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*IBM Information Systems Center, Sterling Forest, N.Y. 1972*  
*Federal Reserve Bank of Minneapolis, Minnesota. 1973*  
*Edited and Photographed by Yukio Futagawa*  
*Text by Esther McCoy*



Global Architecture  
**世界建築**

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明尼亞波利斯 / 聯邦儲備銀行 / 明尼蘇達州 / 1973

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發行 / 胡氏圖書出版社

地址 / 台北市忠孝東路二段39巷2弄2號

電話 / 3926657・3917597

製版 / 王子彩色(股)・飛虎彩色

印刷 / 尚峰彩色(股)

初版 / 1983年8月

定價 / 新台幣400元整

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TJ 206/4:31P

胡氏圖書

1964年當我第一次見到耿納·勃克茲的時候，我就對他目標的專一性與作風的二元性印象深刻。有一天當我們一起散步在靠近他居住的克朗布魯學院附近一處寬闊而略顯荒涼的空地上時，我感覺到他有某種經常在大自然之中滌蕩心神的強烈欲求，這似乎不是美國人通常的習性，但這也提醒了我他是出生在拉脫維亞的人。

從那時起，我開始體會到他作品中優雅的心靈以及北國地方特有的明朗的詩情。

在工作時，他像所有其他優秀而熱誠的年輕建築師一樣；不同的是，他不像大多數在別的建築師事務所中工作十年的人，朝夕之間急於建立可被確認的個人風格。

要想將他區分為那一種派別是很難的，他的作品有兩個方向：一個是技術性的，一個是雕塑性的，而在這兩方面他的表現都很傑出。

I first met Gunnar Birkerts in 1964 and was impressed by two things about him: the singleness of his purpose and the duality in his work. He lived near Cranbrook Academy, and one day when we walked together on the handsome, extensive and somewhat wild grounds I sensed in him some absolute need to refresh himself often in the presence of nature—not an American characteristic, and it served to remind me that he was born in Latvia.

From that time on I began to pick out in his work an elegance of spirit and a poetry that was peculiarly northern in its crispness.

In his office he was more like any good, young dedicated architect. However, he did not have the compulsion, typical of one who had spent ten years working in the offices of other architects, to establish at once a strong personal style with which he could be identified.

He was hard to classify neatly. At that time, his built work fell into two categories, the sculptural and the technological. He had taken the best of both worlds.

There was still in his style the evidence of the training in crafts from his schooling; there was evidence of Eero Saarinen in whose office he spent five years. There was

在他的作風當中，仍然有學院工藝訓練的痕跡。在埃羅沙陵南（Eero Saarinen）事務所中五年的生涯也留下了影子；另外還可以看出他對歐圖（Aalto）作品的感情。他告訴我，從歐圖的伊瑪特教堂中他學到兩種並行的法則，一種是內部的，一種是外在的，這一點領悟使他的設計生命更加輕快而豐潤。

他將牆壁雕塑化的原因在於他個人的成見，因為牆壁太接近玻璃會令他不舒服，所以設法混淆牆面的角色，而同時又賦予牆壁應有的空間感。

就是這些互相對立，激突的意念，使他的作品中蘊含著發散魅力的緊張感。

聯邦儲備銀行和IBM資訊系統中心顯示了兩件事：一是處理一個計劃全新而戲劇化的能力，一是提升一幢被膜建築的非凡手法。尤其這個銀行實在很難被歸類，也不像其他作品，完全是智力與技術的結晶，而技術上又起源於矛盾而拘束的工程計劃。

also a love of Aalto. From Aalto's church in Imatra he had learned, he told me, that there can be two sets of rules, one for the interior and another for the exterior. This bit of wisdom made his design life a lot easier and enriched it as well.

One personal prejudice accounted for some of his sculptural walls. Proximity to glass made him uncomfortable, so he found ways to baffle it and at the same time satisfied a need for giving dimension to walls.

There were these conflicts. Out of them arose the tensions which have always made his buildings so arresting.

The Federal Reserve Bank and the IBM Information Systems Center illustrate two things: an ability to state a program in a wholly new and dramatic way, and a degree of skill in refining a skin building that is truly remarkable. The bank falls into no category; indeed it seems to detach itself from the body of his work. The design is at the service of a brilliant and unique piece of engineering, and the engineering grew out of a contradictory and imprisoning program.

From the plan of the bank it is clear that the building is split in two. Structurally and functionally, the

從銀行的平面可以很清楚地看出這幢建築在結構及機能上都分成兩部分：一是地下警衛層，一是地面上行政與事務辦公室。勃克茲解釋：「一方面要封閉而防禦，一方面又要開放與外界接觸。」

就從平面上所顯示的，地下的部分需要寬廣的空間，所以很難有足夠的支柱支撐地面上十一層的辦公室。然而水平展開又不可能，因為這塊基地屬於都市更新區的一部分，建築物前端必須留出空地聯接尼克列特購物街。地下層可以延伸整個 2.5 英畝基地，但地上的結構却須集中而垂直發展。

根據聯邦儲備銀行的基本性質，不能夠在地面上做得像個卸貨場，而地下的部分爲了每個月堆積如山的鈔票、支票、債券及其他有價證券的進出，必須有寬廣的裝甲運鈔車及儲藏空間。在處理這些票券的時候無法避免需要較大的空間。

一當勃克茲決心想要做一個安放在垂曲線上的懸吊建築時，

underground security levels and the administration/clerical offices above are distinct. Birkerts explains the split as, "On the one hand it wanted to be opaque and protected and on the other it wanted to be transparent and communicative."

As the plan indicates, clear space was needed for the subterranean part in such abundance that it was hard to locate enough supports to hold up the eleven stories of offices. The alternate solution of spreading out horizontally above the below grade was impossible; the site is part of the Gateway Center urban renewal area which called for open space in front of the building to connect with Nicollet Mall. The underground levels could spread under the entire 2.5-acre plaza but the structure above ground had to be compact and vertical.

The very nature of a Federal Reserve bank made it impossible to locate a loading dock above grade; the transportation monthly of mountains of currency, checks, bonds and other valuables demanded an enormous amount of circulation space below grade for the movement and storage of armored transports. Each of the many operations in the handling of valuables consumed more space than if conducted openly.

他即已準備承受此一決定的戲劇性後果。對於這個想法，勃克茲意志堅決毫不退却，要他放棄這種構想，簡直比叫他中止這個皮膜建築的工作更不可能。

奇特的是他消去了垂拱的綫性表現而賦予它牆面的性質。在垂曲線的下端，他將玻璃與窗櫺的外緣齊一以防備溫度變化的影響。而在垂曲線上端，玻璃則拉回到窗櫺內緣，結果玻璃牆便同時具備了包被皮膜以及結構的雙重表現，而且反映在這兩部分玻璃牆上的光影效果就如同在文藝復興建築一樣饒富情趣。

主要結構由焊接在四個巨大鋼柱上的兩座20呎深的桁架，來支撐兩個垂曲線而成的。端部花崗岩貼面的剖面做成H型來抵抗長向表面的風壓，整個11層樓高的側牆提供垂曲結構所需的剛性。樓板與在垂曲線上端受壓而在垂曲線下端受拉的垂直構件相連接而將荷重傳給垂曲線。這些垂直構件同時具有支柱與懸吊的作用。

Once Birkerts committed himself to a suspended building and settled on the catenary arch, he accepted the full dramatic consequences of his decision; to have avoided it would have been a kind of retreat of which he was no more capable than of not going forward in the perfecting of a skin building.

Yet, oddly enough he deprives the arch of its linear character and gives it the substance of a wall. He is pushing the glass forward below the catenary, flush with the outside face of the mullions to protect it from the temperature changes, and above the catenary, he pulls the glass behind the mullions. As a result, the glass wall becomes expressive of the enclosure as well as of the structure. And the two qualities of light that play over the different planes of glass are as welcome here as in a Renaissance building.

The primary structural members are the two catenaries braced by two 20-foot deep trusses which are tied into the support towers by four massive steel weldments. The granite faced end towers, H-shaped in section, were designed to resist wind loads on the long facades. The entire side walls to their eleven story height are brought into service to produce the required rigidity for the braced

使用在這建築物上的垂曲結構，其強度遠超過其實際上被使用的跨距。在“上空權”(air right)的利用上打開了一個新的途徑。「它可以是設計都市構架的未來方法。」勒克茲說：「這種結構系統只要每三、四百呎有一個站立點就可以架設整個城市。」

因為這銀行的結構是空前的，所以需有獨特的施工程序：先安放桁架，再將兩個水壓起重機昇到頂端。沿著桁架來來回回將所有構件放在正確位置上。將來增建五層的提案也是沒有前例可循的，增建部分的荷重仍將利用端部雙塔同樣的支撐點。

同樣的輕型鋼架構也可以倒過來使用而變成拱，如此，在拱上端的垂直構件將成為承受拉力的懸吊構件，而在拱下端的垂直構件則成為受壓力的支柱了。

廣場的水平高程從購物街的O到建築物昇高了20，讓地下層有足夠的高度可以進出，斜面也造成廣場圍蔽的感覺，鋪滿花崗

catenary structural frame. The floor loads are transferred to the catenaries by being tied into the vertical structural members which are in compression above the catenary and in tension below it, being respectively columns or hangers.

The catenary, used here for a span far shorter than its capability, opens up a new way to take advantage of air rights. "This can be the future way of designing urban structures," Birkerts says. "A system which requires contact with the ground only every three or four hundred feet is useful in layering a city."

The solution for the bank, without precedent, called for a special building procedure: the truss was hoisted, then two hydraulic cranes were lifted to the top, and they shuttled back and forth along the truss lifting structural members into position. The proposal for adding five floors to the building in the future is also without precedent. The addition would rest on the same support points of the end towers.

The same light steel skeleton would be used, but the catenaries could be reversed and become arches, and the vertical structural members below the arch would become hangers in tension and above the arch, columns

石的廣場形成沒有地平綫的碗一般，置身其間，令人有互相親近之感受。就象徵的意義上來說，這就像是一座儲存中西北部所有財富的花崗岩山脈一樣。廣場在建築物後側低下數碼，設有從馬凱特街進出的入口，在這個面上有一個脫離主結構而將拱分成兩部份的電梯塔，每一層以橋連接建築物的主體。

地下層的開口在廣場上只有二個不明顯的汽車坡道。立面上似乎缺了什麼，原來是沒有進口。勒克茲從不特意強調入口（就像IBM資訊中心的入口是極隱密而精簡），而一個長達330呎的立面上沒有一個入口却造成了安全感。

這種作法將建築物轉變成一種象徵，從攝影家喜歡的高而遠的觀點來看，這建築像是市民的紀念碑，也可以看做是跨立在整個建築基地上的牌樓。強化這種意象的是因為建築物很扁（66呎寬），又往廣場挑高24呎，平常看見建築物的角度都是從廣場上透過樹叢，很難一眼望盡它的全貌。

in compression.

The plaza rises from zero point at the mall to 20 at the building — a grade creating sufficient height for entering the underground levels; the sloped plane gives the plaza a sense of enclosure. The granite-paved plaza becomes a sort of bowl, without horizon, in which people relate easily to others. Symbolically, it is a granite mountain that has been planed down, and the valuables of the entire middle northwest are securely locked into the granite stronghold below. The plaza drops away sharply a few yards beyond the building, which places the building entrance at the sidewalk level on Marquette Street. The understatement of the entrance is relieved by a detached circulation tower which bisects the arch. Bridges connect it at each floor to the main building.

The security measures on the plaza side are inconspicuous — only two unaccented car entrance ramps descending to the security levels. But something is missing in the plaza facade. Finally you discover what it is. There is no entrance. Birkerts has never been one to over-elaborate an entrance (see how neatly he recesses the IBM entrance) but a facade 330 ft. long without one imposes an atmosphere of security.

對勃克茲而言，這個銀行就像它本身所服務的西北地區力量的象徵——達科他的廣大平原、高聳的蒙他那山脈。噴泉則象徵著發源自該地區的密西西比及密蘇里兩大名川。

使我覺得有意思的是這個建築物能夠做為銀行的事實，因為美國銀行的典型大都是傳統而保守的歷史性建築。自從路易·蘇利文於本世紀初為中西部若干城鎮設計小銀行以來，銀行家們從不曾顯示過可與當時相比的嚐試新形態的意願。

不過勃克茲設計的銀行在某方面來說還是有其歷史淵源的，它的概念比較接近米西尼的阿特烈寶庫而不像一般美國受布雜藝術影響下的聯邦銀行（這基地上原來的銀行就是其中之一）。銀行工程以及古代寶庫的目的均在於求取將財物貯存於地下的大空間。

如果說這銀行是尺度的創造者，那麼 IBM 建築就可比擬為尺度的記錄者了。這銀行在尺度上很接近那些身世不明，聳立於

平坦麥田中的穀物升降機的形象。（注意，穀物升降機並沒有視覺上堪稱英雄式的入口）

這銀行不單是極度戲劇化的作品，也是勃克茲最的精思竭慮之作；相反地，IBM 建築中的許多精妙處，均源自感性的運用。建築物表面上的樹影喚起〔視覺上〕直接的回應，而建築物皮膜——玻璃與光潔鋁板——的強烈反射製造了更深刻的感受。

IBM 公司是許多遷往郊區的公司之一，大概有一打的公司佔據了一大塊公園般規劃良好的基地。在這些建築群中，IBM 公司的座落位置，正處於群樹環抱，由湖泊和露出地表的花崗岩脈所構成的自然景象之中，勃克茲詭譎地將純科技——無林木肌理的建築物嵌入其中。然而，它並非都市化建築——向來使用反射性表皮的建築物從不蓋在粗獷的基地上。

在他早期設計的皮膜建築中，像底特律馬拉松石油公司大樓，他將皮膜被裹在機能的突出部而不像窗簾一樣掛著。1970年休

This absence has the effect of transforming the building into a symbol. Viewed from a height and at a distance (the view photographers prefer) the building has some of the imagery of a civic monument, perhaps even a commemorative gateway spanning the entire site. Strengthening this illusion is the narrowness of the building (66 ft.) and the elevation of the tiers of offices 24 ft. above the plaza. However, the normal way of seeing the building is from the plaza, among trees, where the entire building is not seen at a glance.

To Birkerts, the bank is symbolic of the strength of the northwestern region which the Federal Reserve Bank serves—the vast plains of the Dakotas, the majestic mountains of Montana. The fountain to him is, symbolically, a spring of water seeking its level, representing the two great rivers born in the region, the Mississippi and the Missouri.

Interesting to me is the fact that the building should be a bank, for this is a building type in the U.S. that is traditionally conservative and avoids forms which do not have history on their side. Not since Louis Sullivan's small banks for midwestern cities early in the century have bankers shown a comparable willingness to experiment.

Yet in a sense Birkerts' bank has its historical roots. It is closer in conception to the Treasury of Atreus at Mycenae than are the Beaux Arts-inspired Federal Reserve banks in the U.S. (The Birkerts bank replaced such a one.) The engineering of the bank and the ancient treasury was aimed at producing clear space for hoarding treasures underground.

The IBM Building is a scale recorder, while the bank is a scale maker. The bank fits more in the scale of grain elevators, those forms without antecedents which rise up from the earth in the flat wheat country. (Note that the grain elevator has no entrance to justify to the eye the heroic scale.)

While being the most dramatic, the bank is also the most cerebral of Birkerts' work. Many of the subtleties of the IBM Building, on the contrary, can be encompassed with the senses. The trees reflected on the surfaces evoke an immediate response, and the deeper involvement comes from the two intensities of reflectivity of the skin—glass and polished aluminum.

IBM is one of the many corporate offices which has moved to the suburbs. A dozen or so corporations will

士頓的當代藝術博物館，他用金屬及玻璃包被方盒體，創造了表皮背後的造型。另外在紐約州立大學施工中的舞蹈研究中心，他以構成主義的概念將玻璃彎折成多面體，使光綫漫射到所有的室內空間。

這幢1972年的 IBM 大樓也是一個盒狀體，有凹入的進口，建築物的外皮是像薄膜裹包的三明治式牆版。與他早期皮膜建築不同的是他在入口內外四週的雕塑性處理手法。以及以磨光鋁版配上強反射玻璃來表現內部空間的機能。紅色琺瑯質的條紋延伸成水平綫，用來在立面上表現平面內涵，電腦區無論內外都是紅色——紅色地磚、紅色天花板。

紅色條紋中三個格柵窗適當地區分建築物本身兩種不同的反射面，這在 IBM 建築中是少見的。而且這也代表了電腦在結構設計上的革命性成就——由於世人對電腦的態度而獲致的一種進化。起初人們從粗壯的石柱神廟，步履維艱地走向機械的時代，

acquire a large acreage and build offices in a park-like controlled setting. But the complex of which the IBM Building is a part is on land heavily wooded and with such natural attractions as lakes and great outcroppings of granite. Birkerts inserted with a subtle hand a technological building which has no trace of sylvan character. Yet it is not an urban building; for the time being, buildings with reflective skins are not set down on mean sites.

In his earliest skin building, the 1962 Marathon Oil Building in Detroit, he wrapped the skin over functional projections rather than hanging it as a curtain; the 1970 Contemporary Arts Museum for Houston wrapped metal and glass around a box to create the form behind the skin. His Dance Instruction Facility, now under construction on a New York State University campus, is a Constructivist conception which bends glass to angular shapes to strip-light all the interior spaces.

His 1972 IBM Building is also a box, with hollowed out entrances; the skin is of sandwich panels which are an enclosing foil pulled over the form. What sets it apart from his earlier skin buildings is the sculptural flow of the skin in and around and out of the entrances, and the use of polished aluminum and clear and reflective

後來當電腦漸漸發展成熟，混凝土也出現嶄新有力的樣貌。勃克茲使電腦在他所呈現的藝術新貌中扮演了可親的保護神角色。他這幢建築不僅和此電腦時代一樣練達，而且透過它達成了一種輕靈活現的效果，這對勃克茲和 IBM 公司來說都是一種嶄新的境界。

這幢建築中有豐富的色彩，週密的色彩計劃引導使用者到各個地方。勃克茲形容代表入口接待處的藍色：「延伸到屋頂上，消失在發亮的表面又在狹長的入口重現。」紅色是一種象徵，從外皮到內部的樓板以及大廳天花板，將人與電腦的空間分開，機械間的牆壁漆成鮮綠色，而其他區域則是灰色。（勃克茲的色彩運用似介乎磯崎新大分縣圖書館的色彩法則，以及福岡相互銀行大分支店的色彩解放之間。」

在大廳中成型的塑膠座椅是建築物中少數幾個雕塑表現之一，圓頂的桌椅兼用台座，狀似閃亮的塑膠大頭針墊，和他使用在銀

glass to express function of interior spaces. The red enameled stripe, which dwindles to a line as it becomes a horizontal, represents a floor plan sketched on the elevation—computer areas are bounded on the exterior and interior in red—red floor tiles, red ceilings.

There is a felicity in the three circular gridded windows in the red stripe separating the two intensities of reflectivity that has rarely happened in an IBM Building. They are somehow representative of the evolution of structures housing computers. The evolution follows closely the popular attitude toward computers. First there was the columned temple in which one approached the presence of the machines in heavy, soft bootees. Then as the computers were successfully bred for toughness and sophistication there followed a muscular expressionism in concrete, suggesting newly-achieved power. Birkerts reflects the new state of the art in which the computer is a friendly household god, a likeable presence. His building is not only as sophisticated as this generation of computers, it has a lightness and humor playing through it. This is new both for Birkerts and for IBM.

And color plays through it. Planes of color direct the user from one core to another. The blue core—re-

行廣場中環樹的鋼管座椅如出一轍。

就這兩幢建築來說，勃克茲已經擺脫了歐圖、沙陵南以及以往的記憶而摻入了其他的要素——五年來他在葛拉漢基金支助下對城市層積化研究的心得，在這研究開始之前他對建築的生態學即已涉獵極深，而且在他做托卡洛學院整體規劃時奠定了根基。這個規劃的任務是在一個多變層次的基地上建築一個密實的城區學院。高架的人行道與車道在建築物各層之間交錯穿插，他的層積化的作法容許不限制的成長並創造緊密的都市空間，它顯然的長處是時間上無須事先計劃與對應空間需求的增長。

在他葛拉漢基金層積化研究中的提案，是將所有服務區與道路都放在綠地與人群活動的空間底下。這種經由慎密壁劃而求得的解決方法，除了佛羅里達州的狄斯奈世界外沒有人嚐試過——而狄斯奈樂園並非一個實驗例，因為遊樂區不像城市般的複雜。

勃克茲的作品往往結合了最新的工學技術。這兩幢建築物不

ception and information—"punches through the roof, disappears behind a shiny skin and reappears in the entry slot," Birkerts says. Red is the symbolic line which on the exterior skin carries through the interiors in floors and ceilings of halls, separating the people spaces from the computer spaces. Walls of the mechanical core are painted bright green, and other cores are gray. (Birkerts' use of color seems to be midway between Arata Isozaki's color coding for his library and color released into air in his bank in Oita City.)

The formed plastic seats in the lobby are one of the few sculptural plays in the building, and the pedestal seat/tables with rounded tops, which are as shiny as plastic pin cushions, are in the same genre as the metal pipe seats encircling the trees in the plaza of the bank.

In these two buildings Birkerts shakes himself free of Aalto, Saarinen and memories of the past. Another factor has entered his design, however—his own studies over the past five years on layering of cities—a study done on a Graham Foundation grant. Before actually starting the study he was already deeply involved in an ecological approach to building, an involvement which was at the root of his first master plan for Tougaloo

論對建築或對他本人而言都是獨一無二的。IBM 建築具有前瞻性；而聯邦銀行所採取的特異形式，近期內可能不會再出現。如果再有這種情況，勃克茲將會探求問題的獨特與困難之所在。正如勃克茲自己說：「唯有洞察問題，才能使它們成為賦建築以個性之性格形成要素。」誠哉斯言。

College. The charge there was to build a tightly knit urban college on a site with many variations of level. Elevated pedestrian and vehicular ways joined the buildings at various levels; his layering permitted unrestricted growth and created a tight urban environment. A particular advantage of the layering was that he did not have to zone ahead of time and the response to needs could come as they arose.

The layering he proposed in his Graham study placed all services and roads below green surfaces and spaces for people, a meticulously worked out solution which no one has taken advantage of except Disney World in Florida—not a test case because an entertainment center has none of the complexity of a city.

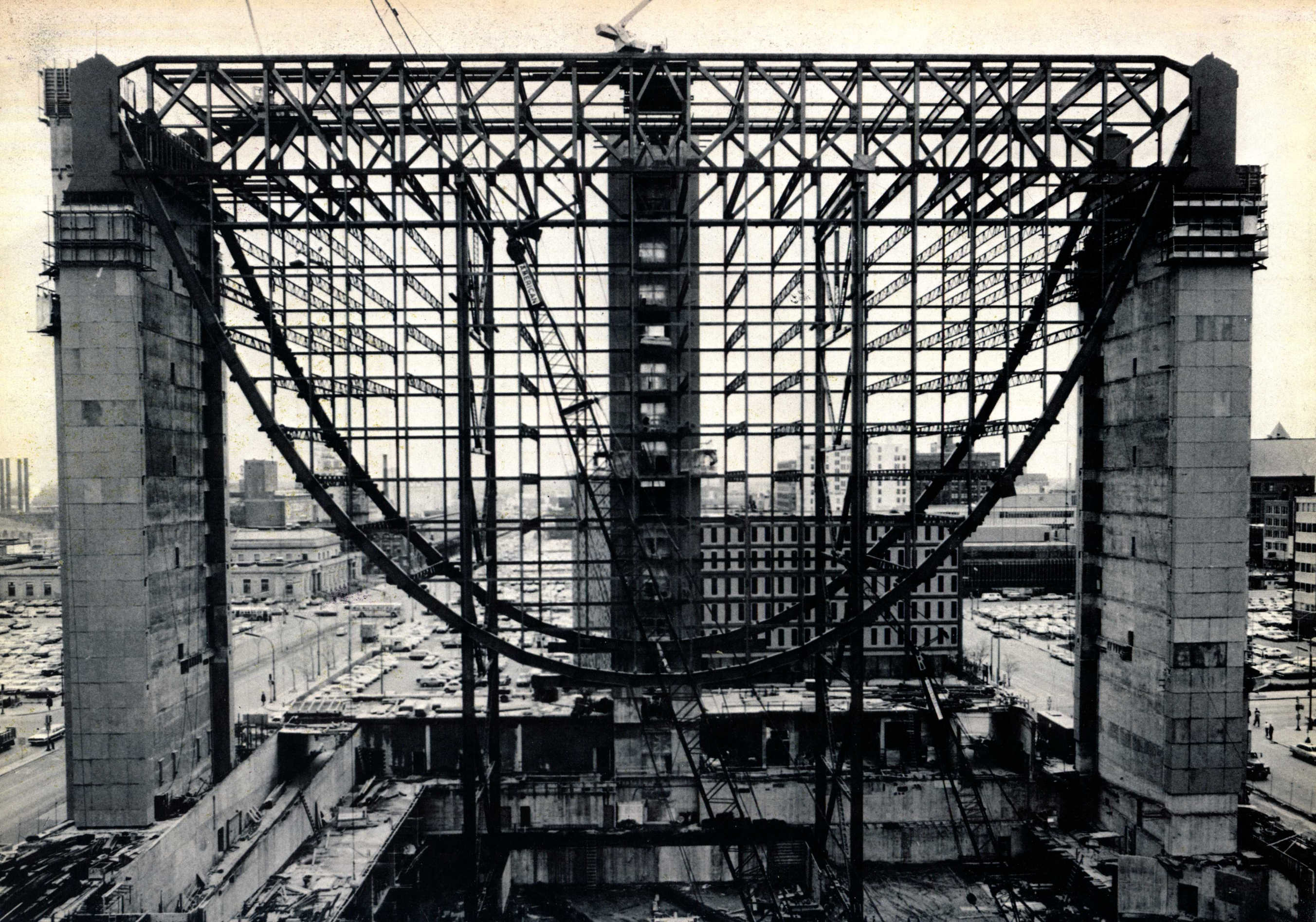
Birkerts works with the immediate information of technology, but these two buildings are unique to architecture as well as to Birkerts. The IBM Building promises a long perspective into the future, while the specialized program of the bank may not come Birkerts' way soon again. When it does, he will look for the unique and difficult aspects of the problem because, as he says, "if they are recognized they can be the character-generating ingredients that give the architecture individuality."

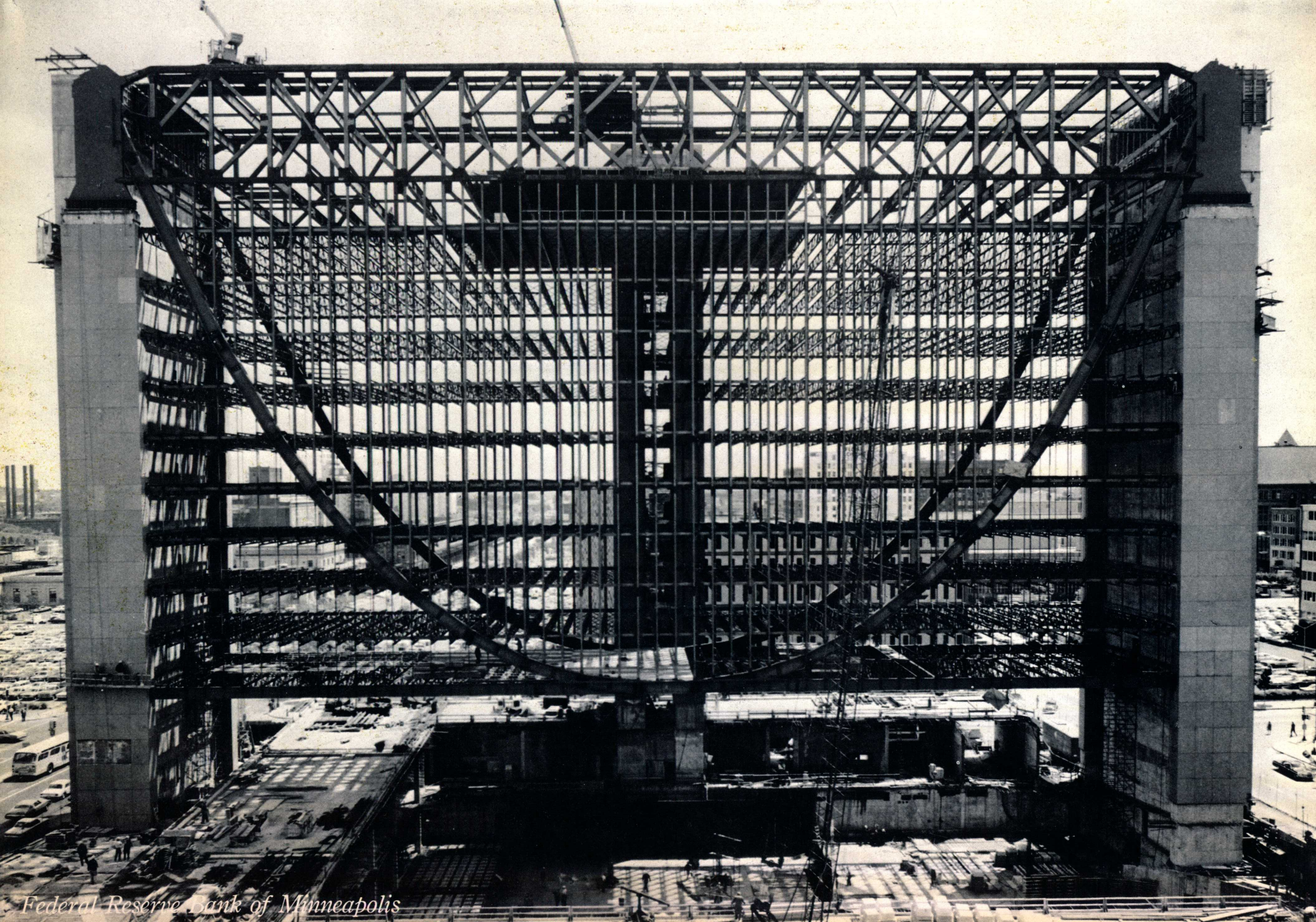
*Gunnar Birkerts & Associates*

*IBM Information Systems Center, Sterling Forest, N.Y. 1972*

*Federal Reserve Bank of Minneapolis, Minnesota. 1973*







*Federal Reserve Bank of Minneapolis*





