只有这样我们才能说修复了这一作品。

超小灯具n55藏在现有窗户和被封死的窗户里。该系统采用独家led技术，由Viabizzuno专门开发，能够散发极高品质的光线，与每天不同时刻照进窗户的日光自然光极为类似，同时还能复制月光。

为雕塑照明的灯具规格是：TM-30量表（IES光源显色性评价方法）上Rg值103（全色域指数），Rf值96（保真度指数），该系统采用99色样本，包括饱和色及略饱和色。

其破坏系数为0.150 mW/lm，这是现代技术所能达到的最低水平，日光或传统卤素灯的数值超过75 mW/lm，比Viabizzuno led光源高500倍。

灯光效率介于115lm/W和96lm/W之间，具有最大节能水平（A++等级）。

其CRI（演色性指数）为98，采用14+1采样色，并不局限于大多数制造商所提供的8个主要色，因此数值较高，特别是饱和红色——R9是led技术中问题最大的颜色。

它们以不同的色温工作，分别为2200K、3000K、4000K和5000K。

它们全都不含uv、ir和闪烁，macadam值为1。

n55灯具便于更换，简化所有维护并减少管理成本，采用专利推进技术和动态散热技术。

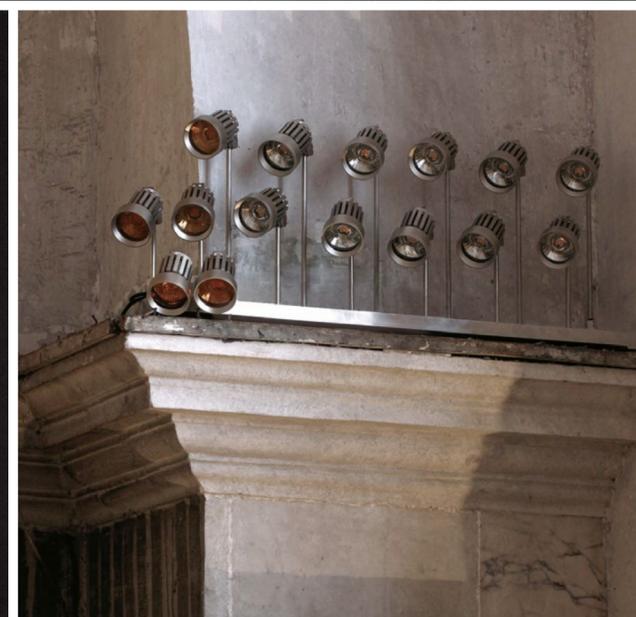
此外，还使用了五个Viabizzuno fi50灯具，其cri数值为95，安装在袖廊中，为整个雕塑组增添深度并突出上方的背光效果。

这些led具有三种色温：3000K、4000K和5000K。

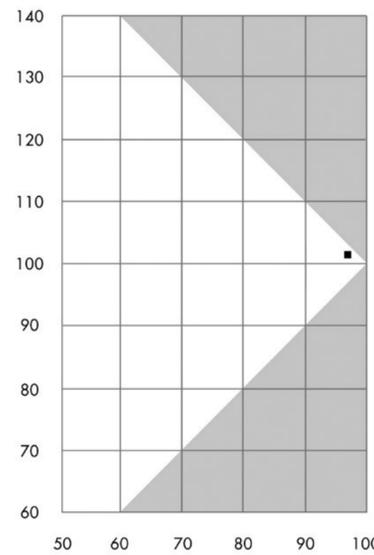
照明系统由dmx控制器管理，提供最大精度并交替不同的照明时刻，确保只有自然光能够带来的敏感度。



the intervention on the tomb of julius II required dynamic lighting operating in symbiosis with natural light throughout the twenty-four hour period. n55 led light fittings with proprietary technology and an exclusive optical system by Viabizzuno recreate natural sunlight and its gradual variations, enhancing the texture of light and its contact with smoother or rougher marble surfaces, the tridimensional quality of the monument, its shadows and the pictorial features which are a substantial part of an artwork today we can claim as recovered. the intervention consists in the installation of n55 extremely small light fittings concealed on the capitals nearby both the existing window and the walled one. the system is and equipped with an exclusive led technology specially developed for Viabizzuno, emitting an extremely high quality of light, extremely similar to natural sunlight entering the church during the different times of the day and able to reproduce moonlight. the light fittings required to illuminate the sculptures have: a Rg value of 103 (gamut index) and a Rf value of 96 (fidelity index) in the TM-30 value scale (IES Method for Evaluating Light Source Color Rendition), a system employing 99 sample colours, including both the saturated and lightly saturated ones. a 0.150mW/lm damage factor, one of the lowest possible using modern technology, considering the sun or a traditional halogen source reach a value of over 75mW/lm, 500 times larger than Viabizzuno led sources. light efficiency varies between 115lm/W and 96lm/W, allowing the maximum possible energy saving (A++ grade). a CRI (Color Rendering Index) value of 98, referred to 14+1 colors, and not limited to the 8 main colors as with most manufacturers, providing an elevated value especially with saturated red—considering R9 is the most problematic color with led technology. they operate at different color temperatures - 2200K, 3000K, 4000K and 5000K respectively. they are both uv and ir and flicker free and have a 1-step macadam ellipse. the n55 light fittings, which are easily interchangeable simplifying all maintenance and reducing management cost, have patented propulsion with dynamic heat dissipation. in order to complete the project, five Viabizzuno fi50 light fittings with a cri equal to 95 were placed in the transept of the choir, adding depth to the whole wall of the sculptural complex and highlighting its backlit upper contours. these led have three different colour temperatures: 3000K, 4000K e 5000K. the lighting system is managed by a dmx controller allowing maximum precision and alternating different light moments, ensuring the sensitivity that only the natural light is able to donate.



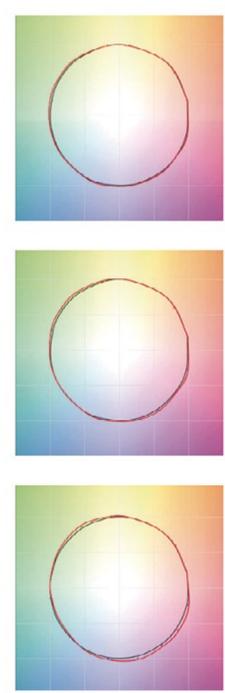
IES TM-30 Rf / Rg 关系
IES TM-30 Rf / Rg relation



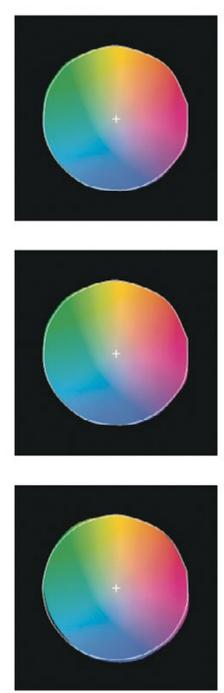
Rf保真度指数
Rf fidelity index
Rg全色域指数
Rg gamut index

Os 3000K LEDs
Viabizzuno
3000K LED
具有 Rf 96 / Rg 103
照明品质接近自然光
(Rf 100 / Rg 100)。
Viabizzuno's
3000K LED
with Rf 96 / Rg 103
have a quality of the
light close to the one of
the sun
(Rf 100 / Rg 100)。

色彩向量图
color vector graphic



色彩扭曲图
color distortion graphic



2700K
CIE
Ra 98
R9 98

TM-30
Rf 96
Rg 102

3000K
CIE
Ra 98
R9 98

TM-30
Rf 96
Rg 103

4000K
CIE
Ra 98
R9 98

TM-30
Rf 93
Rg 103

光源
light source
LED Viabizzuno
QT12-RE + UV过滤器
QT12-RE + UV filter
白炽灯
incandescent lamp

破坏系数 f (mW/lm)
damage factor f (mW/lm)
0.149
0.160
75

n55CI系统卓越的色彩表现力
outstanding color performance of n55 system

CES 1 type c	CES 2 type c	CES 3 type a	CES 4 type a	CES 5 type d	CES 6 type c	CES 7 type c	CES 8 type d	CES 9 type f	CES 10 type g	CES 11 type c	CES 12 type a	CES 13 type f	CES 14 type e	CES 15 Type B	CES 16 Type C
CES 17 type c	CES 18 type b	CES 19 type e	CES 20 type f	CES 21 type d	CES 22 type d	CES 23 type f	CES 24 type f	CES 25 type a	CES 26 type a	CES 27 type a	CES 28 type g	CES 29 type c	CES 30 type d	CES 31 type d	CES 32 type c
CES 33 type d	CES 34 type g	CES 35 type g	CES 36 type a	CES 37 type a	CES 38 type a	CES 39 type f	CES 40 type f	CES 41 type c	CES 42 type f	CES 43 type c	CES 44 type f	CES 45 type g	CES 46 type e	CES 47 type c	CES 48 type d
CES 49 type d	CES 50 type f	CES 51 type a	CES 52 type f	CES 53 type e	CES 54 type f	CES 55 type g	CES 56 type g	CES 57 type c	CES 58 type d	CES 59 type e	CES 60 type g	CES 61 type f	CES 62 type c	CES 63 type f	CES 64 type e
CES 65 type f	CES 66 type e	CES 67 type e	CES 68 type f	CES 69 type f	CES 70 type f	CES 71 type f	CES 72 type f	CES 73 type c	CES 74 type c	CES 75 type a	CES 76 type a	CES 77 type f	CES 78 type f	CES 79 type c	CES 80 type g
CES 81 type a	CES 82 type c	CES 83 type c	CES 84 type f	CES 85 type a	CES 86 type c	CES 87 type f	CES 88 type f	CES 89 type a	CES 90 type e	CES 91 type a	CES 92 type a	CES 93 type d	CES 94 type c	CES 95 type a	CES 96 type g
CES 97 type f	CES 98 type a	CES 99 type e													

TM-30 99 颜色采样
TM-30 99 color samples



结果 **the result**

由米开朗基罗塑造的著名的儒略二世陵墓在数个世纪之后重新焕发光彩。

新的照明重新展现了令米开朗基罗选择圣伯多禄锁链堂的照明条件，重新定义这个卓越项目的建造与人物，这个项目早在1505年便已开始构思，经过多次改造，四十年之后才完工。

来到罗马的任何游客都能够重新见到卡拉拉大理石的原始色彩，以及米开朗基罗雕塑的复杂细节。

之前已经参观过这件作品的人需要回来重新参观，因为照明修复完全改变了圣伯多禄锁链堂的场景和情感，把它们恢复到文艺复兴大师最初构思的样子。

就像米开朗基罗的一位传记作者所说的，“陵墓悲剧”如今有了一个快乐的结局：新的照明重现米开朗基罗作为光线雕刻家的天才，无与伦比的敏感度为摩西带来光明和阴影。

that was given to him by michelangelo; the famous tomb of julius II now shines again after centuries.

the new lighting recreates how it would have originally appeared when buonarroti was inspired to choose the basilica of san pietro in vincoli, defining construction and figures of the extraordinary project which was thought of in 1505, redesigned several times and finally realized forty years later.

any visitors to rome will finally be able to see the original colours of the carrara marble and also the sophisticated details of michelangelo's sculpture.

even those who already know of this work of art must return to see it, because of the restoration of the light which has given people who go to san pietro in vincoli the sights and emotions that were originally conceived by this master of the renaissance.

the 'burial tragedy', as it was once defined by one of buonarroti's biographers, now has a happy outcome: the new lighting reveals michelangelo as sculptor

of light in addition of marble, in an intervention of rare sensibility which has not only given the light to moises, but has returned him its shadows.





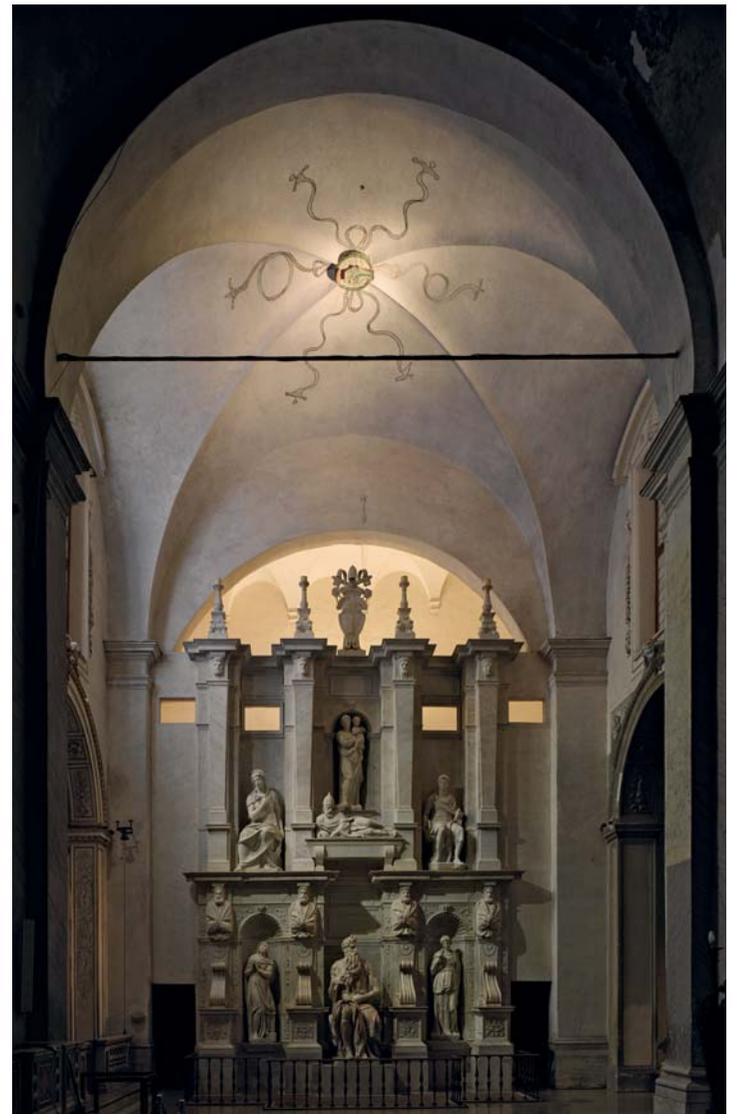
05.40 破晓 dawn



09.00 早晨 morning



06.10 日出 sunrise



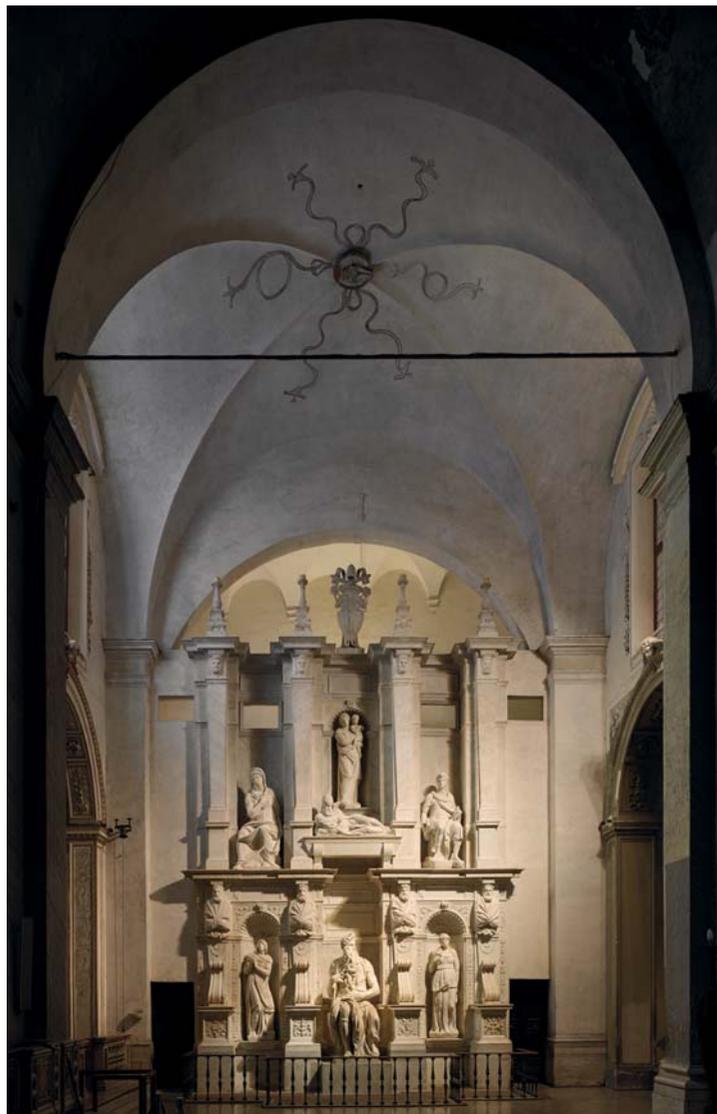
12.00 中午 midday



14.00 午后时分 early afternoon



20.06 日落 sunset



16.00 下午 afternoon



20.36 黄昏 dusk

