Jack Ahern

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Mr. Ahern's research interests focus on greenways as a planning tool and linking landscape structure and function through an extensive open space system.

The following is a transcription of Mr. Ahern's keynote address.

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Thank you, Ken, for the kind introduction. It's my pleasure to be here. It's my first time in Pittsburgh. I lived on the other side of this state for five years. My first two children were born in Pennsylvania, but I haven't been back for awhile and I never did make it to this side, so it's a pleasure to be here. I can't think of a better way to be introduced to the City, than to meet such an inspired group of people and to learn about this exciting project. They sent me a relatively large file of information that I read and digested, but to be here in person is much more exciting—to see this impressive work from the STUDIO. This new model of interdisciplinary cooperation, not only among academics and professionals, but including the community as an integral part. I think it's very well done, and you are fortunate to have them here. I can say this from seeing a lot of other models for how this might be done. Well, the evening is moving along and we have a full agenda ahead of us, so I'm going to try to be as brief as I can and do my talk in a half an hour. I'm going to talk about greenways as a planning strategy or as a planning approach. In your literature, there's a definition that I've written that I'll just repeat. I think it's a good place to start. "Greenways are networks of land containing linear elements that are planned, designed, and managed for multiple purposes, including ecological, recreational, cultural, aesthetic, and other purposes that are compatible with the concept of sustainable land use."

First of all, when we talk about greenways, the primary spatial configuration is linear. We're not talking about preserving and managing large regions. It's a strategic approach that focuses on corridors where resources and activities tend to be concentrated and linkage is a key factor. There's a presumption of synergy with greenways, by linking together nodes of protected areas, we achieve something greater than [the sum of the parts]; by putting different components together, we achieve something that does things that the individual parts [separately] cannot do.

So, there's a presumption of synergy and that can be manifested in benefits of many types: hydrological, ecological, recreation, aesthetic, quality of life, economic, to name a few. Greenways are multifunctional or multipurpose. In some cases, the ecological benefits are emphasized and in some cases, the recreational benefits are emphasized, but in many, the distinctions are blurred and we can't really point to one particular use. Then it's up to the community and the stakeholders and the residents to make the decisions about which gets the first priority. I would say that greenways are a good example of the assumed complimentary between economic development and environmental protection, which is part of my concept of sustainable development. I like the simple definition from the Bruntland Report of sustainable development, titled "Our Common Future". Maybe we can get to that later, but I'll leave that alone for now. Finally (maybe I sound too much like a champion for greenways) but I like to point out that greenways are one strategic approach and there are other fish to fry. We need to take care of entire watersheds and nations and regions and states and counties, but greenways are something that is do-able. It's a grassroots effort; it can bring people together and achieve something in a strategic way where these benefits can be realized.

So let's look first at a couple of overheads from my paper. In this paper, I tried to look at all these different terms and found a Tower of Babel out there. These are just some of the terms that I encountered that are used around the world to delineate greenways: ecological networks, wildlife corridors, riparian buffers, greenbelts, landscape linkages. I tried to indicate whether they're primarily from Europe or North America, the areas I'm most familiar with, whether they are functioning for biological reasons, cultural or multifunctional. What is the scale? Some of these go all the way to the continental scale, in Europe, particularly. National, regional or local— the Nine Mile Run Greenway is an example of a local scale greenway. The primary

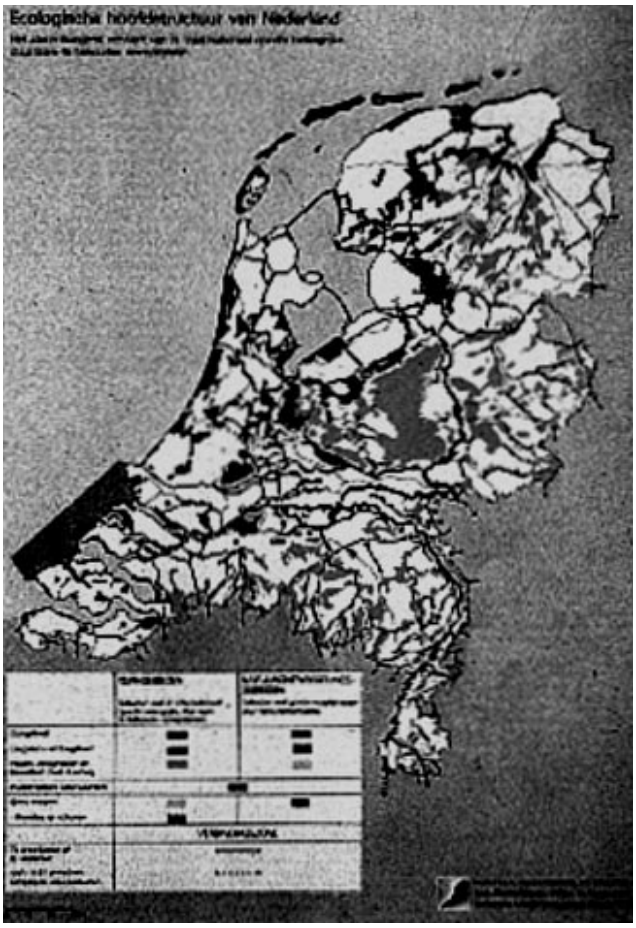
spatial basis—some of these are physical, relying on river corridors, like your project [and] some are biological, looking at the needs of species. Some [spatial bases] are cultural, and others are opportunistic. Rails/trails [is a good example] of a cultural greenway; the spatial basis is an abandoned railroad line that may or may not have anything to do with the stream corridor, or wildlife habitat.

I've developed a typology that I hope is useful to facilitate a discussion so that people from other parts of the world can understand what they really are trying to do. Is a greenway in Lithuania the same as a greenway in South America or in Asia? Well, we can start to look at the scale, and I'm proposing a simple scheme here, like stream orders. We can talk about the landscape context, whether it's in a forested area or an urban area. We can talk about the functions. What are they trying to achieve? Finally, we can talk about the spatial strategy. I've identified four different spatial strategies here: protective, defensive, offensive, and opportunistic. In these diagrams, the dark area represents some kind of a special core area [in which] you are presumably interested. Whether it's a special wetland in a wildlife habitat or a hilltop that has a beautiful view from it, that's the core area. Around that, in some of these examples, is a buffer zone and then corridors. In the column on the left, is the existing condition and on the right is the goal. In New England; our population is declining, the landscape is coming back to a large measure, and we have an opportunity to protect our landscape. Here's a landscape [that is] forested, beautiful, and functioning well. What we need to do is predetermine this network and defend that network against change (against forestry or development). We just protect it and it emerges after the landscape changes as a result of a protective strategy.

The defensive approach is when the resources become a little bit more scarce and then, the threats are a bit more imminent. It's important, I believe, to realize if you only apply a defensive approach, you are always in a losing proposition, because the defense is never perfect. Things are always nibbled away from the edges. They are effected, if nothing else, by physical factors of wind at the edge of forests or predation from species coming into a core area. So when we have a core area in inhospitable surroundings, we can create a buffer zone around it, but there's always going to be a net loss to the core area.

We can have a core area in a somewhat supportive matrix. Here, we can be a little more offensive, and we can create new corridors to link the core area through ecological restoration. I would say that your work is more in this strategy. You have a tremendous opportunity and there are some resource values, but to realize the full value you need to restore that and bring this stream back to life. Clean up the water, stabilize the slopes, reestablish vegetation. You need to be offensive. Maybe that's obvious to you that you need to work that way, but when you are looking internationally at these things, a lot of people in New England (where I come from) don't even realize they are only acting in a defensive mode. They don't really think about the potential for offensive, of things that "could be", that don't exist yet. If you lock into that defensive strategy, then you are always in a losing proposition.

I'd like to talk briefly about two projects to illustrate some of these ideas [more] clearly. First, I'd like to talk about The Netherlands where I was fortunate to spend a year a few years ago. I'm going to talk about a project, but it's a special opportunity to put into [the context] of national scale. It's the only country I know of that has a whole ecological plan for the country, a network of protected areas.



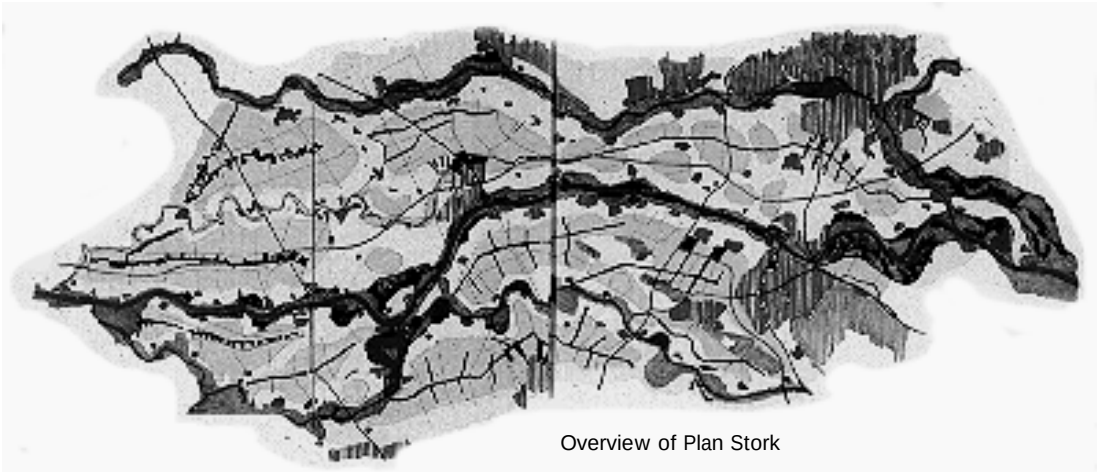
An ecological plan for The Netherlands, 1990

The colors indicate different types of environments from the sandy areas on the eastern part of the country to the dunes along the North Sea, to the peat areas. If you look a bit closer, you can see that the core areas are shown here (the lighter colors are the buffer zones) and then there are a lot of corridors indicated. Now, The Netherlands is way beyond the brink of sustainability, in my view. They have massive water pollution, species are becoming extinct at an alarming rate; the biodiversity is in serious trouble. So they are in a very, very offensive mode here to try and bring this back. These corridors, linkages, and buffer zones do not exist. They have to be restored.

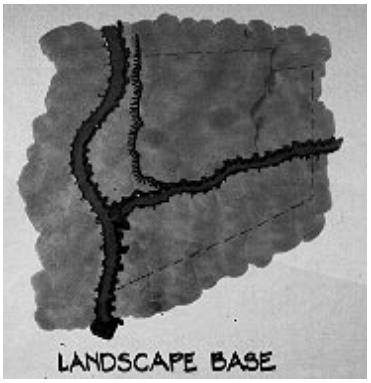
The other thing I think that is worth looking at about the Dutch example, is that they are integrating a creative approach with a scientific approach. This is a famous project called "Plan Stork," that was the result of a competition to come up with some visions for this landscape on a regional scale. It's called the river district [and is] located in the south central Netherlands. This is the City of Arnhem. Nijmegan and Utrecht are up at the top of the map. The area includes the Rhine, the Maas, and the Waal. The three rivers all come together here. The problem is, well, we all know that nature needs to be brought back here, but how do you do it? How can you convince the farmers to give up their land to allow it to happen? There are economic, social, and political issues. This is a rather clever scheme that involves a trade-off with the farmers in a kind of deal making plan on a regional scale so the land adjacent to the rivers (the light blue areas) can be restored to riverside riparian forest.

You see now next to the river channel, there's a flood plain which doesn't exist at the moment and in between the rivers, the yellow zones are places where agriculture is given more freedom from restriction. So they can respond more quickly to an international market for different agricultural products by changing to new fertilizers or changing to the groundwater level. They've employed a myth to sell this plan which is the black stork, a bird that is extinct in The Netherlands but formerly was very common in flood plain forests. The forests have long since disappeared and so has the stork. So the plan is named after the stork. They've created a myth people identify with and use this to sell the plan. Here's another view of the plan with the two components—this trade-off is very much in the realm of sustainability. Making a deal that is right down to the concept integrated with the economic reality of the situation.

The yellow areas are the intensified agricultural areas; it's a strategy of enclosing and containing these. Acknowledging that, yes, they will be polluted, they will pollute the ground water, but this is one way to gain this extra land adjacent to the rivers so that these flood plain forests can be developed. The agriculture and pasture goes right up to the edge of the Rhine River because that's fertile, beautiful land and it's protected by a dike. There's a small dike adjacent to the stream. Further inland, there is a second dike, which is the real flood protection. So occasionally the area will flood, but often not even every year; the flood plain dynamics have been taken away from the flood plain, therefore, the forest can't exist and, therefore, the stork can't exist. Here's the idea: to break the lower dike, strategically, in a few places, to keep the major dike intact, and to allow some interaction between the river and this flood plain so that the riparian forests can develop. This is the other concept for the agricultural area that is a little difficult to explain in a few words, but I'll be glad to discuss that with you if you're interested later. Lets just understand that They're given more flexibility. There is a pilot project that was already implemented along the Rhine River, it's called the Blauwe Kamer. The dike was broken and the area that was formerly used for mining clay for bricks is now flooded periodically. The river flood brings in



Overview of Plan Stork



Concept diagrams illustrating landscape formation around Chicopee River in Massachusetts.

sediment and does some erosion. The hydrology is much more akin to what it would be on a natural flood plain, and the vegetation is responding accordingly. This is a particularly good place to do this because adjacent to it is a large glacial feature—a lateral moraine that is filled with sand and has high quality ground water—so we're starting with the potential for good nature development.

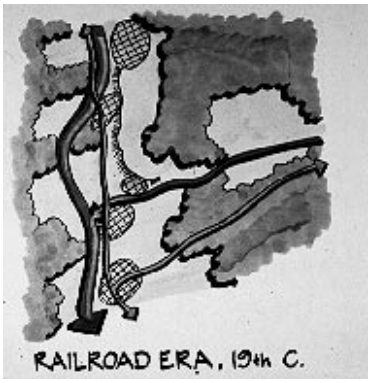
This was a very modest little project, but when this dike was broken, the queen was there. It was a very symbolic event for the Dutch to break a dike after spending centuries developing dikes. To take them down was a major effect. When I was there, I was fortunate to see the flood, to see this in action. So, the flood plain is working once again. Part of the forest had been developed before, but now it is going to be expanded with the increased activity of the flood plain. In a country like Holland, the concept of nature is not inseparable from culture and part of that has to do with grazing. The grazing is a way to introduce disturbance so that the vegetation will remain as a kind of diverse and mixed mosaic. So, they've introduced wild horses that can live outside [and] graze this area to produce variety. This grazing brings variety or diversity.

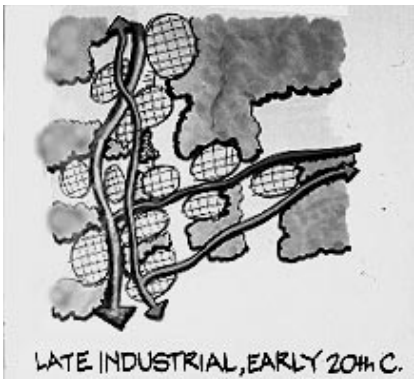
A significant part of this project was the public education and public awareness. So now, people can come here and see the tremendous waterfowl, and in the process, they can learn about this idea. They can see that even though they've given up some control over nature, they are still safe from the risk of flooding, and they can understand the reasons for doing this as well as the benefits. In addition to the hydrological benefits, and the ecological benefits, the human part is very much integrated here and it's tremendously popular. I was fortunate to live near this place, I visited it many times, and saw—it's kind of a pilgrimage for people to see and to bring young children, and so forth. Well, I think you all know that if you're in a building like this—it's dedicated to these kind of ideas, but it's an important part of a greenway and an opportunity that shouldn't be missed.

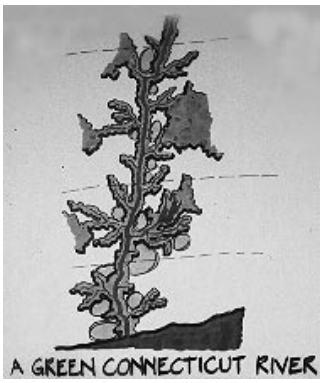
This illustrates a different concept of nature that does not separate design from science. These are some kind of bold ideas for developing nature within a river corridor, but finding a place for artistic expression as well. I'm not advocating this; I don't know if this is the right thing to do, but this kind of thinking is useful and, again, I will commend this project for its integration of art into this. I think that's a way to bring meaning to people—cultural expression—to transcend some of the mundane aspects of it and add a whole other dimension. I would like to emphasize that.

I have another project to present briefly. It is in Chicopee, Massachusetts along the Connecticut River. This is one of the more urban projects I've worked on. A lot of my work tends to be in rural environments, but this is pretty urban. Chicopee is at the site of the confluence of the Chicopee and Connecticut Rivers. It is an old industrial city. I'd like to say at the beginning, the reason we did this—the Connecticut River has recently been identified as a national wildlife refuge in a new type of model that doesn't involve the federal government coming in and buying the houses and acquiring the land. It's a new model based on planning, cooperation, education, and strategic investments, rather than the big hand of the federal government. So, it's a whole different concept—and, of course, the pristine gems are important to include—but if we don't deal with the issues of the urban environment, the water quality that comes out of this major tributary, the Chicopee, into the Connecticut, then, the water quality goes down and the other goals can't be realized.

So here's a terrain model of the city of Chicopee and it sits on an interesting geological formation, it's a glacial delta. Here's the Chicopee River that comes through here and the Connecticut River coming down. The city of Chicopee sits on this





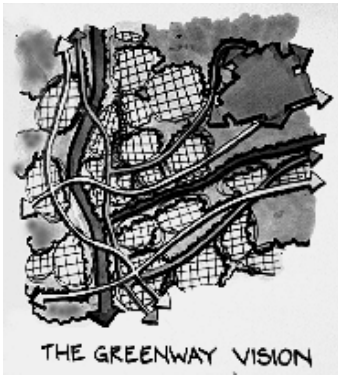


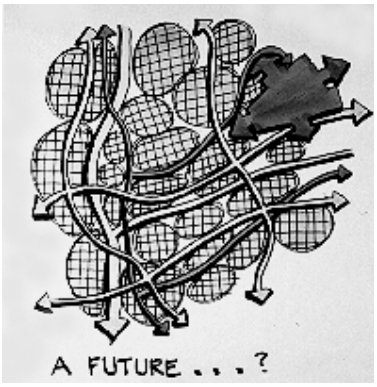
plateau that is about a 100 foot thick bed of sand with some very steep escarpments around the edge which creates some interesting issues on the tributary streams. So, here's a concept diagram of how this landscape was formed. This used to be a glacial lake; there were deltas formed at the edge of the lake and then, the city of Chicopee sits right on the edge of one of these deltas.

This is what it looks like. This is the Chicopee River again. This is the escarpment. The top of it has been almost completely developed; the sides are very steep and this is where we have problems with erosion and so forth. Not exactly analogous to the Nine Mile Run but you'll see some similarities. In landscape architecture, we like to simplify and tell the story of the landscape quickly. So here's our basic hydrological system and the escarpment. The early settlement came here because of the strategic location—two rivers coming together, good soils along the riverside, the railroads came there. I'm sure the story of the city of Pittsburgh is not so different from this and the settlement occurred along the river in the 19th century. Later on, it was quite industrialized. There's another major industrial city called Holyoke here, the first planned industrial city in America, and Chicopee became a very large industrial area. Then, of course, maybe this is one future (we hope not). This is a major airport that's already developed and, you know, some of the little gems may disappear. So we prefer to think of a greenway vision—the infrastructure network is still there but we're looking for ways to make these corridors more functional for multiple purposes—to protect the water quality, wildlife habitat, recreation, scenery, etcetera. So that was our idea and—here's our Chicopee site and the concept is to be a part of a larger greenway vision for the entire Connecticut River. [It] goes 400 miles from the Long Island Sound almost to the Canadian border.

Then we jump down to a smaller scale to look at something more manageable. We looked at a tributary stream, Beaman's Brook, a stream of about two miles in length, not so different from Nine Mile Run, heavily urbanized coming down this escarpment that I showed you. Just a small watershed as a sample, but intensive, impervious surface upstream that caused major hydrologic impacts. To try to help our client and the public understand, we do diagrams like this. The classic idea of the hydrologic system as it should be with vegetation cover and groundwater percolating into the ground, maintaining filtered surface flows that are more stable. And, of course, then we have to consider the developed condition where we have a lot of impervious surface. The groundwater table is lowered, recharge is reduced [and] we end up with lower base flows.

People don't often think of biodiversity in urban areas. They think that's something for the wilderness. But we feel it's appropriate anywhere. It's a question of how "wild" can you get and for which species do you try to plan. We used a concept of target species in consultation with local wildlife biologists. We identified two species of birds that were indicators of healthy conditions. One for the riparian zone which is the Belted Kingfisher. Many of these indicators are predators, because they're higher on the food chain. For this bird to [survive], we need certain conditions to be present which are illustrated here. A vegetated bank for the river and some overhanging banks where the Kingfisher nests. They feed in the waters which presumably contain the [fish they require to sustain them]. We try to map these areas and make corridors to connect them while we are solving the hydrological problems as well. This is all part of the larger idea of the Connecticut River Greenway. [If you look closely] at a map of its habitat, you would see clustered [areas] along the river and strategic zones where we would like to achieve some vegetation and stabilization of the banks in order to enhance the habitat for that species.





Our other species is the Downy Woodpecker. It is an upland species, living [partially in mature forests] with standing dead trees [which contain the grubs that sustain their diet]. We [mapped] the habitat for this species, as well, and identified some broad zones in which we could achieve some kind of connectivity. Again, the habitat map was not the greenway proposal. It is one of the layers that goes into [the proposal]. We didn't make a whole proposal for the city of Chicopee. There's no magic 'bullet' for this.

This became obvious to me today when we were speaking about Nine Mile Run. [You are not] going to come up with a greenway plan in the next year [and sit] back to watch it be implemented over 20 years. It's going to be an ongoing process because the factors are constantly changing, and in many instances we don't have enough information to make the right decisions now. For example, we don't know how to establish vegetation on these slopes. We don't have the definitive answer for how to clean up the water flow in the river. It has to be done incrementally, research has to come along with it, feed back into the process, modifying the design, changing the policies and making [this go forward] in an evolutionary way.

[Some people] fear that the idea of greenways becomes dogmatic—a rigid green framework [that is] imposed on the landscape. It doesn't come from the intrinsic characteristics of the landscape; [it doesn't come from] the physiography or the biodiversity. Of course, greenways are not like this. Some people really fear that this is what will happen if this gets implemented in a rigid, dogmatic way. [But I believe that a greenway is best implemented through an understanding of the natural processes]. This is the tail that wags the dog of the greenway. Where are the stream corridors? Where are the major rivers? Where are the steep slopes? If we are thinking about a strategic approach to fix the landscape, we need to get the most for every dollar that is spent or the most for every hour that is spent - however you prefer to measure your input of resources or energy. By doing that, we need to strategically look at the places where the resources are concentrated and they are often found along the stream corridors, the steep slopes, [and] along the ridges.

At that, I would like to stop. [I don't know] if we have time for any comments. If not, I'll be glad [to speak to you later this evening].