

Designing with Nature
in Town and City

A Celebratory Publication
commemorating the November
2020 Symposium



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In the deepest, darkest lockdown of 2020, a very special centenary occurred. The 100th birthday of one of Landscape Architecture and Scotland's pioneers of the nature based solution - before that term was used - Ian McHarg.

Using online video conferencing, the Glasgow Urban Lab at the Mackintosh School of Architecture, the Weitzman School of Design at the University of Pennsylvania, the Landscape Institute, and the Academy of Urbanism, came together to hold a celebratory symposium, looking at the influence of McHarg, with eyes to the future.

This publication seeks to capture some of the essence of that event, which took place on the 11th and 12th November 2020.

Transcripts and photographs taken from the event have been edited and compiled by Professor Brian Evans and Rachel Howlett through the Glasgow Urban Lab.

Thank you to everyone involved in the symposium, and to Professor Brian Evans, Tony Reddy AoU and Jane Findlay PLI in their roles as chairs.

This symposium was made possible by:

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Welcome to the Archive

Bill Whitaker

University of Pennsylvania

It's a great pleasure and a privilege to welcome you all here to the Architectural Archives. We're in Philadelphia, just across from the Weitzman School of Design, and this is where Ian's archives are housed. I wanted to choose a few objects from his collection in an attempt to "break" the Zoom barrier - to give us all some objects and some tangible things that we can have in our minds as the seminar progresses today.

So let's give ourselves a picture of Ian from 1969 in **Figure 1**. This is one of the press photos for Design with Nature and it shows Ian amongst his students here at the University of Pennsylvania.

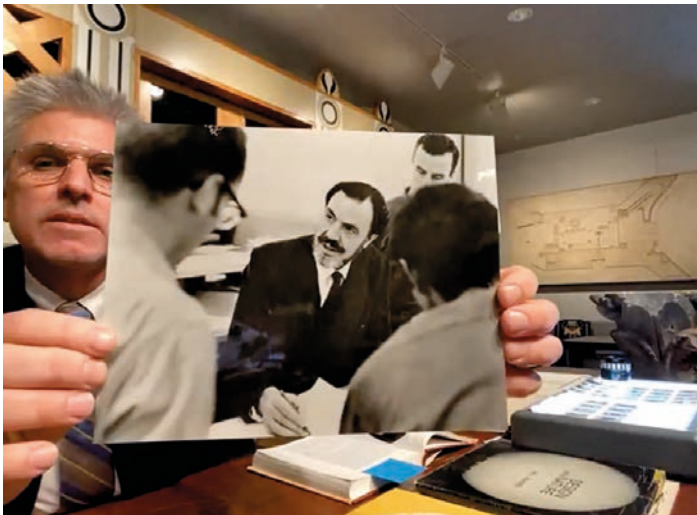


Figure 1: Ian in 1969

I thought it important to note Ian's military service. I believe Ian was proud to serve his country, and perhaps it was there that he learned to do things beyond and bigger than himself, and to take on the challenge of big change. At the very least, he learned to fight like hell. So, since it's Armistice Day in your country, and it's Veterans Day in ours, let us remember Ian's service as a paratrooper and a Royal Engineer in the battlefields of France, Italy, and Greece between 1942-45. He saw quite a bit of real fighting, and I know that was an important experience he had in his life.

I've laid out a few objects here that I think you will be interested in seeing. Let me start with one of 41 diaries that we have that Ian kept throughout his life, the earliest one we have is 1959, it's monogrammed, and this is 1970 (**Figures 2 and 3**).



Figure 2: Ian's 1970 diary cover



Figure 3: Ian's 1970 diary spread

What's so wonderful is this is a thing that he kept close to him throughout his life, and it's where his frenetic life is organised. So, of course we have to turn to April, to the teach in on April 20, the first Earth Day. The day before, Ian's at Independence Hall for Earth Day Eve when he led the gathering in reciting the "Declaration of Interdependence." You can see he's on the Today Show up in New York on the day before.

I think Ian thought of himself, first and foremost, as a teacher. He began his teaching career in Scotland, and teaching is really what energised him to come over here to the US. This thick file contains Ian's notes for a course of lectures he gave on Landscape Architecture at the Glasgow School of Architecture, and also at The Edinburgh College of Art in 1953-54. It is in these notes that he makes the claim that his is probably "the first course of Landscape Architecture given at this college, or indeed in Scotland." I think the real poignant part of this group of items, is that he wrote out all his lectures and through this you can see that sense within him of getting higher up, to a deeper sense of understanding and knowing, and challenging others around him to do the same thing. So he's summarising the class, noting the "negative accomplishments" of the course by which he dispelled various conceptions of landscape architecture and impressed upon his students the need to question "almost every aspect of existing practice in the landscape." - but really, we see one of Ian from the get go trying to shake up the status quo and to think more deeply about Landscape Architecture's place in thinking about the future.



Figure 4: Sheet of slides of Ian's 60th Birthday

I've got an old-fashioned light table (this one happens to be Denise Scott Brown's) and I wanted to show you a few slides (Figure 4). These are from 1980, and you can see Ian's students putting together a layer cake. And it's a genuine layer cake (Figure 5)! And then there's photographs of the students getting ready for the arrival of Ian, and then Ian walking into the room, that has been festooned. This is Ian's 60th birthday. He's asked to say a few words, overlooking the layer cake, and then of course, as expected, he's got to cut into the layer cake, with Narendra Juneja standing next to him.



Figure 5: Ian's layer cake

Ian's surrounded by his students, the next generation, that came from all over the world, including Scotland. And then of course, the set ends with a photo of the half-eaten cake (maybe we should assume Ian choose very precisely where to cut the cake so as to do the least ecological damage).

When I had the pleasure of working on the Design with Nature Now project, and to think about assembling a group of items that consider the making of his remarkable book, I ran across another set of photographs, showing another party here in Philadelphia, with another cake. I knew the man in the blue shirt was Eugene Feldman, and I knew that Feldman had printed Design with Nature, so I wondered what this was all about. Then I found another photograph, again of an environment festooned – this time with pine branches, and dogwood cuttings, and there in the centre of it all was Ian holding the very first copy of Design with Nature. We see him leafing through it, and pausing at the “City and Countryside” chapter, so you're actually seeing a bit of Scotland, and it's worth rereading this wonderful story he tells of his youth and his upbringing and connecting to nature (**Figure 6**).

After finding those photos, I was looking for a first edition copy of Design with Nature, and I found a copy in with Ian's materials. At first, I didn't realise how special the copy was, but when I opened it up, it had signatures of a whole lot of people. Starting with Eugene Feldman, John Clark, Bill Roberts, David Wallace, Narendra Junega, Lenore Sagan, and many others, including Mark Turnbull. Then turning to the book's title page, recognising that Ian, his two eldest sons, and wife, Pauline signed the book as well, and at the top was a date - April 18 1969. So, I had in my hands, the very first copy, the one that we see in those photos with Ian. It was very touching to realise that Ian had everybody in the room sign the book. In a sense, they had all played a role in the book's making. But I believe Ian saw the signing as more of a commitment to the future, to accepting some of the challenge that he, in the book, had put before them (and all of us really). He did the same thing during Earth Week when the committee members signed the Declaration of Interdependence (it just goes to show how interrelated these things are each other). I admire that Ian yielded the



Figure 6: Ian leafing through Design with Nature

way to his students, and wanted to allow the students the possibility of taking on these challenges themselves. So, doing things beyond yourself, and bigger than yourself is a really important and an inspiring part of Ian's story. It's the message I wanted to convey to you today just in thinking about his legacy and some of the materials we have here.

The archive is open to the public, and hopefully before too long, you'll be able to come in here and see some of this material yourself and recognise that it's an important part of the legacy, not just here in Philadelphia, at the school, but in Scotland, and globally, for sure. Thank you for giving me a few minutes to say hello.

Memories of McHarg

Dean Frederick Steiner

University of Pennsylvania



Photo: Eric Sucar

Dean Frederick Steiner with
an original copy of *Design
with Nature*

Brian Evans It's just wonderful to have you here today, thank you so much. Tell us Fritz, when did you first encounter Ian McHarg, and what was that like for a young guy?

Frederick 'Fritz' Steiner Well, the first time I encountered him, or actually his book *Design with Nature*, was Earth Day 1970 in Cincinnati where I was one of the organizers. One of my tasks was to put together a book fair and to collect all the important books on the environment at that time, and there weren't very many. In 1970, there was Rachel Carson's *Silent Spring*, there was Aldo Leopold's *A Sand County Almanac*, and a few others. Then there was Ian McHarg's *Design with Nature*. I picked it up, looked at the cover, and then looked at the NASA image of the whole earth on the back cover - one of the first images of our planet from space - and as a design student, I was totally starstruck! So, I started to take planning theory courses and learn about McHarg's Scottish lineage, to Patrick Geddes, and of course, to Lewis Mumford as well.

Brian Evans Fantastic, so you were already an architecture student, but this opened your eyes and took you into the world of landscape, and the world of planning.

Fritz Steiner I was actually a graphic design student. So, in the late 1960s and early 1970s, the idea of employing Helvetica type for airport men's and women's room graphics for the rest of my life was scary, so I jumped from graphic design to community planning.

Brian Evans Brilliant. Tell us a bit about what it was like when you when you encountered Ian McHarg, and you studied with him, and you worked with him. Tell us something of your time.

Fritz Steiner Well, initially when I was a graduate student at Penn, the relationship was rather formal and distanced, he was famous by that time, a famous professor. My fellow students had come from all around the world, and I felt like I landed from Cincinnati and into one of the last vestiges of the British Commonwealth. There were students from India, Australia, Canada, and the United Kingdom, of course. Ian was an imposing figure, a tall commando major with a Scottish brogue and a razor wit. He was wickedly funny, and a walking encyclopedia. He was also extremely supportive during studio reviews, always trying to find the best of student work, and always trying to push us. At the time, he was advancing ideas about human ecology. As a result, every studio became an exploration of ways to create new theory about design and planning. Then, after several years of teaching in the Pacific Northwest, I came back a second time to Philadelphia to pursue my PhD and became much closer to Ian during that period. The fellow who had been teaching the LARP 501 studio had left, and Ian asked me if I would coordinate this herd of social and environmental scientists, and architects, landscape architects, and planners. This was the studio where students were taught how to read landscapes through an ecological lens. It's still one of our most important studios at Penn though it has evolved and experienced many refinements through the leadership of Anne Spirn, Anu Mathur, Jim Corner, and now Richard Weller.



Dean Fritz Steiner and Ian McHarg at Penn, 1983



Photo: Fritz Steiner A field trip with McHarg to Hawk Mountain bird refuge, Kempton, Pennsylvania, 1983

Subsequently, I asked Ian to serve on my Doctoral Committee, which was chaired by the attorney and city planner Ann Louise Strong. During that period of time, a little bit after that, he asked me if I would help with his autobiography, *A Quest for Life* and we became collaborators. I realised then that he had many essays that hadn't been collected. As a result, I suggested we pull them together and edit them. This resulted in the book *To Heal the Earth*, and then a slimmer paperback called *The Essential Ian McHarg*. So, our relationship evolved from admiration of an influential professor to a very collegial and friendly relationship.

Brian Evans That's wonderful. I think one of the things you said there, Fritz is really telling, isn't it? It's the skill of really, the expert, and also the gifted teacher, to know how to push students and inspire them, to bring out even more from them. I sometimes think that about some of my colleagues, that our job is to take them further, to help them to find things, and I never sadly had the opportunity to meet Ian McHarg. From the film clips I've seen he had this charismatic personality, didn't he, and I'm sure really drew the students in.

After you returned to Penn - for the third time in 2016 - you began organising the 50th anniversary of *Design with Nature*, which looked back at Ian's legacy, and I think this was what was very telling for me, and really inspirational; that you didn't want it to be your leadership, you didn't want it to be simply retrospective, you wanted it to look forward, because you felt that that would have been McHarg's aspiration too. So tell us a little bit about that, about the genesis of *Design with Nature Now* and of the establishment of The McHarg Center too.

Fritz Steiner That's all true. When I came back to Penn for the third time, in 2016, we realised that the 50th anniversary of *Design with Nature* was upon us. So with my colleagues, Richard Weller, Karen M'Closkey, and Billy Fleming, we felt it was both important to look back, and to look forward. As a result, we organised an international conference, we edited the book *Design with Nature Now*, and mounted three exhibitions. "Ian McHarg: The House We Live In" was organised and curated by Bill Whitaker, who actually had a big hand in all three exhibitions. This exhibition focused on McHarg's life and ideas, and was mounted here in the Kroiz Gallery of our Architectural Archives, where we now sit. It was very, very important that we had the McHarg collections, that had been donated by Ian McHarg himself as well as his widow Carol McHarg, which gave us a real rich body of materials to mount that exhibit.

In Penn's Arthur Ross Gallery, we exhibited the work of Laurel McSherry, who you'll hear from in a moment. She had just returned from a Fulbright Fellowship at the Glasgow School of Art. We thought it was important to organise something around contemporary art because Ian was a supporter and an admirer of art, and we thought Laurel's "A Book of Days" helped speak to McHarg's interests in time, landscape, and Art — with works produced in and inspired by his hometown.

For the third exhibition, we curated 25 projects from around the world that exemplified design in nature today and organised them around five themes. The exhibitions helped provide the foundation for the book, *Design with Nature Now*. We believe the five themes address some of the most pressing social and environmental issues of our day: Adapting to sea level rise; Restoring toxic sites; Cleansing water; Managing urban growth; Protecting large landscapes. We hope to bring these exhibits to Glasgow next year in November for the UN Climate Conference.

We opened all three exhibits with an international conference on the summer solstice in 2019. The event also marked the launch of our McHarg Center for Urbanism and Ecology, which is dedicated to advancing research in Landscape Architecture. You'll hear from the McHarg Center Wilks Family Director, Billy Fleming tomorrow.

Brian Evans That's right Fritz and thank you so much. Thank you also for mentioning our hope and aspiration, that we still hold on to, to bring the Design with Nature Now exhibition to Glasgow. And indeed, to keep going with the work we're doing in the transcription of Ian's early lectures. It was fantastic that Bill mentioned that he gave the first set of landscape lectures in Scotland, and he did so at the Glasgow School of Architecture, now the Glasgow School of Art, and also at Edinburgh College of Art, and we'll come back to that during the discussion over the next two days.

For now, Fritz, thank you so much. I had the good fortune to collaborate with you guys in a little way with *Design with Nature Now*, and to come to the event which was inspirational. It recharged all my batteries and got me all got me all fired up again, it was wonderful.

I would absolutely say to all of my friends and colleagues here in the UK, if you ever get the chance to go to Philly, do go to the Weitzman School, where you'll get a great welcome. Bill will be there to show you the treasure trove that is the archive, and I think it's now blessed with a new entrance, designed by Laurie Olin no less, right outside the door - so even more reason to go! For now, thank you very much, that was a fabulous introduction and really reminded me of how great that place that you have there is.

Thank you.



Ian McHarg: The House We Live In, at Penn's Kroiz Gallery



Photo: Matt Wargo

Professor Laurel McSherry: A Book of Days, at Penn's Arthur Ross Gallery



Design with Nature Now Conference at Penn, 21-22 June 2019

A Book of Days

Professor Laurel McSherry

Morgan State University

First, let me say greetings from Baltimore. I'm about an hour on a fast train south of Philadelphia. But as Brian says, I'm a Jersey girl, and it's an honour to be with you today to share in this great celebration.

To reflect on what brought me to Glasgow in 2018, I first need to take a step back and explain that I was not a colleague of Ian's, nor was I a student of his. But, like many of us here today it was Ian's work, and his writings, that influenced my thinking about landscapes, and thinking about landscapes at both the scale of the region, and also the scale of the immediate. Growing up in New Jersey where I did on a coast, I could see another state, so the daily experience was seeing oneself in a particular place, but in the context of a region that was so much larger. I also had the experience of teaching with Fritz Steiner for over a decade when we were colleagues at Arizona State. Both through Ian's writings, and through conversations with Fritz, Ian's work has resonated with me, and informed me. In 2018 I was a Fulbright Fellow at the Glasgow School of Art, and there I had the opportunity to collaborate with Brian, to converse with him about McHarg, and also how McHarg's work resonated with us personally, and in Scotland.

During my time in Glasgow, I explored two themes that occupied Ian McHarg - time, and representation. I'd like to say something about how I explored these themes through my work in the Urban Lab at Glasgow.

Well the timing was, frankly, remarkable, that my fellowship which elapsed six months was the year before the planned celebrations at Penn. But remember, there's no Landscape Architecture programme at the Glasgow School of Art, so when I chose it as the location for my Fulbright, it was a bit of a provocation to me, an opportunity to join a community of artists and to learn something of their practices, and perhaps to expand on my own. Some of my results you can see in the figures here are recognisable as landscape, while others lie somewhere in between an area of abstraction and observation.

One of these is a durational video project that I created over the course of six months. During that six-month period of time, the winter and spring of 2018, the city and the countryside experienced a dramatic increase in daylight. That was of 10 and a half hours, and it did so gradually through daily increments between one and five minutes. This video project analogues this change. I created it by pairing a collection of 180 individual video observations that I shot daily and assembled in sequence, those are shown here on the right in **Figure 1**, with 180 cinema clips of the same duration that were drawn from films screened at the Glasgow Film Theatre during that same six-month period of time. When I constructed, and then installed the piece, I synchronised these two tracks, so they played simultaneously side by side. The completed work is a loop of 10 and a half hours - the work is longer than the opening times for the gallery where it was shown - and explores several themes that are related to time, particularly the distinction between calendar dates that repeat, and lived dates, that don't.

In the meantime in the print studio, I explored the same subject matter through different means, and I used etching and engraving to record Scotland's changing daylight as in **Figure 2**. In a sense, my goal here was to try to make time topographic. The Glasgow daylight series, not only references the original cover of *Design with Nature*, it also inspired the recently published *Design with Nature Now*. I created this series by engraving of four-inch steel plates and etching them in a sequence of acid baths of increasing duration, which were equivalent to the hours of daylight gained each month from January to June, so in a sense in this case, acid was my sun.



Figure 1: Still from video piece

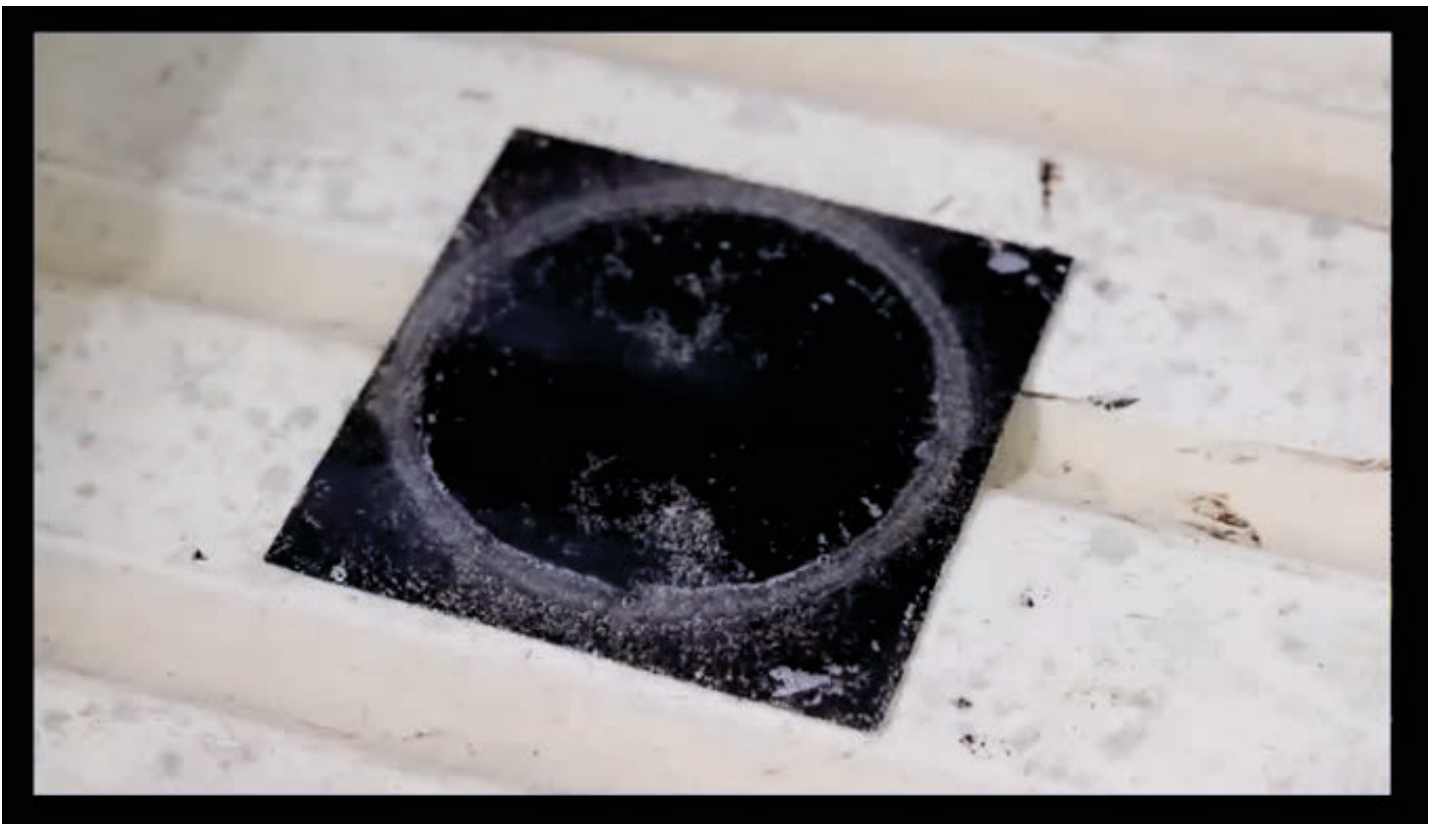


Figure 2: Detail from *The Glasgow Daylight Series*



Figure 3: The Glasgow Daylight Series

I made the first set of prints after the steel was exposed for one hour representing January, that would be the image all the way on the left in **Figure 3**, and the final set of prints after a total exposure of 10 and a half hours, which is the image all the way on the right. Since the plate that produced the image on the far left was sacrificed to produce the image immediately to its right, and so on, each print became both an ending and a beginning. A mooring and a threshold. For some of the work in the series, I also explored a technique called blind embossing, which is free of ink, and relies only on changes in ambient light to render the images, or to render the forms.

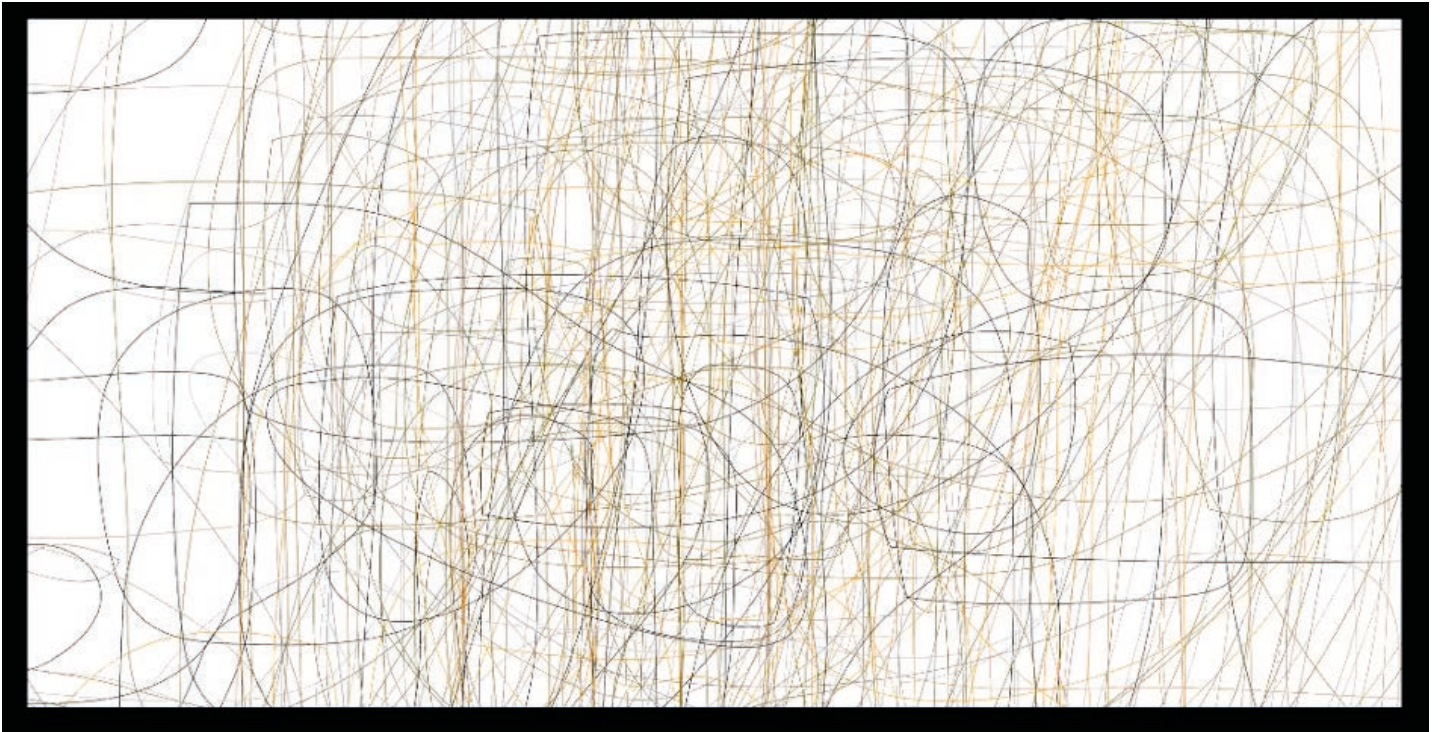


Figure 4: An exploration of walking practice

Another favourite tool of McHarg's was mapping. A memorable passage for me in *Design with Nature* was McHarg's descriptions of his walking practice, and his use of that walking practice as a means of understanding relationships between city and countryside. Recalling this inspired my own walking practice which resulted in the drawing in **Figure 4**, which is in a sense a calendar, I made the drawing by assembling 180 separate hand drawings one made each morning to depict where I travelled the day before, and then I redrew each map digitally using seven colours to differentiate the days of the week. Displaying, as you see here, all the layers together, I could then begin to see the space that was created through my 180 days of walking, and to think about how my navigation in the city and its surroundings evolved over the course of my six months living there.



Figure 5: Dual Transect

Another representational technique that was favoured by McHarg was the transect. I also had this opportunity, or this idea, to think about, and begin to study both the River Clyde and its American counterpart, the Delaware, because both of those were influential in McHarg's life and his work. An underlying theme in, not only McHarg's work, but these experiments of my own, were the significance of increments, and the power in their accumulation. The drawing in **Figure 5** is called Dual Transect, and I produced it through a combination of digital drawing, field photography, and photo engraving. It actually began with a desire to record the locations of shallow river sections along the Clyde, those areas traditionally used by drovers to move livestock from one side of the river to the other. Gradually, it evolved into a recording of many, many different types of crossings. The colour of each line is drawn from sampling field photography from each location, and similar to the process that I used when I created the walk maps, I created dual transect as a series of individual layers, which, when displayed together, reveal patterns and densities and variations along the river's gradient. I tried to also capture the interdependence of the city and its surroundings by trying to make a drawing that was non directional in its reading.

I was encouraged to explore all dimensions of the GSA during my time there, as well as explore the river, and explore the print studio. **Figure 6** is illustrating how I reached out to textile artists at the school when I realised that when I superimposed the Delaware on top of the drawing of the Clyde, the drawing became 20 feet long, because the Delaware is three times the length of the Clyde. I couldn't make it any longer in the print studio, but I did have an idea that maybe I could make it on fabric, so with Brian's encouragement, I went to the textile studio, and here is an example of a test strip being made. The final piece was hung in the gallery, and subsequently here, in Philadelphia.



Figure 6: Reaching out to textile artists

The Ian L. McHarg Center and The Green New Deal

Billy Fleming

The Ian L. McHarg Center for Urbanism and Ecology

Hi, thank you so much for having me, I'm really excited to be here with you all today at this seminar. I'm going to talk about some of the work we've done in the McHarg Center over the last three years around the Green New Deal.

For me it's important to begin just by thinking about what the Green New Deal is, as opposed to the way it's often framed in, for example, the right wing media in the United States. If you draw directly from the kind of language that was used to introduce it back in February 2019 in the non-binding House Resolution 109, it calls for many things and among them are various provisions for channelling investments through our climate agenda into the built and natural environment, into the things that landscape architects, architects, planners, and others in the built environment professions do every day, and do really well.

I won't cover all of them, but among them is retrofitting every existing building in the country for maximum water and energy efficiency; overhauling the US transportation system; investing in public lands; remediating every hazmat and brownfield site in the US. There's a lot of work, and as a resolution it's intended as a framework, not a piece of standalone legislation. It's important for me to also begin by noting here that I often get asked, why focus on the Green New Deal, why not on another climate plan? Why not say, Project Drawdown or similar, and there are lots of good reasons for that. Chief among them is that it's truly unique amongst American climate plans, in that it's actually trying to fuse the more technocratic demands around decarbonisation, with demands from blue collar workers for jobs, and a fairer economy; along with the demands from frontline and fence-line communities for centring justice in the rollout of its investment programme. Often previous climate plans have tried to do one, or maybe two of these, none have tried to do three - when another one emerges that tries to do all three of these, we'll happily take it up. Until then, this is the one we're focusing on.

We normally spend a lot of time talking about the New Deal when I talk about the Green New Deal, in part because it represents such an important moment in political cultural history in the US, and also because it's the central reference chosen by green new dealers. We won't spend much time on it today, but I'll just make a few key comments. One is that, the Green New Deal in many ways shares this kind of DNA with the New Deal - I'm pulling from Nancy Levinson of Places Journal here, who writes that, "*the New Deal is best understood, not as an overarching plan, but as a series of improvisations, held together not by theory, but by strategy.*" It's important to remember this right for the Green New Deal, and that it's not imagined as a punch list or checking off as we go over, say, the first 2, 3, 4 years of a favourable administration, but is meant to define a decade-long, plus a generation, of policymaking that adheres to those jobs, justice and decarbonisation goals.

One of the last things I'll say about the New Deal too, is that it's often imagined in the US experience as providing the framework that would give us the World War Two mobilisation that comes a few years later, as providing your only real universal programme in this country, which is Social Security. But it also builds about 55,000 built environment projects around the US. Some of them very familiar to folks here, like the Tennessee Valley Authority, the Appalachian Regional Trail, but also the pieces of everyday life that stitch together our communities and civic infrastructure: the post offices, the public schools, the housing, the sanitary sewer systems, the state parks. All of the things that we take for granted in our built and natural environment today can trace, in large part, their roots back to this era of the New Deal.

Among the many things the New Deal offered, or failed to offer, was a real theory of power. So here, pulling from Brent Siebel, and a story in here at Penn writing about it - but what the New Deal failed to consider, in its rollout at the investment side of its programme, was how it would be received by state and local government who, at least in our system of government, really bear all the responsibility for implementation. What that meant here is that Franklin D. Roosevelt and his colleagues just didn't think or care that much about who would be tasked with doing the implementation of say, the multi trillion dollar New Deal investment programme. So when that money was channelled to places run by sewer socialists in Minneapolis, it linked in and strengthened their really progressive coalition, allowed it to flourish for longer than it would have otherwise. And when that money was channelled towards Jim Crow Dixiecrats in the south, it did the same for them. You can go back through the built environment history of the New Deal to find countless examples of the ways it drags race and injustice into the US landscape.

So for us and for me and the Center, taking on the Green New Deal has meant thinking about some of those failures in this more contemporary context, and trying to tie them back to a theory of change that begins from the premise that no one will understand the energy transition or something like a Green New Deal through the carbon molecules in the atmosphere, or the electrons in the circuits of their home. We would never log on to zoom like this in 2030, or 2040, and know viscerally that our computers are powered by wind instead of coal. But we will know when real investments are made in our home, in our community, in our transportation, in our work, through the rollout of something like a Green New Deal that makes most people, if not all people's, quality of life better. For us in the Center, that means that one of the things we can best contribute to this moment, and to this movement, is to take the more abstract demands of green new dealers, which often deal at national or international level and with economic and technology and science policy, and translate them into compelling visions of the future that make these quite radical ideas feel much more pragmatic and much

more real. We've done that in four ways, and organised around two research questions.

One is, how do we balance the need to build as much as we've ever built, as fast as we've ever built it, with our responsibility to live up to democratic principles of self-determination? Then how do we translate the demands of the climate justice movement into those compelling images of the future?

One way has been in the construction of a set of public tools, the first of which (and the only one I'll show today) is this project, **Figure 1**, and that was for the Green New Deal. This was developed in partnership with the Sunrise Movement in a few other places, who came to us through the course of conversation with them about what we might be able to contribute to this work. It became clear that a big barrier for them, for their local groups, and for some of their partners, was the siloing and gatekeeping of critical climate and built environment data in the US, either behind academic journal paywalls, or in places otherwise inaccessible to most people who might want to use them to organise around. We took it upon ourselves to begin compiling as much of that as we could get our hands on, curating it into what we hoped was a beautiful set of images and maps, and contextualising a narrative and texts, and then making it available to anyone with an internet connection. So, you can both peruse this Atlas, and use it in your daily organising work as you want. You can also download any of the data we use on GitHub to use however you want to in your own work. That's been one focus - this public tool construction. <https://mcharg.upenn.edu/2100-project-atlas-green-new-deal>

Inventory

100 Million More Americans

Climate + Urbanization Projections

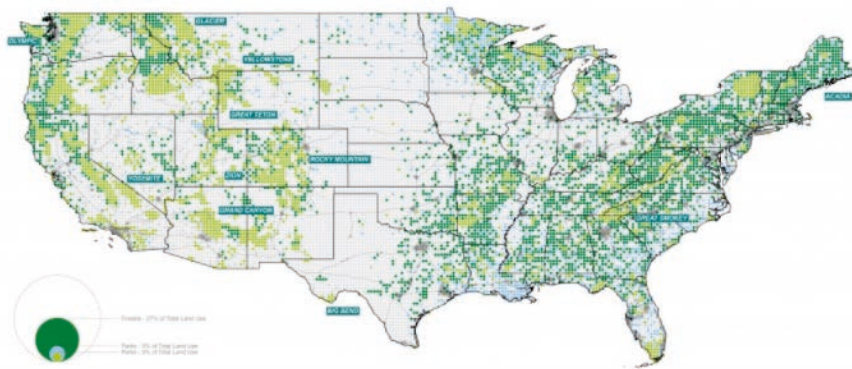
Climate Change Effects

Video Gallery

Contributors

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Public Lands + Wetlands



Water Sources

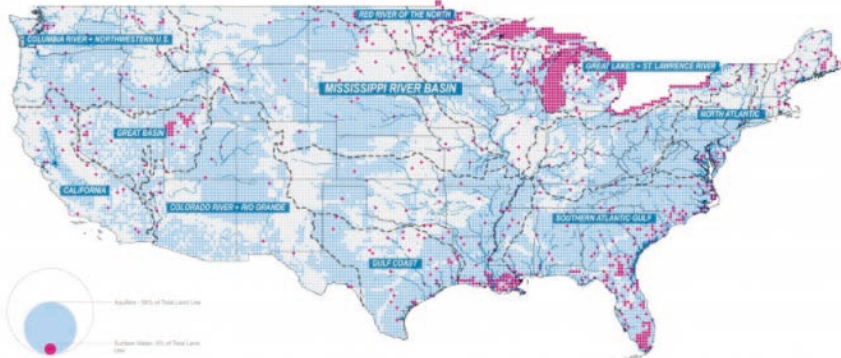


Figure 1: An Atlas for The Green New Deal

The second has been the offering up of the school and the university's platform and resources to groups who are typically not invited in, to have conversations about how their radical visions for the future mesh or don't with those that typically occupy time in a School of Design. Here on stage in **Figure 2** we have some of the national leaders of the Green New Deal movement, and some international leaders of the Green New Deal movement, here at Penn this time last year, asking some of these same questions about how on earth we move from abstract demand to concrete legislative agendas that drive implementation in communities all across the country. On the stage there you see at the podium my state rep in South Philly, Elizabeth Fiedler, next to her was Corinne Taylor, who runs the government affairs programme at Weact, probably the oldest and most successful environmental justice organisation in New York. Next to her is Dave Roberts, writer at Vox; next to him is Rhianna Dion Right, who runs the climate programme at the Roosevelt Institute here, probably the largest left think tank in the US; next to her is Leah Stokes, political science professor at UC Santa Barbara; and they're seated next to Alison Lasseter, an alumnus of our faculty.

The day was structured around taking these big abstract principles, and putting them into conversation with planners and designers around how to actually build the world the Green New Deal has promised. And this picture in particular, in **Figure 3**, I always like to include from this event, in part because the auditorium is full. Our Provost who opened the event for us that day, I think remarked (maybe not knowing it would be perceived as a joke) that this 1,400 person arena was as full as he'd ever seen, fuller even than when our former faculty member Joe Biden used to hold events here. Onstage there you see Varshini Prakash leading the crowd in a song at the end of the day, several of our faculty are there along with a number of other folks from the left in the US.



Figure 2: National leaders of The Green New Deal Movement at Penn, 2019



Figure 3: Varshini Prakash on stage at Penn, 2019

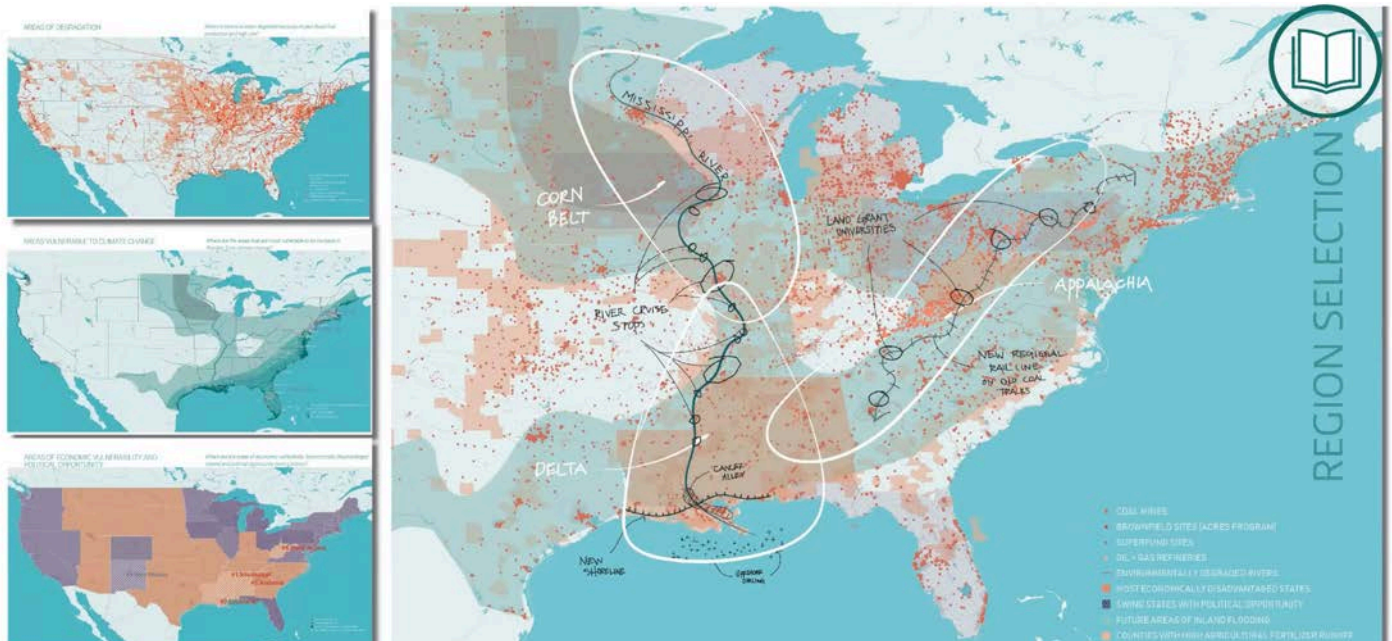


Figure 4: Green New Deal Studio, area selection

To begin to wrap up on this, included after the event side there's been this translation into policy development within the Center as well - focused again, on taking these jobs, justice, carbon principles, and putting them into actionable concrete legislative text. In this case, in partnership with Representative Ocasio Cortez and Senator Sanders around public housing as part of a bill we helped them write last year along with some supporting research, all of which you can always find here <https://www.dataforprogress.org/green-new-deal-public-housing>. This is coupled with some work we've done around green stimulus, we were part of the first group to make this call and articulate a comprehensive vision last March. This language, for the most part, got picked up by the now President Elect Biden campaign, and continues to be drawn upon as they get their transition plan together. It became part of the impetus for us launching the New Climate Policy Initiative in the McHarg Center, which formalises these once informal ad hoc networks in which we collaborate with a group of really compelling and mostly younger BIPOC scholars doing movement connected climate justice work with sitting legislators. We met a couple of days ago now, with incoming

members of what's called the Justice Democrats Caucus in the US, so Jamal Bowman, Cory Bush, Marie Newman, and we've had similar calls like this with other incoming cohorts about how to channel their priorities in their first session in Congress around the Green New Deal, into the housing, schools, civic infrastructure of their communities, and the things that designers do really well. I haven't been through all the names, but there's an initial pool of folks who were involved in that work with us.

The last thing has been the use of studio as an engine for all of these different parts to come together, and to push the work further. I'm currently in the second year of a three-year designing Green New Deal studio sequence in the school. In the first iteration, we asked students to answer a couple of hard questions about where to prioritise investment through the rollout of a Green New Deal. They ultimately picked three regions, shown in **Figure 4**, and I think picked pretty well. They chose Appalachia, the Lower Mississippi Delta and the Corn Belt of the Mississippi River. Then, rather than asking them to solve technical problems, we asked them to stoke public imagination.

We asked, how can we create images of the future in these places that work? Not about scarcity, not about having less, not about aeroplanes and hamburgers, but that were about plentiful quality of life, and abundance for the people who live there, and we asked them to put together a selection of unfamiliar design products.

In **Figures 5 to 7** we see propaganda posters, archival objects from a future that's yet to happen, along with some more familiar drawings such as the rollout of a clean energy programme in a particular part of Appalachia as well as more unconventional storytelling devices.

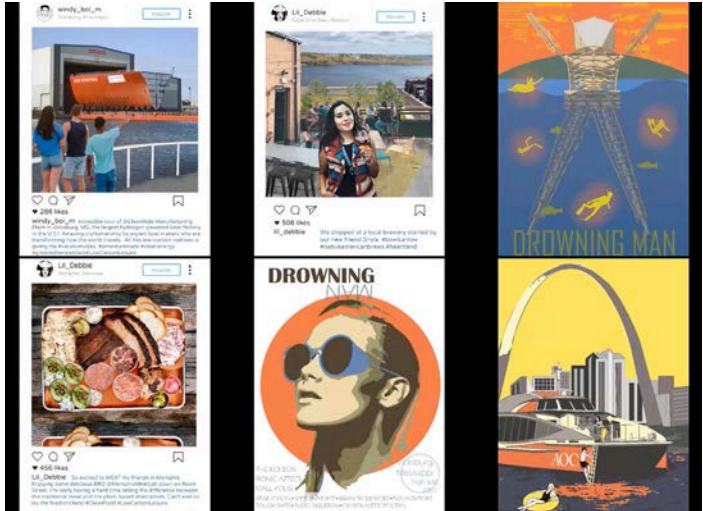


Figure 6: Alternate futures



Figure 5: Propaganda posters

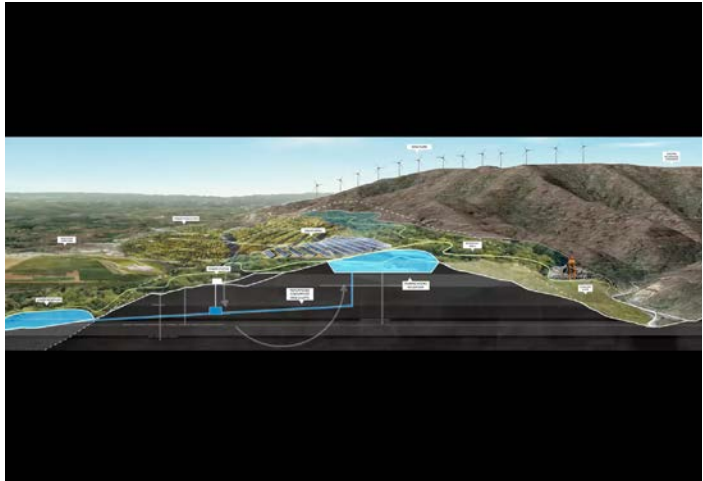


Figure 7: A clean energy project



Figure 8: Graphic novel extracts

As an example of such unconventional devices, I had a couple of students producing graphic novels (**Figure 8**), and rather than asking them to put up boards and talk about the work the way we typically do, where everyone wears all black and punches board and really talks about themselves and not to work, we asked them to curate a series of exhibition curator stocks, and to then have a set of panel discussions throughout the day about the work about the topics.

Information on this can be found here <https://www.gndsuperstudio.com/news-and-events/superstudio-showcase> and this is fed into what's now being called the Green New Deal Superstudio. It's an effort we're co leading with a group of other partners, that has as of yesterday about 160 other schools of design in the US running their own Green New Deal studios this academic year, in conversation with the AA, and with The Commonwealth Fund in the UK to do a UK and / or European version of this super studio next year.



Figure 9: Extraction of People

In the second version of this studio this semester, we're back in the Midwest, Appalachia and the Delta, and are focused on three industries: industrial agriculture; the fossil fuel system; and the prison industrial complex, and there are lots of reasons for that. The most important is that over the summer, the National organising table for the Green New Deal world, which is called Green New Deal Network that I sit on, merged with the counterpart for the movement for black lives. So BLM and GND merged over the summer. In some respects, these three are the industries they identified as the critical ones, so that's where we're focused. I won't go through this in detail, but my students are now working through this in studio, looking at the colocation of prisons on abandoned coal mines in Appalachia, looking at the colocation of prisons on former plantation sites in the Mississippi Delta.

Here in **Figure 9** looking at Angola, the State 10 for Louisiana, which is named for the people who were kidnapped from Angola and brought to the United States, forced to work this land as enslaved labourers, and then in many cases, put back into this facility, as at least notionally free people later on - and see it looks and operates a lot today, as it did back in 1901 - and looking at some of their site plans for that. They're now at the point in their semester where they've constructed regional atlases of these industries and each region, and they're beginning to produce storytelling devices to talk about, again, the possibilities that a Green New Deal might open up for each of these regions and its people if realised there, first and fully. So with that, I will stop talking and turn it over to you all for the next round at ease.

A Blueprint for the Green Network

Max Hislop

The Glasgow and Clyde Valley Green Network Partnership

I'm extremely honoured to be taking part in this seminar, and am overwhelmed by the previous speakers. I'd like to present the work that I and my colleagues in the Green Network Partnership have been working on over the last few years. I'll tell you a bit about the Blueprint, related to the Green Network, and then a couple of projects that relate to the Blueprint.

I work for the Glasgow and Clyde Valley Green Network Partnership, a partnership with the eight councils that make up the Glasgow City Region, and several Government Agencies, such as Scottish Forestry, Nature Scot and the Environmental Protection Agency. Our job is about strategic planning for delivery of a network of connected greenspaces.

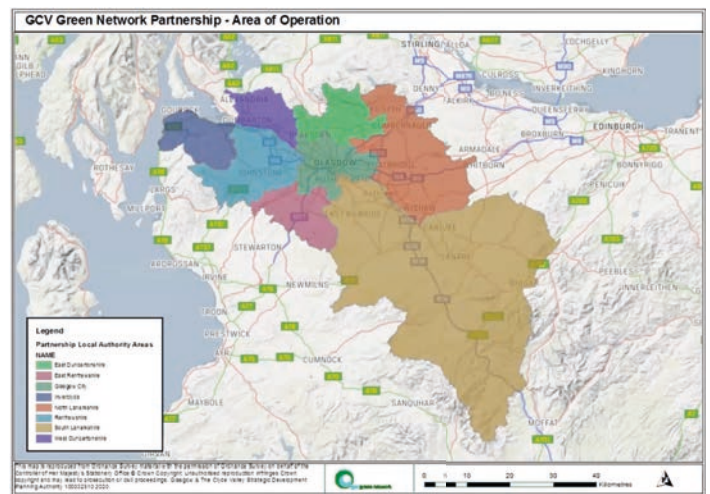


Figure 1: The Glasgow and Clyde Valley Green Network Partnership area

Figure 1 shows our region in context in Central Scotland on the left. You can see Edinburgh over on the east on the Estuary of the Forth, or the Firth of Forth; Glasgow on the Estuary of the Clyde, the Firth of Clyde; and our eight local authorities which make up the Glasgow City Region. You can see how the shape of the Blueprint represents this region. The Blueprint is all about making connections: connections across the region itself, comprised of two networks; a network for people, the access network; and a network for wildlife, the habitat network.

The access network (Figure 2) identifies over 500 miles of off-road walking and cycling routes, utilising existing parks and greenspace, as well as greenways and green active travel routes, that connect people from where they live, to where they need to be: places of work, shopping centres, but also essentially greenspaces, like our Country Parks based around the region. The infographics used are simplifications of detailed analysis done over the region in Geographical Information Systems, or GIS, that's the layer cake we've inherited from Ian McHarg. When it comes to the access network, we've already got 60% of our network in place, and it's been our job to think about how we might green the rest.

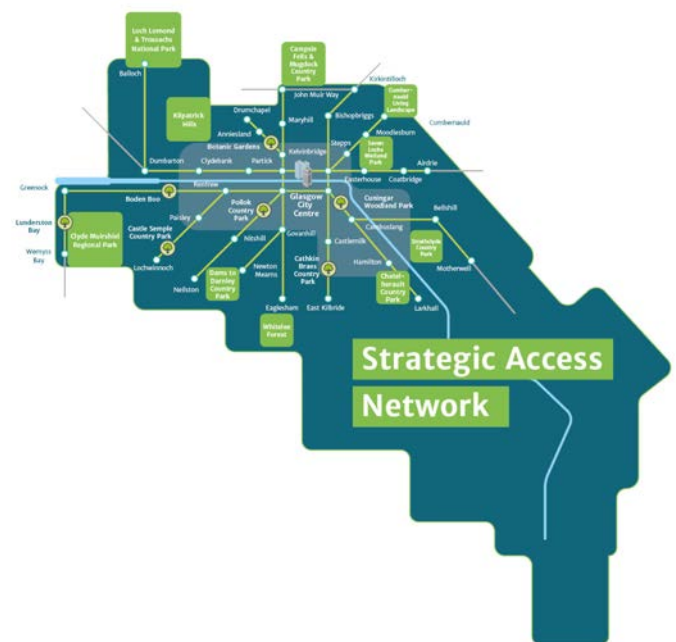


Figure 2: The Strategic Access Network

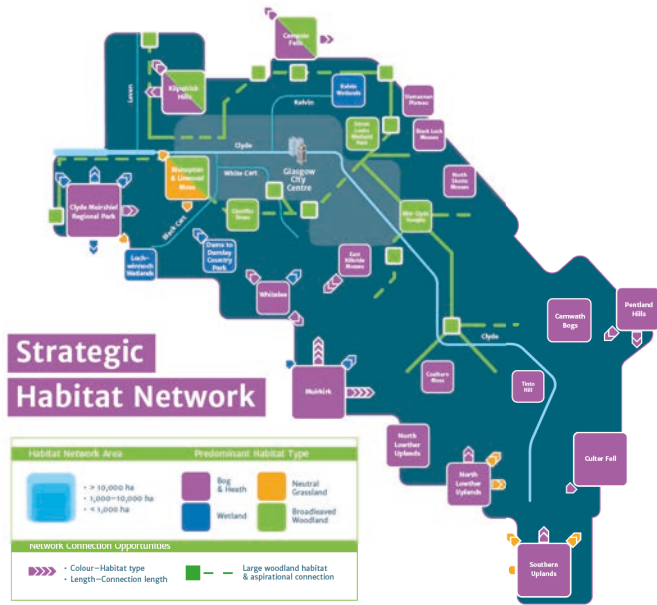


Figure 3: The Strategic Habitat Network

When it comes to the habitat networks, these cover 40% of our region. In the infographic in **Figure 3**, we are looking at four priority habitat types from the British Biodiversity Action Plan. Like so many places, our habitats are heavily fragmented through development and agriculture, so our blueprint is all about making connections between our existing disjointed habitat network. That’s what the arrows on this graphic represent. You can see the four habitat types represented graphically across the region. Focussing in on just the broadleaved woodland habitat network (shown in green in Figure 3) you can see that up the Clyde Valley a lot of our broadleaved habitats are well connected. It’s not a great leap of imagination to see those all connected, as one contiguous network.

Topographically, Central Scotland is a pinch point, with the two firths of the Forth and the Clyde, cutting into the landscape from the east and west respectively. In addition to this there are upland areas, situated to the north, east and west which further constrain migration. Then, of course, we have the conurbation itself at the heart of the region. These all represent a pinch point for species migration, which itself is going to be so important in the face of a changing climate. Our ambition is to create a migratory route through our region which allows woodland species to move from one woodland habitat patch to the next, eventually linking up to the Loch Lomond and Trossachs National Park and the Highlands of Scotland.

So that’s our ambition for a regional woodland habitat, which stems from the Blueprint. This is an important contributing component to a new delivery project we are developing at the moment called the Clyde Climate Forest, **Figure 4**. The woodland element is all about “Connectivity”, but we have two other elements to the project. One is about urban tree canopy cover, and the enormous range of benefits that we all know that urban trees bring to the environment, particularly about stormwater management and the overheating Glasgow will face as the climate changes. We call that one “Canopy”. Then, a larger expansion of forests and woodlands on farmland and vacant and derelict land, right across our region as a response to climate change.



Figure 4: The Clyde Climate Forest

Obviously, we are concerned about locking up carbon emissions, so that's our third part of the vision, "Carbon", for which we are setting targets for.

We want to see 20% canopy cover across the urban parts of Greater Glasgow; we want to increase the average woodland habitat network by 20%; and we want to see 20% woodland cover across Glasgow City region from a current level of 17%.

It's great to have these ideas, but we have to see them delivered. In the Blueprint, we've identified four key delivery methods (below and **Figure 5**):

- Planned Development, through the planning system;
- Public Sector Programmes, through the kind of work which our public organisations are already spending money on, so to aligning delivery with existing budgets;
- Infrastructure Investments, with the delivery of the Blueprint alongside these, so seeing 'green', invested in along with the 'grey'; and
- Funding Opportunities, there's always that search for such opportunities and pots of money. I think that the Clyde Climate Forest really is about taking advantage of the new funding opportunities associated with investment in carbon offsetting, it could be a major driver for that ambition.

I also want to focus in on the opportunity associated with the planning system. We've estimated that the delivery of the Green Network within our region will cost 1.1 billion pounds over the next few decades, but 26% of that capital cost could be delivered through the planning system if we harnessed development to deliver the kinds of interventions that we require. What that will require, is that we get our plans in place - our good city plans, that we have the policies to support those plans, and that the development management teams who manage the planning process understand how to implement those policies when they're scrutinising planning applications. We've therefore been doing quite a bit of work over the last few years, working with analysts and developers, to understand that system better, and how to harness it. That's resulted in us publishing a brochure entitled "Planning for Green Infrastructure" at the beginning of 2020. It provides a suite of exemplar policies, environment planning policies, for green infrastructure.

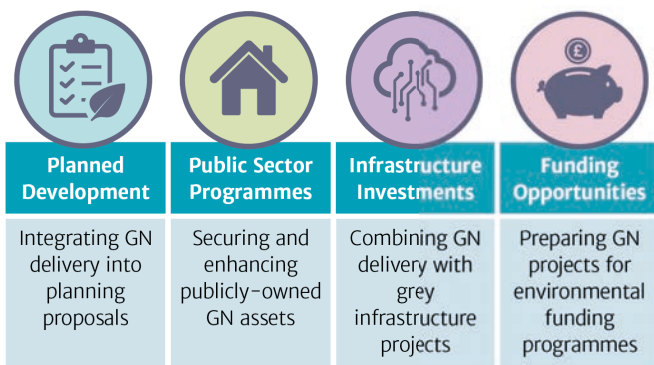


Figure 5: Blueprint delivery methods

Figure 6 shows a snapshot of those policies, there's a principal policy, which is really about ensuring that green infrastructure is designed into new development from the outset; four functional policies based around water management, habitat enhancements, active travel (or 'access networks'), and green and open space. Then finally, crucially, about the stewardship of that resource.

Green infrastructure is also about multifunctionality, and **Figure 7** shows an image taken from that brochure, showing, if you like, those layers - another 'layer cake' - of those functions as they should stack up in the well-designed development.

This is just a snapshot of our Blueprint and a couple of the projects that Glasgow and Clyde Valley Green Network Partnership is doing to see delivery against that Blueprint. You can find more information about our work through the publications on our website at <https://www.gcvgreennetwork.gov.uk/publications>.

Thank you very much.



Figure 6: Policy snapshot

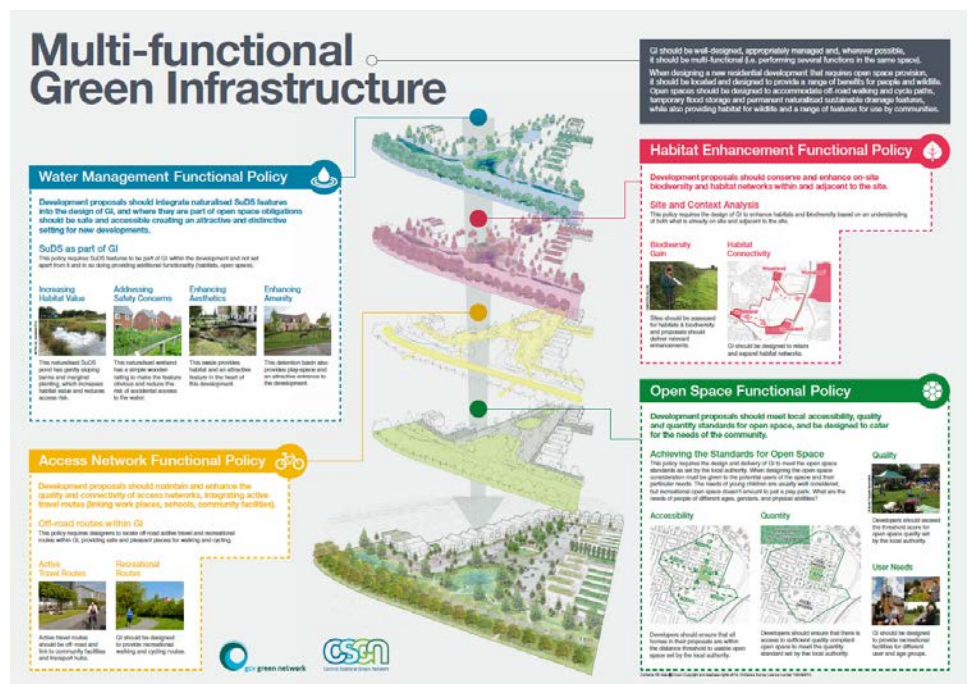


Figure 7: A layer cake of functions

A Nature Based Solutions Approach

Gillian Dick

Glasgow City Council

Hello, I'm the Spatial Planning Manager at Glasgow City Council and the Development Plan Group, I'm going to talk to you about our place-based approach and Nature Based Solutions. This is part of a Horizon 2020 Connecting Nature project that the city is involved in.

I thought I would show you **Figure 1** first because, when we start talking about projects, everybody talks about a beginning, a middle and an end. When we start to fund projects, people find resources for the planning bit, they power the resource up for the delivery bit, but they forget about the stewardship, so we have lots of projects that deliver and then fizzle. What Figure 1 is also showing is that you need all the different elements in all those different stages.

In planning a project, many think about the technical solutions, about the governance, the financing, and business models, the entrepreneurship - i.e. can we power this up, can we make some money out of it - and about coproduction when working with communities. People sometimes think about reflecting on the project journey, because mistakes are made during projects and can be learned from, and can be added to the impact and assessment of the data. They'll gather the evidence that says this is why we're going to do something. People will also often flow some of that evidence and planning into the delivery, but often that flow right through to stewardship is missing. This can lead to not having the finance or governance to maintain a project and keep it going, there is a lack of looking back to see where the bumps in the road were. Where this *is* done it becomes an iterative process, that infinity loop we see in Figure 1. Stewardship should always take you back to some more planning, which should take you to some more delivery, and more stewardship. The key in all of this is not to go into a single subject discussion, i.e. it's never just about biodiversity.

If Nature Based Solutions is not therefore just about biodiversity, what *is* it about? Connecting Nature's Nature Based Solutions Technical Lead, Dr Stuart Connop's, approach is to look at the process involved in developing or changing management of a space and ask whether it follows these 5 simple Nature Based Solutions principles shown in **Figure 2**.

Generally, if you can answer yes to all five of these principles, there is a good chance it can be argued as a Nature Based Solution. This is a somewhat simplified approach, as there should also be consideration of local contextualisation in relation to these principles. However, as a basic introduction to Nature Based Solutions these questions represent a relatively accessible entry point. And, once it has been established as a Nature Based Solution, a simple first step towards evaluating the benefits of the Nature Based Solution can be taken by adding *how* in front of each of the five principles.



Figure 1: Planning, Delivery and Stewardship



Figure 2: What are nature-based solutions?

The International Union for Conservation of Nature (IUCN) recently defined Nature Based Solutions as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”¹. The IUCN also previously produced a diagram, which I thought is worth sharing in **Figure 3**. This begins with the societal changes, then thinking about designing at scale, and scaling that out. While you’re doing that, you think about doing no damage to the environment or the biodiversity, you think about the economic feasibility, and inclusive governance - taking the community with you all the time. You then want to look at your trade-offs, which there will be, but doing no harm - to the environment, the biodiversity of the spaces, the people, or their health and wellbeing - should always be your baseline. If you get all of that right, you can start to look at mainstreaming and sustainability, and have something that could move on to stewardship.

The global standard for Nature Based Solutions was launched on 23rd July 2020², and I also thought it was worth reminding people today about places. **Figure 4** shows the modern Scottish iteration of it, also see <https://placestandard.scot/>. It’s about how you have a conversation with communities about place, which in itself is nothing new. 100 years ago Geddes said, ‘The right places for each sort of people, places where they will feel that where they will really flourish, to the right place for the right people at the right time’. In the 60s, Jane Jacobs talked about dull inner cities, it’s true, do contain the seeds of their own destruction and little else, but lively diverse intense cities, contain the seeds of their own regeneration.

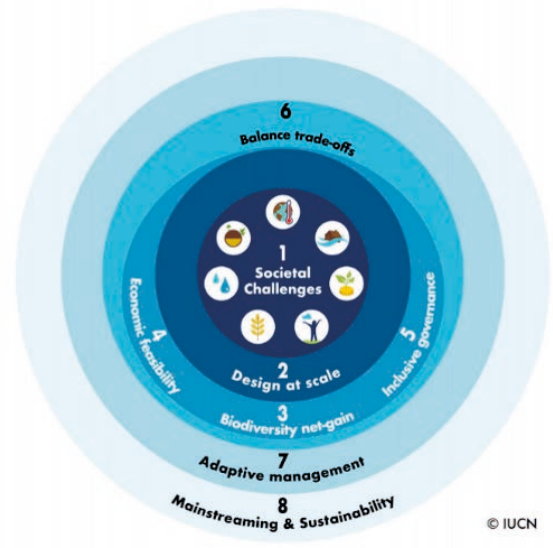


Image credit: IUCN

Figure 3: Nature Based Solutions diagram

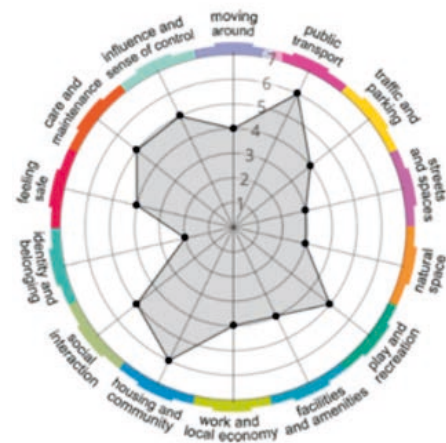


Figure 4: Scotland's Place Standard

If you're thinking about place, you need to think about what people love about places, and what they think is important about places. In Glasgow, we try to contextualise that within our City Development Plan, approved about two years ago. The plan has the headlines you'll see in every plan across Scotland, about a high-quality healthy place and a compact city, and we've also tried to be vibrant, thriving, connected and green. We encompass that in an overarching placemaking principle covering the whole city and in spatial strategy, with 12 policies. We've aimed to reduce the plan down, to get to the policies and *why* they were needed.

Our placemaking policy, The Placemaking Principle, talks about distinct, safe and pleasant places, which are easy to move around, welcoming, adaptable and resource efficient. Our Green Belt and Green Network policy laid the baseline for our Open Space Strategy. In Scotland, we have two statutory planning documents, a Development Plan and an Open Space Strategy, and I cover some more detail on the Open Space Strategy later in this talk. This covers elements such as linked habitats, the provision of multifunctional open space, and protecting the green belt, amongst others.

In a separate Water Environment policy, we consider climate adaptations and improving the water environment. It's worth remembering that in Glasgow our biggest open space is the blue open space, that's the river Clyde, the Kelvin, the canals and the Cart. The second biggest open space is the grey, that's our footpaths, walkways, cycleways, the public realm, the squares; and then we have the green, it's easy to zoom in on the green and forget about the grey and the blue. Our Natural Environment policy covers some of our protected environments, and some of that biodiversity legislation that we have to pay cognisance to.

Our Open Space Strategy (informed by our Green Belt and Green Network policy) has a clear vision of a liveable, healthy, and resilient Glasgow. By a liveable city, we mean good quality, safe and attractive spaces, with lots of informal spaces where you can relax, and meet up with the community, spaces which are really important at the moment. We're currently hearing from people that there aren't enough spaces, or they're not big enough, or they don't feel they can socially distance in them properly. In the Glasgow context, there's lots of tenement buildings where there are shared back courts, or back gardens, and some of them have not been big enough, or have not felt safe enough for people.

We want to enhance the setting of the city, give it a sense of place, make it a welcoming place to live, work and play. We want to create that attractiveness that brings businesses in, and those that want to work here. This helps us to improve our neighbourhoods, so it plays into what Scotland's now talking about with 20-minute neighbourhoods for our existing and our future communities.

Looking at healthy spaces, we want spaces to engage, to play, to do sport, to walk, to cycle, to grow food, to meet and engage with others. A healthy place is somewhere where you can engage for your mental health and well-being, as well as for your physical health, and somewhere that encourages that well-being and social cohesion. A healthy place is also somewhere where we can carbon capture, where we can look at improving the air quality, the water quality, and reducing the noise. All of that helps with creating a healthier Glasgow.

The OSS sets out how the Council intends to deliver Glasgow's Vision for Open Space. Under the Vision's key outcomes of a Liveable Glasgow, a Healthy Glasgow and a Resilient Glasgow, it examines each of the 15 aspects of open space need:



Figure 5: Glasgow's Open Space Vision

When we're talking about resilience, it's about using these spaces to help make our communities more resilient. If you look at our affluent communities, they can cope with the shocks and strains that are coming from the climate changes which are hitting them. Some of our less affluent communities can't, they have less resilience, their houses may not be insured against the flood events for example. We therefore want to try and manage surface water within our open spaces, it's better for a football pitch to flood occasionally than it is for our combined sewers to go into people's houses. We want to be adapted to the climate changes that are coming towards us, rather than mitigate against them.

Mitigation is a good strategy as well, and we want to use those spaces to connect to habitat, to be adapted to the conditions that are coming. We want that change to include carbon capture, renewable energy, geothermal, providing shelter and shade, as we're expected to be wetter and warmer. We are using opportunity mapping to focus delivering this change, aiming to capture data and visualise it in different ways, to give us a better understanding of the quality, quantity and accessibility of our spaces.

The evidence base will allow us to make better decisions, and we've started describing our Local Development Plan and Open Space Strategy (**Figure 5**) as key asset management tools for the Council. We manage the biggest assets in the Council - our spaces and places. Such an evidence base will also allow us to provide data for communities therefore engaging with them and allowing them to work from the bottom up, as well as top down, this enabling us to strengthen the partnerships that we can build with those communities.

We hope that this approach will allow us to stimulate business growth and innovation in relation to the place-based approach and nature based solutions, and facilitate community action that enables our communities to be more resilient and do a lot more for themselves.

Thank you.

Endnotes

1 <https://www.iucn.org/commissions/commission-ecosystem-management/our-work/nature-based-solutions>

2 <https://www.naturebasedsolutionsinitiative.org/news/iucn-global-standard-for-nature-based-solutions/>

Building with Nature in West Dunbartonshire

Antony McGuinness

West Dunbartonshire Council

Thank you for inviting me along to this seminar today celebrating the legacy of McHarg, I'm currently Team Leader of Forward Planning at West Dunbartonshire Council in which Clydebank, McHarg's hometown, is situated. Today I'd like to take you on a whistle-stop tour of the process we've been following with our Local Development Plan 2, the first policy document in the UK to achieve the Building with Nature Accreditation at Excellent level, more detail of which can be found at <https://www.buildingwithnature.org.uk/>

West Dunbartonshire Council is situated to the west of Glasgow, immediately next to Drumchapel and Yoker. The area shares a boundary with Glasgow City Council, and covers our three towns of Clydebank, Dumbarton, and Alexandria. At the inception of the Local Development Plan we decided to create a plan built on three tenets: a plan that delivered places for people; that provided spaces for investment; and that provided destinations for people to visit and enjoy.

One of our key aims was to reconnect people with nature, and follow a green infrastructure first approach to design and development, instead of focusing on roads and physical matters. This enabled us to pursue Building with Nature accreditation, supported by working with the Glasgow and Clyde Valley Green Network Partnership (GCVGNP).

We began with similar principles, and a similar start from where Ian had started. As most people will know if they know Ian's work, Clydebank especially and the rest of West Dunbartonshire, is framed by the Kilpatrick Hills and the River Clyde. The area also has the Forth and Clyde Canal running through it, going all the way to the Forth in Falkirk, as well as the Antonine Wall, beginning at Old Kilpatrick, just to the west of Clydebank, and terminating in Falkirk. The wall was the farthest north that the Romans came, and isn't a traditional wall as you would think, but natural in form and made from turf and mud - so even the Romans were using nature to help them and to fortify their defences.

We followed a multi layered approach to green infrastructure

within our policies in the Plan overall - focussed on people going back to living with nature. Ian himself used to the escape the former squalor of Clydebank and run to the hills. In times of Covid, people have returned to the Kilpatrick Hills, and there's that continuity with where Ian started his childhood, to those people now returning to the hills and to nature. Our approach at West Dunbartonshire shares similar principles to Ian's work with Design with Nature. Design is taken as the conscious shaping of landscape rather than its stewardship alone; and the landscape has shaped West Dunbartonshire and its people, and endures.

The Building with Nature approach is similar in many respects, but it goes further, and it looks towards other European, American, and Australian examples. Green infrastructure is a key component of creating places for people, and this has become even more apparent now that there's a paradigm shift in planning with going back to Garden Cities. The reality that people need open space has also been further highlighted by Covid.

Green space is integral to health and wellbeing and, as Gillian discussed, is about being environmentally resilient, and that's exactly what the Development Plan does. The Plan goes from design principles, through to the layers referenced by Max in the Blueprint and habitats network, to connectivity, water management, and all the way through to stewardship. It's one of our principal policies that developments within West Dunbartonshire will have to comply with in order to obtain planning permission.

Green infrastructure policies are not just contained within one policy, but are embedded throughout the Plan. For instance, we have an air, light, and noise pollution policy that asks people to use green infrastructure to mitigate any adverse impacts on their surrounding environment. The Plan has thought through and followed a green infrastructure thread, as well as a health and wellbeing thread throughout. These will translate into supplementary guidance which will sit alongside the plan, and carry the same weight in planning. In this guidance more detail will be provided on what is expected for development in terms



Figure 1: View of the Clyde from the Kilpatrick Hills

of green infrastructure, and this is currently being written with GCVGNP.

Figure 1 shows the River Clyde with the Erskine Bridge, taken from the top of the Kilpatrick Hills looking towards Dumbarton and to the city centre. In West Dunbartonshire, the Planning Department has a passion for pushing the boundaries for high quality design. Our work is not just about creating new communities, but about strengthening communities through development and green infrastructure, it's about habitat and access connectivity. Our Development Plan has a strategic green network approach, and has a set of strategic green network projects that will link the communities together and connect to further afield through the John Muir Way.

In Scotland we have a distinctive natural environment, and there's a need to integrate with it, as well as to respect it, to flow with it, and to maintain it as a resource. This has become more apparent than ever now, and for many reasons. Health and wellbeing has become incredibly important, and we're seeing a rise in West Dunbartonshire of people returning and needing recreational resources to supplement their home life; flooding is also a big issue in the West of Scotland with our position on the Clyde and the Clyde's rising levels through changes in climate and use; we also need our landscape resource for future food resilience, and to respond to the unknown. Green infrastructure can be used to create environmental resilience in response to these challenges.

Figure 2 shows the former St Eunan’s Primary School site in Clydebank, now turned into a biodiversity and community park by the Council. It sits within the centre of Clydebank, and it’s taking one of Ian’s principles of taking vacant, derelict, and unusable land back into a natural environment for the use of the community. It’s a showcase development for us, and has been well received. It’s still to have its official opening because Covid struck during completion.

The next examples show how we’re trying to embed the green infrastructure first approach in the Building with Nature principles within West Dunbartonshire. **Figure 3** shows a social affordable housing site, in Aitkenbar, Dumbarton. There is an area of existing woodland adjacent to the north, and field links connect into the development through a footpath network, and through a planted tree-lined avenue through the development site. We’ve used drainage swales and rain gardens to contribute to the amenity of the site, and provide a further visual and physical connection with the green network. There’s also a community garden on site which provides amenity and growing space for the residents. It features artwork, and is planted with low-lying native shrubs. This is in close proximity to nearby allotments that can be used by residents, connected by a footpath network. The site is well-integrated and shows that green infrastructure can be planned first, and deliver tangible benefits for residents linked to health and wellbeing, as well as enhance biodiversity.

The second example is the former John Brown’s Shipyard in Clydebank. This shipyard built the Queen Elizabeth, Queen Mary, and the QEII, as well as many other well-known ships, and is synonymous with the term ‘Clyde Built’. Even in the days of Ian, this site would have been full of buildings, and people have not been able to get to the waters of the Clyde here for decades. One of the tangible aims of Queens Quay was reconnecting people, not just to the green infrastructure, but connecting them to their river, so to the blue infrastructure too. If you stand at the Clyde and look up, you’ll see the Kilpatrick Hills, just showing how close Queens Quay is to those hills.



Figure 2: The former St Eunan’s site



Figure 3: Housing development at Aitkenbar

Figure 4 shows the site, its proximity to the Clyde, and the Kilpatrick Hills on the skyline.

There is a strong landscape strategy throughout Queens Quay and its masterplan. It's all about connecting biodiversity within the site and sustainable development. **Figure 5** shows the district heating system which takes heat from the River Clyde and provides the development and other neighbourhoods with renewable heat and hot water. You either love it or hate it, but you'll never forget the system with its gold extraction flue! We also have a series of Design Codes which were written for the development to reinforce our vision for Queens Quay. Throughout the Codes there is a strong green infrastructure theme, directing developers to refer to the principles of Building with Nature. If developers comply with the plans and the policy, they're already 50 to 60% there, because they'll have already built-in the Building with Nature and the green infrastructure first approach contained in the Plan.

These are just two examples of how we're trying to take what we've committed to in the Development Plan and translate that on the ground. I hope that's given you a flavour what's occurring in Ian's hometown and, indeed, West Dunbartonshire for those of you who have never visited.

Thank you.



Figure 4: The Former John Brown's Shipyard site



Figure 5: The District Heating System building

The Brooklyn Shore
Gullivar Shepard
Michael Van Valkenburgh Associates

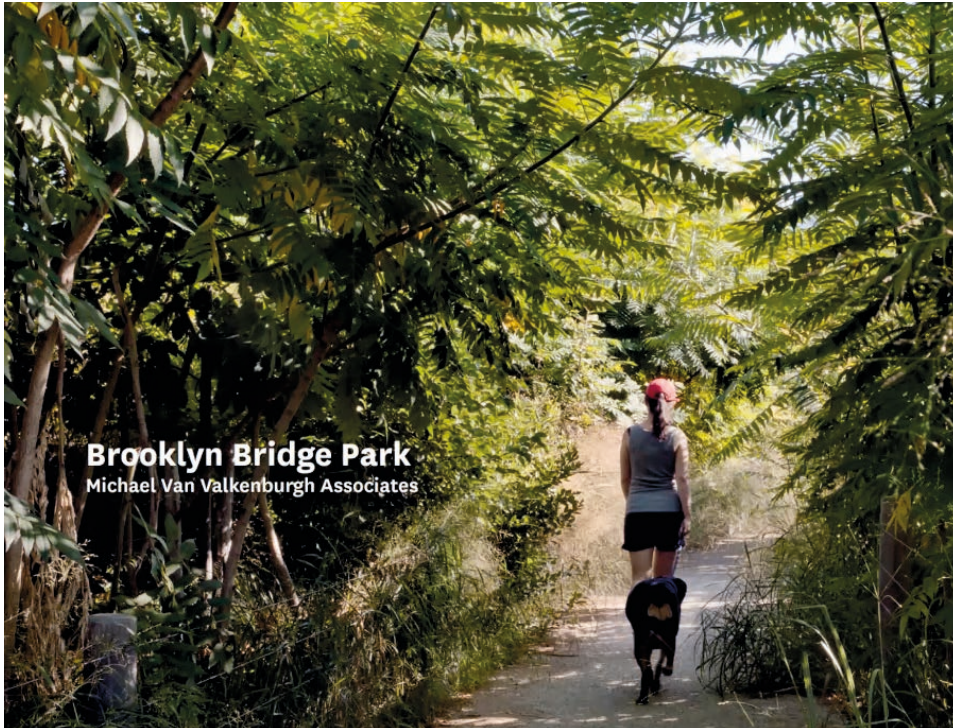


Figure 1: Walking in Brooklyn Bridge Park
Figure 2: Brooklyn Bridge Park today



In this centenary seminar to celebrate the legacy of Ian McHarg, I am delighted to present Michael Van Valkenburgh Associates' work on the Brooklyn Shore. This is a project that is about 10 blocks from our office in Brooklyn, and which has been almost 20 years in the making, design and construction.

I'd like to begin with this image taken from the project (**Figure 1**). It's striking because this illustrates immersion in the spectacle of nature, in extreme contrast to where it is located in arguably one of the most intensely urban places in the United States. It is also remarkable because Brooklyn Bridge Park is a waterfront project, which as a typology have, for decades, been developed as densely urban open settings to water. But when you go to these places, one of the most fulfilling experiences (and in this is the reason we design with nature) is that it's so beneficial to our mental and physical well-being, that when you walk away from a visit to the park, this is what sticks with you the most and has the most impact.

The park covers a site of about 70 acres, in sort of a 'chicken strip' that wraps itself around the east side of the East River, north-west of Brooklyn and south of Manhattan. The site itself is a legacy of shapes from the footprints of former industry and infrastructure built out from Brooklyn into the river.

This is the park today (**Figure 2**), that conveys a sense, a vibe, of



Figure 3: The site 20 years ago

the intensity of city around it, now calmed by greenery, but with the industrial footprint of piers and bulkheads, infrastructure, highways, and bridges that represent hundreds of millions of dollars of city infrastructure but now with greening, bringing nature back. This is the intent and the aspiration behind the project.

But first, let's take a walk back (in **Figure 3**) to when we first encountered the site almost 20 years ago ... there were giant sheds, massive concrete piers, that were so massive that even with windows to the water there was no sense of being on the harbour. There were just slots and windows and completely hard pavements with a backdrop of a cantilevered Robert Moses highway producing a tremendous volume of sound. This was not a loved place.

In fact, during the public engagement, one of the things that was constantly raised was, "who's going to come here?" Because of that highway there were few, if any, moments of access. If access was possible, the visitor – legal or otherwise – was presented with a rundown warehouse of dead pinball machines, and an NYPD training facility. No water activity or access, only a vehicle served lot with a mafia chop shop – it had an incredibly weird accretion of detritus on the waterfront.



Figure 4: Robert Moses' highway



Figure 6: Bluff encroachment



Figure 5: Private piers



Figure 7: The estuary

The piers were shaped the way they are, not as the traditional finger piers in the river that you see that align with roads, because they were built within what was a small window of maritime innovation. Instead of unloading off a ship, and then getting goods onto a cart or a car and taking it to a warehouse or business, the warehouses were put right there where you unloaded, and that was seen as a great thing. This small window and this system was eclipsed by the invention of the shipping container of course. What is fundamentally important here is that due to this we ended up with these very large piers of five acres each.

Going further back in time in **Figure 4**, we see the vision of Robert Moses, and his mission to help rid congestion in this rapidly growing metropolis with that construction of that highway.

Going further back in **Figure 5**, the waterfront. Previously, there were these little private piers, and there were no rights of way. These are just businesses that had private connections to water.

Going further back in **Figure 6**, you can see as Brooklyn was becoming its own economic township, second to Manhattan, the encroachment of what was this bluff between Brooklyn Heights and the East River. In terms of maritime parallel parking before there were piers, this unusual structure of the mercantile class having villas and then warehouses at this lower level. A wonderful expression of that relationship being, if you look in the lower right of the figure, this one moment of access along the mile long edge between what was described as a very seedy waterfront, complete with recurrent reports of pirates that would go through this threshold and raid the town and come back. If you hadn't caught them by then you'd never find them. All this set below the domesticated bluff at the top.

Then going further back in **Figure 7**, and remembering that this is an estuary, that the tidal flats, the salt marshes, the emergent landscapes, the kind of planting varieties that were here. At this time, just being colonised early on by human settlements and industry.



Brooklyn Bridge Park

While certainly working to build a park program to serve Brooklyn, MVVA looked at the project's challenge as "reverse-engineering" nature into an industrial site

- edge complexity
- structural economy
- microclimate and form

Brooklyn Piers 1-5 (post demolition), 2008

Figure 8: Piers 1-5 (post demolition) 2008

Coming back to when we started the project, we started accruing not only all of these historic layers, but also what is now a major global city with all sorts of infrastructure, and we had a jurisdictional soup. We had five subways going underneath the site, and these points where the subway plunges underneath the river had never been encountered by a design project, and all the people who had designed them were long since passed away. We therefore needed a very conservative type of administrative treatment around each of those. All the piers are administratively part of Manhattan, and the upland was part of Brooklyn because, Manhattan being the centre of power and controls of money, one of the moneymakers, so that made permitting an immediate challenge that we would have to talk to Brooklyn and Manhattan separately. The CSOs, the fact that we've State, Federal and City land right of ways, the historic viewsheds. Like many intensely urban waterfronts, you suddenly start uncovering all sorts of material and layers.

Figure 8 shows an image of when we started to demolish the sheds and began to really see what we had as a piece of land. This was basically a pancake with a marine edge, and just one kind of edge all the way through. During the design process, one of the first things we'd done is got a boat, and we all travelled around all the edges of New York, finding it was just all of this kind of marine edge. There was no engagement of water, everything was set back in terms of planting, and we saw this as a tremendous opportunity to challenge some of this marine engineering, maybe for the first time. This loosely held notion of reverse engineering, meaning literally what can we remove of this engineering, but also reverse engineering, showing that nature was here, that nature was still operating - and that we could follow the breadcrumbs of how it was working.

The reverse engineering of this as a larger structure and the land-water relationship was also important, we had the very unusual position of not just being landscape architects, but also having to develop an urban design and financial scenario where we would have certain development parcels that would pay, on an ongoing basis, the maintenance and operations of this park. The City and the State would put up the money to fund the project in its construction, but would not put a dime forward on how to maintain it forever, and we therefore really had to think about this. The site was owned by a port authority that had an incredible influx of money, and when it goes to the Parks Department, this just doesn't happen! We had to come up with a way of paying for the jacketing of piles, since 40% of the site is on structure, or resolve how we could design this in such a way to be more resilient, more self-sustaining, and ultimately more pragmatic with the forces of nature that had been resisted for 100 years.

At this point I'll organise around three working conceits that came up in the early planning and that we've held to, relative to both building a park programme to serve Brooklyn, but also to dampen the engineering, and let nature back in, having previously been built around, with the stamping out of any kind of that erosive force. These are loosely: looking for the benefits of edge complexity; a concept of structural economy; and micro climactic forces and form.

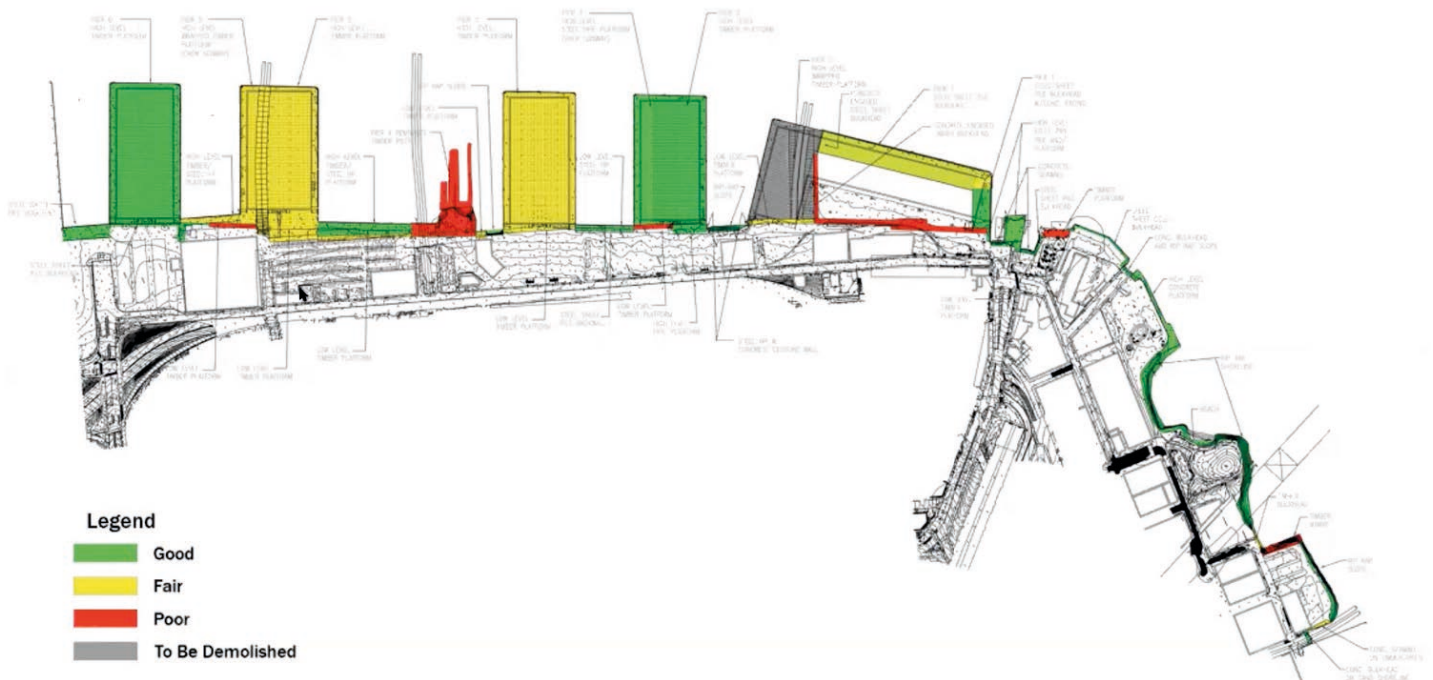


Figure 9: Specialist assessment

Edge complexity really started with this plan where we hired marine specialists to actually walk through the muck and inspect all the structure that you can't see from the top. It's a very unpleasant job, you have to be in the water, understand the relieving platforms, the wharfs, the piers and pile caps, and the spans over subways. In **Figure 9**, areas shown in red and grey were where we're desperately in trouble, with other areas being in better condition than others.

Our concept was that we had that monochromatic edge, almost two and a half miles of it, and through a series of operations we looked at what we should keep, and what we could rip out. We added three quarters of a mile, just through removals; by adding floating walks that would help connect these very vast piers at the water's edge; and by cutting into the land to create more natural resilient edges. We nearly doubled the amount of edge, and 'the edge is programme' became one of our project mottos.

Figure 10 shows our depiction of what the site was, with the complete covered erasure of the tides of an estuary. It was basically a no-life zone in the shadow of these piers which were acres in scale.

Figure 11 then shows our idea of how to pull back and reveal this and expose this connection of water and land once again. This was perhaps one of the central engines for what we think we accomplished here, leaving the piles because they had tremendous value for the ecology of the estuary, and bringing back salt marsh which had basically been eliminated from the harbour.

In **Figure 12** we see a very exciting moment, our first moment of revelation. You can look at all the plans you want, and there weren't many as most were stored in the World Trade Centre when 9/11 happened, so we had very few records to go off. Therefore when we are in the act of actually physically ripping apart, it was breath-taking to see this connection begin to happen in front of our eyes.



Figure 10: Existing site conditions



Figure 11: Potential site conditions

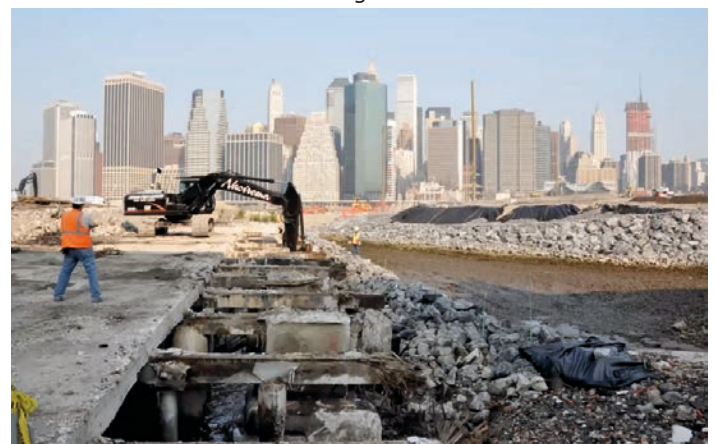


Figure 12: Revelation



Figure 13: Pier 1 during development

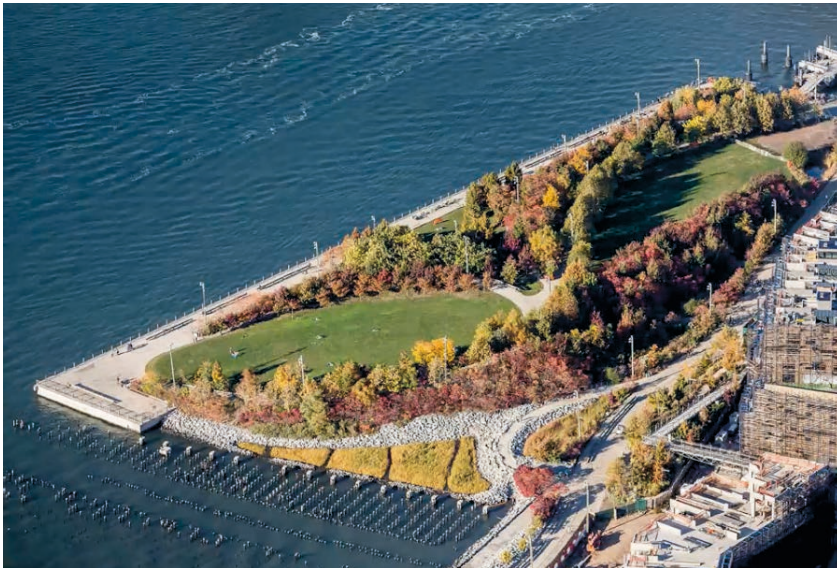


Figure 14: Pier 1 post development

In this pier in **Figures 13 and 14** you can see that clearing and the pile field in the lower left where one of the subway tunnels was, and this cut between the buildings and the park, where an old bulkhead that had been rotting in the brineish groundwater was removed. This became the engine to a whole new system of site water treatments, letting the tide into this landscape, and bringing people into it with a variety of experiences of nature.

In **Figure 15** we see one of those moments where you're seeing the salt marsh, and the tide starting to flood this. Being able to clamber out and get up close to that something, from that original boat ride we didn't see the ability to ever come in contact with water, and we're very much wired to respond to that. Creating actual programmatic access in **Figure 16** for the untapped resource of being able to paddle around in a safe water environment, or simply get people closer to the water, being project mission number one.



Figure 15: Pier 1 salt marsh

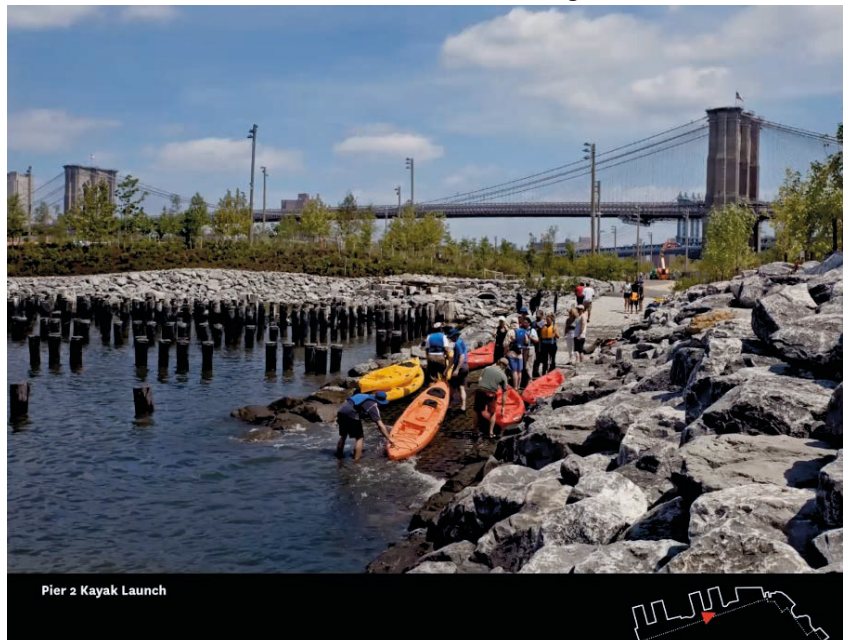


Figure 16: Pier 2 kayak launch



Figure 17: Revealing the hall



Figure 18: The slipway

Another instance, the pier further to the south, in **Figure 17**, was this amazing machine, a bandsaw on tracks, that sawed this 300 foot wide pier off the land, revealing this virtual hypostyle hall. To the left side you can see that this spans over additional subway tubes. **Figure 18** shows where we created a metaphoric slip, where you could launch boats into the protected waterways. It was allowing you to see the infrastructure that was there, but also understand the tides because with four or five feet of rise, the water would be in different locations in this gradient pathway and go in counter clockwise, and change the nature of feeling of the site. We created a salt marsh sluice that would fill with water, the city's first beach, all allowing that experience of actually touching the water.



Figure 19: Joggers



Figure 20: Water play

The structural economy concept was taking this idea that too much money would be invested to try to put heavy things on the piers, and instead the land should be robustly designed using topography and plants. This led to the creation of intensely robust nature, which is now thronged with people, paths and activity. There are ways you can hike; go on your daily jog through water gardens (Figure 19); a play programme with total immersion in nature, playing with water (Figure 20); the experience of slides and changes of views with slide mountain - versus the flat landscapes on these piers; play on a wonderful set of soccer pitches in the shadow of the skyline, used all day round (Figure 21). The park also has picnic peninsulas; a temple to basketball, court sports and roller skating; and sand volleyball...all of this very much loved to death.



Figure 21: Soccer pitches

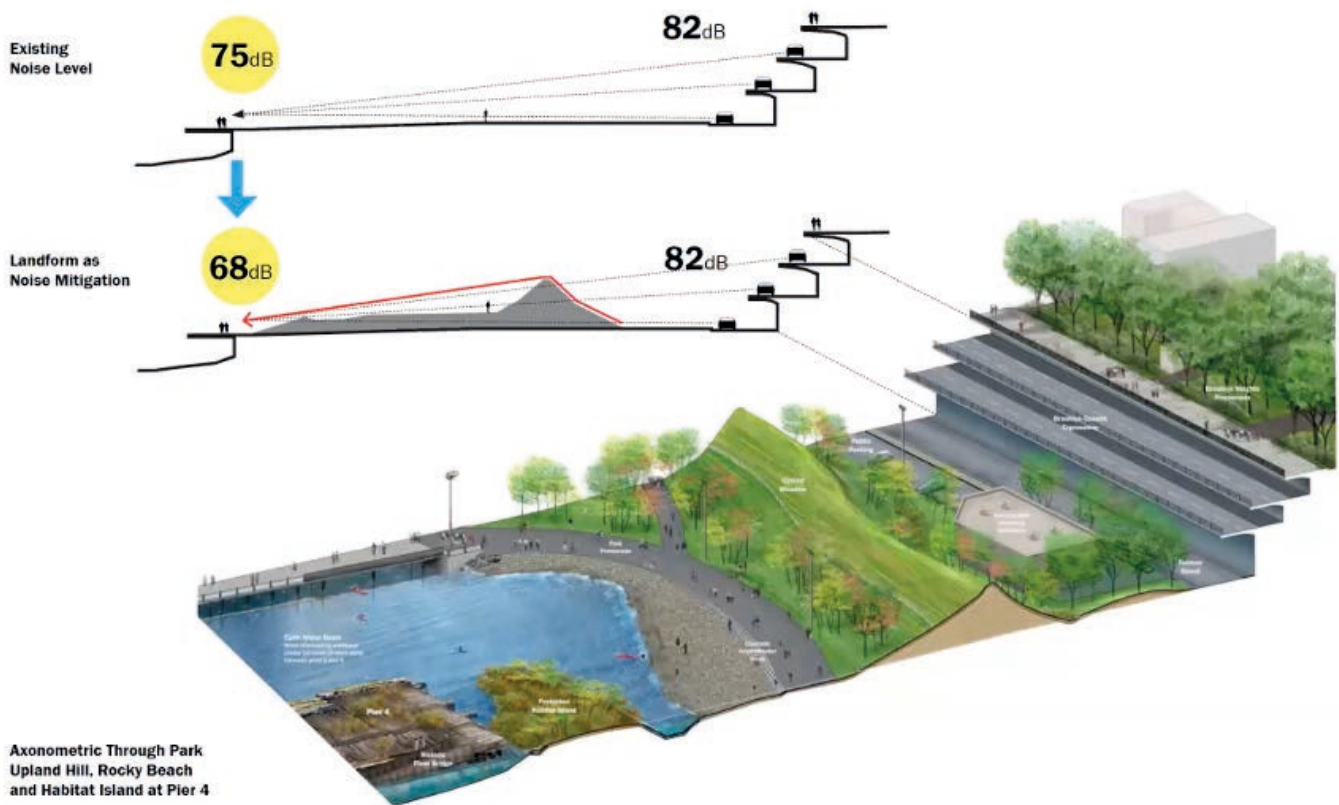


Figure 22: Recreation of the bluff

The final design element relates to the micro climatic form, and how brutal this was at the very edges of the piers. Boats would come within 100 feet of these edges, the site was wind whipped, and inboard the erosive forces of the wave actions acted on the land edges. Nature did, however, have some purchase in the shadow of the former bluff, now a highway, with a wind shadow there that was something to take advantage of. The highway itself created 82 decibels of sound, trumpeted across the Parkland, and this led us to this recreation of the bluff (Figure 22), abating the sound and creating a background.

The landscape of trees and shrubs therefore became a series of linear sections, parallel to the river, with pieces that would meet and join. Through the small addition of these narrow, robust planting edges, you can feel this great expanse of the city, but also feel completely pulled away from it, as shown in Figure 23.

I'm pleased that I've been able to share this story and images, and I hope communicate some of the feelings of Designing with Nature in an incredibly industrial, intensely urban, environment. Thank you very much.



Figure 23: Space between the expanse of the city and the shore

The Reimagining the Canals Project

Alice Shay

Buro Happold

It's wonderful to be part of this panel with such a dynamic set of speakers and great conversations, and I think how we look at our infrastructural and urban landscapes is extremely pertinent today. I'm an Associate Principal within the Cities Strategy Team at Buro Happold, who carry out consulting and engineering. In this talk I'm going to discuss an idea proposition called **Stranded Assets** and share one of the exemplars of this work, the *Reimagine the Canals* effort.

As urban strategists and engineers we are deeply invested in public infrastructure. Infrastructure is our collective investment in the functioning of our urban agglomerations. Cities are places where people can live together equitably, and with resilience, due to the mutual benefit derived from the economies of scale of large public infrastructure, such as bridges, waterways and urban systems. However, much of such urban infrastructure was built in the early and mid-20th century, and much of it is now ageing out and becoming stranded. This stranding has many different drivers: regulatory change and environmental issues, particularly around climate change; economic stranding, with transitions in production and distribution which drive infrastructure needs to be different today; technological stranding, where mobility is shifting; or changes in the way we deal with our waste, to name but a few, and the infrastructure that undergirds all of these systems must also adapt and transform.

These underutilised and under-invested stranded assets, can contribute to producing detrimental effects, causing safety concerns or security issues. They can catalyse more disinvestment, cause ecological degradation, and produce negative externalities in terms of land uses in our neighbourhoods. Buro Happold is very engaged with the concept of adaptive reuse of such large public infrastructure, and has worked on a number of such projects. At the Highline we were involved with the design firms from the outset, and the concepts produced were the adaptive reuse of that famous elevated rail line into the park that is today, we've also worked on projects transitioning land uses across districts including in North

Brooklyn. We've worked on a range of different waterway infrastructure, looking at how they can be more resilient and better positioned for the future and such a project, the Erie Canal, forms the main example in this article.

The Erie Canal is a huge, historically incredibly important, piece of infrastructure for New York City and New York State, as well as the country at large. It's situated where it is because of the one navigable break in the Appalachian Mountain Range. In its current form, the New York canal system is 525 miles in length, consisting of four different canals, but this system was never just one iteration - it has evolved and transformed over its lifetime, driven by technological changes. **Figure 1** shows a map of the Erie Canal route, demonstrating its scale and relationship to the topography of the region. It came about through the vision of the former governor DeWitt Clinton, who proposed to Congress a plan to make New York City competitive for shipping, and open up trade from the coast to the Great Lakes. Initially called DeWitt's Folly, the canal was immediately incredibly successful and paid itself back within 10 years.

The first iteration had mule drawn boats, then was expanded to carry steamships. In the early 20th century the canal was expanded once again to be able to compete with the railroads. This iteration actually moved the route of the canal and canalised natural waterways, principally the Mohawk River. In order to function effectively, gigantic mechanised infrastructure was used to ensure that the water could be deep enough for ocean faring vessels to travel across the new route. This included movable dams (unique, beautiful structures) large guillotine locks, and guard gates.

The canal has lived many different lives since its inception and tells a varied story. As noted, initially incredibly successful, but then losing momentum as it began to compete with the railroads.

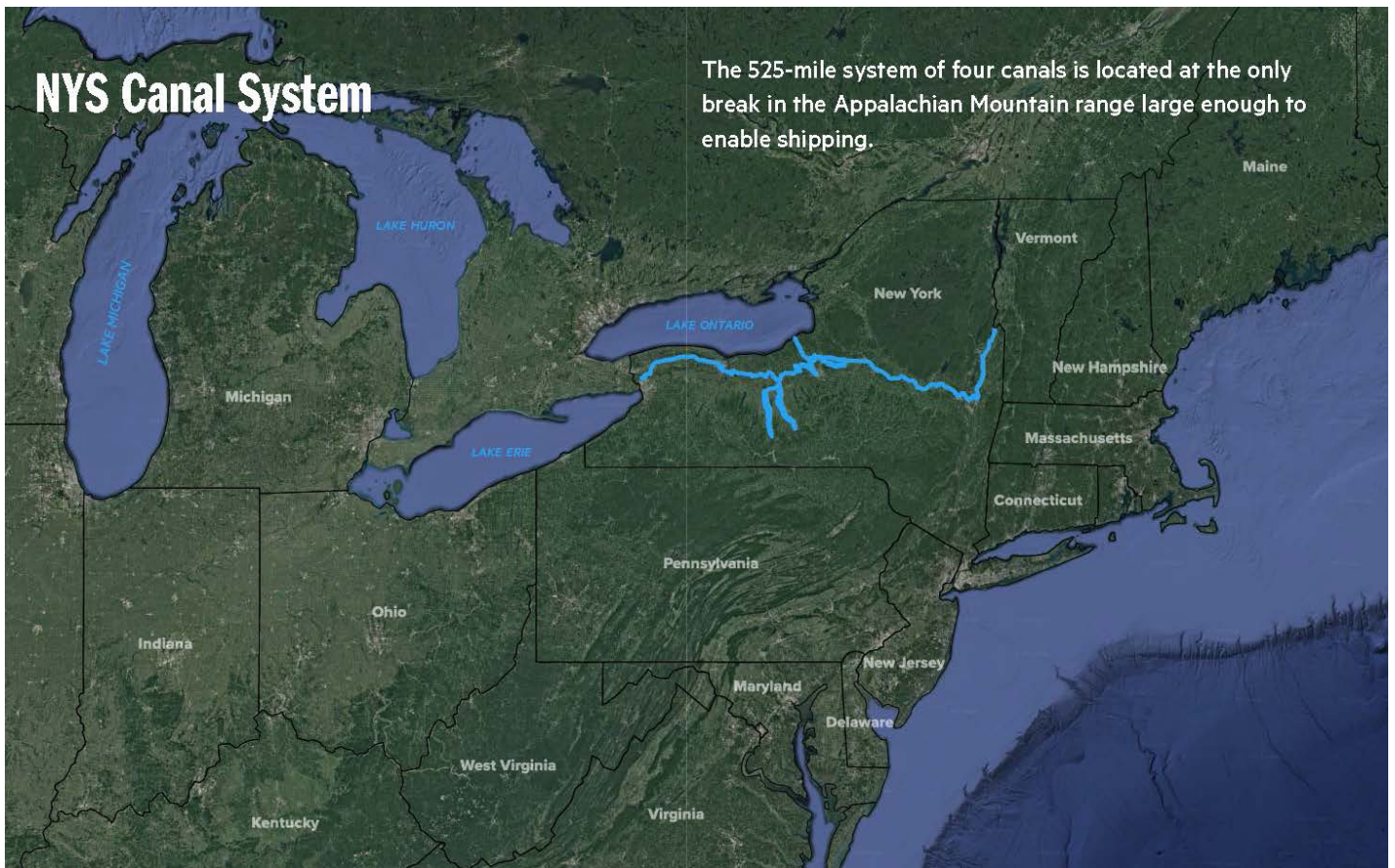


Figure 1: The Erie Canal System today

The system saw a brief period of success in the mid 20th century with expansion but, by the 50s with containerisation, shipping on these waterways became obsolete. Canals struggled to compete, as the water-borne route took a week to travel, versus a day or less by highway. Despite this, the Erie Canal is an incredibly important piece of infrastructure for New York State history, providing the reason for New York City being the mercantile capital that it has been, having opened up trade to the Midwest and all across the country. It is an incredibly important waterway, an asset in the process of stranding, but one which can have new benefits and a new life.

The Buro Happold Cities team was brought on by the New York Power Authority in 2017 to run an ideas competition aiming to generate innovative ideas for the future of the canal. Rather than a typical ideas competition with 'apples to apples' designs, we hoped to garner big ideas from a wide variety of different disciplines. Seven finalist projects each of offered a new model for the future of the canal, including tourism, regeneration of industrial properties, cultural regeneration, using the canal system to provide water to farms through irrigation, ecological restoration, and accommodations to support more varied tourism. We received 145 submissions for the competition, and the whole process catalysed excitement in looking at the canal in a new way.

Governor Cuomo and the New York Power Authority subsequently commissioned Buro Happold to run a six-month taskforce, bringing together five state agencies, as well as key leadership from across New York State. This group vetted ideas from the competition, expanded them, tested how the varied concepts could be combined, or how they may be looked at in a new way, and how it was possible to see the canal system as providing multiple array of benefits, as opposed to just being focused on its original mandate of commercial shipping. Through this taskforce a vision for the canal was developed, centred around four key concepts: resilience, regeneration, restoration and reuse.

In terms of resilience, because the canal is a mechanised waterway with elevated water levels for shipping, it can exacerbate dramatic flooding issues. It can also make ice jams worse, which are essentially riverine icebergs, ploughing into anything in their way when they move. We were therefore looking at ways that the canal system could be operated differently to mitigate such flooding issues to canal-side communities. We're also looking at ways that the canal can be positioned as an economic engine for upstate New York, instead of being managed only for transportation. The system can be focussed on tourism, agriculture, or supporting local businesses. We're also interested in ways that the canal could be repositioned to further ecological restoration. In addition to flooding caused by the management of water levels, the canal

can also cause both drought and inundation to wetland and riparian areas across the state, undermining those environments and challenging habitat quality. Again, if the system can be moderated differently, the canal can actually support wetland regeneration. Lastly, the idea of reuse, the canal is so important to the history of the state, and has beautiful, iconic, monumental infrastructure along its length, and we considered how those could be monuments to the ingenuity and innovation, and continued success, of upstate towns.

The task force presented these concepts to Governor Cuomo and the leadership of the New York Power Authority (the agency that oversees the canal) and was met with great enthusiasm. In 2020's State of the State, Governor Cuomo committed \$300 million of investment to reimagining and repositioning the Erie Canal over the next five years, 100 million to economic development projects, and 200 million to resilience studies and new initiatives. This piece includes examples of some of the projects invested for the first phase, and under implementation currently. We're hoping to have each of these built out over the next five years, by 2025.



Figure 2: Guard gate reuse in Brockport

The first project (**Figure 2**) is looking at an adaptive reuse of a guard gate as a bridge spanning the canal in Brockport, in western New York. To one side of the gate is a university and to the other, the Empire State Trail, a 200 mile long trail crossing New York State. The project considered how to adaptively reuse this infrastructure so it can be the foundation for new types of connections between communities and support new types of recreation.

Working with a lighting designer we are considering how to illuminate some of these fantastic infrastructural beacons, including a movable dam in Amsterdam, New York, **Figure 3**. We're planning a whole series of programmatic interventions as well at this site to combine glamping with the Empire State Trail, and programming around the new illumination of these structures.

This healthy water recreation project (**Figure 4**) is situated at the top of the Finger Lakes in Cayuga. To the back of the image, you can see a tainter gate, a piece of infrastructure which modulates the water flow from the Finger Lakes into the canal. By operating that gate differently, it's possible to create the foundation for a whitewater course on the canal. In past times, when people thought of the canal, they may have thought of big steam ships and barges, but the canal can also be a place for human powered recreation and ecotourism. The site is situated next to the Montezuma National Wildlife Refuge, a major stopover in the North Atlantic flyway. By supporting ecological restoration you can bring more people to the region because of the beautiful flora and fauna supported by the repositioning of the canal and regeneration of these habitats.



Figure 3: Moveable dam in Amsterdam



Figure 4: Tainter gate in Cayuga



Figure 5: Adaptive reuse in Canastota

All towns along the canal grew as industrial towns because the canal was there, Amsterdam produced carpets, Canajoharie canned food products, and other towns produced stoneware, textiles and other goods. With the transition in manufacturing across the country in the 20th century, much industry and production left the region, so there are many disinvested, underutilised industrial properties and structures along the canal system. Consequently, we looked at how to apply a new model for waterfront development, applicable in Upstate New York, and shown in **Figure 5**.

In the town of Canastota, the municipality is working with a team of developers to create a new live/work development designed around a public realm focused on the canal, as a driver for real estate development in the region. This is a model that could be replicated across the canal system. This project is one of our winners from the original ideas competition.

A final economic development project is Guy Park Manor in Amsterdam, New York where the historic building is being adaptively reused so it can function as a hospitality venue, with the nearby movable dam transformed to add a pedestrian bridge across the canal to connect to the Empire State Trail. In economic development, improving quality of life for local communities is essential, but to add new dollars to a region, you need to tempt visitors from afar. We're therefore looking at how you can take these interventions, find places with a little catalytic energy already and combine some of those new interventions to create destinations that will pull people from New York City, Chicago, Toronto, and beyond, as in this example.

Within the composite image shown in **Figure 6**, we have a whole host of resiliency strategies currently in development, including mitigating ice jams that happen almost every year (top left). By moderating the water flow and operating canal dams in a new way we can decrease the amount of flooding and damage caused by such ice jams. To the top right, this is an image of Montezuma and the regeneration of wetlands. In the image to the bottom left we see syphons, irrigation infrastructure that pulls water from the canal to adjacent farms. Many farms are seeing challenges due to drought because of climate change. By providing steady, reliable streams of irrigation to these farms, growing seasons can be expanded, and higher value crops grown. There are ancillary benefits for food production beyond the farmers themselves and such ventures can help address economic challenges in the region. One such example - as a sidebar to this irrigation work, it's possible to also direct water from the canal into adjacent streams with additional benefits. Western New York has a great fishing community, and one week a year everyone storms to the area because water is released from the canal into the streams. If that outflow of water is moderated over a longer duration, that angling season could be expanded to bring more fishing tourists to the region, as in the bottom right.

Looking at the Erie Canal as a piece of infrastructure, we saw it as a 'mega' infrastructural landscape, and focussed on shifting its mandate from being mono- to multi-purpose, with the provision of a range of different benefits to communities. Within the design community other disciplines so frequently come in at the end of the brief process, but being involved in the ideation process from the very outset, such disciplines can really help transform our infrastructure in new ways.

Thank you.

RESILIENCY + ECOLOGICAL RESTORATION
Flood mitigation, wetland restoration, irrigation, expanding fishing



Figure 6: Resiliency strategies

The Nature of Cities

Mark Johnson

Civitas

Thank you for inviting me to speak at this seminar today, it's a pleasure to be here and an honour, and nice to see so many friends on screen. I was asked to talk today about something that my company, Civitas, made a focus of 20 years ago, which was to start to make change in second and third tier cities, or what I've called everyday cities, cities that exist within their own context. These cities may have many connections to the world, such as for economic or other reasons, but they're fundamentally local.

I'm from Chicago, and was at the 1968 Democratic Convention in the city which supported the anti-war, pro-environment movement. About two years later, I was introduced to Ian's book *Design with Nature*, and shortly after went to work for Grant Jones, who for a long time was the poet laureate of the City of Seattle and has remained my best friend. As a poet, Grant was always looking for meaning in everything. I was at the office one day where we were doing the weirdest combination of work: major river and watershed studies across the Northwest and Alaska, and also zoo design. One day, this chap Ian walked into the conference room with Nadir Ardalan, Nadir was his client for a project called Pardisan, a zoo outside of Tehran, and so I met Ian in 1977 or 8, and we worked together on Pardisan for a while.

When Ronald Reagan was elected, I was so disheartened because I was so passionate about the environmental movement, what with working on zoos, wildlife, habitats, and all those sorts of things. All of that work vanished, and I went into one of those personal tailspins that young people do, and I switched. I decided to go to the Harvard Graduate School of Design, the GSD, to get a degree in urban design because as a city kid I figured, if I couldn't save the environment, maybe I could make cities better. I'd only been at the GSD for three months when I saw that Ian was coming to speak and, since I knew him, I told Dean Gerry McCue that I'd pick him up at the airport. So I went and met Ian at Logan Airport and as we started driving said, "Ian, open the glove box." He opened the glove box, his face lit up, and he turned to me and said, "Oh, a real gentleman." In the glove box, I had a pack of cigarettes, a pint of whiskey and two glasses. Ian stuck a cigarette in my

mouth and lit it, he poured a whiskey, and off we went to the GSD for his lecture.

After the GSD, I started my firm, Civitas, where our mission since 1983 has been to engage people with nature in cities - but what *is* the nature of cities?

When I talk about an everyday city, I'm talking about a city that is deeply situated because of its ecological context, or the ecostructure of the place. Using Boston as an example, and looking at a simplistic map in **Figure 1**, you can see the areas labelled landfill, the Shawmut Peninsula, and Long Wharf. Long Wharf is the Long Wharf because it got out into the deeper part of the harbour for the ships coming from the old world, and the red dot shown on the figure is where the State House was placed on top of the hill, because humans generally plant the flag at the top. In a very brief period, State Street emerged between the State House and Long Wharf surrounded by the financial district. This commercial centre, attaching the new world to the old and the wharf, the political centre on top of the hill, and the finance district opens up between, and as I like to joke - because pilgrims weren't stupid - the commons on the sunny side of the hill on the south.

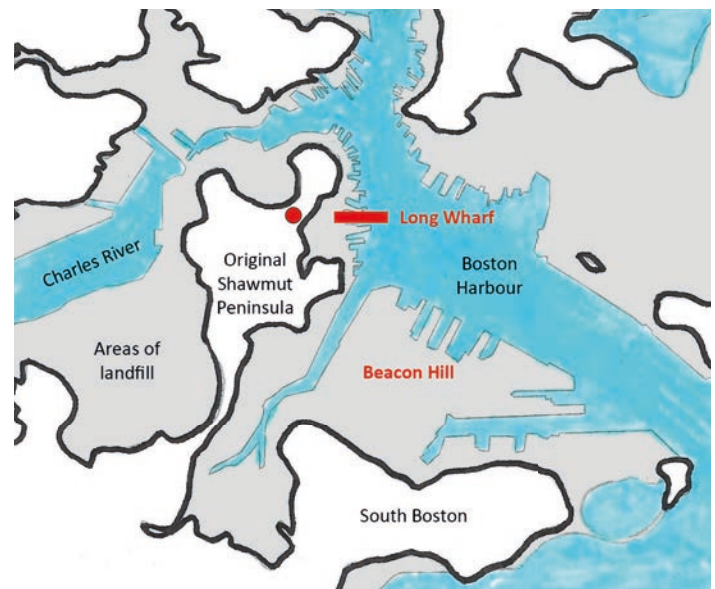


Figure 1: The nature of Boston

This original structure still persists today. We still find the State House and the Long Wharf, and that original ecostructure from deep water to hilltop, combined with the sunny side of the hill, has formed the basis and backbone of this terrific city. With the addition of design, we've created a structure of a cultural and economic engine that is absolutely bound to the original ecological structure of the place. When you think about it, you immediately know that everything is in its place, you'll never see a tower in Beacon Hill, and you'll never see a little townhouse in the financial district, because these patterns have been fixed, and were fixed by the original settlers very quickly. As new technologies come, we adapt, but these structures remain resilient.

I'm now going to talk about two everyday cities - Calgary in Canada, and Brno in the Czech Republic. In Calgary, Civitas did something, an incision, something very small and impactful, and in Brno, we're working on something very big, and yet also impactful.

As I've explained, everyday cities have their roots in this idea of an ecostructure. People come to a place, they find water, they find soils that can support agriculture, and they build their village, their town, their city, on the back of the economy and technology of their time. As economy and technology change, you see shifts in how cities grow, but they remain bound to this structure, and that context is essentially never changing. One of the things I personally love about everyday cities is that people generally understand their identity and agency of who they are within the place. Civitas work across Canada, the US and overseas, but by looking at these smaller cities with a very clear sense of identity, a very clear sense of agency, and the ability to pull together to make things happen, we have found rich soil for our work and our thinking, and have been able to create some exciting outcomes.

In Canada, the city of Calgary sits between mountain and plain - to the west the Rocky Mountains rise, and to the east lie the Great Plains. Calgary really is the political and economic link, centre, and engine that ties mountain and plain together, all based in the core resources of the place.

From Kananaskis to the west, through Cochran to Calgary, flows the Bow River, a beautiful, wild river coming out of the Rocky Mountains. To the south west, the Elbow River springs, I think it's quite amusing the Bow and the Elbow, and they have a confluence where Calgary was founded. The city remains shaped by these forces, and the Bow River flows through downtown Calgary, curvilinear in form and with areas of bluff. South of Memorial Drive there is a pointy island called St. Patrick's Island, and that's where we are headed for this first project.

St. Patrick's Island was a park and was a campground in the teens and 20s, when Model T car camping and that type of travel hit. The island was rip-wrapped, flattened, and flooded many times and, when Civitas arrived around six years ago, was the centre of drug and sex crime in Calgary, because it was isolated in the heart of the city.

With a great deal of public engagement, we realised that the most popular and best use of this island was to put new life back into nature, and to bring the children and people of Calgary into nature right in the heart of their city - you can walk from City Hall here in seven or eight minutes. Through historical research, we found that the first new world settler was a man named John King who was with the precursor to the Royal Canadian Mounted Police. He camped on St. Patrick's island because it was safe from the First Nations people that surrounded, and the city really began here.

We also discovered that the island had previously been three islands, so we reopened this breach across it, as in **Figure 2**. As a white-water canoeist and kayaker I have a deep understanding of how water works and, by making what I refer to as a triple eddy, even in the highest flows this breach is a safe place for children because we've changed the velocity of the water. You can visit the island today and wade and swim and play in a beautiful clean mountain stream. You can get there on the light rail, on the bus, you can take your bike, or you can walk. For the first time inner city kids, who don't have access to the National Park, have this resource right at home.



Image credit: CMLC

Figure 2: St Patrick's Island



Image credit: CMLC

Figure 3: Aerial view

Figure 3 gives you more of a sense of what we did as part of the design, that rather strange footprint shape on the left of the figure is a 10-metre-high hill, using the soil which we'd cut from the breach to open up the island. When we showed this design to the mayor of Calgary, he questioned how we could get such a hill approved. I explained that as we were doing so much ecological restoration, and opening up so much recreation within nature in the city, we had a story that would succeed. Getting approval wasn't easy, but we did achieve it. Even though the hill is 10 metres high, the maximum flood only goes up one metre to the bottom of the hill.



Image credit: CMLC

Figure 4: The beach



Image credit: W Architecture

Figure 6: Evening stroll



Image credit: CMLC

Figure 5: Beach overview

Within the design we created a 1,000-foot-long wetland, areas of lawn, a beach and a low water crossing. It's become a really beloved place just in the four years that it's been open, as you can see in **Figures 4 to 7**.



Image credit: Civitas

Figure 7: The wetland channel



Image credit: Civitas

Figure 8: Site views, Brno

At another extreme of scale, the city of Brno in the Czech Republic sits on a hill near a river, it's a somewhat concentric city because the hill itself is somewhat circular. Down in the green woodland below the city, threading along is the river. The Svitava and Srvatka Rivers have a confluence here, and that's why Brno is here. **Figure 8** shows the site we are working on, you can see the cathedral which is in the Old City in the distance in the top photo, the lower half of the figure is from the cathedral looking back towards the river.

This area is floodplain, which is why it has never been developed, and even though this is a really ancient city we are standing just 3,000 metres from that Cathedral on site. What the project is doing is relocating the central train station to the point where the photo is taken which will open up an entirely new quarter of the city, allow us to move the trains, and to introduce a massive green system to connect the Old City to its river.

Figure 9 shows where the train tracks were, with the old station at the end of that green corridor. By removing the tracks, we're allowing space to make a green connection down to embrace the Svitava river. As part of the designs, we're creating a new boulevard that leads to the old station, and a green corridor that will form the heart of this massive city expansion. This continues, tying down to the river itself, and a large park space. This project has already made a dramatic impact, and the City of Brno recently announced the shortlist for the international competition to design the new station. It's exciting that the plans continue to move forward.



Image credit: 4ct

Figure 9: Plan of Bruno South District showing repurposing of rail corridor



Image credit: 4ct

Figure 10: Aerial of Bruno South District

Civitas are working with seven different architecture firms on the project, with seven of the planned buildings now in design development, **Figure 10**. My client is the property owner, but obviously a property owner with real vision. We've been working in partnership with the city staff, the mayor's office, and city council of Brno for almost three years now. I couldn't be more excited to say I think this is really going to happen.

To bring my talk to a close, I think you can see that I have focused my career on really trying to use nature to make transformations in city spaces, and to engage people with those places, and that is something I learned personally from Ian. Ian taught me how important it was to not just to think of nature, but to look at what are the real issues of your time and ask how you as a designer can make an impact to improve the life of the world, and the life of people, against the contemporary forces that we face.

Thank you very much.

Health at the Heart of Designing with Nature

Erlijn Mulder

City of Utrecht

Thank you first of all for the invitation to present at this seminar, I'm very honoured to share our insights with you today.

The City of Utrecht is located in the centre of The Netherlands, and is the fastest growing city in the country. We are also the second most bicycle-friendly city in the world, with 100,000 bicycles pedalled across the city every day.

Utrecht has the largest central railway station in the country, with approximately 300,000 travellers crossing the station daily. With the fast growth and influx of people there's a huge task and lots of challenges. For instance, previously the central station was located on the edges of the city centre, but with the expansion of the city it's becoming closer to the middle. The city itself is also becoming more and more crowded, and with that comes more air and noise pollution.

As background we carried out and layered up mapping of our over-heated places, comparing these with mapping of the differences in a good life health expectancy. This has informed where we would like to grow the city by infill within the city boundaries, but also where we want to create more green spaces. We have strategically mapped locations for urban development projects, as well as green development.

Meeting these challenges requires a systematic leap for nature in our city, because we're growing so fast. We've measured that we need at least 440 extra hectares of green space within our city boundaries, so the question for us is, how are we going to achieve that?

One answer can be found in the strategy we've been working on the last few years called Healthy Urban Living for Everyone, of which our urban planning strategy is a very important part. We also look to connect the dots in our



Figure 1: Utrecht's urban planning strategy

urban planning strategy, as shown in **Figure 1**.

Whenever we develop new neighbourhoods, we measure how much green space we need, how many educational services, sports facilities, what drinking water capacity, as well as other factors.

We've also defined our core values as a city region. Being a meeting point is very important for us, as are the great landscapes we have in the surroundings of our city. Utrecht is also a knowledge centre which is very important for our economy, and we are very well known for our Life Sciences and Health University. We cherish our human scale, and with such fast growth we want to consider carefully how to still contain our human scale. The history of our city is also very important, we have roots in mediaeval, and even



Image credit: Jelle Verhoeks

Figure 2: Railroad repurposed as a park

Roman, times and the city has lots of historical monuments we would like to keep.

As already mentioned, the systematic leap for our urban nature strategy is the need to create 440 hectares of green space within the city boundaries. Utrecht is growing by infill, and with a 30% increase of citizens within 20 years, we must look to balance this with nature in our city. We

therefore need to plan carefully where we are going to make space for nature, and how that can be done.

As an example, **Figure 2** shows a very pleasant park which used to be a railroad, which we've redesigned in collaboration with citizens from the surrounding neighbourhoods. It's now a space where there is lots of

greenery, and where you can stroll around and also cycle through. We've created a new connection, so to speak.

In planning, we've mapped out four scenarios or variations, that indicate how we can achieve those 440 hectares at different scale levels: green fingers and greenbelt; green framework; green streaks and greening neighbourhoods.

As part of our work to create **green fingers and greenbelt** we took over the roof of a very important tunnel in Utrecht, over one of the busiest highways in the Netherlands. It's owned by the Central Government, whom we negotiated with so that we could make a green park on the roof of the tunnel, and therefore create a connection between the new and the old neighbourhoods. Houses will be built either side of the tunnel and they will have access to the new park. In addition across the city we've created bee hotels with a billboard agency, where the pole of the billboard is itself the hotel, so we try to create more biodiversity within the city as well.

One of the other scenarios is to create a **green framework**, with construction of green connections between parks, neighbourhoods and outdoors, thus strengthening our urban ecosystem through better migration of plants and animals.

Another scenario is **green streaks**, which is about adding large parks of a size new to Utrecht, and finding spaces where we these could be realised. We've already begun this in a new neighbourhood called Leidsche Rijn, where we have been creating the biggest park in the Netherlands for the last 20 years, but we are also on the lookout for new options.

The final scenario is **greening neighbourhoods**. This should be a robust greening of the green-poor neighbourhoods in the city to create greener living conditions for plants and animals, but also for each neighbourhood's citizens. This vision requires the redesign of 800 streets and the relocating of 5,000 parking spaces, as well as rearrangement of underground infrastructure. This is quite a challenge, and brings with it its own questions.

Overall we found that by placing health at the centre of our urban planning strategy, nature became much more important in that strategy too. We therefore need a lot of colleagues, each with their challenges, which we look to combine, and therefore engage in a more multidisciplinary approach. We have also tried to develop better tools to value green space as well, developing this with others. We have different challenges with the growth of our city: the energy transition, new mobility, climate adaptation and cooling the city, maintenance, increasing biodiversity; we would like to combine all of these challenges, and create smart combinations that finance the greening of our city as well.

I would like to share some case studies that I find inspirational, and that we have been working on over the last 20 years. One of them is Utrecht's canal, the Singel. This used to be a waterway until the 1970s and then, with the increase of cars within the city centre, it was thought a highway was needed within the city boundaries. An eight-lane highway was constructed in the 1970s, in spite of huge protest from citizens. When working on the masterplan for the station area, this came up on the table as a discussion point, to which somebody said, *Why don't we reconstruct the waterway?* This then became a political item and with the backing of the Council we began demolishing the highway, and the Singel is now a waterway again. **Figures 3 and 4** show the before and after. The waterway was opened in September 2020, and almost immediately everybody came down to boat around the city again and stroll along the waterway. The Singel is an important symbol for the citizens of Utrecht but it's also important for leisure and liveability. Especially during the COVID lockdown it immediately showed its purpose and value.

Figure 3: The Singel before



Image credit:
CU2030

Figure 4: The Singel after



Image credit:
CU2030

Another example I would like to share with you, is the Croeselaan, a circular street which also used to be a very important corridor into the city centre. The Croeselaan was a busy road with many cars, but is now a green place, with lots of specially commissioned artworks. We are also building a vertical forest, the first in the Netherlands, from the architect Boeri, but with plants from the Netherlands, and are working with the University of Utrecht in order to create large variety of plants that can survive there.

Finally, I would like to share five lessons, recognising many of these within the stories shared today:

It's very important to **talk with your people and not at them**, in a lot of plans that we are developing, we do this with the citizens, and also with multidisciplinary partners. Our Healthy Urban Living policy is very much citizen centric, so you need to involve them in the conversations.

The **focus of health** really helps us in achieving the ambitions that we have.

Keep your partners involved - it's very important to define mutual interest and invest in the relationships that you have.

Start with questions not with answers. **Figure 5** shows a very nice example of a bus stop that is sustainable, and has a green rooftop. We have 300 bus stops in the city of Utrecht, and they all have bee-friendly green rooftops. This was not our own idea - we simply had a tender for the bus stops, and said, come up with a solution for us to create sustainable bus stops that also add something to the health of our city. The solution went viral, and we received telephone calls from all over the world, Shanghai, America, all kinds of cities, who wanted to adopt the same bus stops. I think it helped in the election that we heard last Monday that we are now the most bee-friendly city in the Netherlands!

The last lesson I would like to share is, **enjoy the results**, because it's a lot of hard work working for a city and creating a more liveable and healthier place. When you succeed, it's great to enjoy the results as well.

That was Utrecht's story.

Thank you!



Image credit: Barbra Verbij

Figure 5: Utrecht's bee-friendly bus stops

Cover

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McHarg and America

Bill Whitaker

Figures 1-6 taken from the film of our virtual visit to the Architectural Archives of the University of Pennsylvania

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Figure 1: Adapted from Civitas presentation

Figure 2, 3, 4 & 5: CMLC

Figure 6: W Architecture

Figure 7 & 8: Civitas

Figure 9 & 10 4ct

Erlijn Mulder

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