AGC Glass Building

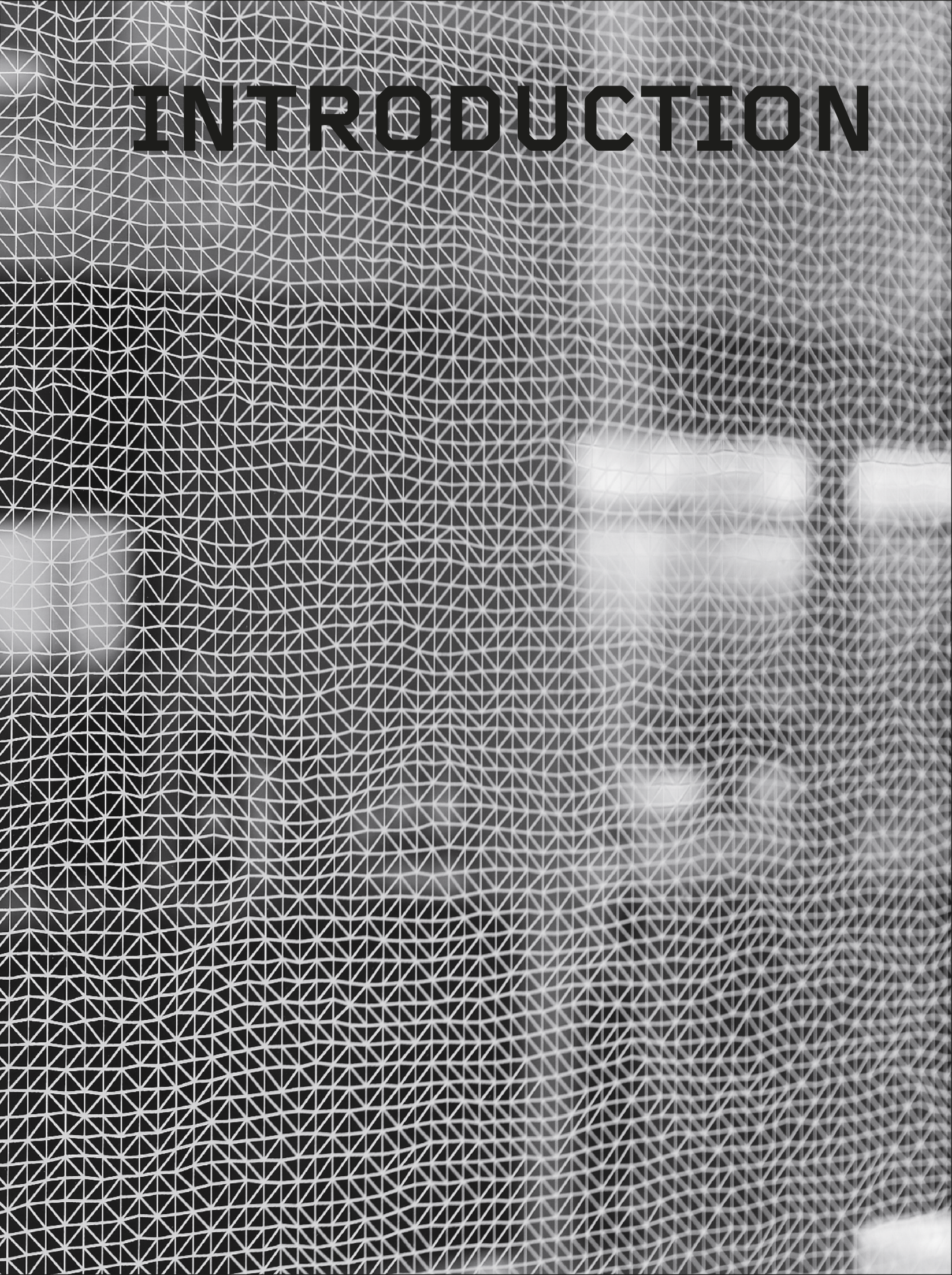
Philippe Samyn
Architect and engineer

Jan De Coninck

LANNOO

CONTENTS

INTRODUCTION



***Architecture is an artistic and technical process aimed at blending the project owner's 'grand design' with the* genius loci.**

An exceptionally complex process, it involves intensive teamwork, with all participants – the project owner, project designers and contractors – invited to pool their skills and personalities in favour of the 'grand design'.

And the architect's role? Working like the composer of a musical score and the conductor of the orchestra playing it, it is his responsibility to blend the functional, technical and artistic aspects, integrating and coordinating the different works with a view to achieving the final goal: the finished building nestling on its site. This introduction discusses the* genius loci *of the Louvain-la-Neuve site and presents the project as a continuation of my (experimental) work.

THE GENIUS LOCI

Coined by Christian Norberg Schulz[1], the term covers all physical characteristics (orientation, neighbourhood, soil type, topography, flora and fauna, climate, pollution of all kinds, etc.) and intangible characteristics (history, legends, sociology, public or private management, etc.) of the site where the building is to be erected.

Knowledge of the site's genius loci is of vital importance for the project designer, as all its constituent characteristics necessarily influence the project's 'grand design', whether in the form of constraints or opportunities. It is particularly important to identify a site's strengths and weaknesses at the very start of the study phase. A key and not-to-be-underestimated process, getting to know the *genius loci* often involves a lot of time and money.
The *genius loci* of the AGC Glass Building project is closely associated with the spirit of Louvain-la-Neuve, a new city located to the south-east of Brussels.

LOUVAIN-LA-NEUVE

With Professor Michel Woitrin heading the overall project, planning for the new city started in 1968 and was carried out by a multidisciplinary team under Raymond Lemaire (Professor of Art History at the Université catholique de Louvain [UCL]), Jean-Pierre Blondel (architect and town planner, professor at La Cambre [École nationale supérieure des arts visuels]) and Pierre Laconte (economist) and under the watchful and constructive eyes of the UCL authorities.
The foundation stone of the first building (the Cyclotron) was laid on 2 February 1971.

With the theoretical principles at Louvain-la-Neuve explicit and clear, and planning rules understandable and strict, the city quickly became a magnet for architects. I was no exception, and I received a warm welcome there in 1977. Even now, I still feel very much at home there, as do my colleagues.
There is no need to 'play the prince' here[2], a role assigned to the authorities. This gives the architect the chance to concentrate fully on his work[3].

It was Jean-Marc Lechat, head of the Urban Development and Management Department (SPGU)[4] who welcomed me in 1977, guiding my firsts steps in the city under construction. I was given the task of designing two small houses in the Clos des Blancs Moussis in the district of Hocaille.

I will always remember Raymond Lemaire's good-natured rebuff when I showed him the first sketch. Pointing to a lack of modesty, his criticism was so clear that I went straight back to the drawing board. Two days later I presented the new draft, this time earning a radiant smile: *'Mais voilà !',* he said.
This was to be the beginning of a long-lasting collaboration[5], and I was to discover, admire and deeply respect the thoughts of Raymond Lemaire who, as a sort of guardian angel, guided all the architects privileged to work in Louvain-la-Neuve with a well-meaning firmness.

FROM THE CRCSL TO THE AGC GLASS BUILDING

In 1986, Royal Dutch Shell awarded me the task of building its Chemical Research Centre Louvain-la-Neuve (CRCSL (Figure 1 [01/160]). This saw me shuttling back and forth nearly every day between Uccle and Raymond's Heverlee home to lap up, on top of his wise counsel, his inspiration. This was to be practically the last building I designed with a brick or stone facing, in an environment admittedly steeped in postmodernist ideas.

Questions linked to a building's physics led me to question the 'tradition' of thin brick or stone facing and I started to look for a more logical way of enveloping my buildings using lightweight skins of wood, steel, textiles and glass.

In itself, this almost philosophic choice implied a complete questioning of the architectural vocabulary of my facades.

When using a glass facade, calories flirt with light, as light can generate unwanted heat. Reflecting or absorbent glass panes are like high UV-protection sunglasses worn all the time, while clear glass will transform a building into a greenhouse.

In combination with external louvres to ward off the sun, a double skin facade made of glass or textiles fixed to a wood or metal structure attempts to resolve this seemingly insoluble problem by creating a dynamic layer of air[6].

Natural draughts, noise, transparency and reflection, and dust are all factors that have to be taken into account, as well as the use of double skin structures, glass louvres and photovoltaic cells.

The design process itself is modified, with the approximate geometric layout of a brick building superseded by a layout exact to the millimetre, encouraging intense reflection on numbers, dimensions and modules. This increasing design sophistication goes hand-in-hand with developments in computing and design software, as well as those of production robots.

The influence of this new approach to facade design makes itself indirectly felt right down to a building's structural design: stairs

Fig. 1 | 01-160 | Chemical Research Centre Shell | Louvain-la-Neuve | 1986-1992

Fig. 2 | 01-225 | Brussimmo office building | Brussels | 1989-1993

Fig. 3 | 01-286 | Headquarters of Éditions Dupuis | Marcinelle | 1993-1995

Fig. 4 | 01-320 | CNP | Gerpinnes | 1993-1995

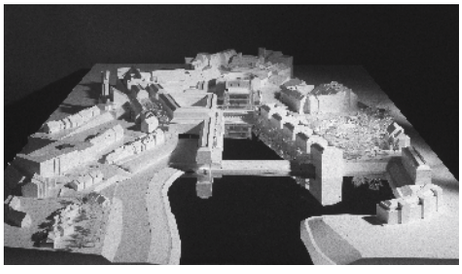


Fig. 5, 6, 7 | 01-297 | Aula Magna | Louvain-la-Neuve | 1996-2001

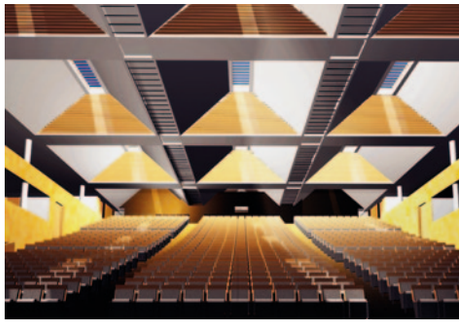


Fig. 8a | Aula Magna | View of the main auditorium | Simulation with natural lighting

Fig. 8b | Aula Magna | View of the main auditorium | Actual implementation

between the facade's two skins, having the building built on piles or stilts, the use of flat-slab mushroom floors, freely expandable structures, steel frame bracing, series of facade overhangs – all such aspects are finding their way into the architect's vocabulary. In retrospect, the constructive simplicity of the AGC Glass Building seems nothing more than the technical conclusion of an already long series of innovations:

DOUBLE SKIN FACADE

A series of ten piles supports the steel skeleton frame of the Brussimmo office block in Brussels at the intersection of Rue Belliardstraat and Rue de Trèves/Trierstraat (Figure 2 [01/225]). Overhanging the ground floor, the double skin facade features an outside skin of Glaverbel 'Stopsol Supersilver Clear' glass mounted on thin aluminium profiles, while the inside skin consists of a wood frame, external blinds and ordinary double glazing.

EXTERNAL LOUVRES

Looking at the headquarters of Editions Dupuis, on Rue Jules Destrée in Marcinelle, we find an outside skin of ordinary double glazing and external louvres, fitted on thin aluminium profiles, and an inside wood-framed skin of single glazing (1993, figure 3 [01/286]).

EXTRA-CLEAR GLASS

Extra-clear glass was used for the first time for the headquarters of the Compagnie Nationale à Portefeuille in Gerpinnes[7] (1993-1995, figure 4 [01/320]). The glass of the opaque sections is white-enamelled on the rear and acid-matte-finished on the front. The use of extra-clear glass for the double skin facade was, however, not really able to reduce the greenish coloration caused by the electrolytic layers intended to reduce the solar factor.
This led me to pay closer attention to this aspect, and I now limit the use of such layers to a strict minimum to improve both light transmittance and the colour rendering index (CRI).

THE AULA MAGNA

This led to the double skin facade of the UCL's Aula Magna, Place du Couchant in Louvain-la-Neuve (1996-2001, Figures 5, 6 and 7 [01/291])[8] being made entirely of almost completely clear double glazing. This was the first building where computer modelling and simulation software were used to calculate the natural lighting, thermal comfort, energy consumption and acoustics, with this work being done simultaneously with the development of the building's architecture[9].
I designed the roof of the 1,200-seat auditorium and stage area to let in natural light between sunrise and sunset, with the plan being to have heliostat mirrors concentrating sunlight on the stage. However, the auditorium's future operator took advantage of one of my trips abroad to order the closure of the windows provided for this purpose – his bad luck! Fortunately the foyer was not obscured! In any case, there is still a chance that this blunder can be corrected and I am sure that this will happen one day. In the meantime, it is just sad (besides increasing the energy bills) that the exemplary

character of this design element is not available to light up the stage – and our minds (Figure 8). Twelve years later, the example of the AGC Glass Building makes this seem even more a crying shame.

LIGHT CONDUCTORS

What a contrast to the Polar Foundation building in Toronto (2004, Figure 9 [01/477]). Here, the project owner, well aware of the importance of such issues, had no problem with my proposal to 'innervate' the wooden columns, using optical fibres to distribute natural light harvested by parabolic collectors on the roof.

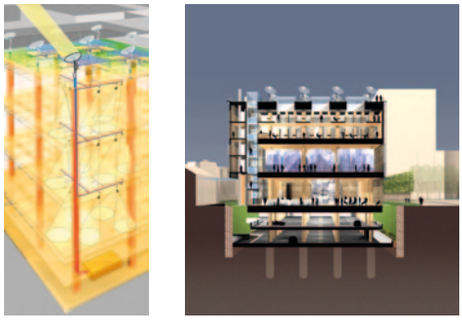


Fig. 9 | 01-477 | Fondation Polaire | Toronto (Canada) | 2004

ANIDOLIC REFLECTORS

This quest for natural light quite naturally led me to propose the use of light shelves. For the first time in 1997, anidolic reflectors (developed by Raphaël Compagnon at the Ecole Polytechnique Fédérale de Lausanne) were dogmatically included in the refurbishment plans for the offices of the Caisse des Congés du Bâtiment on Boulevard Poincarélaan in Brussels. This feature also enabled us to model the facade in harmony with its existing neighbours (Figure 10 [01/351]). Unfortunately, despite the incredible performance of the system, as demonstrated by Peter Wouters and his team at the BBRI, this way of using natural light did not convince the project owner.

Fig. 10 | 01-351 | Caisse des Congés du Bâtiment | Brussels | 1997

LIGHT SHELVES

In 1998, my second attempt in this field, involving the office building at the intersection of Avenue de Cortenbergh/Kortenberglaan and Avenue Michel-Ange/Michel Angelolaan and using simple walkways (Figure 11 [01/260]), was so successful that Jan-Piet and Dirk De Nul, visiting the building in 2001, immediately understood its importance and installed it in their new De Tragel offices in Aalst (2002 – 2005, Figure 12 [01/401]).

MIRRORED EMBRASURES

Light shelves are to be found in the bay windows of the refurbished section of Block C of the Residence Palace (Council of the European Union 2005-2015, Figure 13 [01/494])[10]. I here installed light shelves fitted with mirrors above the openings, as well as vertical mirrors in the window embrasures.

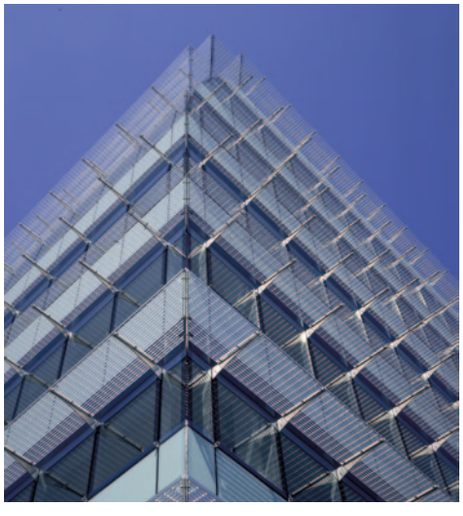


Fig. 11 | 01-260 | Office and apartment building | Brussels | 1991-1998

OTHER EXTERNAL LOUVRES

The use of external louvres has taken on different forms, and two projects in particular inspired their use in the AGC Glass Building. Our proposal, accepted though not yet implemented, for refurbishing the Ente Nazionale Idrocarburi (ENI) headquarters in EUR, Rome (1998, Figure 14 [01/375]) provides for very large mobile panels (3.6 m high and 7.2 m wide) made of clear glass with alternating screen-printed white stripes on the east and west facades. These panels would act both as sunscreens and light shelves.
Then came the refurbishment of a small office building at the intersection of Avenue Marnixlaan and Rue du Trône/Troonstraat in Brussels (2004-2009, Figure 15 [01/489], for which I developed a system of fixed clear-glass louvres to protect the wooden cladding of the refurbished facades.

Fig. 12 | 01-401 | Headquarters of Jan De Nul Group | Aalst | 2002-2005

Fig. 13 | 01-494 | Block C of the Résidence Palace (European Council) | Brussels | 2005-2015

Fig. 14 | 01-375 | Headquarters of Ente Nazionale Idrocarburi (ENI) | Rome (Italy) | 1998

Fig. 15 | 01-489 | Office refurbishment | Marnixlaan | Brussels | 2004-2009

AGC GLASS BUILDING

AGC GLASS started producing its extra-clear Clearvision glass in late 2006. Featuring high colour rendering and light transmittance coefficients, this glass admirably rounded off the components available for sophisticated double skins, louvres and light shelves.

At the same time, my scientific and technical work with Glaverbel (now AGC GLASS) researchers and engineers was developing, creating a spirit of trust between us. Though obviously my primary focus is on developing and perfecting technologies for my projects or the industry, I have rarely been able to benefit from such exceptional trust as found at AGC Glass, and we ended up jointly producing my ENI louvres, a development successfully concluded in the AGC Glass Building.
Though new technological progresses of various kinds now enable us to envisage major improvements to the system and a significant reduction in its cost, this is something to be told at a later date.

Looking at the building's structure, its purity – forgive me for using such an absolute term, but in my mind it is appropriate – owes much to the openness and competence of the teams from the construction company, Van Roey. It is rare to be able to work in such harmony with a company, moreover our client, and I would like to take this opportunity to express not only my gratitude but also my admiration.

Facade and structural concepts are closely linked to a building's physics and to their technical facilities, and the following text is very explicit on this subject.

But architecture is not limited to a building's envelope, its structure and technical facilities, nor can it be reduced to the production of drawings and their on-site execution. Architecture is all about teamwork, and in the case of the AGC Glass Building, this was magnificent, with all those involved constantly interacting with each other and combining their skills to achieve a result exceeding the sum of its parts.

Though the building in question bears my signature, its architecture is the fruit of working with Bernard Van Damme (BEAI), just as its execution is the fruit of my work with Ghislain André (Philippe Samyn and Partners). Andrew Janssens (FTI), responsible for building services engineering, Filip Descamps and Paul Mees (Daidalos Peutz) for the building physics, Ben Verbeeck and Ronny Van Hee (Jan Meijer Engineering) for the structural engineering, are further engineers who greatly contributed to constructing the AGC Glass Building.

Georges Meurant's colour schemes, now a feature of many of my projects, the landscaping work of Erik Dhont who had already shown how well he understood my intentions when he worked for me on the Groenhoven Castle project in Malderen (1997-1999 [01/352]), and the interior design work – in particular the restaurant – of Dominique Hottois and Leslie Maes all harmonize perfectly with the project.

I owe the fact that the building has been realized in a manner so close to my aspirations to Emmanuel Hazard, AGC's father of the 'grand design' (assisted by Michael Jacques de Diksmuide), to Frederic Van Elst representing the investor AXA, and to the general contractor Van Roey under the technical supervision of Ronny Van Doninck, assisted by André Jacobs and Kyo de Fraeye.

Throughout the design and execution phases, the work was carried out with great commitment, with everybody doing their bit. The end-of-work colophon lists all those who, to varying degrees, contributed to the work. I would like to take this opportunity to thank everyone involved.

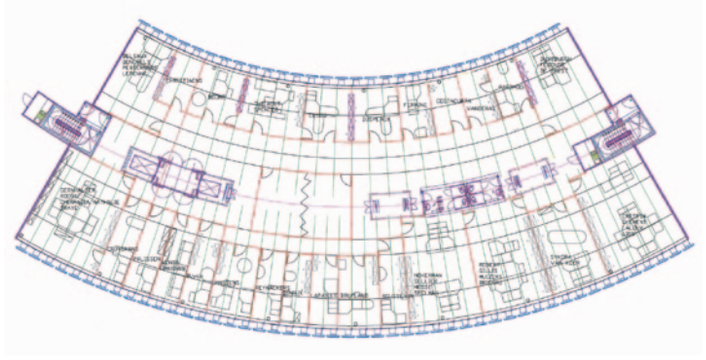
Dr Philippe Samyn, engineer

1 - Christian Norberg-Schutz, *Genius Loci*, Mardaga, Brussels, 1981.
2 - Reading or rereading Niccolò Machiavelli's *The Prince* (1515) helps everyone gain an understanding of their role. There would have been no Pope Julius II without Alexander VI, no Sixtine Chapel, no Michelangelo without Julius II.
3 - In my view, Rudyard Kipling's 1910 poem *If* (either in its original English version or in André Maurois' masterly translation from 1918) represents the perfect road map of this craftsman, in the twilight of his life, recalling what his father had said to him years ago: '… you'll be an Architect, my son!'
4 - Jean-Marc Lechat, *Naissance de Louvain-la-Neuve. Chronique d'une aventure entrepreneuriale* (Presses Universitaires de Louvain, 2006).
5 - Below is the complete list of my designs and built projects in Louvain-la-Neuve to date:
Two houses, Clos des Blancs Moussis (1977-1978; 01/034). Four houses, Clos de la Houssière (1977-1979; 01/044). Design for four houses, Clos de l'Argayon (1978-1980; 01/052). Design for three houses, Clos des Molons et Tchantchès (1978-1979; 01/054). Chemical Research Centre Shell Louvain-la-Neuve CRCSL (1986-1988; 01/160), extension 1 (1990-1991; 01/244), extension 2 (1990-1992; 01/247), extension 3 design (2001; 01/418). Nissan European Technology Centre NEOS (1991-1992; 01/255) and extension (1992-1994; 01/280). Design for the Elastomer Systems research centre (1991; 03/204). Aula Magna (1996-2001; 01/291). Planning studies for the Grand-Place – Lac area (1996-2003; 01/268). Sculpture for NEOS (1993; 01/292). Extension of the Albemarle laboratories (1997-1998; 01/349). Design for the Fina filling station, Boulevard de Wallonie (1996; 01/345). Design for the cinema complex, Grand-Place (1997; 01/358). Designs for the Louvain-la-Neuve Musée du Dialogue (1998, 1999-2001, 2005-2006; 01/376). Design for the NEOS extension (2008; 00/543). Design for the IBW office block, Boulevard Baudouin 1 (2009; 01/558). AGC GLASS EUROPE (2011-2013; 01/577). New design for the NEOS extension (01/590).
6 - Lying on a beach in the sun, how high does a sheet of glass need to be placed for the greenhouse effect no longer to be felt due to the breeze?
7 - Rodolphe El Khoury and Marc Pasnik, *Groupe Frère CNP Headquarters, by Philippe Samyn* (Princeton Architectural Press, New York, 2004).
8 - Its cuboid shape and its location are the result of the urban plan for the city's West Zone, between the Grand- Place and the Lake, which I designed together with the Aula Magna, again under the watchful eye of Raymond Lemaire. The sketch earned me a second *'Mais voilà !'* when I showed it to him on 28 December 1996 (Figure 6). The Aula Magna was designed for the ground plan featured in Figure 7, with its forecourt facing north-east towards the Grand-Place, the rectangular square to the north-west, and its trapezoidal lake bordered by buildings to the south-west. The area remains relatively isolated, bordered to the south and north-west by car parks, a road and a pedestrian bridge, and to the north-east by the foundations of the former Musée du Dialogue, which will one day be used otherwise, thus making a square out of what is somewhat presumptuously called Place Raymond Lemaire.
9 - Already in conjunction with Filip Descamps and Paul Mees from Daidalos Peutz and with Peter Wouters from the BBRI. See also Philippe Samyn and Yves Avoiron, '"La Grande Aula" de l'UCL à Louvain-la-Neuve' *(Bulletin de la Classe des Beaux-Arts,* Royal Academy of Belgium, 6th series, vol. 12, 2002, pp. 99-162).
10 - Jean Attali, *EUROPA. Conseil européen et Conseil de l'Union européenne*. Philippe Samyn, architecte et ingénieur (Editions CIVA, Brussels; Lannoo Publishers, Tielt; 2013).

CONTEXT

1

The Glaverbel Building, 1964-1967, Brussels Architects: Renaat Braem, Pierre Guillissen, André Jacqmain and Victor Mulpas (photos 2014.03.18)



Typical floor plan: fragment of the first floor, sector B, situation on 10 November 2009. Each floor is 22 m deep. Natural light only penetrates to a depth of 5 to 6 m. Consequently, there is a darker zone some 10 m wide in the middle of each floor. The layout with enclosed work areas means that much space is lost through the need for corridors and circulation areas.

Photos of the enclosed work areas: situation in June 2009

GLAVERBEL AND AGC GLASS EUROPE

Glass manufacturer Glaverbel was founded in 1961 by the merger of Belgium's two largest producers of flat glass at that time: Glaces et Verres (Glaver S.A., founded in 1931) and Union des Verreries Mécaniques Belges (Univerbel S.A., founded in 1930)[1]. In 1981 Glaverbel in turn became part of the international AGC group (Asahi Glass Company, Ltd), the world's biggest manufacturer of flat glass. In 2007, AGC decided to introduce a single global name for all the different companies in the group, and so Glaverbel became AGC Flat Glass Europe. The name of this European operation was changed in 2010 to its current name, AGC Glass Europe.

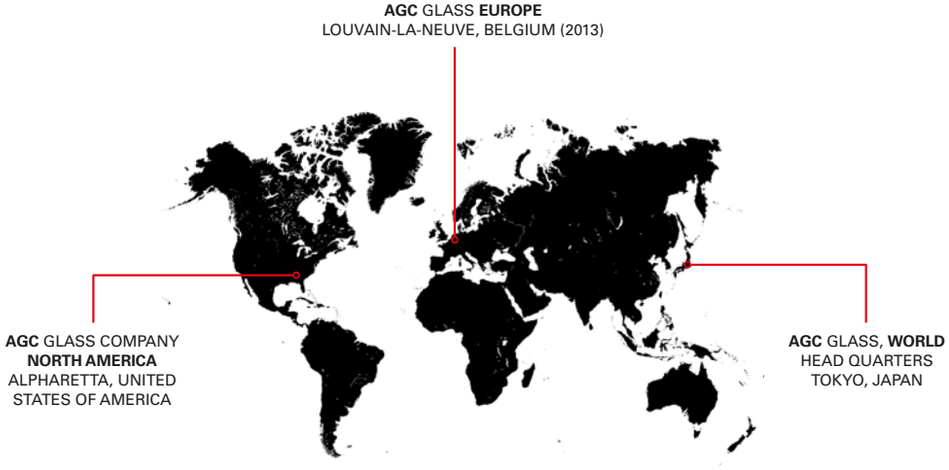
AGC Glass Europe manufactures, processes and distributes flat glass for the building sector (both for exterior glazing and internal uses), the car industry, the solar heating industry and other specialized industrial sectors. Today, the company employs some 14,000 people worldwide. AGC Glass Europe has its own research and design centre, and more than 100 production units throughout Europe, from Spain to Russia.

The headquarters of AGC Glass Europe were originally located on Chaussée de La Hulpe/Terhulpsesteenweg in Brussels. This is the well-known Glaverbel Building. AGC's leasing arrangement for the building came to an end in 2013. With this in mind, in 2009 a thorough audit was carried out with Progema. The different aspects of the company were examined: finances, organization, communication, efficiency, etc. On the basis of these parameters, several scenarios were developed for a move to one or more new premises. The locations of the other AGC offices and production units were also investigated to assess their relative advantages and disadvantages. The audit examined the structural configuration and internal organization of each unit. It also looked at the way the different departments at the various locations communicated with each other.

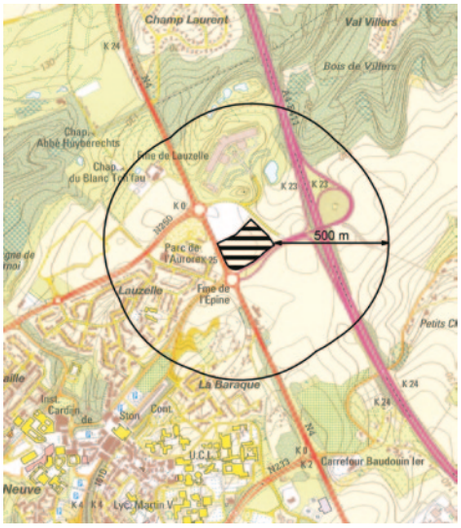
It was concluded that the organization of the 'old' offices had not evolved to keep pace with changes in modern communication technology and contemporary methods of working. As a result, internal communication among staff and among management of the different units was more difficult than it needed to be. In addition, more and more of the company's employees were working from home or 'on the road', so that expensive office space was not always being used efficiently. These offices were not compact, nor were they optimally organized. Too much circulation space and too little light were common factors identified at the different locations. It was also established that energy use was consistently high.

In the first place, this analysis was a useful support tool in the search for new premises and led to the translation of AGC's needs into a specification based on the conclusions of the audit.

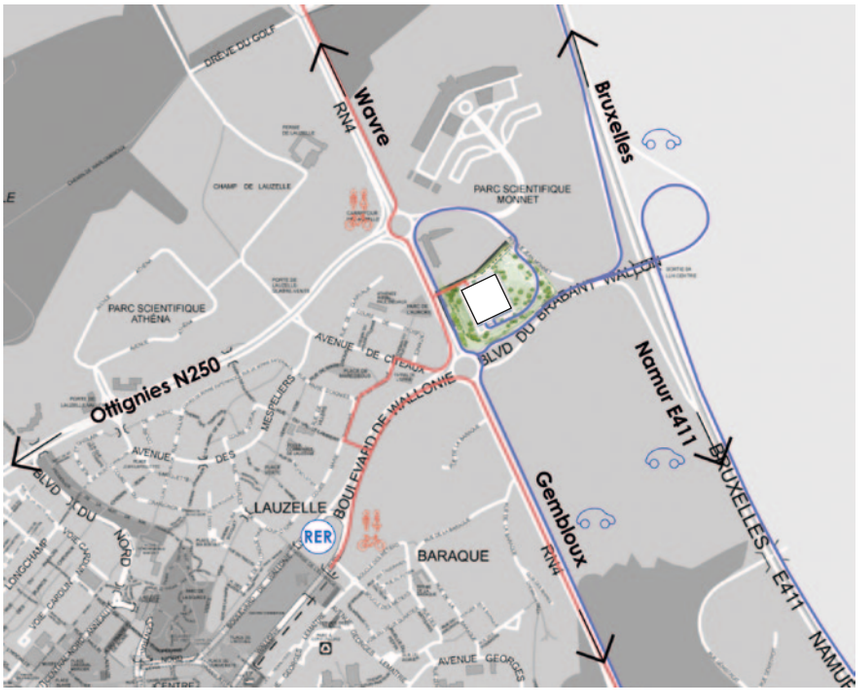
1 - Francis Poty and Jean-Louis Delaet describe the history of the glass industry in Wallonia in their book *Charleroi, Pays verrier* (Éditions La Centrale Générale, Charleroi, 1986).



Site of the future Louvain-la-Neuve, Ferraris map, 1777 Plates 95B and 96B



National Geographic Institute, topographic map Ottignies – Louvain-la-Neuve no. 40/1 south, 2002



Accessibility of the site

AGC GLASS EUROPE AND LOUVAIN-LA-NEUVE

On the basis of these conclusions, the European and global management of the AGC Group decided to leave the existing headquarters on the Chaussée de La Hulpe/Terhulpsesteenweg in Brussels and search for new premises elsewhere. It was further decided to make use of this opportunity to centralize in a single building the various departments of the headquarters that were currently spread over several locations (Fleurus, Mechelen, Mont-Saint-Guibert, Lodelinsart, Hoeilaart, Brussels). The prime condition was that the new building must make possible the implementation of the audit's conclusions. This meant that the working areas had to enable efficient and compact organization (in part, by limiting the number of individual workstations); that the annual cost of energy consumption must be significantly reduced; and that an improvement in internal communication between the different departments must be facilitated.

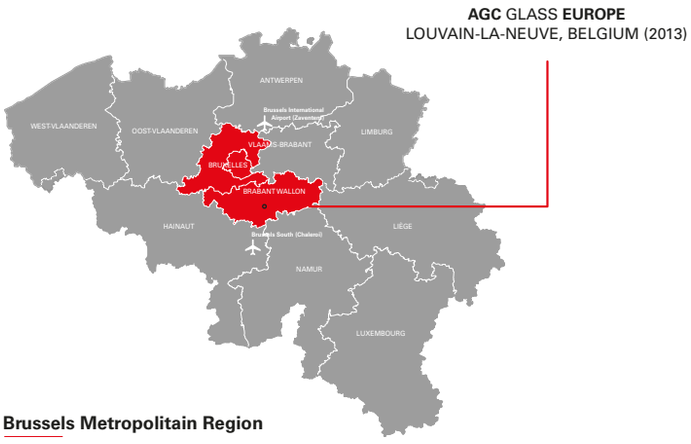
The search for a suitable existing building proved fruitless. No building could be found that complied with the requirements of the audit report. It was consequently decided to search instead for an appropriate piece of land and construct a new purpose-built headquarters. The choice fell on a parcel of waste ground near the site of the Université catholique de Louvain.

Both highly visible and accessible, this land was on one of the main roads into Louvain-la-Neuve, adjacent to the university campus. From a strategic perspective, the site had several major advantages for AGC.

Louvain-la-Neuve occupies a central location in relation to AGC's production centres in Belgium and is also the gateway to the Brussels Metropolitan Region. To facilitate regular contact between staff in the headquarters and staff in other operational units throughout Europe, it was necessary for the new building to be close to one or more airfields. The chosen site is within easy reach of Belgium's two most important international airports: Brussels Airport (Zaventem) and Brussels South Charleroi Airport. The distance to either airport is just 45 km.

Moreover, the general accessibility of the site is also good. It is just 800 m from the E411 motorway between Brussels and Luxembourg (exit 8a), at the junction with two other important regional roads: the N4 and the N25. Connections with the public transport network (bus, train and the Brussels Regional Express Network) are just a stone's throw away (300 m), and the centre of Louvain-la-Neuve is within easy walking distance (10 min.). Facilities for cyclists are also good.

Last but not least, the culture of the general surroundings was another major asset. The site is located in the Louvain-la-Neuve Science Park, which seeks to bring together companies that are actively engaged in research and the pursuit of excellence. The adjacent sites are currently occupied by the Monnet Centre (the former Shell research centre, which is now subdivided into distinct private laboratories) and Sedilec (an interregional authority for the supply of gas and electricity). The proximity of the university also stimulates the exchange of knowledge and makes it possible to attract young, dynamic and highly-qualified new recruits.



Brussels Metropolitain Region

AUTHORS
Ir arch. Jan DE CONINCK
Dr Ir Filip DESCAMPS
Georges MEURANT
Dr Ir Philippe SAMYN arch.

ENGLISH TRANSLATION
Ian CONNERTY from the Dutch: texts pp. 23, 25, 28, 29, 30, 31-32, 47, 53, 69, 81, 93-98, 107-129, 217.
Richard LOMAX from the French: texts pp. 14-19, 39-43, 57, 137-145, 149-151, 157-165, 171-177, 181, 183, 187-201, 203-211, 215, 219, 224-225, 252-255.

REVIEW
Philippe SAMYN and PARTNERS, architects and engineers
Ir arch. Andrew JANSSENS
Denis MELOTTE
Patrick LENNON

CONCEPT OF THE BOOK
Jan DE CONINCK

GRAPHIC DESIGN
Jan DE CONINCK and
DOJODESIGN.eu

This book is also published simultaneously in Dutch (ISBN 978-2-87386-883-3) by the same publisher and in French (ISBN 978-2-87386-882-6) by Racine.

www.lannoo.com
Register for our newsletter to receive information regularly on our publications and activities.

D. 2014, 6852. 13
Registration of copyright: May 2014
ISBN 978-2-87386-884-0

Printed in Belgium