↑ Ice and snow form sculptural forms on the church facades, due to heat-loss through the thin concrete vaults.
← The eastern facade in 2012. Physical deterioration, plaster cracking and deformed copper eaves on the facades.

THE CHURCH OF THE THREE CROSSES IS AT RISK

スリークロス教会は今危機状態に

アルヴァ・アアルトの後にスリークロス教会と名付けられたVuoksenniska教会はフィンランドの近代建築の中で最も重要な建造物と言われている。国際組織であるドコモモはこの教会をフィンランドの近代建築の注目すべき建物として位置づけこれを選定した。１９６９年初頭に制定された町の計画にはこの教会の置かれている場所の保存条項が明記されている。“現存しているこの建物は建築学的にみて重要であり建設当時の外観、内装及び意匠などについての改造、修繕やペンキ塗装などはしてはならない。小規模の修理においても建築委員会の承認が必須”とある。

正式な保存条項があるものの今の教会の状態はこれを反映しているものではない。教会の主たるホールおよびエントランスロビーの内部は当時のままであるもののファサードの劣化は著しく、特に教会の南側の湿気による傷みは床から天井まで及んでいる。

教区民は修理の為の費用を生み出す必要に迫られている。学際的な保全の専門家が原因を特定し、問題は構造的かつ建築材料にありと判断し保護の必要性を説いている。そして適度でありながらも十分な現実的解決方を計画し、試みた。しかしながら、Imatra教区民行政部は修理費用の捻出ができず外部の支援を仰ぐ運びとなった。

1 The Church of the Three Crosses was protected on 25.2.2003 under the Church Act. In accordance with the Church Act, protection is carried out jointly with the National Board of Antiquities. A statement from the National Board of Antiquities is requested for each measure regarding notable alterations.

A UNIQUE 1950’S CHURCH IN BOTH CONCEPT AND DESIGN

発想とデザインこの両面からみてもユニークな１９５０年代の教会

この教会はImatraの教区員によって建てられたものでVuoksenniska の産業及びここに住む地域住民と社会の為のものである。ただ単に宗教的な儀式のためだけのものではなく、全ての教区民の為にスポーツを含む様々な活動に使われている。

スリークロス教会の建築は、機能重視の観点から自由と秩序が融合されたものになった。教会の設計にあたり異なる使用を構想し空間を３つに分け波打つ様なコンクリートの骨組みを作りそれぞれに西向きの入り口を設けた。３つの空間は大容量のモーター使用の可動壁で仕切られ個別にも統合した形での仕様も可能となっている。
内部には若干の変更が加えられたのみである。　手直しはオルガンとオルガン用のバルコニーで、地下にある台所と隣接する貯蔵庫は僅かな変更のみである。
エントランスロビーにはバリアフリーの入り口を設けたトイレが後付された。

FORMS WITH EMOTIONAL POWER

情緒的な力をもつ外形

ファサードはレンガに白漆喰をぬり、屋根は銅板である。支持構造はレンガの組積壁と薄いコンクリートのボールトで作られた。屋根は有機的な形で柔軟性のある壁が徐々に屋根のスラブ部分に変形する形で収めてある。ピロティはほぼ壁の中に収まっている。

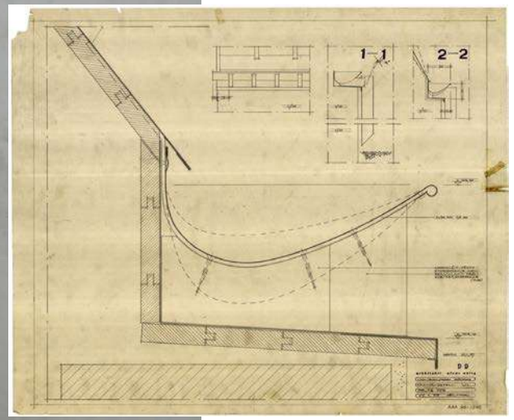
現代的な趣の強いデザインではあるものの中世から伝わる伝統的なノルディック教会の特色が塔、聖具室、後陣や聖歌隊席などに多く取り入れた作りになっている。西側の入り口は伝統的な武器庫のような設えである。

入り口は高さを低く抑えてあり形は四辺形ではあるが、教会の３分割出来る内部は起伏にとんだ伸びやか且つダイナミック空間になっている。これとは対照的なのが塔であり形は流線型で、近在の工場の建物と競うように屋根から突き出ている。この塔は建物の地下の土台部分に使用された大量のコンクリートのみで支えられている。

↑ The window sills and copper gutters have been deformed by ice and snow on all facades, but the eastern facade has the most challenging forms.
← View from the church tower.

← The copper eaves on the eastern facade as found in November 2013. It had been altered, possibly due to repeated icing problems and deformations. This part of the roof eaves was chosen to make a tentative repair of the gutter in 2016.

↓ The copper eaves and gutter as shown on the original working drawing number 173 by Aalto on 25th of January 1957. © Alvar Aalto Foundation



THE CHURCH NEEDS REPAIR

教会には修理が必要

このスリークロス教会はル・コルビュジエの代表作と言われるロンシャンのLa Chapelle Notre Dame du Hautと比べられてきた。残念ながら今ではこのアアルトの傑作建築も湿気による問題に直面している。教会の白のファサードは松の幹の間から輝いて見えるのだが近くに寄るとその素晴らしさは薄れてしまう。

教会が建設されたのは１９５７年でそれ以降ファサード部分は北欧の早いサイクルで繰り返される氷結と融解にさらされ続けてきた。教会の塔の部分は建設当時には白色で美しかったが、劣化が進んだため１９７８年コンクリートの吹付け作業を行った。最近まで当初滑らかな下塗りがなされていたファサード部分の、再下塗りおよび再塗装が行われてきた。

アルヴァ・アアルトは銅板をはった屋根の下の空間を次の様に説明した“空気の断熱層”であると。しかし換気は機能しなかった。３つのホールに使用した厚みの薄いコンクリートのボールトから熱が逃げだし、そのために氷結と融解が周期的に起こり続けるのであった。ファサード東側の曲線部分は冬になると毎年氷の彫刻が出現する事態となっている。

銅葺きの屋根は雨漏りし、銅のひさしは変形し、ファサードのプラスターは剥げ落ちこれは全て湿気が原因である。板状の銅の屋根のといの下からむき出しのレンガが見える。ファサードの外観維持のための修理は年中行事であると教区員の聖具保管係は言うのだが湿気の問題の解決にはならないのである。

← The facade plasterings have been cracking on the outside since the church was built, but in 2018 pictures the moisture damages have bevcome visible on the inside walls as well. © Alvar Aalto Foundation/ Pinja Eerola 2018.

← The eaves on the eastern facade after a tentative reparation in November 2015. The aim was set to restore the form of the roof as well as to open a proper ventilation gap, which had been neglected in the earlier repairs as well as in the original construction. © The Imatra Parish/ Jari Nousiainen

→ A new copper lattice was added to North-Eastern corner to enhance ventilation under the copper-roof.

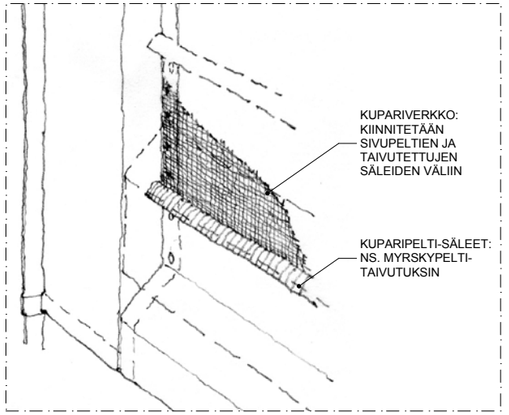
WHAT HAS BEEN DONE SO FAR?

いままで何がなされてきたのか？

大規模の手直しは行われなかった、そして修理、修繕はファサードには行ったものの修正は僅かでしかなかった。例えば、当初から使用されていた縦樋は修理が施され新品と交換され、西側ファサードに設置された入り口のキャノピーは作り変えられ、また屋外の照明装置は取り除かれたなどだ。

壁にひび割れ、軒の銅の樋の変形を目の当たりにして教区員が動いたのが２０１３年のことである。この問題解決にあたり保存の為の諮問グループを立ち上げ劣化調査及び対策を施す試みを２０１３年から始めることとした。２０１３年から２０１７年の間教会の状態を把握し、歴史的な観点からの調査がおこなわれ、且つ計画上の施策が有効可否か判断するために試験的な修理が施された。

↑ Endoscopy of the roof structures by engineer Heikki Möttönen in May 2013.



２０１６年から２０１８年には地下に置かれた台所とトイレの換気と湿気問題の解決のための修理が、地下部分、西と南側の入り口、そしてコートヤードの雨樋などの部分に対して行われた。

調査の結果、湿気問題が建設当時からある排気システムにもある程度原因があることが判明した。それは内部の空気が教会ホールから直接屋根に向けて漏れ出ることにあるのだと。すなわちホール内の空気の通り道が不十分である上、当初からの空気排出システムが“３０年以上もの間”機能していなかったのだと、インタビューに対して教区員の聖具保管者Pekka　Tirronenは答えた。

２０１６年には一時的な処置としてこれ以上の問題を起こさないために排気機能を取り付けたのであるが、これは教会の３つのホールに対しだけであった。

↑ Between 2016–2018 the southern entrance granite slabs were removed, and the concrete slabs underneath were recast and moisture insulated. Water had been flowing through under the treshold cut in stone.

→ The facade in December 2018. One of the original courtyard light fixtures in copper was repaired and re-installed on the courtyard wall. © Alvar Aalto Foundation/ Pinja Eerola 2018.

↓ The facade moisture end temperature changes have been monitored by the parish since 2013. The repairs have dimished moisture in the cellar.

↓ Degraded concrete had grown calcium carbonate stalactites beneath the concrete slabs. This is a result of calcium hydroxide being leached from concrete.

↓ Between 2016–2018 the western entrance slabs have been removed, the concrete structures recast and moisture insulated.

WHAT NEEDS TO BE DONE TO SAVE THE CHURCH?

これから何をすれば教会を救うことができるのであろうか？

教会存続のためには屋根の修理は必須である。気候変動により将来のメンテナンスを行うのは容易なことではない。

屋根の軒と樋は全体的な修理が必要であり排気機能の強化もおこなわれなければいけない。建設当時のディテールをもとにその後付け加えられた変更は建物とその構造機能に対しての妥協案でしかなかったことを考えた上で再建する。
屋根が元に戻った時点で、修理が必要なレンガ作りのファサードの修理を行うこととする。

当初からの排気システムは新しい物に変更、これに熱回収用のユニットも取り付けるものとする。

２０２０年１月２６日

Niina Svartstrom　建築家

→ The eastern facade in February 2015.

↑ Ice and snow form sculptural forms on the church facades, due to heat-loss through the thin concrete vaults.

← The eastern facade in 2012. Physical deterioration, plaster cracking and deformed copper eaves on the facades.

THE CHURCH OF THE THREE CROSSES IS AT RISK

Architect Alvar Aalto's Vuoksenniska, later named the Church of the Three Crosses, is among the most significant buildings of modern architecture in Finland[1]. The International organisation DOCOMOMO has included the church in its selection of notable sites of Finnish modern architecture. A strict conservation clause has been stipulated for the building area of the church in the town plan that was ratified as early as in 1969: "the existing building, which is of architectural significance, must not be altered or repaired, painted, etc., such that its original exterior, interior or character changes. Even for minor repairs, permission must be sought from the Archaeological commission."

In spite of formal conservation clauses the church's present condition is a challenge to its preservation. The main interior spaces, such as the church halls and entrance lobbies are virtually in their original state, but physical deterioration is visible on the facades, and a severe moisture problem concerns the southmost church hall from ground to roof.

The parish is needs funding to carry out repairs. The causes of the problems have been identified by a cross-disciplinary group of conservation professionals through an analysis of structural and material deficiencies and conservation needs, and a combination of moderate but sufficient practical measures to solve the problems has been planned and tested. Imatra Parish administration has still not been able to provide funding for the repair costs and is now looking for any external support.

1 The Church of the Three Crosses was protected on 25.2.2003 under the Church Act. In accordance with the Church Act, protection is carried out jointly with the National Board of Antiquities. A statement from the National Board of Antiquities is requested for each measure regarding notable alterations.

A UNIQUE 1950’S CHURCH IN BOTH CONCEPT AND DESIGN

The church was built by the Imatra parish, to serve the Vuoksenniska industrial and residential community surrounding it. The modern church would not only serve the community as religious ceremonial space, but also welcome all parish members to enjoy other activities, even sports.

The architecture in the Church of the Three Crosses - a synthesis of free and ordered form - is tied to these clear functional ideas. It’s envisioned multiple functions have inspired the architect to design a combination of three spaces under an undulating concrete shell, with their respective three entrances opening to the west. These spaces can be separated and united again to form one large church-hall, with large, motor-driven sliding walls.

Only a few actual changes have been implemented in the interiors. Alterations to the organ and organ balcony, and minor alterations in the kitchen and adjacent storage in the basement have been carried out. A barrier free entrance toilet has been added to the entrance lobby.

FORMS WITH EMOTIONAL POWER

The facades are white-plastered brick, the roof is sheet-copper. The bearing structures are brickwork walls and thin concrete vaults. The roof is organic in form, as the plasticity of the wall is gradually transforming into a roof slab. Pilotis are mostly hidden in the walls.

Behind an apparently modern design many traditional features of nordic churches since the middle ages can be identified – the tower, the sacristie, the absid, the choir. The western entrances remind us of the traditional weapons-room.

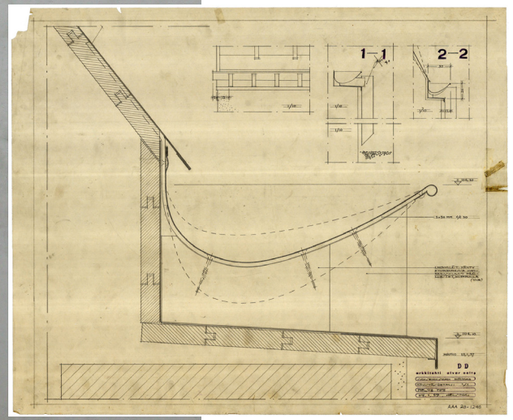
The entrances are rather low and quadrangular in form, while the three-parted church hall has undulating plastic dynamics. The tower in contrast is strikingly streamlined and rises over the treetops to challenge the industrial landmarks in the area. The tower stands only because it has an impressive foot of concrete underground.

↑ The window sills and copper gutters have been deformed by ice and snow on all facades, but the eastern facade has the most challenging forms.

← View from the church tower.

← The copper eaves on the eastern facade as found in November 2013. It had been altered, possibly due to repeated icing problems and deformations. This part of the roof eaves was chosen to make a tentative repair of the gutter in 2016.

↓ The copper eaves and gutter as shown on the original working drawing number 173 by Aalto on 25th of January 1957. © Alvar Aalto Foundation



THE CHURCH NEEDS REPAIR

The church of the three crosses has been compared with such masterpieces as La Chapelle Notre Dame du Haut in Ronchamps2 by Le Corbusier. Unfortunately, today the architectural masterpiece by Aalto also suffers from moisture issues. Its white facades are glimmering between the pine trunks, but give less splendid an impression when having a closer look.

Its facades have been challenged by the nordic climate and an accelerating cycle of icing and melting since the church was built in 1957. The church tower, which was originally fair-faced concrete, was spray-concreted in 1978 in order to halt its deterioration. The smooth rendered facades of the church have been re-painted and re-rendered again until recently.

Alvar Aalto describes the cavities under the sheet-copper roof as “The insulating layers of air” - and yet they are not ventilated properly. Combined with heat-loss through the thin concrete vaults of the three church halls there is a continuous melting and icing –cycle. The ice gathers every winter to form somewhat sculpturous forms on the east façade curves.

The copper roofing is leaking, the copper eaves are deformed and the facade plasterings are cracking, because of moisture issue. Some nude bricks are visible under the sheet-copper gutters. Cosmetic repairs are a nearly annual task in maintaining the façade, said the parish sacristan, but they do not solve the moisture issues.

2 It was published in the Finnish Arkkitehti-lehti 9/1955 articles by Aulis Blomstedt, Pater Jean Paillard and Pentti Ahola (pictures) - describing it to be “sensational”.

← The facade plasterings have been cracking on the outside since the church was built, but in 2018 pictures the moisture damages have bevcome visible on the inside walls as well. © Alvar Aalto Foundation/ Pinja Eerola 2018.

← The eaves on the eastern facade after a tentative reparation in November 2015. The aim was set to restore the form of the roof as well as to open a proper ventilation gap, which had been neglected in the earlier repairs as well as in the original construction. © The Imatra Parish/ Jari Nousiainen

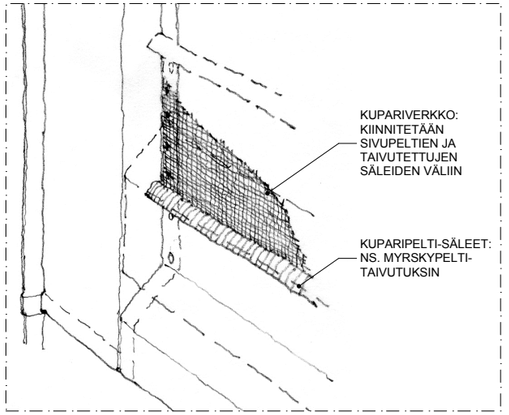
→ A new copper lattice was added to North-Eastern corner to enhance ventilation under the copper-roof.

WHAT HAS BEEN DONE SO FAR?

No major alterations have been carried out, and the fixes and repairs carried out over time are only visible in the facades as minor alterations. For example, the original downpipes have been repaired and new ones have been added, the entrance canopy on the west façade has been altered and original exterior lamps have been removed.

The cracking on the walls and the deforming copper gutters on the eaves finally caused the parish to react in 2013. In response to their concern the parish gathered an advisory conservation group to investigate the damages and plan thorough repairs from 2013 on. Between 2013–2017 the church condition has been studied, a building historic survey has been composed and important tentative repairs have been carried out to test the efficiency of the planned measures.

↑ Endoscopy of the roof structures by engineer Heikki Möttönen in May 2013.



Between 2016–2018 the basement and western and southern entrances as well as the courtyard rainwater draining installations have been repaired to solve ventilation and moisture problems in the basement kitchen and toilet facilities.

According to investigations the church's original ventilation system has also played a crucial part in the moisture issues. Indoor air has leaked directly into the roof space above the church halls. The air supply routes in the church halls have been insufficient, and the air extract system with its original ventilation units have been out of order "for thirty years or so", according to the parish sacristan Pekka Tirronen interviewed in 2016.

A temporary ventilation arrangement has been installed in 2016 to prevent further damages, but it only serves the main halls.

↑ Between 2016–2018 the southern entrance granite slabs were removed, and the concrete slabs underneath were recast and moisture insulated. Water had been flowing through under the treshold cut in stone.

→ The facade in December 2018. One of the original courtyard light fixtures in copper was repaired and re-installed on the courtyard wall. © Alvar Aalto Foundation/ Pinja Eerola 2018.

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↓ Between 2016–2018 the western entrance slabs have been removed, the concrete structures recast and moisture insulated.

WHAT NEEDS TO BE DONE TO SAVE THE CHURCH?

The church roof will have to be repaired in order to preserve the church. Climate change will not make manutention easier in the future.

The roof-eaves and gutters need to be repaired in their entirety and provided with ventilation gaps. Some later changes need to be rebuilt according to original details, as they have compromised both the architecture and constructional function. When the roof is secured, the presently damaged brick-facades can be repaired and replastered.

The church's original mechanical ventilation system will have to be renewed and a possibly a heat-recovery unit added to it.

26.1.2020

arkkitehdit mustonen oy / Niina Svartström, Architect

→ The eastern facade in February 2015.