A conversation with the architect Øyvind Almaas

Onkel Eriks vei 2A, Monday 25 February 2019

-I personally think that one of the greatest things an architect can achieve is to integrate the construction as part of the architecture, as an inseparable part of both the aesthetics and the spatial qualities.

-It is very nice that you have come as an angel from above and pointed out exactly what I have been striving for as an architect. And not all buildings are protected! At least not all buildings that to this degree do not, what should we say, have Architecture with capital A as a goal. We worked from the point of view of function! This means that you can also build buildings only based on the function they are supposed to have, and that the resulting expression still can become a cultural expression that is worthy of preserving.

-Are you saying that when you designed this building, you didn't think it should also be beautiful?

-No.

- It was pure function?

-Yes. Aesthetics weren't allowed. We cut them out! Almost everywhere, there are many examples of that. But then you can ask yourself, who were "we" who designed this building?

-Yes, I'm very interested in hearing this story from the beginning.

-Tore (Tore Kleven, 1938 - 2007) had a background working for Sverre

Fehn (1924 - 2009). Odd (Odd Østbye, 1925 - 2009) was nine years older than me, he was the same age as Sverre Fehn. Now it's only me who is still alive and the only one who knows what we were thinking when we designed this building. As a friend of mine at the Directorate for Cultural Heritage said "you are a first-hand source, and we do not have that for many buildings that are protected, they are all stave churches".

-Can we take the story from the beginning? As I understand it, you worked for the city architect?

-What do you know about the building? Maybe we can start with that?

-Absolutely. Me and a fellow student did a case study of the Laboratory Building in the course we are currently taking. We were going to analyze a building with an interesting construction, and I proposed this building. So what I do know is that the client was the City of Oslo, and the assignment was a pathology laboratory building for Ullevål Hospital, and that it's still functioning as that today. And now the building is protected, the exterior structure and facade. Then we did an analysis of how it's constructed, which are two rows of columns cast in situ, on the outside of the facade. And then transverse concrete trusses resting in between the columns, and the trusses were prefabricated.

-No, they're also cast in situ, unfortunately.

-Okay. But they are resting in-between the columns. The height of the truss is about 2.5 m, and this height forms the so-called 'service floor'. And that is

what frees up the whole plan of the floors between the trusses, which are the operational floors. And then there are the cores at each end and the stairwells on the side that support the building. That's what I know.

-Yes. Did you find that out, or how ..?

- We figured it out. But we weren't focused on the low block at all. Maybe it is more interesting than we assumed?

-It's a kind of supplemental building, it is related to the other. It is an example of that way of thinking.

-Okay. And you drive down underneath it?

-Yes, it's because of the special use of the building, the dead bodies are transported here. There is an autopsy room in the basement, and then there's a chapel next to it. One Muslim and one other.

-But are the plans really free? Or do some cores for water and drains run vertically through the building in fixed places?

- No, no cores. 18 x 120 meters without anything. And everything is fed from the top down, except the drains. Gravity takes the dirty water down to the floor below.

-So you can have toilets and sinks anywhere?

-Yes! Within a system. Because you have to drill holes to take pipes down, and that can only happen in certain places. You can't drill directly over the truss girder, there are certain zones where you can drill.

-But you can drill anywhere between two truss girders?

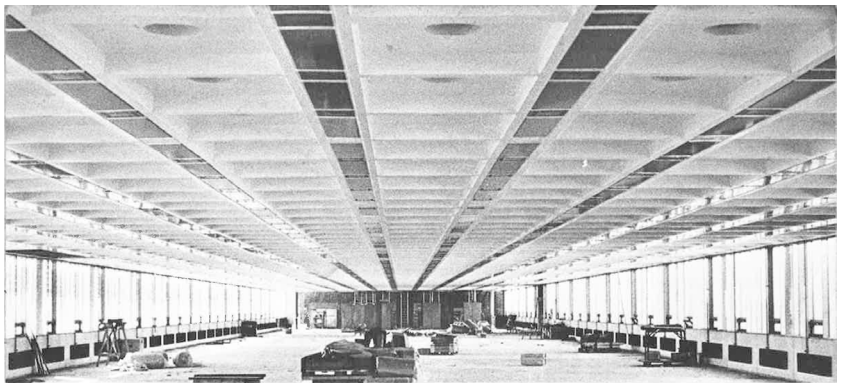
-Yes, there is a drawing of all this. Between each girder there is six meters, which means that the modular wall system is offset 1.5 meters in relation to the structure, so that there is never a wall where the girders are.

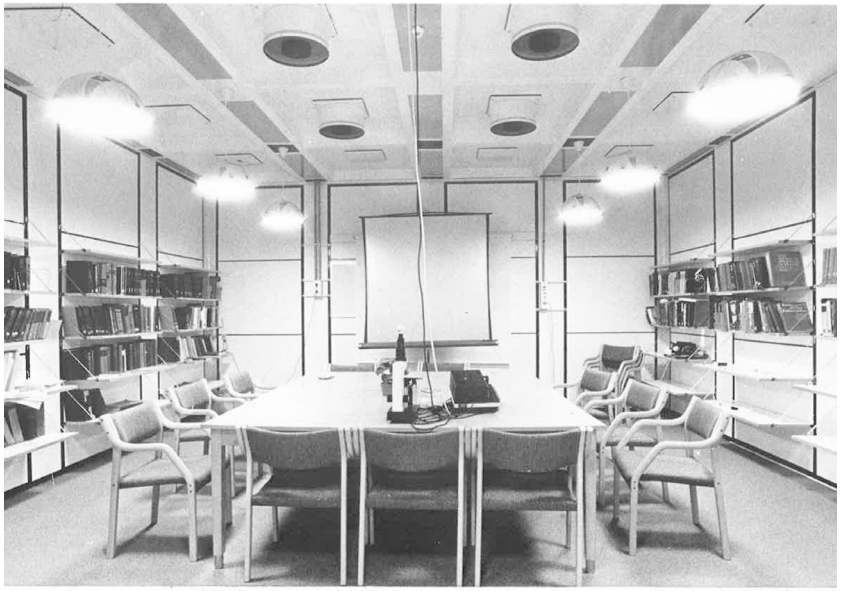
-Yes..

-Then you can drill on each side of a wall without hitting the girder. That is the trick here, that we operate with one module for structure and another for the internal walls, and then there is a third for interior furnishings. At that time, this was a laboratory where people stood at benches and worked and spilled things and rinsed a lot in water and so on. And then you fed both water and gas and compressed air down from the ceiling, cold water and hot water and maybe other types of water. And then you needed to get rid of all it again. And you needed to alter the laboratory according to changing use.

- Was that a requirement when you were designing the building?

-No. It's interesting to know maybe, that nothing about this building came as a requirement from anyone else, it came from us.





-So you got that commission…

-I can tell you how it all came about! I'm letting you in to the very heart here.

-You were quite young?

-I was 30, and Odd was 39. But it was he who got the job. Is this boring?

-No! I'd love to hear that story!

-Okay, then I'll give it another few minutes. So, in 1950 three young architecture students, Geir Grung (1926 - 1989), Odd Østbye and Sverre Fehn, had gotten a job at the city architect's office in Oslo, after finishing school. It was Grung's uncle I think, Greve, who was the city architect, who arranged for them to get a job there. They did a lot of different things there, including the decorations at the Olympics in Oslo in -52. Part of the decoration was the responsibility of the city architect, these boys made the portals with flowers etc. Which makes you smile today, in a way insubstantial things. But eventually they left and started up by themselves. Grung and Fehn won the competition for Maihaugen Museum at Lillehammer, while Odd began working at the office of an hospital architect called Ole Øvegaard (1893 - 1972). Later he began designing churches, including Kristiansund church where he collaborated with a painter named Gunnar S. Gundersen (1921 - 1983). And then it was, in 1968, at NTH in Trondheim, when Arne Korsmo (1900 - 1968) was professor there, that Korsmo was visiting Machu Pichu in Peru and

had a cardiac arrest and died. So then his institute was without a leader. Odd Østbye, who had a one-man office at the time, was asked to manage that professorship after Korsmo's death. I believe it was in -68. I was somewhere else and Tore Kleven was working with Sverre Fehn. It was a strange incident. Until then I had sat by myself doing competitions, and some of my friends had been assistant teachers at Korsmo's course, who then asked if I would come and be an assistant teacher there for a period during the winter of -68. And I said yes. So I went up there, and we went cross-country skiing, also with Finn Kolstad who went on to teach at AHO.

-Are you educated at NTNU?

- No, I went to the architecture school in Oslo. And there I had Sverre Fehn as a teacher. During his first period there, when he was teaching a course on form. But anyway, it was that event up there in Trondheim, where me and Odd went skiing – Odd was a great skiier but I wasn't as good as him, I was just happy to go skiing – but we hit it off, Odd and I. And a while later, whether it was fall or spring, Odd asked if I could come up to meet him. At the time I had worked as the sole assistant for Wahlstrøm, a teacher at the architecture school, designing Nadderudhallen in Bærum. I learned a lot from that project. The building is still there today. Odd had received a request from the City architect in Oslo, who was in the process of being closed down as city architects, making their office something similar to Statsbygg today: a building director, or a directorate you might have called it. They were no longer going to design anything themselves but act as project managers

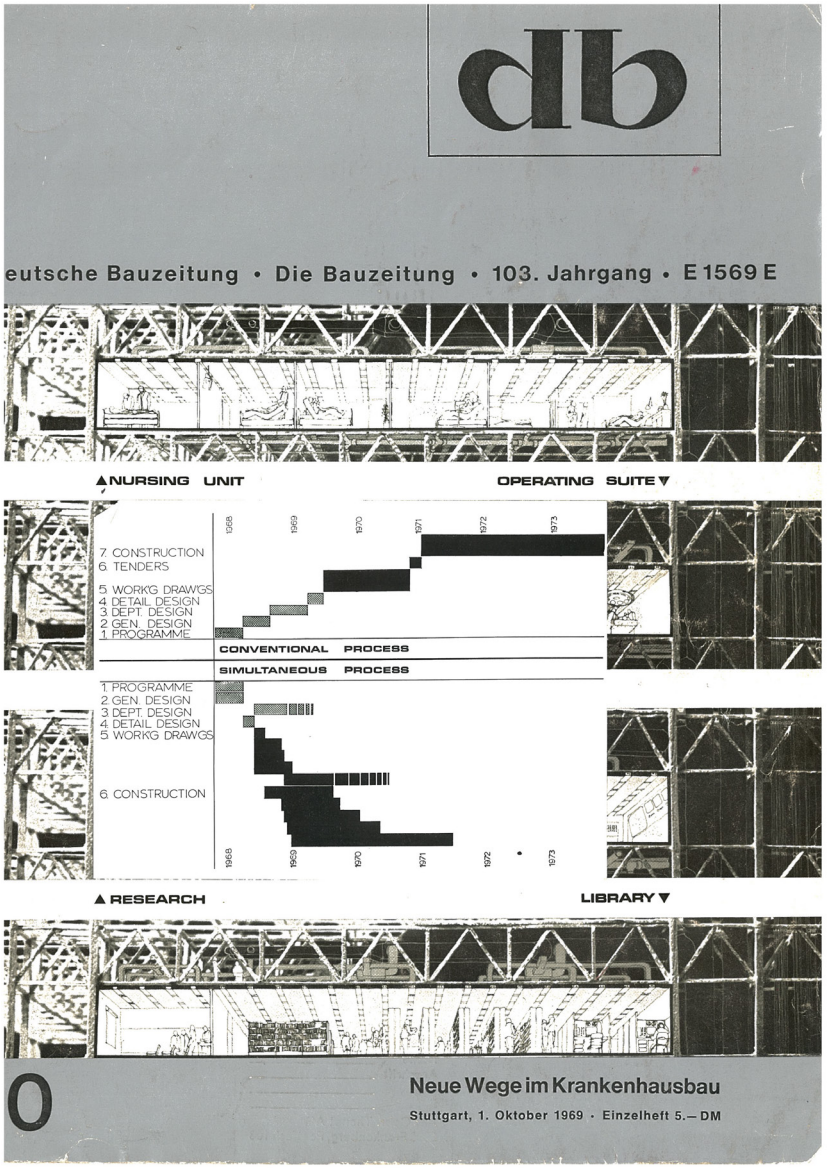
on building projects. But then there were some buildings that had already been designed far enough so that they just had to be completed. So the question arose whether Odd would complete this building at Ullevål. The project consisted of a high block and a low block, just the standard laboratories and hospitals as they were at the time, with two corridors and a core in the middle, and rooms facing the facade and full of shafts all over, and brick and plastered walls and so on and so forth. I had never done hospital design, but Odd had worked for a hospital architect. So Odd then asked me, if he said yes to the task, whether I would join him. That's how we had the opportunity to start an office, because he had thought, up there skiing in Trondheim, that our minds worked in similar ways. There was simply a human start to it all, a contact. The age difference was nine years, it was quite a lot. And then I said that maybe we should have one more person, what about Tore Kleven? He was in Africa at the time, driving through the Sahara with his wife and another couple on a big desert tour. And he was bloody talented after his years with Sverre Fehn. He had quit architecture school, and started a summer job with Sverre after his second year, and figured he was learning more there, so he didn't think there was any point in going to back to school. But we had been together at the school for a few years, I knew him from before, from the College of Art and Design. So it became the three of us. But Odd was up there [in Trondheim], and Tore had returned from Africa with some amoeba in his body, so he was at Bærum hospital, so the office consisted of just me. We were able to borrow an office space down at Frederik Stangs gate. And I went to pick up drawings from the director, of this conventional laboratory building they had planned for.

- So they had drawings ready?

- They had drawings. It was a huge project. Four floors. And the design had proceeded far enough that our job was to start producing working drawings. And they were to be in 1:50 scale, and the building was 100 m long, making the drawings two meters long.

-So the building was already designed?

-Yes, it was designed. There was pile of drawings that we looked through. But then we started researching laboratories, looking for inspiration. We went and looked at some laboratories in Oslo, but we thought "My god, this is bloody cumbersome, with all the pipes and wires inside the wall! What if you have to change something? Then you have to cut the wall open!" So we started reading and searching different places, or especially me, because the other two were busy, and I came across someone in Sweden called Hidemark (Bengt Hidemark) who had designed a building, the Linköping College I think it was, and we went over and looked at it. It had a big floor with labs, and he had put all the pipes in the basement. And then there were some towers where all the water and all the pipes came up from the basement, and you could connect to them from the labs. That was when we realized that this can be done a lot smarter than putting the pipes inside the wall. And in a magazine I found a laboratory in England, and, in an issue of the magazine "Deutsche Bauzeitung" which I still have, a laboratory building in Canada, the McMaster Health Sciences Centre (Craig, Zeidler & Strong). The one in Canada had a steel structure with a lab floor plus a service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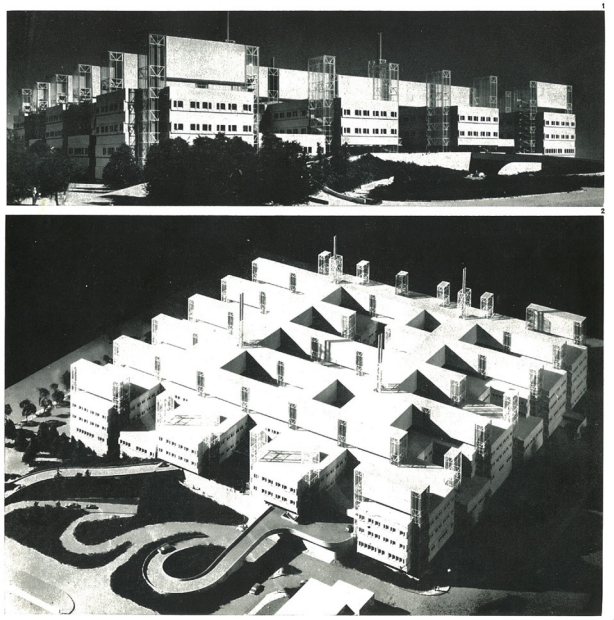

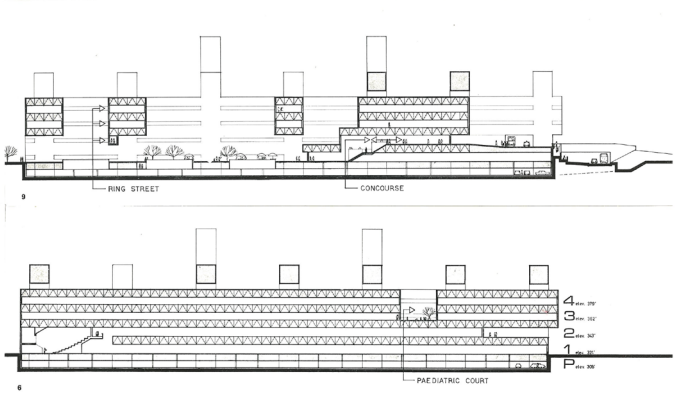
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mezzanine above. And it was all analyzed in that magazine. By building the laboratory like that you divided the building into complicated and uncomplicated parts. You could build all the rooms, and above them you could organize the pipes and ducts, and feed them down wherever you wanted. That meant you could shorten construction time, because you could plan your departments without thinking where in heaven's name you would get the water from - where the closest shafts were. You knew it would be possible. And you could also start building without knowing what was inside, because you knew you could get access to whatever you needed later. So you could compress the usual building time, which is first programming, then planning, then building. Now you could merge the construction and the design and do them simultaneously. They had already spent a lot of time on this process up there at Ullevål hospital, in closing down their department, and starting up again by planning those buildings... There are a lot of things that need to be done to arrive at something like [the Lab block], you know. In the first place, that the three of us met. If it had been someone else, they would have just designed the building that was almost finished. The fact that we didn't do that, well, it wasn't popular. Odd was called up to get yelled at by the Building Director "We have not asked for anything which is smarter, we have asked you to draw up Tørum's (the previous architect) building, and you have said yes!" In the text box on the drawing was the Building Director's name, and the "by architect Harald Tørum, collaborating architect Odd Østbye". We did not exist there as an office in our own right. But then it all developed further, and we got to go on a study trip to Canada with the Building Director and with the two heads of the biological and the microbiological departments, who were to be the main

users of the building. We paid our own way and the others got the trip covered, but we got a tour of a building and saw something we had never seen before, and they realized that this must be smart!

-So you just persuaded them?

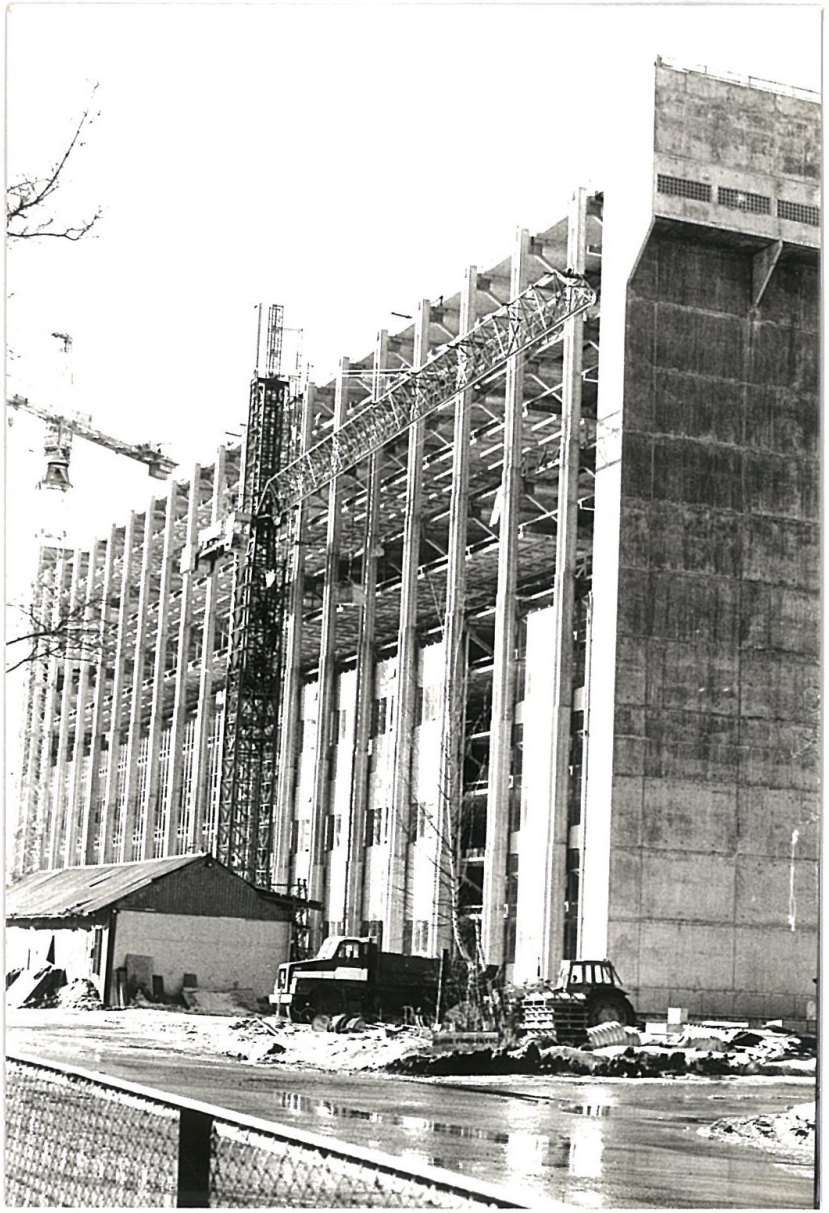
-Yes. By taking them to see it! That we, as completely fresh architects would have a say... Yes! When we got back we said "what if we build a full-scale test of part of it here?" So we built a unit of 6x6 meters on a field next to the site, with trusses of plywood and ducts, where we started experimenting with the walls and the lab furnishings. And all along the budget for this project was very modest, everything was compared to a cheaper way of doing it. So that was also a challenge that we accepted. We were always looking for cheaper ways. For example, we found that you could make a wall first, and then come along with water and gas and electricity and whatever you needed and hang it on the wall. This allowed you to construct the wall, as I said, and then hang everything else on the outside. But then everyone said "Yes, but for heaven's sake, this is so ugly!" Yeah, well, then we had it to prove it to them then. "And it gets dirty, it collects dust!" So we went around to look at other labs, and all the shelves were full of glass and stuff, so whether a pipe or two is added to that, we didn't think it mattered. We got that initial rejection, all the time. But in the end they bowed to reason. And in this project that was pervasive, that you bowed to reason. This was originally a four-floor building, but then we said let's make the foundations and columns to allow for building an additional two floors. Everyone thought it was smart. So it was done, even as the building was under construction.

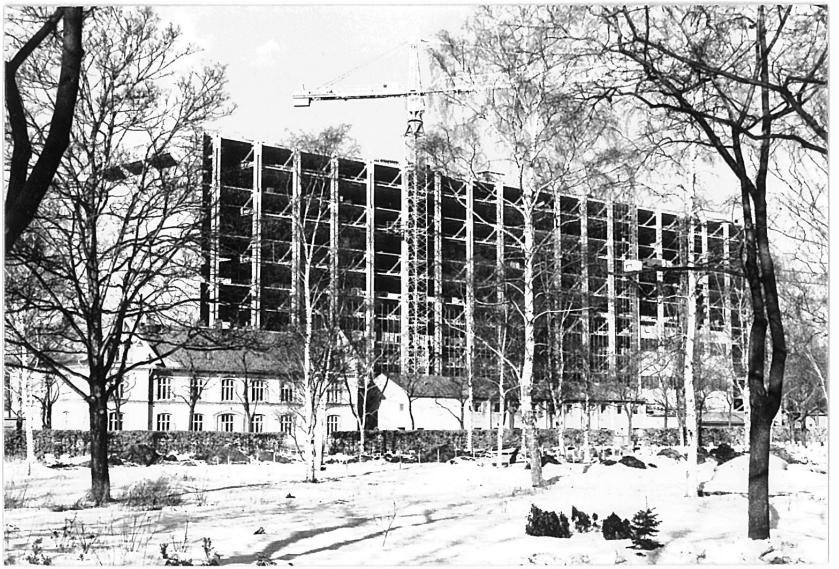
-So there were only four floors planned?

-Yes. But during the construction, organizational changes took place in the Municipality of Oslo, merges and so on. Blood tests that had been done at the Institute of Public Health were now to be done at the microbiological laboratory instead, so the brief grew to almost twice the size. So it was decided that the two extra floors should be constructed right away. On paper the two floors were empty, but then that whole microbiology department had to be reorganized. So already then, early on in the process, the system proved its worth. We were able to say ”Yes, we can manage it.” We didn’t have to say “stop construction”. We had foreseen it, in a way. The first transformation, if you will, began already while we were building. Then we got a man from McMaster over here, and he gave lectures at the Association of Hospital Architects and the Physicians’ Association, and he went up to Tromsø, because they were planning the new hospital up there. We were able to spread knowledge that we had acquired. I think about the importance of a real study trip. Our studies were all inside the engineering floors over in Canada, and then we took pictures there and brought that knowledge home. And that led to this ”common sense” building, to call it that, passing all tests.

-Did you study Louis Kahn’s Richard’s Medical Research Laboratories?

-Yes, you hit the nail on the head there, because Louis Kahn was the architecture theorist we usually referred to. He introduced the concepts of ”servant” and ”served” spaces. That is, zones or rooms that are served by other rooms. And in Richards Laboratories the laboratories are served

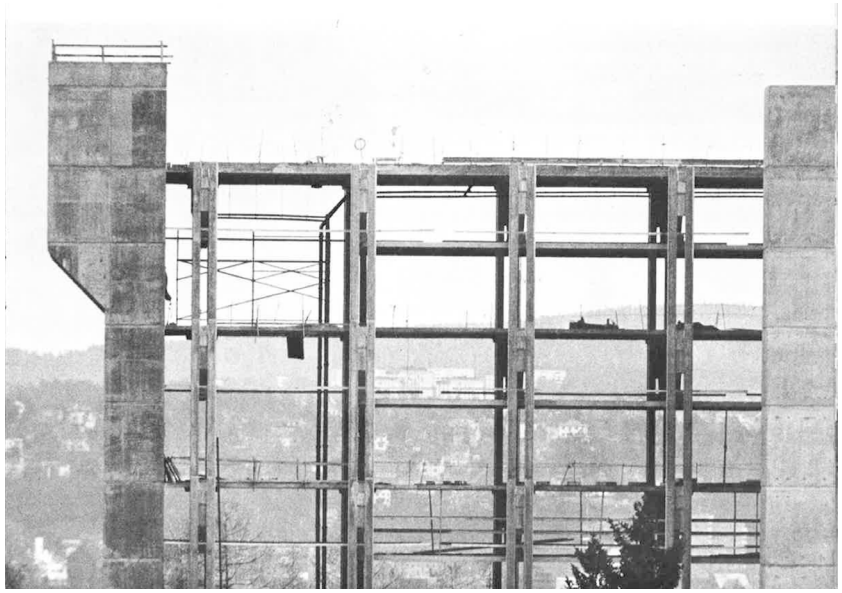




by the towers on the outside. And it is the same here, this building is served by the two vertical gables. There are two large shafts, one for air in and one for air out.

- Air in and air out ...

-And in addition to the shafts there is a staircase in the gable. We even had a lift. We got really crazy about this, we put a workshop down in the basement where you could make parts that would go up and into the floors via this elevator. But then they screamed ”No, this madness must stop!” An elevator exclusively for the plumber, that was too much. So the elevator shaft is there, but it’s empty today. But the big shaft was where the air came in and was processed by the ventilation unit, treated and heated. There was an air purifier to clean the air. It was possible to extract heat from the air. You see the two chimneys at the top of each gable, the one that sucks in fresh air and the one that blows out the used air. And in the ”backpack” on the gable there are two large fans that suck air in or send air out. All of that is part of what we called “the story”. We say that every building should communicate how it has been created, meaning how it was built and what job it does. Take the pillars. They are stepped by five centimeters for each floor going up. That was obvious for us, because they carry less load further up, and they show that they carry the most down here and only a little up there. But that became a debate in the building committee, the stepped columns. That the columns were not straight, they had to process that. “Yes”, we said, “But you save on concrete!”, “Well, we’ll pay extra to get them straight!” they said. So the building challenged... [the standards]. We went all the way and asked



each element what job it should do. Should a pillar carrying six times as much load as another be the same thickness? You could of course have less reinforcement but keep the same dimension, but we wanted to make the story readable, show that it carried less load. So during the building period we had already started to use the possibilities incorporated in the building. That's a story on its own, there was a lot more of that along the way, and it's still going on.

-What is still going on?

-Rebuilding. It is still ongoing. And then there is the artistic decoration. Did you see the silkscreen prints when you visited the blood bank?

-No?

-It was part of the project, two percent of the building cost was supposed to be reserved for artistic decoration. But we got only two per thousand. We included silkscreen printing on some of the standard elements in the interior. We thought we were going to design our own wall system ourselves, but that was both too expensive and too complicated, so we were looking for available partitioning systems that could be easily installed. We found some very cheap and simple office partitions from a company called Norema, or Nordia at the time. And we got them adapted, they had a grey burlap texture and some profiles with holes every five centimeters to hang shelves. But we had the profiles painted in six colors and made a fixing system that used the holes on the sides of those profiles. Then we had found a canvas made that was completely

smooth and white, which allowed for artistic decoration. The silk screen printing was then done directly on the partitioning elements. It was done by two artists, Gunnar S. Gundersen and Odd Tandberg (1924 - 2017).

-What do you think about the art not being protected by the cultural heritage status?

-Well. How would you do that? The interesting thing now is that the interior has been rebuilt many times. Also by other architects. You get a phone call from a colleague if you can please send over some drawings because they are going to rebuild your building. In the beginning I was a bit awkward and bitter about it, but now here we are. Maybe the idea for this building is interesting enough that people want to hear it? We have lots of these printed wall plates that have taken down when they have rebuilt departments, 40-50 of them were down in the basement, and we thought that was a bit sad. That opened up a possibility: what if we reprint some of them and mount them down in the long entrance hall. And we've done it. There are six meters between each column, and every other module is open and every other one closed, so we put up two areas of new printed wall plates. Six on each side with colored moldings and special profiles at the bottom, mounted slightly away from the wall using a system that we have designed. And then we put a small description next to the decoration project with some information about the building. And the company who originally printed the silk screen wall plates, they still exist. They have printed these too, but in a different way. It is no longer screen printing, but digital printing. The man who printed the original silkscreen plates (Jardar Sæthren), he is dead now, but he grew

up in a house designed by Sverre Fehn in Ski. And we were there to look at that house when Sverre was our teacher, when it was new. There was a silkscreen printshop, a brickwork thing, and a house next to it. And now I am out there, not in that house exactly, because the printshop has become a big factory (Sæthren & Wraamann AS), but with the son of the man who got the house built by Sverre Fehn. There are two cousins who run the print factory, and one of them grew up in that house. And suddenly I come in, who have been a student of Sverre Fehn. It's a shame that my two colleagues aren't here to see it.

-Maybe it's all a part of... I think that post-war concrete buildings have not had a lot of interest from people, but maybe it is starting now, that people in general are beginning to recognize them.

- I must say that I'm starting to doubt whether concrete can withstand the ravages of time. It cannot be maintained either, you can't refurbish it to its original state. It can possibly be painted or plastered. And when it is mossy and looks muddy and terrible, in the urban context, for example, it is covered with natural stone or it is transformed into something else, because no one identifies with fair-faced concrete. We have won lots of awards in the office for concrete construction, and concrete element awards and so on, we have used a lot of untreated concrete. In nature, yes, but I think it is foreign to people in the city. Even these buildings of our friend Le Corbusier. La Tourette for example. When you get close to it, it's so ugly and grimy. My wife Gro has been with me to see some of it, she thinks it is... She just can't understand that we think it is beautiful. But when we had just finished architecture school, we believed that if

only we could get to use exposed concrete, then that in itself was a goal.

-Why?

-I don't know if it had to do with honesty and back to... You say the post-war period, but it was after all 1977 when the Lab building was finished. It was long after the post-war period, and it was perhaps a herald of a new age, but we had teachers who grew up during that time, and Odd, me and him had roots in this, plus we were raised in the school by Sverre Fehn, and we were raised by Knut Knutsen (1903 - 1969) in the use of natural materials. And what were natural materials? Raw concrete and wood and brick. Those three materials. And if you had any fittings, they were copper or zinc. Asbestos cement was a popular material at the time that solved many things practically. The facade of the Lab. That is also a story. It is made of toughened glass that hangs on a facade system. And at that time there was only 10 cm of insulation.

-I just have to ask a question. That concrete can't withstand the ravages of time. Do you mean as in appearance? Or structurally?

-I mean both. We were in Bergen recently. I thought that Viksjø's (Erling Viksjø, 1910 - 1971) "natural concrete" would last, it looks so damn solid, there's not a crack or a discoloration, and it is even quite pretty, to use that word, to look at. But Bergen City Hall is about to fall down. In some places the concrete has fallen off so you're looking straight at the reinforcement. They have emptied the building of people because they are afraid it will fall down. So the technically untreated materials don't

last either.

-Yes, because that's what many people think concrete is. An everlasting material.

- We thought so too. We insisted that concrete was liquid natural stone. There were some exterior stairs in the Lab building where we used concrete elements, and after a while some heating cables broke, and then they started to use salt instead, to melt ice in the winter and it ate up the whole stairs. So the stair was demolished and replaced.

-What do you think about the maintenance of this building then?

-Well, what can I say. There is no outside maintenance. On the roof we had an elevator, a facade elevator. Along the side of the columns there are two guide rails so you can run the elevator like a lifeboats, and lift it up and down to wash windows. There are rails and a runway and even a garage for it on top of the roof, but it has been removed and was probably never used. The building was supposed to be self-contained. We had storage in the basement for partitioning elements, and storage for all the interior furnishings and an elevator up to supply the floors. We built a machine! If you compare it to a ship, the ship has people down in the engine room doing the greasing and they have mechanics and so on. Self-contained. So among the service operating staff at Ullevål, if they wanted a building… We did a lecture for them a few years ago where I asked "If you could ask for one building, that you would choose to continue building on, you have 300,000 sqm [here at Ullevål hospital], which are

the smart buildings?" and they replied "There is only one building for us and that is the Laboratory building."

-So your impression is that people who work at Ullevål also see the value in it.

-Yes!

-Now that this building has protected status, exactly the same laws apply to it as to the stave churches. The ambition is that it will last for a thousand years. But what do you do? Do you start patching? Do you set up a formwork and refill it?

-Nothing has been broken here so far. But for example in Bergen there is a lot of rain. Perhaps that reinforcement should have been covered in more concrete? There are some thin window mullions there, and half of the outer part has somehow fallen off, and then there is the rusty iron which means that water must have come in, caused some frost expansion, a combination of things. That has not happened here in our building. But the roof has been redone, it is 40-50 years old now. So it will happen. Roofing felt has a lifespan of 25 years, which is nothing. 25 years is nothing. But the system is still in use. Including the interior furnishings and the benches. We made this system on the wall with two legs at the front. That way we saved the steel framing and legs. And the legs of the benches were adjustable to a height of 5 cm, the same as the holes in the wall. So if you wanted to have a desk for sitting at, you raised it to 75 cm or you raised it to 105 centimeters if you wanted to stand. It was easy to

make changes within the system. Plus, those pipes that came down from the ceiling stopped right above the desk. That system we actually used in two other buildings that we designed.

-I have to ask again. So you think maintenance is a question mark? We do not know how this is to be maintained?

- Some people said that these exterior glass plates, which are so-called "white", they are enameled on the back, they were so dirty that they were ruined. But then I told them that they are made to be washed, after all, there is even a washing elevator for that. But it has been removed. So I took a cloth with me from home and wiped the glass, and it was as fresh as new again.

-But what about the concrete? If it starts to crumble?

-It's rough, it's not smooth. And it will never be repaired.

-So when it crumbles up then it's over?

-Yes. Then you have to take down the building. There is also an issue about acid in the air. When you look at the concrete barrier blocks along the road when you're driving. Many of them are eaten up by the salt used on the roads. You can also see it in some of the noise barriers along the highway. And all the bridges! Now, there is an enormous amount of repair works being done on bridges.

-Then what do you think is the time frame here?

-Well. Should be at least a hundred. And then the question of transformation arises. What else can it be used for.

-Yes. What do you think?

-No, you are the one here... Well, you have three other students who have made suggestions. One was a columbarium, a vertical graveyard. I don't think that's realistic. I think the smartest thing would be to use it for laboratories.

-In any case, one should somehow make use of the service infrastructure in the building. I think the indoor garden project was interesting.

-Yes, the plants require height, you can take down the ceiling elements.

-The ceiling elements?

-Yes, the ceiling elements, they are hanging from the trusses. After all, they are there just to make it walkable and fire-proof.

-You could, for example, imagine salad cultivation, some plants that do not need that much space?

-You have to think about the whole process, in order for it to be sustainable. You have a building. In a way you can say that you get that

for free. But the moment you start to rebuild, it quickly becomes a cost discussion. What is the cost for rebuilding? And you need daylight. After all, it's like a greenhouse.

- You don't have to have natural daylight anymore …

-With LED lights then. Like the salad we eat, it grows in a house with artificial light.

- They don't even need soil nowadays.

-No, soil is just messy.

-What about data storage, for example.

-Oh dear…

-But it is interesting in a way, because it is something that needs a lot of ventilation, if the building was full of machines that generate heat.

-But those are buildings that make noise. I think about the surroundings. The data storage facilities being built now are out in the countryside, and where they are near people, I understand they are a pain. With fans hissing all day long. But I will tell you another story about this "unfriendly" building. There are quite a lot of windows here! The ceiling height is 3 meters, in itself a nice height. There is 1 meter up to the window sill, because it needed to fit standing benches, and then there

are 2 meters of windows all the way up. So for those who have windows facing east, they can see Holmenkollen and the whole mountain ridge there. Up in the microbiology department, on the fourth floor, there was a lady, Sister Klara, she had worked with tuberculosis tests down in a basement in one of the old buildings, where she was handling test samples. But then she got a new lab with stainless steel benches and windows facing Holmenkollen. We were there still working long after people had moved in, and one day Sister Klara caught me and said "You know, architect Almaas, you have changed my life. Now I look forward to going to work every day. Just look at the room where I work now." And it sure was nice. A six meter wide window. One meter and then only a five centimeter mullion and then a new window, the whole wall. And the whole of Holmenkollåsen lit by the morning sun.

-So you think data storage will be a waste of qualities?

-Yes, I think so. With those light conditions. For people, there is so much there... So, if you try to find a logical answer to the use of the building in the future. The building is served in every way, you can drive down underneath and reach the elevators and make deliveries. Down there there is storage space for whatever you want, never mind the dead. And then you have six floors that can be provided [with a service infrastructure]. But, as we argued once, you can also house something that has little need for service installations, because you know you can add that later if you need to. There's an economy in it.

-But if it's not to be a medical lab any longer, the what do you think it

should become?

-A place for people. For learning. A school or a kindergarten for example. Where do you find this much daylights nowadays? Now it seems like window design is the last area where architects are able to play around. Windows are crooked and angled and strange-looking. But there is an energy issue with these windows. And the walls are really bad in terms of energy performance.

-Yes. I have been thinking about the trusses. They are penetrating straight through the glass facade, that's a serious thermal bridge.

-Yes. It was designed according to the standards at the time, and the requirements then were not in any way what they are now. But we had done some research and concluded that what was going to be the challenge in the building was to get rid of the heat, not the opposite. There was so much heat-producing equipment in the building that there was excess heat in the structure. So the fact that it lost a bit via the truss cold bridge did not matter. The important thing was that the dew point, or the zero point for condensation, was outside the façade, not the other way around. That you didn't have the cold coming in, which would give moisture and even frost inside. And because of the excess heat that was all ok.

-The building is about 50 percent service space. Is it oversized? Or is all of that in use?

-Well, that's a question. But you cannot dimension a service floor according to how much equipment it's going to contain. You have to dimension it for a person to be able to work up there. In our full-scale test, we ended up defining that as a height of 2.85 meters. You lose a bit, so about 2.5 meters is roughly what you need for a man of about 1.80 to be able to walk around in there. Because you need to be able to walk around inside when the main systems are above your head.

-So the reason for there being so much volume allotted to the service floors is for all the different labs to have separate ventilation?

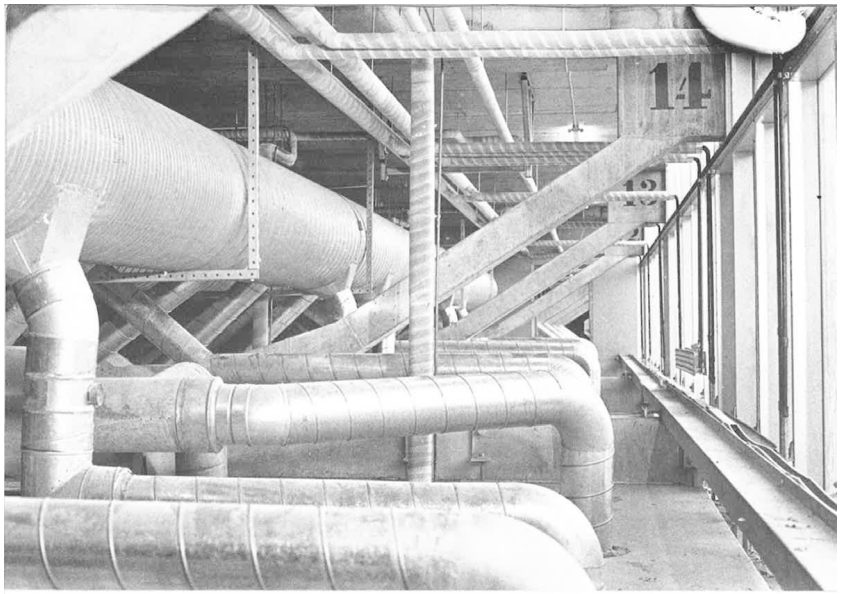
-It's a system, a traffic system in a way. The building is divided in two halves, one gable serves one part and the other gable the other part, and in the middle there is a fire wall. There are main systems in that 18 meter wide space. One big air duct out and a big air duct in, and branches off that. The smallest possible room is a toilet of 1.5x1.5 m, and that too has to have both air in and air out, in addition to drains and water. You have to be able to serve the toilet with a 10 cm pipe. The same with electricity and water.

- Were there any things you had designed that had to be cut out on the grounds of finances or other things?

-Yes, basically everything. No, but we had to look for the cheapest alternatives. In the facade there was talk of asbestos cement panels. But because of our three-meter lab module, a lab is just like a kitchen, a wall on one side and a wall on the other, a bench on one side and a

on the other there, and space in the middle to move between them. We had analyzed the laboratory module. It was 3.25 meters in some older labs, but that was because the walls there were thick masonry. But we had figured out that the 3 meters should be divided into a 3x1 meter modules, rather than the standard 60 cm modules (60x5 is 30). We looked at the economy of having three studs of with a three meter module, as opposed to five if we used a 60 cm module. We then found out that glass could would span horizontally with a 1 meter module, while asbestos cement panels could only span 60 cm. Imagine if they had chosen asbestos cement, the cheapest facade material that existed. That would have been a horror. We fought to get to a shiny glass building instead. And we won that battle because it was cheaper with three studs for every three meters, than five studs for every three meters – cheaper sheets but more studs. The calculation ended in our, or actually the building's, favor. I think cheap looking asbestos cement panels in combination with fair-faced concrete, that would have been a nightmare. The old Ullevål hospital buildings are in yellow brick, and we got an offer from the director to cover the building with yellow facing brick; they would pay. But we resisted. Who knows, maybe it would had been all right in yellow brick? (laughs) But we were completely fixated on raw concrete. 30 years old... It was supposed to be cheap, the walls as well. It all relied on the building solutions being smart, because [they were applied across] 12,000 square meters, 2000 square meters on each of six floors. So it had to be a well-tested system. And it has turned out that they are still using these modules.

- They are using the same interior modules now?



-Yes.

-Did you talk during the design process with people who would be working there?

- Every single person. We investigated what they were doing and what they needed. It could be a special feature, how much space they needed for a certain task, what kind of appliances they had, and if they would be standing next to each other. And everyone at that point was working in spaces that weren't suitable for what they were actually doing. They were in old classrooms, or other unsuitable rooms, with a bench here and a bench there — a case of chaos and coincidence. So we asked them: "if you were planning this yourself, how would you like it to be?" "If I could get that wall a little longer, and maybe a bench across here, it would have been better." But no one was able to think process, that is, the process of what they were really doing, so we had to analyze that for them. For example, there was the autopsy room. I guess you were not in there, it is located on the ground floor. In every other place we visited the autopsy room was in the basement. It is a business that people thought should be hidden. Professor Arnesen, the head of that department, said "this is a very important part of the hospital". Macro over here, the surgeons observing, you disassemble [bodies to teach the] students: a timeless function in the hospital is the education and learning that comes out of watching this skill. "Okay", I said, "but why is it always in the basement, if it is such an important part of the hospital?" "Are you mad, he said, "it can't be upstairs!" But the ground floor here is a little elevated above the outside ground level, so I said "from what you're saying, that it is such

an important part of the hospital, we should put it on the ground floor. And then we cover partly the windows facing the cemetery." "Okay," he said, "but I have to draw it, architect Almaas." Then he made a drawing of it, but I saw right away that it did not fit into the building module. So I asked to be allowed to redraw it to fit the building. He said that wasn't necessary because he had seen every autopsy room in Europe. But I took the drawing home with me and made it fit, and handed it back to him the next Monday. He put away his own drawing and said, "I'll never do this again, architect Almaas." He also said "It's strange how the most appropriate can also be the most beautiful." We had this close dialogue with the head of that department. As a scientist of the so-called old school, he could have used his power against us. But he didn't.

-What did you change? The dimensions, the details, or the organization of the room itself?

-Yes, the organization of the autopsy room and the side rooms, where students go in and out… here they get dressed, there you cut, here you wash your tools and here the elevator goes down… There is a small factory in there. And it is, after all, an example of how the function, that is to say how reason, is universally available. That's what we've been doing. It is not in competition with any other type of architecture. It is the field of use where I have done most of my work. I've used, you could say, understandable arguments. And now, when I go back to visit the building, and it has been protected: that is something I'm really enjoying, at this point in my life.

-Is there anything that turned out not to work very well in the Laboratory Building?

- (thinking ...) Yes, we received a lot of criticism for the original chapel in the basement. It wasn't something the head physician really wanted. He didn't want there be a second funeral, the funeral agencies were interested in a farewell ceremony with flowers and stuff, but the head physician wasn't. He wanted to keep the chapel very modest. And we weren't particularly religious either, so we supported him. But the result was that when you drive down into the basement, there is such a collision of functions, deliveries and garbage and waste disposal. The chapel was pretty poorly received. But then it was remade, we got to do an entrance to the chapel from the entrance hall instead. You enter there and go down a flight of stairs and come down to a reception room adjacent the chapel. And then you can go up the same way.

-So that's a rebuild you've done afterwards?

-It is a rebuild, a correction of a function. And then of course all the technical services have been updated. Technological requirements, requirements for health, requirements for the environment, drainage systems, waste separation... There was a lot of waste that was organic, simply from the autopsies. And where to put it? When we started this project, that kind of waste went into Ullevål's regular trash, which was picked up by the municipality. Hush hush! But then we made another autopsy room down in the basement, so if an autopsy case came in with a risk of infection, such as smallpox, something really dangerous, then it

would go down there in a separate space. And then a separate incinerator was built where you could dispose of organic waste. Not a whole dead body maybe, but waste. Something you had used. And then incinerate it, and the smoke went up and out of the roof.

-A kind of crematorium ...

- But it's gone now. That incinerator has been dismantled. So now the municipality has another waste system with containers and boxes and yellow bags and so on. A new system. And we had an animal stable once, a whole floor up there, with laboratory animals, mice and rats. But it was removed and a small one was built downstairs instead. And then here, by the entrance, there was a student section. With a nice canteen with a lift to go down to the basement stores and with food to go up, and there was a large metal decoration by Odd Tandberg hanging from the ceiling. Now it hangs in the entrance hall, and there is a dialysis department [in the old canteen]. We haven't had anything to do with that. The students are no longer there, and we have converted the student lab into an auditorium. We even had some student reading rooms, they were also converted into something else. So the whole university part was rebuilt. These are transformations that are ongoing, or maybe not transformations but rebuilds.

-Can you say something about this low block, we haven't looked at that very closely. Does it have a more conventional structural strategy?

-No, it's not as conventional as you think, it's actually exactly the same.

The Lab block in miniature, but with regular beams instead of the big girder trusses. And then it has a service space, you see the small axis there, that is three meters, and above that there is a walkable service zone. In the section you can see that it is on top of the roof, there are units for ventilation and other services there.

- Louis Kahn's Richard's Laboratory has been criticized for the sun disrupting the laboratories. But it has not been a problem here?

-Yes, it has. But at that time, there were no computer monitors in the house, so there simply weren't any screens disturbed by the reflection. But on the three meter windows we had roller blinds on the lower part. There is one meter up to the window sill, and then the window goes all the way up. Outside there is permanent sun shading that goes down to two meters, and from there it's open. But from the two-meter mark we had a profile with blinds, so if the sun coming in underneath the sun shade was too bright, then we had blinds on the inside. But this proved to be insufficient, when all the computers arrived. So then blinds and lots of other things were installed. But we also gave them the option of curtains, and we had a system of cotton curtains in four of the six colors, not the white or black. Everyone who wanted curtains could choose the color they wanted, in the offices for example. First we tried to organize it into a blue floor, a yellow floor, etc. That it didn't work. But the ceiling profiles in are finished in those six colors, the same as the curtains. They were made of high temperature washable cotton, according to hospital standards, and then everyone could choose their color. We were pretty happy with that, because it became random where there were curtains

and in which colors. It looked pretty nice. Now that's all gone, nothing remains. Instead there are some printed curtains with leaf patterns and stuff. So you could say, in relation to the preservation status, that in the facade you could have kept the colored curtains. Because the coloring had its own value. A small touch of bright colors, rather than coloring the building. As with our friend Le Corbusier. We got it into the construction documents back then that the wall profiles should be finished in colors with no additional cost, because they were to be painted anyway. So it went unnoticed into the bill. We changed color in the ceiling every six meters. There are those profiles and a square ceiling tile with holes where pipes come down, and then it changes to yellow and to blue and so on and so forth along the 120 meter building. And the wall modules also change, in the same pattern. It's not so easy to see, but a small touch of bright colors. So coincidence has also played a role in our philosophy. It has something to do with John Cage, if you know him, the musician. The fact that you put together sounds randomly, that can become a system because your head wants to create an order. A pure dunk dunk dunk dunk is too simple, but if you have what seems like chaos, put together sounds from nature, then, he says, when you get used to hearing it your head wants to put it together and it becomes an order. You create that order yourself because you want there to be order! We played a lot of John Cage's music. And we thought that we were in a kind of random system ourselves: It was random that Korsmo died, it was random that the city architect quit, it was random that I was in Trondheim. Coincidences formed the team that became our life and that resulted in something. There was no separating our life from our thinking in those days. We also became close to those people. I attended the

funeral of the chief pathologist and quoted that story in the memorial, so it has kind of followed me since then. And now I'm sitting here bothering you with this monologue! But that's the personal part of that building. But the building is still there, and when I'm gone then everyone is gone, and there is a building. Oh well. And eventually someone has to tear it down. A house is not eternal.

-I want to talk to the Directorate of Cultural Heritage too, what they think about all this.

-Yes, what a preservation really means. I have those papers here. But should we take a break maybe? And continue next time? Is two hours enough for today? So you can get a chance to digest it all? Because all of a sudden it's no fun anymore. I'll find out what you can have and what you can take with you. We have a lot of material. But what we definitely have is what is built! We must go over to the building! There is no point in sitting here pointing at drawings, we have to go there, it's only ten minutes from here.

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