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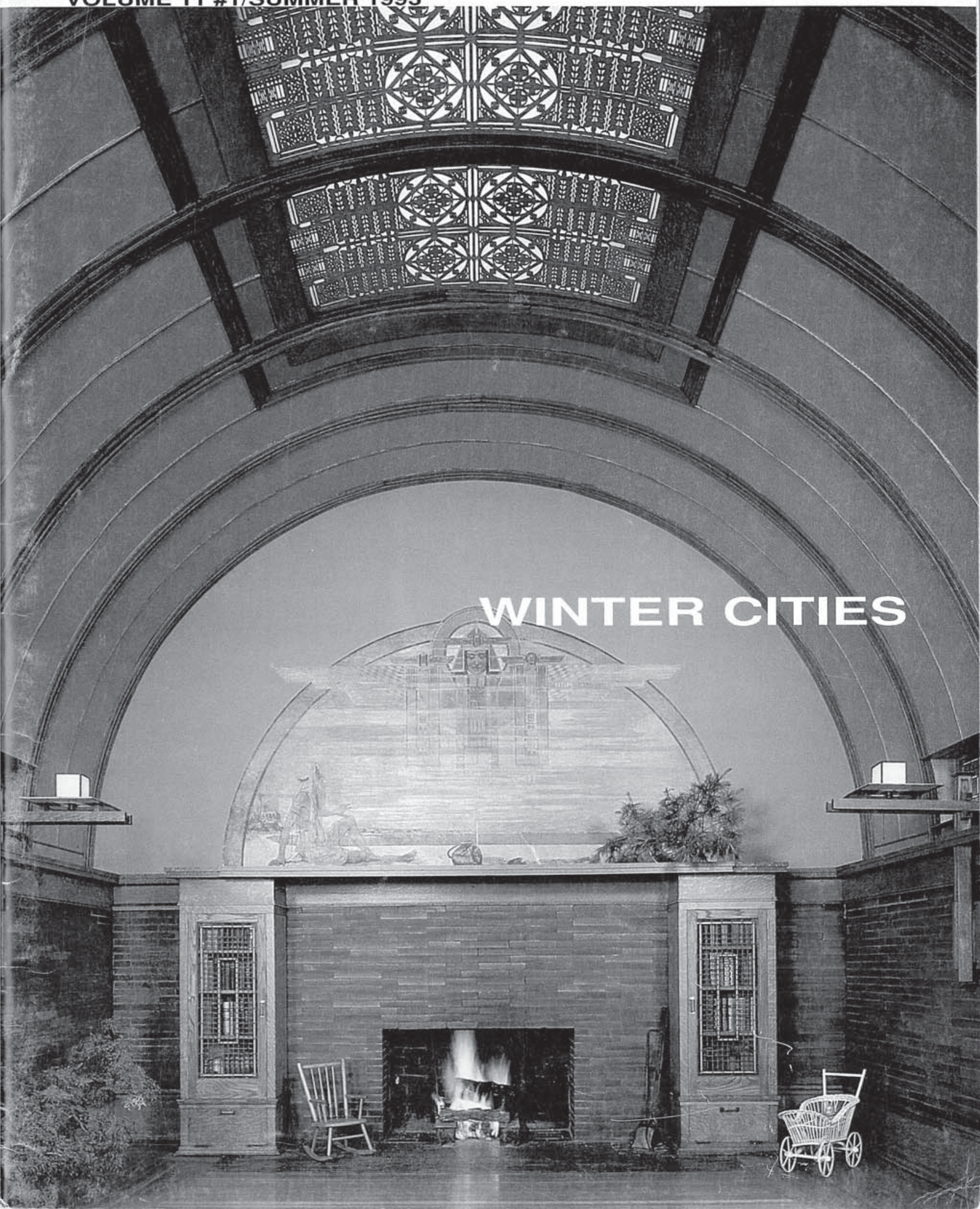


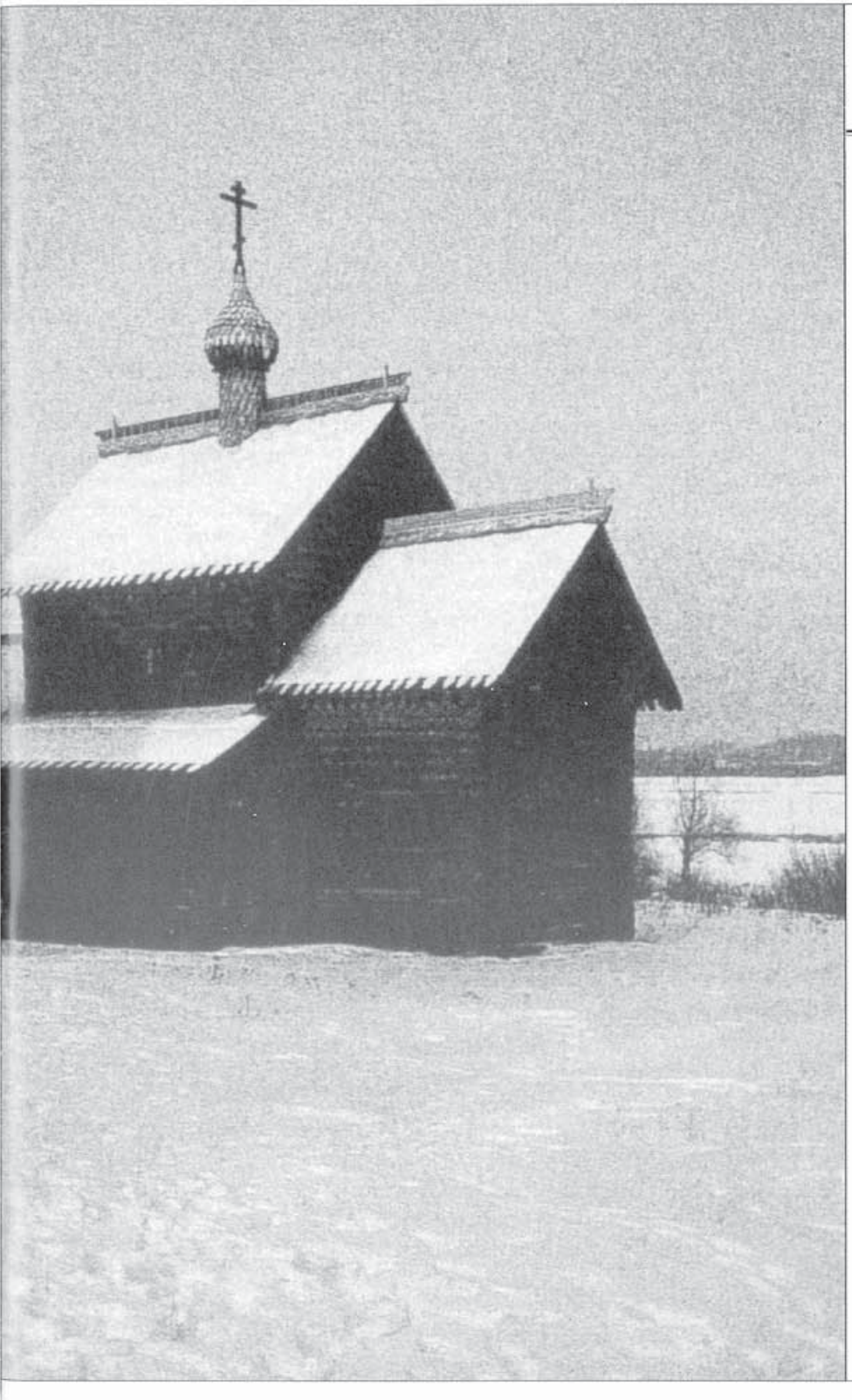
WINTER CITIES

Winter Cities

FEATURES

DEPARTMENTS

On the Cover: Frank Lloyd Wright's home and studio in Oak Park, Illinois



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Winter Cities Association
is dedicated to realizing the unique potentials of all northern communities. Through publishing, networking, organizing conferences, facilitating research and other means, the Association seeks to make available solutions and to promote awareness of opportunities associated with the winter season.

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editorial

WE'RE RENOVATING!

"What is it going to look like this time?" I'm sure this refrain is voiced by a large number of you when your copy of this magazine rolls in with each season. Why do we change so much (too much perhaps)? Though our editorial has remained somewhat consistent, the layout of *Winter Cities* has been predictably unpredictable.

The reasons for this inconsistency are too numerous to fully address: staff changes, experimentation, production changes, you name it. Though we have learned volumes from putting out a different type of magazine practically each time around, the time has come to put down some roots and start growing upwards.

Much like the Winter Cities Movement we have gone through a period of an identity crisis and are now becoming aware of who we are and what we want to do. The format of this issue will be echoed, hopefully, for quite awhile. This shall allow us to concentrate on bringing you user friendly articles which will inform, enlighten and entertain you.

We plan on presenting less opinion and more hard core, "this applies to me" information. *Winter Cities Magazine* is the worlds leading digest of multi-seasonal issues and we feel that we have only scratched the surface. We are cultivating a vast pool of circumpolar experts to write articles that you will want to read and use.

In order to navigate ourselves through these new editorial waters we have consulted a field of architects, planners and academics who told us what they want. We have listened and will be evolving along a line that will hopefully serve you more effectively.

These changes will reflect what we see as the direction of winter communities including: the growth of regionalism, networking and recognizing the value of indigenous cultures. These are all elements which we will feature on a more regular basis.

Speaking of regularity, you will notice that the magazine has been divided into more departments that will allow us to serve the reader better and provide benchmarks for editorial stability.

We have done the best we can to try and reform this publication into a user friendly instrument. However, we still need input from you. We are in the process of developing a reader survey in order to fine tune our efforts. Until that time we would still greatly appreciate any opinions. Please feel free to give us a call, fax us or write us a letter. We will seriously review every response that we receive.

So now you know the full scoop. The chameleon you once knew as *Winter Cities* will now be sticking to one colour. This stability will allow us to serve a greater purpose and make us more accessible. Thank you for enduring with us through the past and continuing to support us in the future. We hope to hear from you soon.

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news

ARCTIC ALIMONY

Impoverished Arctic residents will be able to make alimony payments with whale blubber, musk ox, or even a chunk of iceberg under new legislation proposed in Canada. The Northwest Territories government and the support scheme, expected to become law this fall, will recognize that unemployment among the vast territory's Inuit population which averages more than 60 percent. It will also acknowledge that wild meat and other country food are used extensively for bartering in the Arctic and would give native hunters a means of making support payments.

TIRED SOLUTIONS

Late in 1992, there was considerable publicity about a solution to dispose of scrap tires in the form of a new product developed by Domal Envirotech Inc. of Etobicoke, Ontario. Using the rubber from recycled tires, the company has made rubber transition collars and adjustment rings for maintenance holes. Used on manholes, the rubber absorbs the impact of traffic vibrations and frost heaving while being cost effective initially and having a lifespan of at least 15 years. For parking operators, catch basin transition collars and adjustment rings are in the development stage. An added advantage is that replacement time to repair a maintenance hole can be cut to approximately one hour in lieu of the conventional disruption of traffic for up to a day.

PARKING FREEZE

As most of Canada gets through 1993 with record snowfalls and unusual cold, we should keep in mind that Saskatchewan had record cold temperatures in December when it was 40 for five days in a row. Saskatoon drivers reported that the only benefit was that parking meters froze solid and would not register time. Somehow, it seems a small advantage for those drivers who ventured out to do business as usual.

WINTER THUNDER

After a month of unseasonably mild weather, cold–loving Russians have begun grumbling that even the winters were better under the Communists. The first winter thunderstorm to strike Moscow since 1976 rumbled across the capital, accompanied by blinding snow which turned into slush on roads and sidewalks whose temperature was above freezing.

"A slight chill of about eight to 10 degrees below zero makes it much more pleasant to work here on the street," said a traffic policeman who was standing on a bridge above the now thawed Moscow River.

TAINTED AIR, NUCLEAR WASTE THREATEN ENTIRE ARCTIC REGION

Pollution, including an Africa–sized mass of tainted air over the North Pole, and dumping of nuclear waste, threatens the entire Arctic region, say U.S. government scientists.

Radioactive wastes dumped at sea by the former Soviet Union and heavy metals and other pollutants from East European industrial sites have created a huge mass of tainted air over the North Pole.

These emissions from Eastern European industrial sites were carried by ocean currants, sea ice and the wind to the Arctic region.

In addition, heavy metals, pesticides, acid rain and acid snow have appeared around the Arctic rim according to Environmental Defence Fund geologist Kathy Crane.

University of Alaska, Fairbanks physics professor Glenn Shaw says that Eastern European industry is largely responsible for the Arctic haze that can be seen from his interior Alaska home.

innovations

Porous Paving

New permeable materials may revolutionize the fine art of surfacing

BY KIM SORVIG

Widespread paving is a recent phenomenon: even a century ago, the normal condition of city streets was a muddy morass. The introduction of "macam" changed all that, and by the early 1970's paving was referred to as "the nation's biggest publicly endowed business." But paving, for all its functional popularity, has been implicated in a wide range of ecological problems.

Most paving materials create surface stability by excluding water from the soil, and this impermeability causes a number of difficulties. Whereas soil absorbs rainfall and nurtures flora, fauna and humans, impervious surfaces increase runoff, causing erosion and flooding, depleting soil–water and contributing to siltation and water pollution.

Waterproof surfacing, however, is not the only way to achieve surface stability. Porous paving is a relatively recent technology that combines surface stability with permeability.

BASICS OF POROUS PAVING

Porous paving is stone aggregate, with a binder such as asphalt or Portland cement, placed in situ. The stone aggregate must be carefully sorted to exclude all the "fines" (sand–sized particles) which normally fill the voids between the larger aggregate; without fines, the voids make the material porous.

Both porous asphalt and porous concrete are strong enough for parking, pedestrian and even some road surfaces. Porous asphalt was originally developed as a surface for airport runways, where it prevents dangerous surface ponding. Many state highway departments have adopted the material for road surfacing, and asphalt plants routinely carry it, specified as "open–graded mix," "popcorn mix" or "porous friction coat." Porous concrete, a lightweight load–bearing material with good insulation properties, was first used in housing construction. In order to reduce runoff and increase soilwater recharge, the porous surface material must be underlaid with a bed of larger aggregate surrounded by filter–fabric. This bed supports the porous surface, and forms a reservoir to hold precipitation until it can percolate into the soil. (In highway and runway use, the porous surface is underlaid with impervious concrete).

ADVANTAGES OF POROUS PAVING

In addition to its ecological advantages, porous paving can save in construction, real–estate and maintenance costs; as such, it is a clear example that working with natural systems yields economic benefits.

Ecologically, porous paving reduces both runoff volume and the concentration of overland flow. This avoids disruption of the site's natural groundwater recharge capacities as well as downstream erosion and siltation. While water is percolating through the porous reservoir, significant amounts of water–borne pollutants are also filtered out.

The cost advantages of porous paving derive from its serving two purposes at once. Since most stormwater is absorbed near where it falls, the storm drainage system may be significantly smaller and simpler when porous paving is used. Considered strictly as a surfacing material, porous paving may

cost approximately 10 percent more than conventional paving; but, as a part of an overall stormwater system, porous paving's ability to eliminate storm drains can make it 12 to 38 percent cheaper. A second, greater saving occurs where porous paving over an underground reservoir also substitutes for open stormwater detention basins, and the land area otherwise required for the basin is freed for other uses. If used to provide more building space, this savings can offset several times the total cost of porous paving construction. The space can also be used for landscape amenities or to conserve natural features that would otherwise have been destroyed. A third advantage is reduced maintenance costs, particularly in areas where snow removal is significant. Snow that falls on porous paving tends to melt and drain into the pores. Only after heavy snowfalls will any removal be required, and dangerous surface icing can be virtually eliminated.

As with any new technology, porous paving has a learning curve and requires the education of both clients and professional colleagues. Among the concerns raised by engineers and planners, the fear of clogging is the most common. Yet most researchers have found that proper design, installation and maintenance can prevent any loss of porosity over time. An "insurance" feature is an overflow drain that allows water to exit the reservoir if the bottom should cease to percolate.

Another objection to porous paving has been that it may not stand up to freeze–thaw. However, existing porous asphalt installations have withstood many winter cycles without any breakup or heaving the porespace allows for freeze–expansion without damage.

The United States paves more each year than the Roman Empire paved in its entire existence.

Impervious surfaces are a serious ecological problem which landscape architects are often asked to confront. The value of porous paving is sufficient to warrant its more frequent use, as well as further research and development, including the development of new synthetic binders with greater strength and durability. Familiarity with porous paving offer landscape architects an increasingly important option for site design that satisfies both social and ecological imperatives.

OBSTACLES TO POROUS PAVING

With all its advantages, why hasn't porous paving become a standard material?

The primary reason appears to be resistance from some members of the engineering and regulatory community. Porous paving goes against the grain of the "pave–and–pipe" school of stormwater techniques.

Kim Sorvig writes for Landscape Architecture

WOOLLY HILLS

The skiers are long gone but the slopes of Canada Olympic Park in Calgary, Alberta will soon be filled again – this time with sheep.

COP is bringing in some 300 sheep to eat the grass, as a trial alternative to conventional grass cutting. The sheep will also be able to get at grass and weeds on parts of the ski hill machines haven't been able to reach.

Leased from a local contractor, the sheep will be hard at it early spring, and will stay on the job through the summer. They'll be controlled by a full–time shepherd, two herding dogs and a guard dog.

European ski areas – not to mention a few golf courses – have used sheep for cutting the grass for many years.

WHEELCHAIR WHEEL CLEANER

Four University of Victoria engineering students are off to Halifax with their prize winning wheelchair wheel-cleaning device.

The gadget placed first for entrepreneurial design at the Western Engineering conference and Competition held in May in Saskathchewan. The team hopes to win the national competition featuring finalists of four regional competitions.

The Victoria entry is a pair of black boxes about 40 centimeters long, with roller brushes that scrub the tire treads free of dirt while the person in the wheelchair rolls the wheels backward a couple of turns.

When the chair moves forward, ratchets lock the scrubbing mechanism while a rubber squeegee wipes most of the moisture off of the tires, The wheelchair emerges with tires clean and dry. "We tried to design it without any power or electronics," said team member Thomas Congdon.

PERSONAL OFFICE SPACE HEATING

Tired of hearing employees complaining of a cold office? Try Cozy Legs, a lightweight radiant heat panel that helps solve one of productivity's biggest enemies the cold work space.

Cozy Legs is ready to use in minutes. It attaches to the under–desk portion of the modesty panel of any office desk (or leans against panels), gently and safely. It warms the air under desk areas and provides even heat with no hot spots. It easily plugs into any 120V AC outlet with handy six foot cord. Cozy Legs requires only 150 watts of power to operate compared to an average space heater that requires 1,500 watts. The return on your investment based on energy savings alone will generally pay for itself within the first six months.

This sign must have been directed at some truly innovative lawbreakers. It's location, Route S6 in San Diego County, South California.

Blame it on Tibet

New evidence gives insight into the origin of weather

By TIM RADFORD

Anyone who thinks the weather has been unusually bad for the last 40 million years or so is right.

Dr. Maureen Raymo, an earth scientist at the Massachusetts Institute of Technology, blames in on Tibet.

Forty million years ago, and for the previous 250 million years, the earth had a benign climate. There were seasons, but not much difference between them. The evidence is trapped in the fossil record; in pollen grains, in peat bogs, in bones, in coalfields, in globules of amber, in deep sea sediments and old alluvial fans. The question is why the global thermostat was suddenly turned down 40 million years ago.

In 1987, Dr. Raymo, who had been studying evidence from deep sea sediments, tied it all together. She proposed that the big chill started with the upthrust of the Tibetan plateau. Once that happened, the hard rain started to fall, and erosion did the rest over a few million years.

About 40 million years ago, India collided with Asia. It was a slow, gentle collision, but with that amount of mass behind it the momentum changed the topography of a continent.

The impact threw up the Himalayas, and northwards, the enormous Tibetan plateau. Every time a molecule of limestone was formed, an atom of carbon was removed from the atmosphere, and buried beneath miles of seawater.

This had been a negative greenhouse, taking CO2 out of the atmosphere through natural effects over millions of years, leading to global cooling. (Hence the development of ice sheets in Antarctica, Greenland and North America).

Once the carbon dioxide levels began to fall, arid zones began for form, then the difference between the seasons became sharper. The jungles began to retreat to central Africa, the Amazon and southeast Asia. Grasslands began about 15 million years ago, and the deserts too. Ice began to form in the winter and to encrust on the polar regions.

Not everybody is happy with this explanation, and though Dr. Raymo feels that the Tibetan argument occupies what might be called the high ground, there were other factors. "This is the natural world: it's a messy system. There are probably a lot of other impacts on climate ... but we propose this as one of the major driving forces." One of these "other impacts" may have been the closing of the Panama isthmus. About 40 million years ago the Atlantic and the Pacific flowed into each other, and the Mediterranean was open at its eastern end as well as at the Strait of Gibraltar.

Dr. Raymo says that closing the isthmus of Panama wafted the Gulf Stream up northward in the Atlantic and brought warm moisture that dropped as snow and created the ice line. So the next time you are cursing the seasons remember that if it weren't for Tibet, with a little help from Panama, you wouldn't have anything to complain about.

Tim Radford writes for the Guardian News Service

Surviving the Cold

A human success story

By PENNY GREY

One million years ago our ancestors, armed only with their intelligence and crude implements of stone, ventured out of Africa and faced one of their most daunting challenges – the cold. They survived – during the last advance of the glaciers, about 70,000 years ago, a well known group of early humans, the Neanderthals, bore features specifically attributed to cold–climate adaptation, including short and stocky body build, enlarged facial sinuses, and enormous nose.

Today, humans living far from the equator, such as the Inuit, also have a short, stocky physique – compared to its volume, the surface area of the body is smaller, thus dissipating less heat. The enlarged facial sinuses and noses of the Neanderthals may have been an efficient mechanism for warming the cold air as it passed to the lungs, by providing an enlarged warm surface area.

Despite the legacy of our recent ancestors, humans originated in the tropics and in fact have a very limited physical ability to adapt to the cold. Certainly, all humans can acclimatize to a limited extent. The physiological response begins when air temperatures fall below 28 degrees Celsius – surface blood vessels constrict, thus shunting warm blood back to the body's core and reducing heat loss from the skin surface.

If the individual remains inactive, the core temperature (normally 37 degrees Celsius) will begin to fall, and involuntary muscle contraction will eventually result in shivering, a very efficient mechanism of heat production. However, as core temperatures decline, most individuals suffer a gradual loss of mental alertness; at three or four degrees below normal they become unconscious or semi–conscious.

Generally humans make every effort to avoid the conditions which lead to severe physiological responses. At the same time, however, they become more tolerant of the cold if they are exposed on a regular basis, given sufficient protection in the form of clothing and shelter. Those of us who live in winter cities are aware of how uncomfortable zero degrees C feels at the beginning of the season, after a summer of warm temperatures, and how wonderful it feels by the end, after a winter of cold ones.

Although all humans are capable of the acclimatization response, it seems that some are more capable than others. For example, aborigines of central Australia have been described as living without shelter or clothing in winter conditions, with night–time temperatures just below freezing.

In peoples that require manual dexterity in cold temperatures, such as the Inuit, surface vessels normally dilate rather than constrict – the hands are thus warmed, enabling individuals to work bare–handed for short periods of time. Whether or not these represent true genetic differences between human groups, or simply arise from continual cold exposure, is unknown.

Because of their recent history in cold climates, the story of human success in the cold is predominantly a story of behavioral, rather than physical adaptation. Clearly, a combination of material inventions and behavioral adjustments allowed our ancestors to succeed. The most important of these were clothing, shelter, and the controlled use of fire.

Hearths are clearly evident during the time of Homo erectus in China, over 250,000 years ago; for the central Australian aborigine, fire is the only protection from the cold. At Terra Amata, in the heart of Nice, France, lies the evidence for large oval huts, dating to just under 250,000 years ago; today, the Inuit igloo is a marvel of engineering, enclosing the greatest volume with the smallest surface area so that heat losses are minimized.

Our ancestors probably wore animal skins, poncho–style; the Inuit use caribou skins to make their parkas, which provide such insulation that they are equipped with vents that can be opened and closed with drawstrings.

Today, behavioral adjustments to the cold are as many and varied as the world's cultures. For example, the Quechuas Indians of highland Peru regularly consume sizeable quantities of alcohol to combat cold stress, a remedy not unknown to Canadian football game–goers. While alcohol does cause increased blood flow tot he extremities, the raised skin temperatures are only temporary and can be dangerous – precious heat is quickly lost to the external environment.

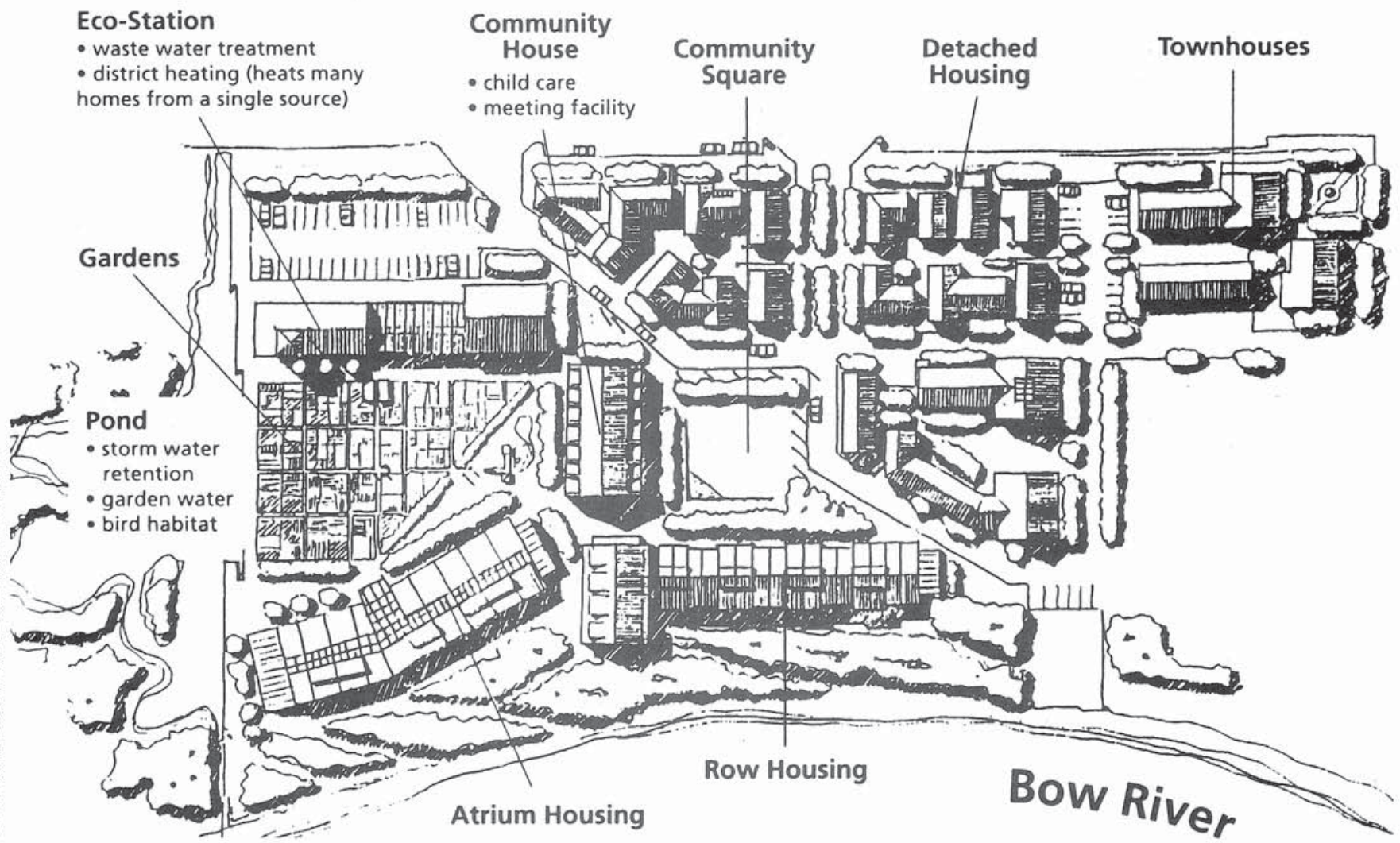
The Quechuas also chew coca leaves mixed with lime, claiming it makes them feel warm, though it does not measurably do so – perhaps is psychologically adapts them to the cold.

The San Bushmen of the Kalahari Desert prepare for a cold night by splitting into groups, each around its own campfire. They lie with skin cloaks tucked round their bodies and pulled over their heads; their feet, burned toward the fire, seem to serve as thermostats, for when the fire dies down, they awaken and add more wood. The air next to their bodies stays at a comfortable 18 degrees Celsius.

Though we remain essentially tropical beings, biologically speaking, we have managed to exploit the coldest places on earth. It has been our cultural and technological ingenuity which has allowed us to write our own success story. As the Inuit say, the best way to deal with the cold weather is to "take care not to be cold."

Penny Grey is a physical anthropologist who teaches Human Evolution

Plan of the Affordable Sustainable Community Project



The Push To a New Way of Life

A Sustainable Community Project in Calgary

By SCOTT ROLLINS

Like many people today, Calgarian Ida Tjosvold faces a paradox. Although she lives in a pleasant, modern apartment building, surrounded by neighbors on all sides, she sometimes can't shake the feeling that she's all alone.

"I'm sure we all feel isolated sometimes. I certainly have a network of good friends, and I'm not isolated in that sense, but I do live alone in my apartment. My neighbors are excellent, but urban apartments aren't community. We smile at each other in the hallway and we're very pleasant, but we wouldn't go over and say, 'You want to have a cup of coffee? I had something super happen to me today,' or, 'I had a miserable day. Come in and let me tell you about it.'"

But Tjosvold, unlike most of us is not content simply to bemoan her isolation. Instead, she joined a project to build a whole new kind of community, literally from the ground up.

The Affordable Sustainable Community (ASC) Project, masterminded by the University of Calgary's Faculty of Environmental Design, is at this point only a dream. But the tiny residential development proposed for the Inglewood district, on the banks of Calgary's Bow River, may ultimately change the way many of us live.

SCANDINAVIAN KNOW–HOW

Picture a neighborhood where the single family dwelling has made way for closer, more integrated housing. Neighbors from all walks of life spend much of their time together in common work and recreation spaces, and co–operate in caring for the vegetable garden and other green spaces.

Cyclists and pedestrians rule the narrow, intimate streets, even though many residents still own cars. At street level, blended in with the housing, you find an assortment of small cafes and shops. The community looks after its own storm and waste water treatment, and works together to promote conservation, recycling and composting.

You might dismiss this vision as utopian, except for the fact that similar communities already exist in Europe.

David Van Vliet, ASC Project co–ordinator, travelled to Scandinavia in 1988 while working on his master's degree thesis. He studied a wide array of residential communities, ranging from 16 to 600 units in size, and was struck by the way they combined practical, social and ecological considerations. While he points out, "There's many lessons to be learned from each of them," Van Vliet describes one particular project as an example.

On the surface, "Tusenskonan" in Fasteras, Sweden, looks like a typical inner–city apartment complex: a 70–unit, U–shapedstructure overlooking a partially enclosed courtyard. When he first stepped into it, however, Van Vliet sensed that the place was special. "It's just a beautiful thing" very simple and very well–conceived, and it feels good when you're in it."

In one, tidy package, Tusenkonan manages to accomplish a multitude of ecological and social goals. High insulation, good window design and heat exchange from the air and water systems combine to dramatically boost the complex's energy efficiency.

The residents, through diligent recycling and composting, generate 80 per cent less waste than their neighbors. The project's few parking spaces are all underground, freeing the courtyard for other uses, including a community garden, rainwater pond and play areas.

The people who live in Tusenskonan physically shape it. "The residents are empowered to make changes in the courtyard as they see fit, even though it's a rental arrangement. They can expand the garden, they can have more trees, they can create new play areas, or take them out."

The high level of public involvement Van Vliet saw in the Scandinavian projects struck him. People have a stake in their community, simply because in many cases they designed it themselves.

HOME ASSEMBLY

Inspired by the Scandinavian

model, Van Vliet and urban design professor Dr. Bill Perks launched an effort to design a similar project for Calgary.

"We wanted to try to break the inertia that has seemed to exist for the last decade or so, in terms of environmental planning," says Van Vliet. "Industry was saying, "We're waiting for some direction and guidance from federal and municipal government,' and the municipality was saying, "Geez, isn't it up to the private sector?'"

Looking to break the gridlock, Van Vliet and Perks brought together a forum of experts from the City of Calgary and the housing industry. The ASC Project was born.

Three years later, however, it still exists only on paper. The Inglewood site is far from finalized and the design asks for a lot of rule–bending. City planners would have to stretch countless codes and regulations to accommodate the scheme. Developers, a notoriously conservative lot, would have to sink money into a radical and potentially risky venture. Housekeepers would have to abandon their suburban preconceptions and commit themselves to a completely different lifestyle.

Yet, despite the delays and hurdles, the project remains very much alive. Ida Tjosvold and her fellow society members have begun to hammer out the physical details of the project. At the same time, despite their lingering reservations, more planners and developers have come to recognize the project's potential value.

"If they were able to get this project built, or even a variation of it, and we could see what it could represent, I think it would be a tremendous benefit for everyone," says Greg Brown, who represented the Canadian Institute of Planners on the ASC advisory panel. "People could look at the results and say, 'Here's another way of thinking, or another way to do things.' As it is now, they're making various people think about the concept, which in itself is positive."

Perks is determined to see the job through. "It's a long and complicated process, but we won't get any change in the Canadian context until we can build demonstration projects. We need a partnership of senior government, municipality and industry to build a few of these to demonstrate, test and monitor the results."

IMPOSSIBLE PRICE?

Not everyone shares the enthusiasm of Perks and Van Vliet for Canadian trial of Scandinavia model.

"There's a standoff among the municipality, the regulatory people and the industry," observes Perks. "The industry says, 'We will build whatever the consumer wants.' The only problem with that is that the consumer doesn't have any images of 'the possible'. Their only frame of reference is what they see already. We don't have residential projects conceived around sustainability."

At the same time, says Perks, people in the housing industry see city regulators as an insurmountable obstacle.

"They'll say 'Look, we have tried to get innovative projects going, but we get a hell of a lot of resistance from the municipality about changing the standards of development and the codes. It costs us a hell of a lot, because there are big long days in getting these changes through the system.'"

Finally, Perks describes a third element in the standoff. "The politicians are very sensitive to their electorate out there, and they're not sure that community associations will accept a different form of urban development.

A more sustainable community means more intensive land use, it means tighter groupings of housing, it means mixed use of housing and it means more preservation of open space and natural ecological systems, which adds maintenance costs either to the community or to the city."

That kind of widespread resistance would doom most projects. But, says Van Vliet, "none of this is unusual. It's certainly happened in other places, in terms of having to overcome some of these barriers before things can move forward.,

The first barrier Perks identifies, the housing industry, currently enjoys a booming market in Calgary. With houses selling as quickly as they can be built, developers might well see the ASC project as an unnecessary risk.

Says Greg Brown, "As a planner who is out there designing the subdivisions and developments that people are buying today, my biggest concern is, there a market? Are there enough people willing to invest their dollars to live in this community?

"People are extremely conservative when they buy their houses. One of the real driving forces is not only 'Does it satisfy my needs' but 'Am I going to be able to sell it?' When people go buy a car they say, 'This is going

"The industry says, 'We will build whatever the consumer wants.' The only problem with that is that the consumer doesn't have any images of 'the possible'. Their only frame of reference is what they see already. We don't have residential projects conceived around sustainability."

to serve my needs for the next six years, it looks fun, I love the colour, so I'm going to buy it.' When people buy a house, they say, 'I'm going to leave the walls white for the rest of the time, I'm not going to make it too exciting or do anything really radical with this house, because I'm going to have to sell it 15 years from now if I decide to move.'"

Although they're named as Perks' second barrier, Calgary's city administrators appear ready to give the ASC project at least some regulatory leeway.

"In my mind, the City of Calgary is willing to look at anything, as long as it seems reasonable," says Owen Tobert of the City's Urban Development Division. "Our job isn't to make sure that they make a subdivision just like any other subdivision."

Tobert even sees some distinct advantages to the project. For instance, by taking responsibility for such things as waste water treatment and storm water management, ASC removes that burden from the city.

"Everybody here at the City of Calgary is fully aware that we've got finite financial capability. If subdivision development is going to continue the way it has in the past, we're going to reach a point where we won't be able to afford new developments. We're rapidly reaching that point already."

Perks and Van Vliet did their best to overcome the third, political barrier when they made up their initial advisory panel.

The panel included a representative from the mayor's office, a city alderman and Bob Lang, director of Federation of Calgary Communities. As a result of their involvement, none seem particularly alarmed about ASC. Says Land, "I don't see any real problems with the project."

Even so, Van Vliet can't seem to find the kind of political help he saw in Scandinavia, where politicians eagerly embrace social experimentation.

"The attitude there is to see how things work in practice as fast as possible in order to learn from it. The fundamental difference is that municipal agents themselves as playing a role for change and having influence on the private sector."

Instead, he finds himself caught in a frustrating political cycle. "Certain people say, 'This can only come from strong political support,' and certain politicians say, 'No, this can only come from support from the planning bureaucracy,' and the planning bureaucracy says, 'The only way this can happen is if the commissioners fully support it.'"

SOLD

If they lack a strong friend at city hall, however, Van Vliet and Perks have some determined allies in Ida Tjosvold and her colleagues.

The Sustainable Community Housing Society sprang into existence after a local CBC radio interview with Van Vliet and Perks where they asked ordinary Calgarians to help design the project. During the next 36 hours, over 100 calls flooded in.

Of the 24 people chosen for the group, many, including Tjosvold, hope to ultimately become residents of the project.

"I like the sense of stewardship, of 'living lightly on the earth', of being environmentally responsible," says Tjosvold.

She adds: "I look at it in two ways. Partly I look at it as a consumer, in that I would love to live there. On the other hand, I'm also a sociologist, and it makes awfully good sociological sense, in terms of people's loneliness and the need for community."

It makes good sense to project engineering consultant Finn Spanggaard too.

"We've been trying to increase the density of the housing units, so you'll find people living closer together but at the same time with more common areas. That will cut down on servicing costs," says Spanggaard. It will also cut down on alienation: "Sometimes if you're closer in with other people you're almost forced to talk to them. I think in today's communities people are very distant toward each other."

For the time being, Calgarians will have to find moire conventional ways of bridging the distance among them.

The three–hectare plot at the edge of the Bow won't take its new shape for at least a few years.

But Van Vliet is convinced that the long wait will eventually be rewarded.

"Some of the professionals involved say that they have never seen something being discussed for this long, and engaging this many people, without eventually proceeding. I'm confident that something will happen."

Scott Rollins is an Edmonton writer for Environment Views

Thoughts On Nordic Design Awareness

The stylistic repercussions of winter living

By NORMAN PRESSMAN

A positive approach to the varying expressions of winter life can be witnessed in the Nordic nations of Iceland, Norway, Sweden, Denmark and Finland. These countries have a lengthy traction of understanding the nuances of landscape and weather changes upon human habitation.

Many of the popular adaptations to northern habitat exist in older, rural settlements which have survived the passage of time. Newer urban developments – portrayed in planned communities such as Malminkartano (outside of Stockholm), Alsike (outside of Uppsala), and Ekero (outside of Drottningholm) — have also been sensitive to climatic factors, people's needs, and the voice of the site. Eco–village projects such as Ekoby in Lovasen (Sweden) are demonstration experiments which can point the way to a new and better organization of urban space.

Regional planning, urban design, neighborhood development, housing, and even furniture and industrial design are of an exceptionally high–quality. After all, why shouldn't a telephone handset, a compact disc player, a chair (just look at, and then sit in, a chair by Swedish designer Bruno Mathsson), or a scotch–tape holder — not to mention a building — be superbly stylish, comfortable to use, and very elegant?

The Nordic peoples know instinctively that northern living is influenced by changing seasonal demands. Their seven months of sub–zero darkness serves as a constant reminder. They possess a deeply rooted attachment to nature in all its manifest forms. Their industrial designs products, handicrafts, architecture and neighborhood planning are exemplary and have always been one of their biggest worldwide exports.

Their high degree of social caring and sensitivity appears virtually unmatched in the Western World (as exhibited through designs for every sort of physical and mental challenge) with the ergonomic and aesthetic qualities of artifacts and buildings creatively conceived and expressed. They are on the cutting edge of applied high technology which rapidly filters down to everyday life!

Nordic nations have a tradition of unsurpassed design excellence. They were among the leaders in accepting the early tenets of modernity combining a sensitivity for materials (usually found in the natural envi-

> The world around us should be conceived in a 'seamless' manner in which interior design exists in relation to buildings, buildings in relation to cities, cities in relation to landscape, and all of these combining the highest regard for humankind and the 'voice of the locality'

ronment) and user requirements (emphasizing ergonomic factors), with an artistic flare, resulting in products of genuine beauty — 'objets d'art'.

Elegance, clean and simple lines, quality finish in treatment of the materials, correct proportion and clever application of colour impart "character" despite an object's functional purpose normally being the major source of inspiration. These values hold true for tableware surgical instruments, and T.V. remote control units (e.g. the Bank and Olufsen line) as they do for furniture, boats, buildings and the spaces between them. The ultimate principles cry out — ageless quality, functionality, outstanding craftsmanship and seductive visual attractiveness. Design is a way of life and an integral part of Nordic culture.

If the built environment has any significant influence in shaping a more compassionate society — and if good design plays a seminal role — then Nordic experience is one which is essential to understand. This is more than just a collection of individual object–statements (although personal talent should not be minimized). It reflects cultural value constructs with their subtle variations, deeply imbedded in the Nordic soul. These can undoubtedly help us to mould the milieu in a more humane manner.

The underlying message which Nordic design emits, suggests that both industrial design and architecture embody, evoke and transmit meaning in the attempt to relate function to form, to function and both of these to deeper human needs. Through an analysis of the design process and the everyday products which surround us, we can gain a clearer comprehension of the universally understood language of form through which the built world can be interpreted.

Finally, we must not perceive the built environment as a collection of individual objects no matter how well designed these may be.

The world around us should be conceived in a 'seamless' manner in which interior design exists in relation to buildings, buildings in relation to cities, cities in relation to landscape, and all of these combining the highest regard for humankind and the 'voice of the locality' — giving rise to genius loci possessing distinct personality and evoking the spirit of place.

Nordic design tends, on the whole, to respect this ideology and, therefore, represents idealized expressions of culturally derived form weaving past, present and future together in a meaningful way. Fenno–Scandinavian experience has the potential not only to help us understand present–day problems but also to provide solutions for the dilemmas of tomorrow.

Norman Pressman is a professor at the school of Urban and Regional Planning at the University of Waterloo

feature

MULTI-SEASON ARCHITECTURE

Multi-season responsive architecture is good architecture. The architect who creates with both feet planted firmly in the local realities of people and place will be a successful one. The following articles don't outline the specific steps to building for the north. On the contrary, they present a variety of approaches, examples and opinions. The blind application of international styles has lead us to a point where we can no longer accept the status quo. New regional traditions need to be forged. Winter city architecture should be a distillation of techniques and concepts which create a locally specific, unique solution. This feature will put forth several of the implements which can be used to build effectively. It is up to you to decide which you will put in your toolbox and how you will use them.


東海道
五拾三次
之内
蒲原

H O M E

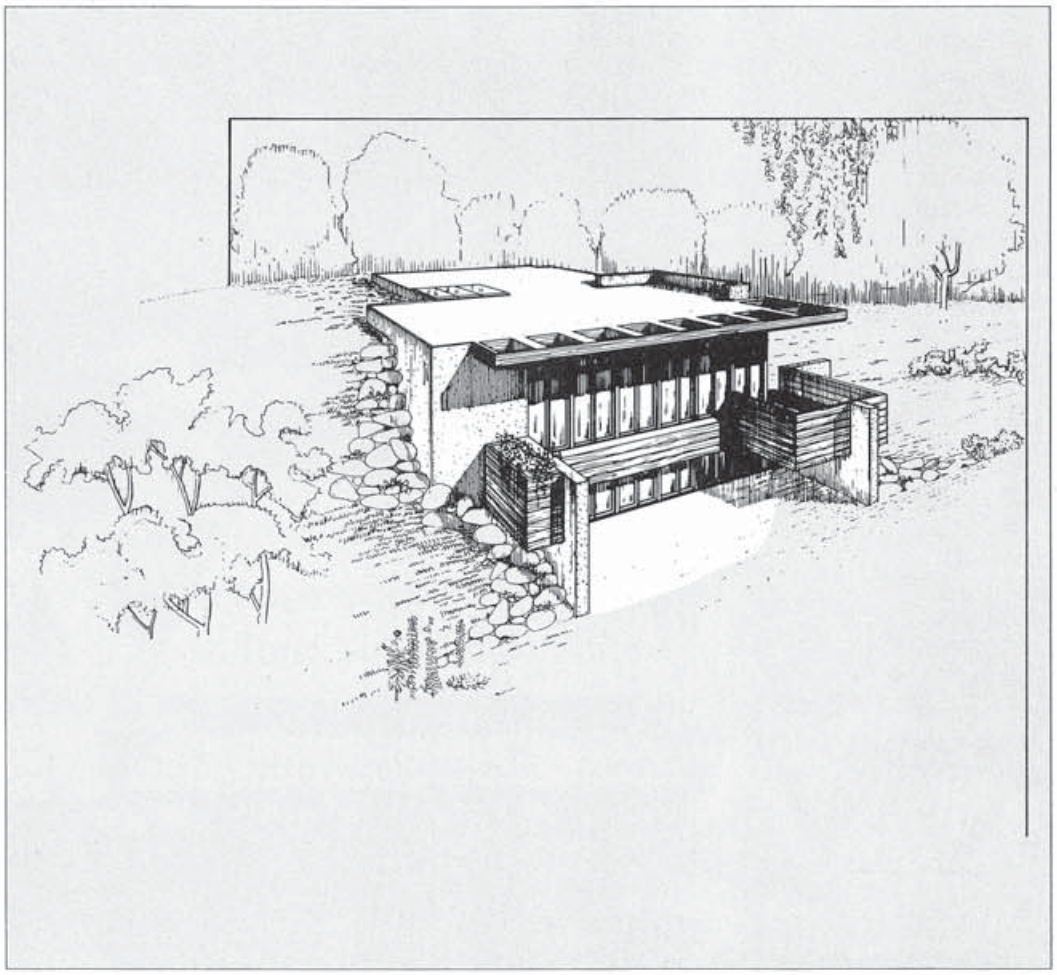
KUENY

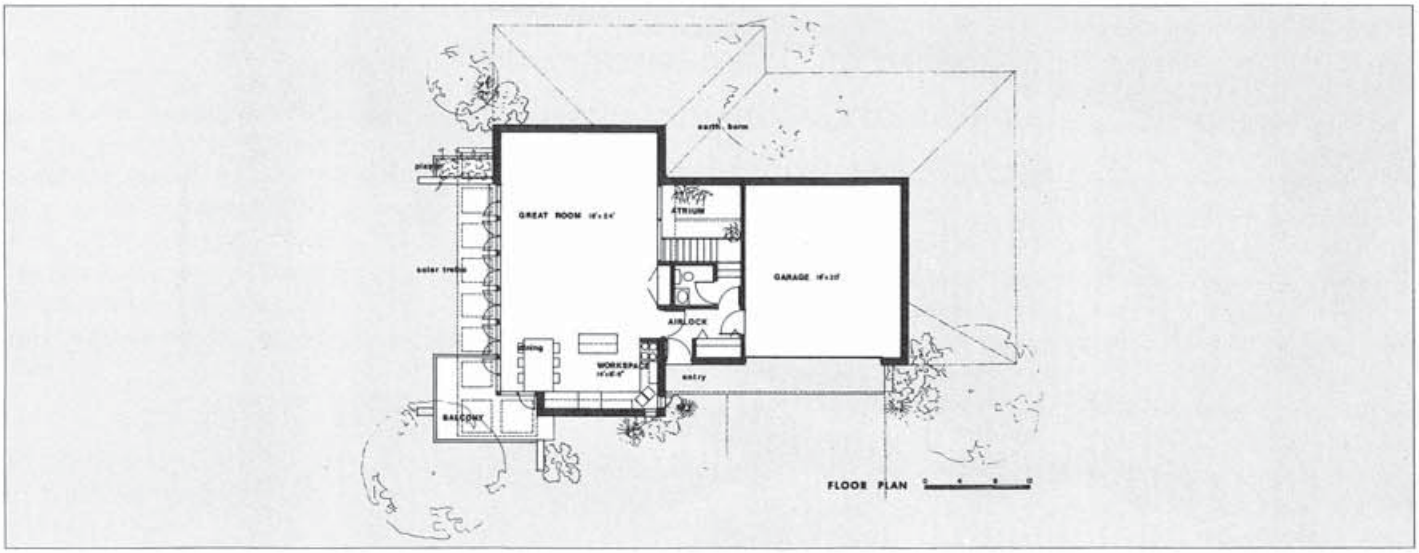
A small house (860 sq. ft. first floor, 462 sq. ft. garage, and lower level of 1,322 sq. ft.) that facilitates family interaction through open planning and enhances environmental awareness with earth sheltered, passive solar construction.

The atrium unites both levels by bringing sky, greenery, and if desired, activity and sound flow into every space. Sheltered spaces and functions are woven into a grand space allowing both privacy and togetherness: a place for family.

The construction is poured in–place concrete walls, precast concrete floors and roof decking, and steel tube framing with thermal break insulating sash; a thermal mass within an insulated envelope of R–50 roof and R–25 walls, providing quiet, strength, and shelter, as well as elegance and economy.

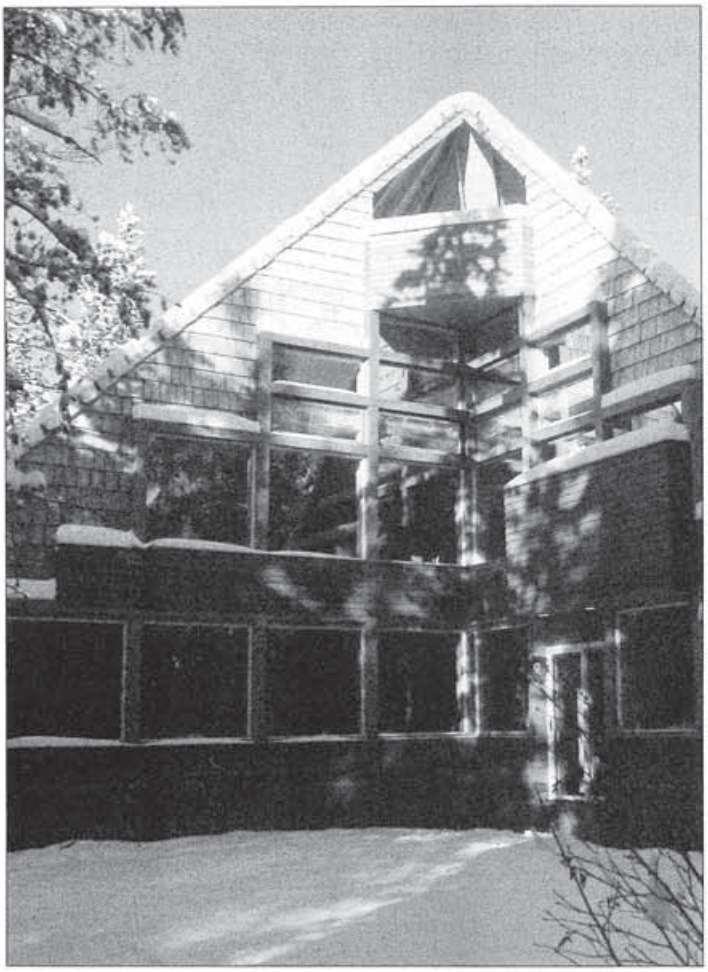
The design achieves responsible, social and environmental Architecture at a small, affordable scale.





F R O N T

McDOUGALL



The home is located in a small community at an elevation of '4800 (1450 m) i the foothills of the Canadian Rocky Mountains. The site is heavily treed with lodgepole pine and spruce and slopes gently to the north.

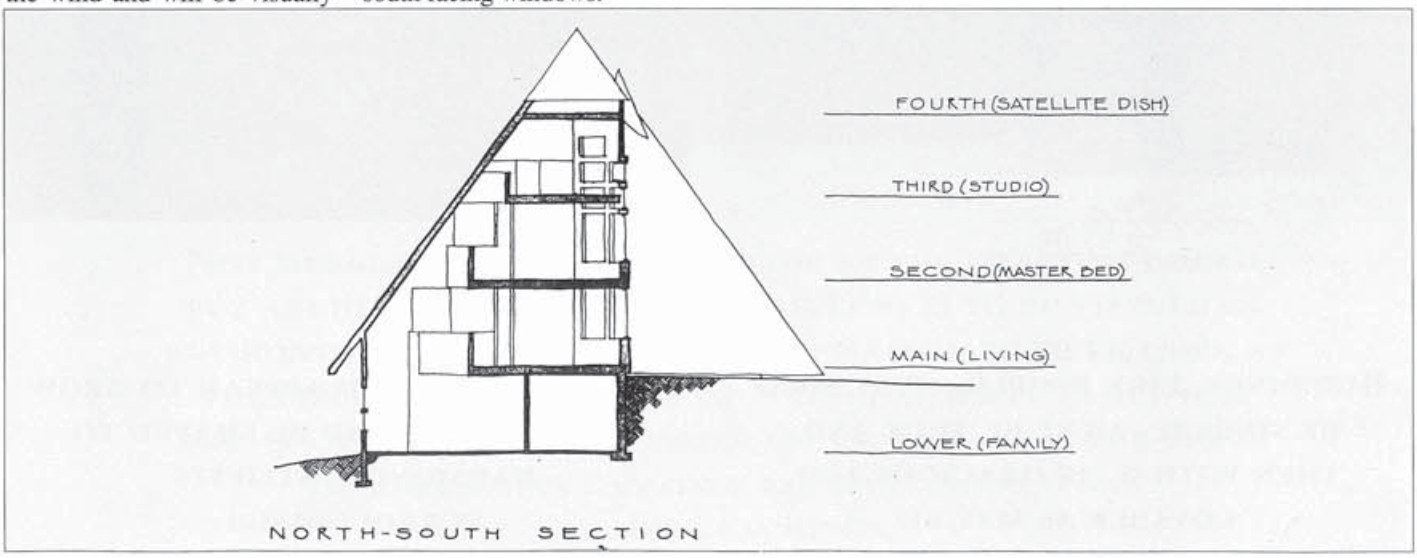
The house was built when the children were teenagers and are now gone. The artist and her husband live mostly on the main floor and above. The lower floor is used mostly when the children come home to visit and for guests.

The building is sited so that the vertex of the notch is oriented due south. This creates a microclimate giving the sheltered area approximately one month more summer than the surrounding countryside. This small area now has a similar climate to Calgary, the nearest city, with an elevation 1000 feet lower.

The TV dish and future solar cells will be located at the top level in the notch, sheltered from the wind and will be visually unobtrusive. This means they will be installed at a height sufficiently above the surrounding grade so no trees will be removed to give unobstructed access to the sky.

The main floor and upper floors are all oriented to the south, Most of the active living (Dining, Living, Masterbed is done within 20 feet of the walls facing into the notch. The uppermost floor is a studio with excellent lighting.

The lower floor is oriented to the north. The only windows in this area are triple glazed and are situated where they are protected from the north wind by earth berms and natural vegetation. The roof is insulated with R-40 batts. Instead of natural light flooding this portion of the house, there is space, space, space. This four storey high space is the interconnecting element for all levels in the house and allows for some spillover natural light from the south facing windows.



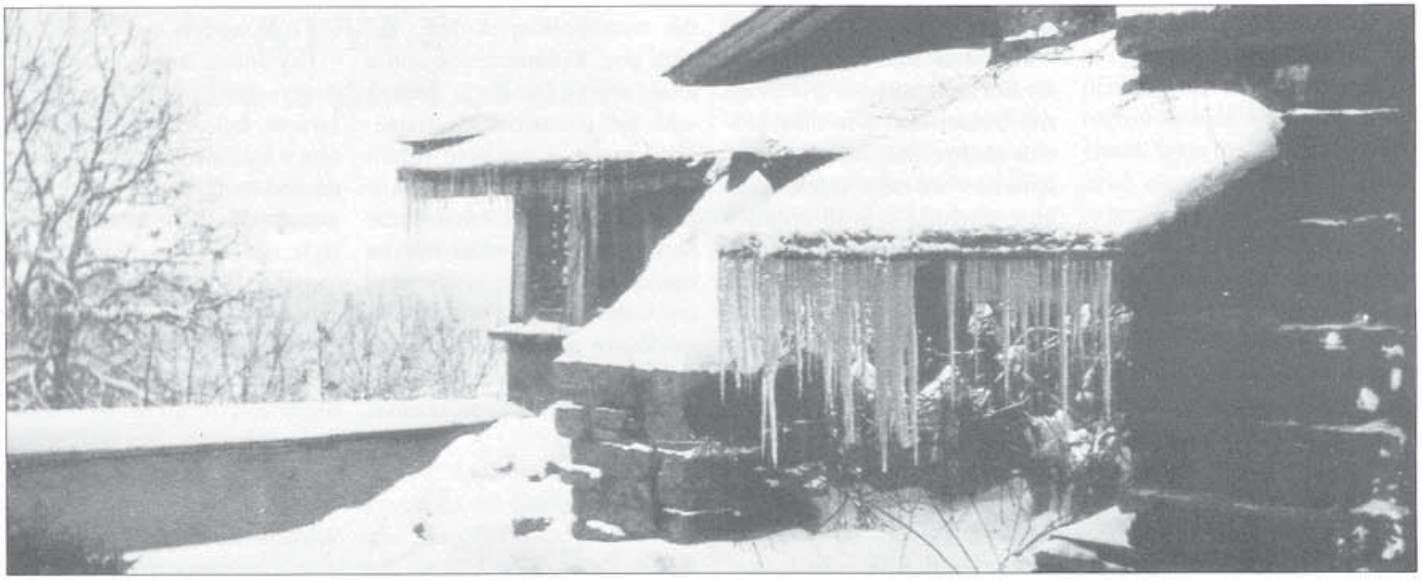
frank
IMAGES &
lloyd
IDEAS
wright

BUILDINGS, LIKE PEOPLE, MUST FIRST BE SINCERE, MUST BE TRUE AND THEN WITHAL AS GRACIOUS AND LOVABLE AS MAY BE

A BUILDING SHOULD APPEAR TO GROW FROM ITS SITE AND BE SHAPED TO HARMONIZE WITH ITS SURROUNDINGS

NO MAN EVER BUILT A BUILDING WORTHY OF THE NAME ARCHITECTURE WHO FASHIONED IT IN A PERSPECTIVE SKETCH TO HIS TASTE AND THEN FUDGED A PLAN TO SUIT. SUCH METHODS PRODUCE MERE SCENE PAINTING

MEN OF STATURE...WILL COME FROM THOSE WHO HAVE NOT DIVORCED THEMSELVES FROM NATURE. ART, THEN, WILL ACQUIRE MAGNITUDE AGAIN



NOT MERELY IS ARCHITECTURE MADE AT THE DRAFTING BOARD, BUT ARCHITECTURE IN ALL OF ITS ASPECTS IS TO BE STUDIED AS ENVIRONMENT, AS THE NATURE OF THE MATERIALS TO BE USED, AS THE FORMS AS PROPORTIONS OF NATURE HERSELF IN ALL HER FORMS - SEQUENCES AND CONSEQUENCES. NATURE IS THE GREAT TEACHER - MAN CAN ONLY RECEIVE AND RESPOND TO HER TEACHINGS.

ARCTIC-TECTURE

How can we make our built forms meet the challenges of the seasons?

By HAROLD HANEN and GREG LIBURD

ARCTIC-TECTURE. THE play on words at first seems cute and maybe brings to mind igloos. However, scratch beneath the surface and it reveals a bias. The term architecture stems from the Latin 'arcus' (meaning arrow) which was used to describe the shape of the curved structural member which delineates the vast majority of buildings. Greco-Roman ancestry has created a lineage that still holds strong in all of Western society and of course in the traditions of the modern architect.

The principles of building practiced thousands of years ago would have to be updated to be appropriately applied in this day and age. If this were not the case we would all go to work at the downtown Acropolis and lunch beneath the pillars of the agora. This might seem far fetched, yet we continue to shamelessly apply temperate climate architecture in realms of multi-seasonality.

Architecture is integral to cities and their citizens. Buildings and houses do more than provide shelter, they help to determine how we exist. One can see how essential it is to create a built environment which is harmonious with the realities of surrounding.

Just as it is now intolerable for structures to be anachronistic in their function (i.e. handicap access, energy efficiency, etc.) it should be equally unacceptable for them to be climatically inappropriate.

The goal of an architect should be to create structural expressions which enhance the daily life of their inhabitants. Since our existence is not severed from the earth, wind and sky it makes little sense to ignore these elements.

PROBLEMS

Essentially the situation of seasonal illiteracy has arisen out of priorities. Previous paradigms have focused on technology, the needs of form makers and international marketing. The results may look great on the covers of annual reports but are a slap in the face of those who have to live with and in them.

The results of failing to relate to specific environments can be seen in any city where the snow falls. Just look at the staple of the metropolitan skyline, the high rise. Encapsulation and a total lack of finesse in dealing with the inside/outside transition creates a negative health situation, Sick Building Syndrome. On the outside these same buildings worsen wind, darken streets and create unsafe passageways.

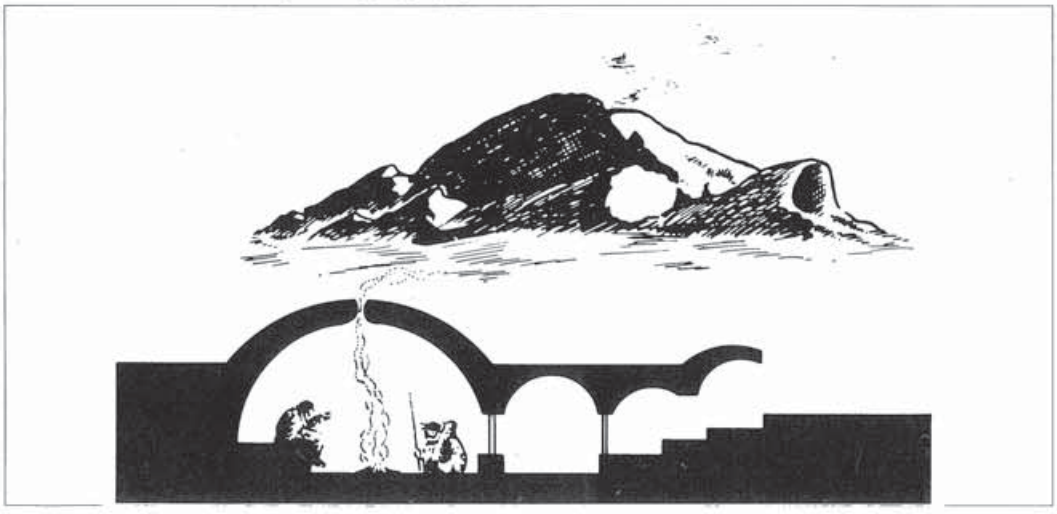
Modern architecture's bankrupt connection to climate and geography has also lead to environmental difficulties. In cold climates natural systems go into hiatus. The resulting problems with river flow, air pollution and landfills should be handled with sensitivity, yet they are all but disregarded.

EDUCATION

What does it take to get started in this reconstruction of ideas? Those involved have to genuinely care about the environment they are creating and this begins with students. Discussion has to be promoted to rekindle an enthusiasm for honest northern architecture. One quarter of the earth's surface is cold climate and building on it requires a multi-dimensional approach.

To provide ultimately successful and enduring buildings there has to be a shift towards the needs of the users and regional practicalities. This sentiment and those who promote them should be seen as visionary role models.

Fay Jones, holder of several American Institute of Architects awards, believes that architecture is intended to make life better and to fit place, not to win awards. Buildings need to have style, not be a part of one. Jones own stylistic parameters revolve around three elements: the nature of materials, the relationship of the part to the whole and site.



Principles should be taught which will give future architects the ability to successfully encounter landscapes, rather that trying to conquer them:

Copying is out. Architectural plagiarism is an expression of low confidence, laziness and not savoring the real world.

The north provides countless opportunities for creativity and innovation. There are so many problems that need to be effectively addressed that the ambitious should be chomping at the bit to tackle them. With this brave new frontier at every snow covered doorstep, it makes no sense to blindly apply southern cookie cutter mentality.

Multi-seasonal design requires dealing with the worst case scenarios. Extremes of climate require respect, designing for the most wealthy, able bodied in tropical conditions is more than insensitive, it is negligent.

NEO-NORTHERNISM

Wholism. This is the underlying concept of circumpolar architecture. Multiobjectivism is needed in the north. Resources have to be coordinated to meet the needs of the citizens.

The fragmentation of the last forty years has limited scope and vision. We are now attempting to reverse urban decay through such trends as Neo-Traditionalism. Why not avoid having to be put into such situations by taking an integrated approach in the first place?

To create a nuturing atmosphere for northern architecture there has to be appropriate administrative support. Current cold climate building codes are universal and restrictive. They force builders to jam square pegs into round holes. Regional codes would address the need to diversify in order to meet the needs of specific areas.

The new northern architecture should be a positive one. Streets and buildings should welcome season changes. Colours should be used which enhance the natural environment instead of stifling it. Protective scale and intimacy should be created using nooks and hearths. Given the chance people would celebrate winter rather than fruitlessly trying to avoid it.

POSSIBILITIES

Architecture for the north can only change if the ideological infrastructure is there to provide support. The incentive for creating and adhering to such ideals is compelling. Communities which function well within their environment create an atmosphere for social, economic and political strength. In addition, the innovation and creativity used to build climate sensitive architecture is a valuable commodity.

The applications for such broad based thinking are vast and span across the globe. With all these potential benefits it makes no sense to cling blindly to the past. Accordingly, it is now time to stop living in someone else's house and to start creating buildings that we can call home.

Harold Hanen and Greg Liburd are Editor and Associate Editor of Winter Cities

buildings need to have STYLE not be a part of one

ALL SEASON ARCHITECTURE
Trent University

Does Trent offer any lesson 25 years later? The first is the value that good architecture, honestly and creatively fulfilling a carefully thought–out brief, can have for the economic and social health of an institution. When constructed, these buildings not only received design awards, but they were also well loved by the great majority of their occupants. And this is still the case. Building design which is acceptable to both the architectural avant–garde and the general population is not as common today as it should be, but Trent spanned the gap in its day and continues to do so. The architecture itself is a draw to faculty and student alike.

The buildings are so respected by the occupants that they have established the role of "Heritage Architect" (an office currently held by Larry Richards) to advise on renovations and new buildings that respect Thom's original creation. When one of the youngest universities in the land thinks of its buildings as heritage and goes further to institutionalize their protection than other universities that have collections of century–old buildings, one begins to sense the enormous current value placed on the architecture at Trent.

A second lesson, as relevant today as it was in the 1960s, lies in the inventive, informal interplay between the buildings and the outdoor space they contain. Without directly repeating Oxbridge college layouts, the interplay yields similar results. Trent's spaces, narrow lanes between buildings, wider walks, courtyards, and central academic square, are all formed by the buildings, whose exterior treatment provides them with interest. They in turn form a fine setting for the buildings. Walking through them provides an emotionally charged kinetic experience as one moves from narrow to wide, from intimate to grand, from manicured to wild, from closed to pen. It is an experience not as easily provided by the fractured axes of deconstructivism commonly used today as organizing devices for composite form.

A third lesson lies in how to dramatize a natural site. The buildings and the river interlock. The stone concrete walls of one of the residences and the library rise out of the water, the river banks flow directly, into the courtyards, the central academic square and bridge overlook the river. The pedestrian framework has a wonderful interplay with the grounds, providing grade separation from vehicles without it ever appearing that bridges have to be negotiated. They are extensions of the buildings at various levels and the grades at various elevations.

NO LIGHT IN THE STAIRWAY

An architect surveys the Soviet legacy of post–Communist Russia

By MICHAEL S. OWEN

ONE OF MY MOST poignant recollections from my time in Russia was the rainy afternoon I took a walk around one of the housing "micro–districts" of Irkutsk hand in hand with the five year–old son of the head of the English department at the regional university. We had left the seventh floor flat and walked down the short dingy hallway to the elevator cage, I could see through the crack in the floor a lone light bulb shining in the blackness of the shaft seven stories below.

Outside, we were surrounded by eight and ten–story block apartments as far as the eye could see. All of the grass between the units had turned to mud. All the pavement was cracked and broken. For the entire complex of thousands of units there were a handful of garbage collection sites, all overflowing. We passed a playground containing a long–neglected swing and teeter–totter of twisted metal.

From time to time we could hear loud, angry shouts from an anonymous window. When we returned, the electricity had gone out so the elevator was not operating, and there was no light in the stairway. The boy slowly guided me up the stairs to his home, where, safely inside, I shared a warm and hearty meal with the family.

On one level, I remember this as an experience of sweet melancholy – a metaphor of contemporary Russian life – the innocence of the young boy accepting this place as the Soviet ideal, oblivious to its damaging effects, forming unquestioning, lifetime assumptions about the world.

On another level, I am deeply troubled. My knowledge tells me that what I am seeing is an experiment that was tried in the West and failed. During the 1950s, and 1960s, billions of dollars were spent in the United States on public housing projects not very different from this Soviet model, with about the same results. Within a few years the anonymous blocks were vandalized, crime set in, and family life broke down.

In 1972, because it had become unlivable the Pruitt–Igoe Housing Development was dynamited by the St. Louis housing authority that created it 17 years before. This event symbolized a change of Policy in North America that strove to reverse the destructive aspects of urban renewal, including the practice of using high–rise apartment blocks for public family housing. Here I was 20 years later, an eyewitness to the same destructive power of this concept on millions of Russian lives, and it saddens me.

The purpose of my 1991 travel and study in Scandinavia, Russia, and China was to visit cities

at latitude 55 north to identify and compare strategies for coping with winter conditions. I had done similar studies comparing urban design aspects of Spokane; Edmonton and Calgary, Alberta; and Minneapolis and St. Paul, Minnesota, as part of research for the International Winter Cities Association.

I was looking forward to seeing how traditional northern cities like Stockholm, Helsinki, Leningrad (now St. Petersburg), and Harbin, China, with long histories of traditional building and planning, structured their street systems, organized their pedestrian and vehicular transportation and transit systems, and arranged buildings to maximize wind protection and solar heating. I was also interested in the issue of historic preservation; to what extent were these centuries–old cities, especially in the Communist non–Western world, willing and able to incorporate the buildings and infrastructure of the past into the automobile–and skyscraper–dominated urban center of today?

I discovered in Scandinavia and, to some extent, in China that they had indeed succeeded in using centuries of traditional city planning and building practices to inform and guide the development and operation of their cities today. I found the winter cities of Stockholm, Sweden; Turku and Helsinki, Finland; and Harbin, China to be full of friendly street life, comfortable and easy to orient myself in, and composed of a sensitive blend of new and historical structures.

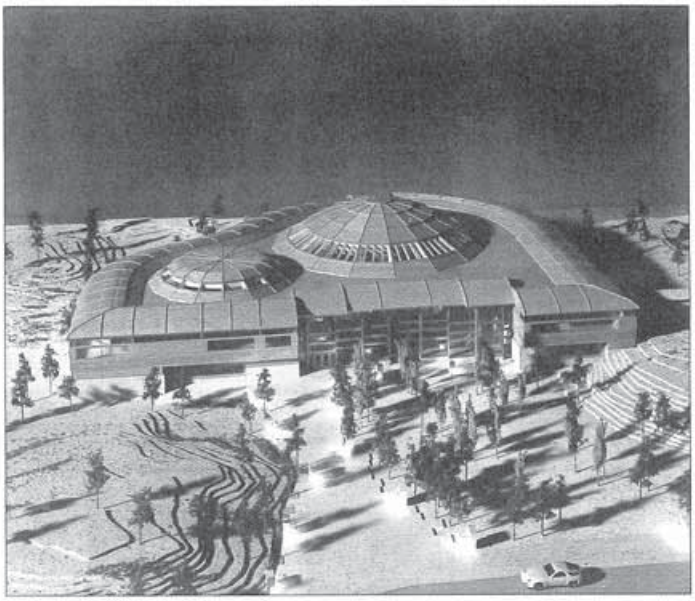
These and other Scandinavian and Chinese cities contain a great variety of beneficial examples for North American planners and urban designers. Healthy, livable cities provide accommodation for working, living, and playing for all ages; they contain lively streets that are safe; they express historical and cultural identity; and they balance the need for community with the fulfillment of individual potential.

I found virtually none of these qualities in the Russian cities I visited.

We have heard of the food and fuel shortages, the lack of employment, the civil unrest, the nuclear meltdowns, and other impending environmental disasters, the myriad of seemingly insurmountable problems facing the Russian people today. As an architect and urban designer, I would add to this the almost total evisceration of the built urban infrastructure by 70 years of well–meaning but misguided Soviet policies and methods of development. As one of my Russian friends and colleagues explained, "All of the buildings prior to the Revolution represent the 'real Russia'; all the buildings since symbolize the 'artificial Russia.'"

One evening, we celebrated at a friend's house in Vladivostok because, for the first time in several weeks, we had electricity, water, and hot water ***all at the same time***

ALL SEASON ARCHITECTURE
North West Territories Legislative Building



The first new legislative building to be constructed in some 75 years, this structure uniquely reflects the geography of Canada's north and the consensus–style government of its people.

The 54,000 square foot facility takes on an organic serpentine shape, with a circular chamber at the heart of the structure, a smaller circular caucus meeting room, library, and speaker's office all flanked on three sides by office and support space.

The building's relationship to the land was a key aspect of the architects' approach. According to the builder, "The building is tightly integrated with the site. That's why we situated the buidling at the extreme end of the site, veiled behind stunted growth on the lake edge."

It was important that the landscape's indigenous materials be disturbed as little as possible. Landscape architecture, reinforces the area's indigenous plant materials such as sedges and grasses. In addition, the architecture and materials of this structure are far removed from legislative assemblies elsewhere in Canada. For example, the exterior walls are clad in zinc panels with a cast zinc accent band. Zinc was a logical choice because of its durability (the structure is designed as a "100–year" building) and its ability to withstand the harsh northern climate.

The interior consists of materials that are sensitive to the northern sensibility. Slate flooring of green/grey tones is used in the "Great Hall" (a large public meeting area) with a wood ceiling and maple panelling adding warmth.

In addition, both the Chamber and caucus areas are surrounded by skylights and a glass frieze of images related to the north which modulates light as it enters the central space.

It was the ordeal of negotiating the everyday life of the city that I found so utterly disturbing. Buses and subways were always overcrowded and dirty. Steel doors slammed shut with no regard for misplaced hands and feet; drivers stay in closed booths invisible to passengers; roads were pot–holed beyond imagination. Pedestrians had no rights – vehicles had the right of way. Crossing lights were either nonexistent, broken, or too short in duration to allow pedestrians to cross in less than a dead run.

Besides the every present danger of speeding vehicles, pedestrians had to negotiate either dusty or muddy sidewalks among crumbled chunks of concrete. Public telephones were invariably out of order, or booths and receivers were damaged beyond recognition. Doors into stores and offices were heavy, difficult to open, and almost always slammed with arm or knee–breaking force.

Particularly difficult for first–time visitors as the lack of signage or advertising, which made it all but impossible to know what product or service was being offered, if any, behind shop fronts. It requires that a person enter the shop to find out, which almost always results in suspicious looks or outright verbal abuse.

To be fair, there is significantly less mobility in Russia than most countries in the world; almost everyone I met was still living in the city of his or her grandparents, and obviously non–Soviet tourists are a recent phenomenon. In this regard, Russian cities even the size of St. Petersburg seemed relatively provincial to me.

Making my way around the city made me angry, but visiting my friends in their homes made me sad. Assuring that every Soviet citizen has a place to live has been a priority of the Communist Party since the time of Lenin. Each successive premier has initiated wide–scale housing programs based almost entirely on the model of the high–rise apartment complex. This was considered the most cost–effective and time efficient method for development and reinforced the underlying goal of social equity, meaning that everyone, from the dog catcher to the doctor, deserves the same quality of home.

Typically, this home consists of a two–to–three room flat – approximately 700 to 900 square feet of living space. Each room is multifunctional, serving as living room, study, and parlor during the day and bedroom by night. In addition, each flat contains a small washroom with sink and tub, a separate toilet room, a storage closet, and a modest kitchen and eating nook. I visited eight private homes from St. Petersburg to Vladivostok, and all had the same basic configuration.

Actually, the flat itself is a private haven from the harshness of the public world. My experience was that my Russian friends were some of the most gracious and gentle people I have every known. They always made me feel welcome, and it was partly because of this that I feel so strongly about the needless suffering that they must endure. It was routine for my Russian hosts not to have hot water, or none at all. Often there were blackouts due to electrical fail-

ures. One evening, we celebrated at a friend's house in Vladivostok because, for the first time in several weeks, we had electricity, water, and hot water all at the same time.

I will never forget the sensation I felt when I entered one of my friend's apartment building for the very first time, something I was totally unprepared for. I can still feel the claustrophobia of the tiny, unsteady, steel–caged elevator and the nausea from the moldy smell of cooked cabbage and moist dust.

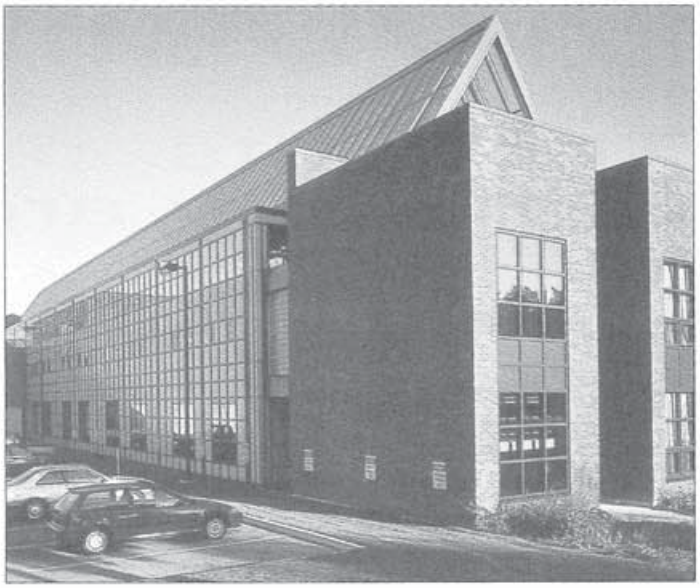
At the landing there were three anonymous doors, one leading to my friend's flat, the others to neighbors. To enter the flat, there were two doors. The outer door was heavy and padded and fit very tight; the combination of the two doors apparently assured a greater degree of acoustical privacy and security – it reminded me of entering a prison cell. Of course, I came to realize that it is a sanctuary.

By the end of my Russian tour, I was discouraged about my research mission. In regard to urban design and development, all I could think was "nothing to learn from the Russians." This was to change at my last stop, where I had the pleasure of spending time with the faculty and students of the Far Eastern Polytechnic Institute in Vladivostok. They too are aware of the adage, "We shape our buildings, and our buildings shape us." Many of the architectural design problems they study at the institute include projects in historic preservation and restoration, as well as net approaches to large–scale housing. Of note are their efforts to reduce the visual and environmental impacts of high–rise "micro–districts" by introducing mid–and low–rise, high density housing into these areas with moire and higher–quality parks and public spaces.

The new housing would be owner–occupied, including parts of the surrounding landscape areas to encourage a higher level of maintenance based on the "pride of ownership" model. When I explained that an important area of architectural study in the United States is the adaptive reuse of historical buildings, they replied, "Yes, we have that, but we also need to design for the adaptive reuse of our new [high–rise apartment block] buildings."

Michael S. Owen is an associate professor of architecture and urban design

ALL SEASON ARCHITECTURE
St. Thomas Elgin Hospital



The new long–term wing at the St. Thomas Elgin hospital in Ontario has a comforting domestic scale and lots of daylight circulation space.

The general hospital in St. Thomas, Elgin County near Lake Erie in south–west Ontario serves a population of about 73,000, and is undergoing a 25 year long–term development plan. As part of this, Norr Partnership have designed a new wing for long term care and an outpatient rehabilitation unit.

The design of the long–term wing is kept to a domestic level and has residential aspects to it that help patients feel less institutionalized. On the exterior, brick–clad two–storey wings match the scale of neighboring houses. Patient rooms have large living room like spaces with windows looking out onto the street. Here they can sit and escape the bustle of the hospital or entertain their visitors.

On the other "backyard" side of the patient wings is a glazed, single–loaded corridor that looks out onto a courtyard.

This "colonnade" is another area where patients can lounge or walk around, very unlike the usual blank hospital corridors. Linked to the atrium and rehabilitation wing, it provides a continuous circulation route.

Almost two years after the new wings opened, hospital director J.R. Skefel is very satisfied with the way the building is working architecturally and said it is popular with patients and visitors.

And, while Skip Schwartz, the project architect at Norr, fears that features such as the single loaded corridor and the patient living rooms might be a luxury one would not easily wrest from hospital building boards in these days of curtailed government funding, Skefel feels that the benefits to patients are so great, they are easy to justify financially.

BIOCLIMATIC

Thoughts on successful winter city architecture

IT IS UNFORTUNATE that climate and weather factors are seldom considered within the context of contemporary architecture and urban design. Their application is essential if winter cities, confronted with climatically–induced stress (cold, high velocity winds, snow, and ice) are to be livable.

"Bioclimatic design" creatively relate the biological requirements of human comfort, with the natural environment's climate.

According to Victor Olgyay, "planning should utilize natural possibilities to improve conditions without the aid of mechanical apparatus". A bioclimatic approach to urban design manipulates the natural site characteristics to provide a climatically comfortable place.

Climate undeniably influences our lifestyles and the choices we make on a daily basis. Bioclimatic design functions in accordance with the natural landscape to create environments that are conductive to human comfort, and the provision of a richer life with respect to movement and activity.

Thus, it protects one from the harsh winter elements without constructing "indoor" projects such as shopping malls and skywalk systems through applying climate–sensitive design that takes advantage of nature's attributes.

ORIENTATION

Buildings should be positioned to capture the maximum solar exposure. During the winter time, the inclination angle of the sun is low and the arc is short. South facing hills and southern orientation of buildings maximizes solar exposure.

The alignment of buildings can influence wind resistance and turbulence.

Rectangular buildings oriented perpendicular to the prevailing wind direction create more wind turbulence and have larger wind–free zones on the leeward side, than buildings oriented with the prevailing wind direction.

TRANSITIONS

Sun pockets should be designed to function as comfortable outdoor gathering areas during less desirable seasonal periods (ie. early spring and late fall). The sun pocket is architecture designed to create microclimates which optimize available solar energy and provide protective buffers from the cold, windy northern exposures.

Courtyards can be designed to form "sun pockets". Dimensions of the courtyard and the heights of surrounding buildings determine the positioning of the sun's rays and shade.

Narrow courtyards surrounded by high buildings will have less sun and can become cold and dark, large courtyards surrounded by low buildings can become so large that the courtyard microclimate is lost and only small areas within the courtyard have the desired microclimate.

It is therefore important to reach a middle ground which takes the maximum advantage of the sun's light and warmth.

Application of the above principles is capable of enriching our built environments through the provision of an architecture and urban form which reduce human discomfort.

At the ground level, multifold minute climates exist side by side, varying sharply with the elevation of a few meters and within a distance of several kilometers.

Simply put, a microclimate can be described as a climate with in a climate. It is most suited to creating spaces capable of "extending" the outdoor season and reducing climatic discomfort.

Microclimates are typically created by the positioning of structures; exposure to the sun, proximity to water; and form, density, and type of vegetation.

BIOCLIMATIC DESIGN PRINCIPLES

- prevention of shadowing by buildings and natural elements,
- use of heat–absorbing and heat–reflecting materials,
- provision of built form or vegetative shelter usually to the north and west,
- avoidance of negative or cold microclimatic air pockets,
- use of deciduous trees for summer shade and winter sun penetration,
- use of coniferous trees for year–round wind buffering,
- orientation for maximum year–round reception of solar radiation.

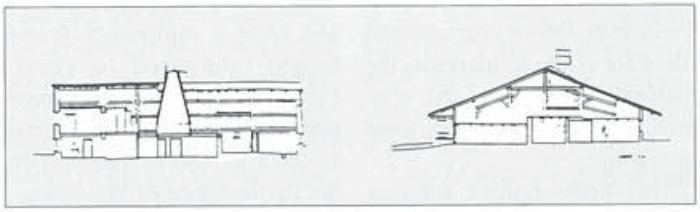
DESIGN

By EMMANUEL PRESSMAN

VERNACULAR ARCHITECTURE

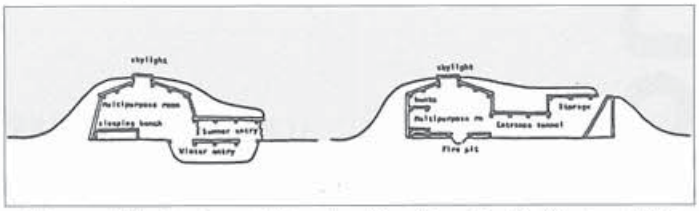
Vernacular architecture consists of shelters, dwellings and buildings that adapt to specific social, cultural, and environmental contexts. In particular, the structures represent personal expressions of cultures that have evolved over time to meet respective social–economic needs through the application of local tools and techniques.

Prior to our highly sophisticated and technological age, a culture's only tools were nature, instinct, and experience. One had to adapt to the landscape and climate resourcefully. Many examples of vernacular are quite ancient. However, some are also representative of modern achievements based on historic precedent. Regardless of time, these structures are based on vernacular principles that provide protection from winter–induced discomfort.



Farms in the Jura, La Grand Sagne in the Vallee de Joux, Switzerland, built in 1616, are comprised of three continuous dwellings underneath the same roof. The dwellings heat each other; and the western frontages are protected from the snowy and rainy winds.

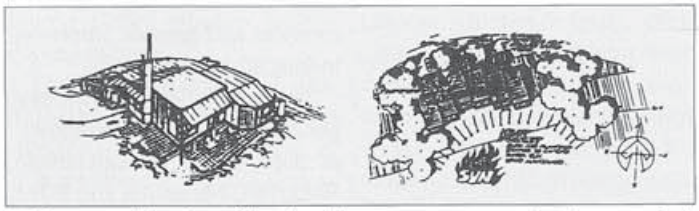
Farms in Semplain, Franches–Montagne, Jura, Switzerland have two fireplaces in the kitchen. Smoking meat was a common gastronomic activity and the smoke would spread throughout the kitchen, providing warmth, protecting people and food from flies, and the wood from termites; and would leave via an orifice located in the kitchen.



The earth lodge is an old housing form found in the Western Plains of North America. It is a sturdy timber–framed dwelling; roofed with poles and covered with earth. A central fire–pit provides heat. Alaskan earth houses indicated adaptation to harsher climates and vary according to region. The entrance tunnel is low and partially dug into the ground so that cold drafts remain trapped below the level of the interior living platform.

MODERN EXAMPLES

The design and construction of buildings have not always consciously taken into consideration bioclimatic building principles. Examples do exist, however, of buildings which are adapted to the site, providing a greater comfort for the inhabitants.



Houses of the Jaer District, Norway are exposed to heavy wind, rain, snow, and sun which leads to degradation. The gables largest areas are protected by external storage and woodsheds. The buildings is surrounded by galleries or closed porches which provide a transition from cold to warm zones.

People who live in close contact with nature and must adapt to its demands, apply climatic design principles. The ability to deal with cold climate within the context of architecture hardly seems a challenge given our advances in building technology, but using a vernacular approach would help to save both energy and money.

Emmanuel Pressman holds an Honours Degree in Urban/Regional Planning from the University of Waterloo

SUPER WINDOWS IN ADVANCED HOUSES

A NEW GENERATION OF "SUPER WINDOWS" ARE BEING USED IN CANMET'S ENVIRONMENTAL PROGRAM.

Dale D. Kerr

ACROSS THE COUNTRY a series of "Advanced Houses" are under construction, or have just been completed. CANMET, the research and development arm of Energy, Mines and Resources Canada, initiated the program and selected eleven designs through a national competition held in 1991. The criteria were that the homes should use only one quarter of the energy and one half of the water of a conventional home. The schemes also had to minimize their impact on the environment and provide improved indoor air quality.

This article describes the new generation of "Super Windows" as used in the Saskatchewan, Waterloo, Manitoba and P.E.I, houses. Although not all the window products described are commercially available yet, those that are not are past the research and development stage and should be available soon.

Super Windows are originally defined as those with a centre–of–glass R–value greater than 5 (an average residential window has a centre–of–glass R–value of about 2), but with the advances in window technology, maybe a Super Window should be defined as one with an overall R–value greater than 5.

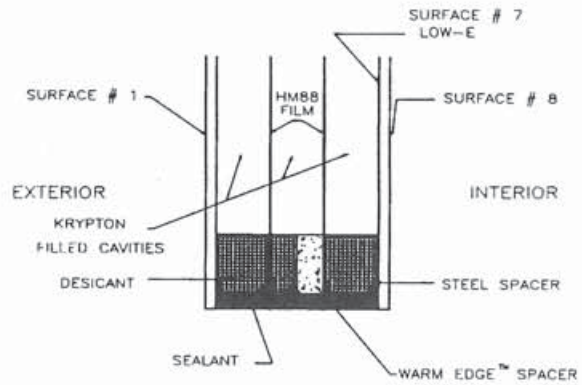
Each super window uses a combination of technologies to achieve its high performances. These include low–e coatings and films, gas filling, warm edge technology and pultruded fibreglass frames. The advances in performance, however, do not come without some trade–offs. The use of low–e coatings and films, for example, increases the thermal resistance of the window, but also lowers its solar heat gain.

This helps reduce summer overheating, but may prove to be a disadvantage for passive solar heating purposes. Some glazing treatments also reduce daylight transmission. When selecting a super window, therefore, it is prudent to consider a variety of performance parameters and exposure conditions. It is even possible to optimize window performance by installing different windows on different orientations, as was done in the Advanced House in Nova Scotia.

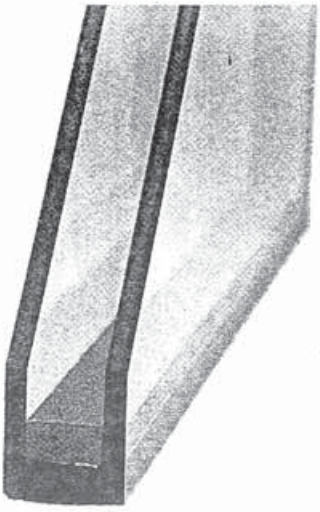
The Saskatchewan Advanced Technology House and the Waterloo Green Home use windows with Fibertherm pultruded fibreglass frames manufactured by the Accurate Dorwin Company in Winnipeg. Pultrusion is the process of pulling continuous glass fibres that are saturated with a thermo–set polyester resin through a forming guide and into a heated die. The resulting profiles are strong, weather and corrosion resistant and have a minimized frame height compared to vinyl. Pultruded fibreglass reinforced plastic will soon be considered by the CSA–A440 Standard on the Performance of Windows.

Triple glazing, with 1/2" argon–filled spaces, is used in the Dorwin windows. A sputtered or soft low–e coating is applied to the number 2 and 5 glass surfaces (glass surfaces are numbered from the outside in). Low–e coatings reduce the radiant heat transfer across the spaces and increase the effective R–value of the unit.

The lower the emissivity, the higher the thermal resistance. A pyrolytic, or hard coat, low–e coating has an emissivity between 0.2 and 0.4 and may improve the thermal resistance of a



The Willmar R-Plus XII™ window used in the Manitoba Advanced House has a centre-of-glass value of 11.9. A film of Heat Mirror 88™ suspended between the panes of glass creates a radiation barrier and extra air pockets. Illustration courtesy Willmar Windows.



The warm edge technology Super Spacer™, used in the Saskatchewan Advanced House window is made of silicone foam and thus conducts less heat than traditional aluminum spacers. Illustration courtesy Edgetech I.G. Ltd.

double glazed window by R–0.91. A soft low–e coating has a lower emissivity of between 0.05 and 0.1 and improves the thermal resistance of a double–glazed window by ab–1.25. However, although a soft low–e coating provides a higher R–value, when the increased solar gains obtained with the hard low–e coating are traded off against lower heat losses, the hard coat can provide an overall energy rating (ER) improvement of 6 to 6.5 watts per square meter.

Traditional aluminum spacers lower the insulation performance of the glass in the edge–of–glass area, which is defined as the glass area within 2.5 inches of the perimeter. To overcome this problem "warm edge technology" (less thermally conductive spacers) has been developed, notably the Super Spacer, manufactured by Edgetech I.G. Ltd. in Ottawa, which is used in the Dorwin windows. It is made of UV–resistant silicone foam that incorporates a high percentage of desiccant–fill material, backed by butyl sealant. The thermal resistance of the spacer is R 0.4 compared to traditional aluminum spacers at R 0.05.

The Dorwin windows have the highest ratings on Ontario Hydro's 1992 Window Incentive Program Qualified Products List with energy ratings of +8 for operable and +17 for fixed windows. They have been commercially available for two years and are rated A3, B7 and C4 when tested in accordance with CSA–A440. These ratings refer to the window's airtightness, water penetration resistance and wind load resistance, respectively. The highest ratings available are A3, B7 and C5.

The Manitoba Advanced House windows have a conventional metal–clad wood frame, but boast an impressive centre–of–glass R–value of 11.9 (R–8 was considered impressive three years ago). Produced by Willmar Windows, also in Winnipeg, the Willmar's R Plus XII windows achieve this by using two lights of glass and two films of Heat Mirrors 88 creating three 3/8" spaces. The number 7 surface is coated with soft coat low–e. heat Mirror, made by Southwall Technologies, is a clear polyester film with a low–e coating that is suspended in the space between two panes of glass.

In addition to acting as a radiation barrier, the plastic film creates additional air spaces which reduce heat loss even further without the disadvantage of increasing the weight or having to increase the overall thickness of the unit. A double–glazed window with a suspended Heat Mirror film typically has an R–value equal to or slightly better than that of a triple–glazed window (depending on the thickness of the air spaces) and typically exceeds the R–value of a double–glazed window with a low–e coating.

The performance of the Willmar sealed units in the Manitoba Advanced House is further enhanced by using krypton gas to fill the space between the glazings. The replacement of air with argon in a double–glazed unit can improve thermal resistance by R–1.5, but using krypton can further improve thermal resistance by R–2.1. These units use Southwall's Warm Edge thermally broken steel spacer.

The Willmar windows have an overall R–value of 5.3 and a shading coefficient of 0.49. They will be commercially available within one to two years and are rated A3, B5 and C4 when tested in accordance with CSA–A440.

The P.E.I. Advanced House uses a window with a wood frame and an exterior aluminum extrusion designed around the rainscreen principle. Manufactured by Visionwall Technologies of Edmonton, the "Series 600" windows have two lights of glass with two suspended low–e films. The air spaces are wide compared to other units (almost 3 inches in total). they also use a proprietary non–heat conducting spacer. The windows should be available within a year. They have an overall R–value of 7.1 with a shading coefficient of 0.50 and are rated according to CSA–A440, A3, B7 and C5.

Dale D. Kerr, M.Eng., P.Eng. is a building science engineer based in Pefferlaw, Ont.

*For information on the Advanced Houses, contact Rudy Lubin at CANMET
Phone (613) 996–6220
Fax 996–9416.

MITIGATING SOIL CONTAMINANTS UNDER AN AIRCRAFT HANGER

EFFECTIVE CONSTRUCTION AND BIOHAZARD MANAGEMENT

Tang G. Lee

IN THE WINTER (Design,1993) issue of Winter Cities News I described how exhausted air from buildings can be used to melt ice and snow from driveways, sidewalks and patios. The merits are obvious as the installation is inexpensive, easy to install and operating cost is very low. The handicapped ramp at The Dermatology Centre in Calgary is not only free of ice and snow, it is completely dry (See figure 1) throughout the winter. Notice the amount of snow surrounding the ramp in the photograph where it is not heated.

For the past 15 years, I have been designing solar heated buildings which stores heat in ordinary building materials such as masonry and concrete floor slabs. Solar heated air is ducted under the floor slab through plastic drainage pipes. These drainage pipes are particularly suited for this applications because they can withstanding ground conditions, are readily available and fairly economical. Perforations in the pipes help discharge any condensation buildup.

Recently we designed an aircraft hanger for Sunwest International Aviation Ltd. (formerly Sunwest Charters Ltd.), a private charter airline located at the Calgary International Airport (see figure 2). There was some concern about contaminated soil in one portion of the building site. Apparently aviation fuels had been discharged into the ground during the second world war. Most of the contaminated land had been paved over thus trapping the fluids and gases. When our aircraft hanger was proposed, soil tests suggested presence of hydrocarbon vapours. The subsurface hydrocarbon concentration ranged from 14 to 19 ppm, well below any standards requiring mitigation measures. In one small corner of the hanger however, a reading of 320 ppm was detected at three meters below grade. Since the Total Petroleum Hydro (TPH) is below the 400 ppm Level II classification of the Management of Underground Storage Tanks (MUST), mitigation was not required. Nevertheless, the airline company decide to install a ground barrier and a soil ventilation system as an added precaution.

Aircraft hangers requires a ventilation rate of three air changes per hour to dilute air contaminants caused by normal aircraft maintenance. Instead of exhausting the ventilation air directly to the outside, the air in this hanger is ducted under the floor slab to intercept and ventilate gases from the ground. Air is extracted from the top of the hanger, and ducted through an array of perforated plastic pipes under the slab–on–grade (see figure 3). The pipes intercept contaminated gases rising from the ground, and discharge it to the outside.

A radiant floor condition was an added benefit of extracting the stratified air from the top of the hanger. The aircraft maintenance staff reported this radiant heating area to be very comfortable and created a most desirable working environment. Furthermore, the thermal mass of the concrete floor slabs retains its warmth. The thermal lag time prevents rapid heat loss, especially when the large hanger doors were opened in the winter.

After the ventilation air intercepted the soil contaminants and deposits some heat to the floor slab, the still warm air is ducted out of the hanger to melt snow and ice from the concrete apron. The design parameters had been discussed in the December – January, 1993 issue of Winter Cities News.

With only one ventilation fan, the system described in this project has served a multitude of functions. The exhaust system ventilates the building, provide heat to the radiant floor slab, removes contaminated soil from the ground, and melt snow and ice. The design and operation of the hanger for Sunwest International Aviation Ltd., demonstrate opportunities to combine various functions in one system thus reducing capital and operating cost. The strategies developed in this project can be applied to other building types.

Professor Tang G. Lee is on the Board of Advisors for Construction and Technology, Winter Cities News. He is a Professor of Architecture in the Faculty of Environmental Design at The University of Calgary, and Adjunct Professor of Architecture at The University of Manitoba. Professor Lee runs in his own architectural design firm and can be reached at

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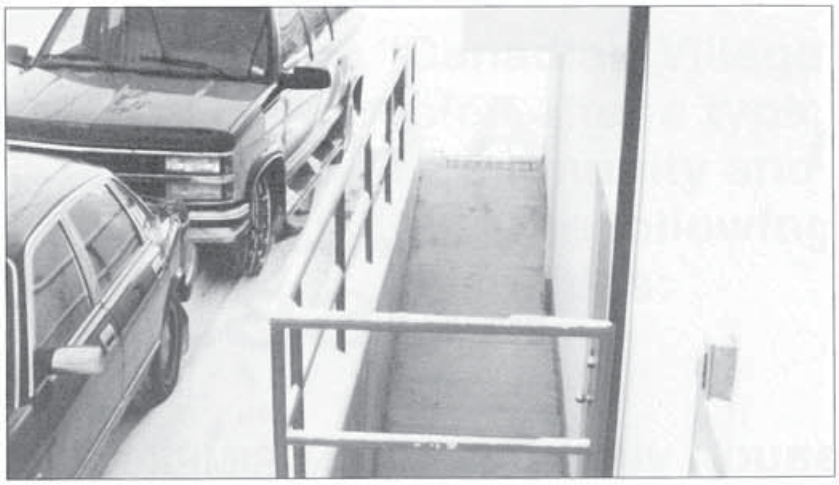

Figure 1: Building exhaust melts snow and ice from thehandicapped ramp at a medical clinic in Calgary.

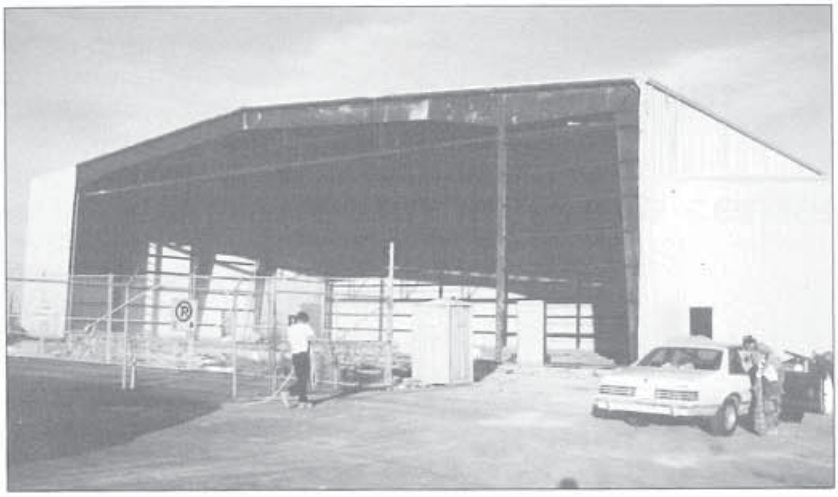

Figure 2: Aircraft hanger at the Calgary airport under construction.

Figure 3: Perforated drainage pipes for radiant floor heating and intercepting contaminated gases rising out of the soil.

A CANADIAN VILLAGE IN RUSSIA

FERGUSON, SIMEK & CLARK

"CANADIAN VILLAGE" that's what the Yakutians call it and that's what it's now referred to in the offices of Ferguson Simek Clark (FSC) in Yellowknife, Northwest Territories. The 11 hectares village is currently being constructed 10 kilometers from the City of Yakutsk in the autonomous Republic of Sakha (Yakutia). Scheduled to be completed in October of this year, the project was conceived as part of a Canada–Russia exchange in northern building technology.

During the past 5 years, delegations from Russia, primarily Sakha, have developed a working relationship with the Government of the Northwest Territories (GNWT) and FSC. In July 1991 the Premier of the Republic, Mikhail Nickolayev, headed a delegation that visited the GNWT and the offices of FSC. FSC specializes in cold regions building technology and the logistics of building project in remote locations. The Yellowknife office has a staff of 35 and is the largest engineering/architectural firm in the Canadian north. During the July visit the delegation visited several projects completed by FSC for the GNWT.

The Premier noted that there was an urgent need for housing for the people of the Republic. Past philosophy was to relocated and centralize the citizens into large communities with many thousands of residents. This is not longer desired and the Premier noted that the typical community in the Northwest Territories with 100 to 800 residents was the preference for the development in his Republic.

The delegation was also impressed with the technology used in the Canadian North primarily the light weight, high strength building components. The Premier requested that FSC prepare a proposal to design and build a community for 150 residents in the Republic that would demonstrate Canadian Building technology and be constructed using a Canadian labour force.

Clark Bowler Construction, with offices in both Yellowknife and Edmonton, is the construction manager for the Village. Sub–trades from Yellowknife and Edmonton round off the construction team. This Village will use 100% Canadian building materials. Site and foundation work was carried out by the Russians and the remainder of the work is being completed by Clark–Bowler. A work force of approximately 100 men, camped at the site, shuttle in and out from Canada on a 6 week in and 2 out basis.

The Republic of Sakha is located in the eastern Siberian area of Russia. It covers an area approximately the size of the Northwest Territories and is geographically located at approximately the same latitude as the NWT. The climate is more continental in nature, thus winter low temperatures can reach – 60 C, and summer high temperatures of +40 C are not unusual.

The terrain varies from mountainous regions in the east central area rising up to 3000 meters to flat delta areas at sea level on the north coast and adjacent to rivers. The Lena River is approximately in the center of the region and serves as a major transportation route.

The total population of the Republic is 1,200,000, with the capital city of Yakutsk having a population of 220,000. Russian

is the language spoken, however the native, Yakutians, use their own language.

The primary reason for building the Village is to transfer northern Canadian building technology to our Russian counterparts. By constructing a Village right in Russia the people can see exactly what this technology entails. Learning new materials as well as new designs is a major goal of the Russians.

The materials being used are standard Canadian building supplies ranging in scope from lumber, drywall, windows and doors right down to the nuts and bolts. The buildings are all "stick–built" on site and are not prefabricated structures.

One of the most difficult problems with the project was getting the materials from Canada to Yakutsk. The goods were assembled in Vancouver and shipped via a Russian freighter to the port of Tiksi on the russian Arctic Coast. From there the goods were transferred to barges which travelled up (south) the Lena River to Yakutsk. In all, a total of over 9000 kilometers were travelled. Guards were used throughout the trip to ensure the goods arrived safely on site. More than a few grey hairs were earned on this voyage by the project team however all the materials and equipment arrived on site with no losses.

Once completed, two Canadians will operate and maintain the Village for the first year of operation. As well, they will train the local people on the operation and maintenance of all the equipment and machinery being used in the Village. A maintenance training program will be developed by the GNWT to assist in this endeavour.

Another Russian desire is to develop an infrastructure in Sakha for the production of building products including a sawmill, drywall factory, window and door factory, insulation factory as well as the various electrical and mechanical manufacturing required for the buildings we are constructing. A primary objective is to establish the infrastructure and technology in Yakutsk to enable the Yakutians to design, manufacture and construct a similar Village using 100% Russian materials and 100% Russian tradesmen.

In summary, we are doing more than just building a Canadian Village in Russia. We are showing the Yakutians what we build, how we built it, how we design it, how we produce the materials and how we keep it working.

Ferguson, Simek & Clark, 4910-53rd St., Box 1777, Yellowknife, NWT X1A 2P4

The "Canadian Village" is modeled after a typical NWT community and includes the following facilities:

- **37 single family houses**
- **4 classroom school**
- **health center**
- **administrative center**
- **store**
- **cafeteria**
- **firehall/garage**
- **water treatment facility**
- **sewage treatment facility**
- **roads and surface works**

The Indigenous Peoples Of The Russian North

A primer on this seldom recognized group

THE INDIGENOUS population of the Russian north is officially comprised of 26 different peoples, numbering approximately 185,000 in total. (This figure is based upon the 1989 U.S.S.R. census) According to archaeological sources, they have inhabited the vast territory which covers 58 percent of the Russian Federation for thousands of years.

This territory stretches along the coastline of the Arctic Ocean, from the White Sea in the west of the Bering Strait in the east, including Kamchatka and the Sakhalin Island, and unfolds south to cover moist of the geographic Siberia. There are four main ethno–linguistic groups among the various languages spoken by the 26 groups: Uralic; Altaic; Palaeoasiatic; and, Eskimo–Aleut. Many of these languages are linguistic isolates and none are related to Russian.

Prior to the 16th century, these indigenous groups had virtually no contact with Europeans. Less than a century later, the Russian Empire had reached the Pacific Ocean. By the end of the 1700s, settlements consisting of Russian peasants, merchants, hunters and sailors had emerged mostly along the large rivers, and across the vast territory, including the coast of Alaska.

Between the 17th and 19th centuries, the administration of the Native peoples was carried out by a system of governors, through local chiefs and elders. The responsibility of the elders included judicial, security and fiscal functions, as well as collecting the fur tribute. In practice, the indigenous groups enjoyed little, if any, political and economic jurisdiction over their respective territory as they came increasingly to be ruled by Moscow and the local Russian settlers.

The main goal of the Russian government and colonists was to turn these groups into reliable suppliers of tribute, mostly within the fur trade. Trade with the Russians, however, greatly affected their traditional economies. From reindeer breeding, hunting and fishing, many of the Native peoples shifted gradually to fur hunting and trapping in order to exchange the furs for goods at the trading stations. Others developed large–scale reindeer–breeding economies which had not previously existed. The emancipation of the serfs in the late 1800s brought an influx of landless peasants into Siberia and the north.

A nascent Russian industrialization, as a result of the completion of the Trans–Siberian Railroad, signalled the beginning of a transfiguration of the traditional native social structure.

The period following the 1917 Bolshevik Revolution saw a rapid development of the Soviet north. Stalin's policies during the late 1920s and early 1930s involved the forced collectivization of hunting, fishing and reindeer herding into state and cooperative farms; the forced settlement of nomadic and semi–nomadic peoples; and the dismantling of the traditional clan system. These policies had detrimental and irreversible effects on the traditional way–of–life of the northern indigenous population.

The greatest pressures on the northern minorities came after 1945 with Soviet influence on these peoples was institutionalized, and russification policies with regard to language and education were implemented. In the northern schools, the number of teaching hours allotted to Native language instruction was reduced. The system of boarding–schools was introduced during the 1950s and 1960s to provide children of nomadic groups the opportunity to obtain a systematic and structured education.

Eventually, however, the system was made compulsory for the children of all indigenous groups. It led to dramatic changes in traditional social and family structures and contributed to the formation of "broken generations", as the majority of the northern boarding–school graduates completely lacked the necessary skills to return to their traditional way–of–life.

In 1957, another widespread campaign of forced relocation was launched by the Communist Party of the Soviet Union (CPSU) under the context of simplifying the administrative–territorial divisions, which had been created by the Soviets, and to facilitate a continued economic development of the So-

viet north. Small traditional Native villages of 30–50 inhabitants were amalgamated into new larger settlements. However, the sites chosen for these new settlements did not consider proximity to the continuance of traditional economic activities such as hunting and fishing.

These policies continued throughout the 1970s and mid 1980s with devastating ramifications for the indigenous population of the Soviet north. Traditional occupations lost their importance and the proportion of unskilled labourers increased. There are presently a wide range of social problems, including unemployment, alcoholism and suicide, which afflict the indigenous peoples of the Russian north. For example, the life expectancy of the Russian northern indigenous population is between 45 years for men and 55 for women, 18 years lower than the average in the Russian federation.

After 1985, Mikhail Gorbachev's policy of glasnost removed the ideological filters that prevented from seeing a true picture of the situation of the indigenous northern minorities. This new openness allowed for the development of unprecedented political and social movements throughout the U.S.S.R. and an open forum for many of the indigenous groups to discuss publicly the problems which afflicted their communities. More important, the pluralism of the late 1980s allowed these groups to organize politically.

The first Congress of Northern Minorities was held in March 1990. Attending the Congress were various leaders within the Native communities as well as elected Native representatives to the new Congress of Peoples' Deputies of the U.S.S.R. The Congress of Northern Minorities established the Association of Aboriginal Peoples of the North and adopted several important resolutions which included: a return to tribal soviets (councils) and Councils of Elders as forms of self–administration; legal confirmation of traditional land use in areas populated in indigenous organizations; exclusive rights to control land and water use by indigenous village soviets; the establishment of reserved territories to protect traditional life; better educational and medical services; and special measures concerning Native languages and culture. Vladimir Sangi, a Nivkh writer, was elected as the first leader of the Association of Aboriginal peoples of the North.

Many indigenous groups in the Russian Federation are taking a more aggressive role in lobbying the government with respect to economic development in the northern lands, environmental issues, land and resource rights and use, education and language. In addition to the aforementioned Association of Aboriginal Peoples of the North, numerous Native organizations have recently been formed. Foremost among them is the International league of the Small Peoples, founded by Evdokia Gaer, a well–known Nivkh politician and member of the Russian Parliament, who has become a leading advocate of native rights in the Russian Federation.

In December 1990, the Russian government established a new Committee on the Social and Economic Development of the Northern Regions (GOSKOMSEVER, which is the counterpart to Indian and Northern affairs Canada in the implementation of the Canada–Russia Agreement on Cooperation in the Arctic and the North). While the Russian government has offered a few concessions to some indigenous groups, (such as, monetary aid and some control over local administration of lands), it has yet to formulate a comprehensive policy with respect to the political and economic rights of its indigenous northern population.

With the Russian economy in crisis, the pressure will grow to extract more natural resources from the North in order to generate hard currency revenue. The government in Moscow is already engaged in disputes with several regional and local governments as to jurisdiction and profit returns with respect to the development and export of raw materials.

The immediate prospects for a new comprehensive policy for Russia's indigenous population do not appear promising. The indigenous population, unfortunately, does not possess the power in numbers to present a strong lobby in Moscow. (It represents less than one percent of the entire population). It is likely that northern economic development, and a compromise between the federal government and the regions as to economic control over natural resources will remain key factors in the formulation of future Russian policy in the north. The hope remains that, as regional and local authorities within the Russian Federation gain more control over their respective regions, they in turn will address issues affecting the indigenous peoples who inhabit these territories.

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