

The Past Present and Future of Urban Forest Management
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Introduction

The purpose of this presentation is to set the stage for this conference by providing you with a review of urban forest management from early on through present day, and then to speculate as to how it might look in the future. After I accepted this assignment and began to think about the history of urban forestry, I quickly realized that there really isn't too much of a history, particularly prior to the 20th century – and most of what history there is has occurred during our lifetime, and perhaps most during my professional career. However, when you do look back, there are several paradigms and subsequent events that have had a profound influence on the emergence of urban forestry. One is our past perception of the natural landscape, and the other is how we grew our cities

Land Use in America

So let's talk about land use in America....There is no question that the activities of man have altered the landscape. If we were to turn our attention to general land use in this country, we would find that as humans, our role in literally changing the face of the earth has largely been characterized by seemingly limitless resources and perhaps at one time, a very limited land ethic. In a book titled "Quiet Crises and the Next Generation", Stewart Udall (former Secretary of Interior under the Kennedy and Johnson administrations) coined a phrase called "the myth of super abundance" He wrote;

"A temperate [American] continent, rich in soils and minerals and forests and wildlife, enticed men to think in terms on infinity rather than facts, and produced an overriding fallacy that was nearly our undoing - the Myth of Superabundance".

Europeans brought with them to this continent a concept of land ownership wholly different from the indigenous cultures, and as we chased our 'Manifest Destiny', Americans saw abundant resources, an environment seeming limitless, and, we had more available to us for the taking with every technological advance. As we moved out of the colonial period and onward to the industrial revolution, populations and cities grew - as did their impact on the landscape. Urban forestry really didn't exist during this period, however there were early tree planting initiatives in cities like Philadelphia, Boston, and Savannah.

During the 1800s, populations in cities exploded - between 1850 and 1900 the population in New York went from 51,000 to 3.4 million people, and Chicago's population went from 26,000 to 1.7 million. And it was during this period of mass growth within cities that we saw our first stirrings of concern for the natural landscape.

One of the earliest thinkers interested in addressing what we now know as our reckless use of the land was a land philosopher from Vermont named George Perkins Marsh.

In 1864, Marsh produced perhaps his greatest work, "Man and Nature; or physical Geography as Modified by Human Action ". In this conservation classic, Marsh pointed out "the dangers of imprudence..... the necessity of caution....and the importance of the restorations of disturbed harmonies. He wrote:

"...Man everywhere is a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discords, The proportions and accommodations which insured the stability of existing arrangements are overthrown. Indigenous vegetable and animal species are extirpated,

and supplanted by others of foreign origin, spontaneous production is forbidden or restricted and the face of the earth is either laid bare or covered with a new and reluctant growth of vegetable forms, and with alien tribes of animal life ... Of all organic beings, man alone is to be regarded as essentially a destructive power ... [against which] nature - that nature whom all material life and all inorganic substance obey - is wholly impotent".

City Beautiful

It is the writing of Marsh that probably gave rise to the early American conservation movement and the actions of people like Gifford Pinchot and John Muir – founders of the Forest Service and the National Park Service. It was also during this time, the mid 1800s, that nature began to emerge in our cities. The tremendous growth of our cities, fueled by the industrial revolution gave rise to overcrowding, unsanitary conditions, labor strikes and disease. And, this in turn, gave way to the “City Beautiful Movement”, a Utopian reform effort lead by the progressive middle and upper class to bring planning and design into our cities. The ultimate goal of this movement was to create an orderly city with beautiful, natural open spaces and to showcase public buildings that exhibited the moral values of the city. Through this movement, pioneers like planner Patrick Geddes, architect Daniel Burnham and landscape architect Fredrick Law Olmsted transformed American cities, and places such as the Emerald Necklace in Boston, the World Columbian Exposition in Chicago and New York’s Central Park were born – trees really started to take their place in cities. I would like to read you Olmsted’s design goal for ‘Greensward’ (which later became Central Park) because he so well captures the spirit of this movement:

“It was to create country side in the city...to supply the hundreds of thousands of tired workers, who have no opportunity to spend their summers in the country, a specimen of God’s handiwork that shall be to them, inexpensively, what a month or two in the White Mountains or the Adirondacks is, at great cost, to those in easier circumstances.”

I might also mention a couple of other notable events during this period.

- The state of New Jersey began to encourage the appointment of shade tree commissioners to promote the planting and maintenance of trees through the adoption of local ordinances, ,
- J Sterling Morton created Arbor Day by to encourage tree planting across the country.

Shade tree care was more an art than a science, imported from Europe, and Urban forest management wouldn’t exist until the middle of the next century

Into the Modern Times

In the first half of the 20th century as we experienced a great global depression and several wars, and continued population growth our influences on the landscape continued. The limits to urbanization were seemingly non-existent. There are over 400 cities world wide with populations over 1 million, and 26 mega cities. World population doubled between 1950 and 1987, and will double again just after 2050. We can say this growth has occurred in a lifetime as surely there will be more centennials.

Several things drove our own American style of post war urbanization and now suburbanization: the baby boom, the promise offered by the GI Bill - for single family home ownership, the transition of transportation from public and mass to private and our preferred choice of one or two cars in every driveway, and finally the Eisenhower Interstate System, which promised national security, but became the umbilical chord to the suburbs. Clearly, our population combined with our transportation choices has been and continues to be one of the greatest influences on urbanization patterns.

Urbanization went ex-urban and sprawl became a household word. This of course, has resulted in very horizontal land use patterns and cities grew outward beyond any geopolitical boundary, rather than upward. The reason I mention all of this is because the geomorphology of our cities has a profound impact on our natural systems and how we manage them (or don’t manage them), and will define urban forest management into the future. These growth patterns require a much larger land base and exert a

much larger footprint on our forests. For example during, a period of rapid growth in GA in the 1980, over 400,000 acres of timberland was forever lost to urban land uses.

Emergence of Urban Forest Management

Shade tree care hummed along during the first half of the 20th Century. In fact, the first Shade Tree conference was convened in Connecticut by a guy named FA Bartlett in 1924. By 1928, this group had formally convened becoming the National Shade Tree Conference, then the International Shade Tree conference in 1961, and finally the International Society of Arboriculture in 1975. However, the event or series of events that really crystallized the concept of urban forest management was a pesky little thing from Europe called the elm bark beetle, first detected in New York City in 1930, and fully devastating urban tree populations across the North, East, and Mid-west between the 1950s and 1970's. Caring for the individual trees was no longer enough, the entire population – the urban forest, had to be managed. Age and diversity mattered, and a program of systematic maintenance mattered. Managing the forest through changing land-use mattered. But to do this, it required knowing the population of trees, building a community resolve to fund the necessary maintenance, and then local public policy to underscore that resolve, which all translates to inventories, management plans, community tree boards, and ordinances. In 1965 urban forestry was born as a profession. Since, the profession has become increasingly sophisticated and demanding, particularly with respect to technology. Thanks to research, the challenge to growing trees in cities is better understood, and thanks to technology, we better understand the work that our urban forests do for us – the services they provide.

Back to the Future

So now that you've heard the history, all of it is what really sets the stage for the future, which will underscore the challenges for tomorrow's urban forester as well as the central theme around which this conference is built – Professional expertise, the importance of planning for management, a strong base of citizen support, ordinances and other forms of public policy to reinforce that support.

The future will be driven by continued land use change, sprawling cities with environmental challenges that cross-jurisdictional boundaries such as climate change, invasive species and natural disasters. Technology, our understanding of ecosystems services, and our ability to communicate will also drive our future. Thus, I submit to you, this following list of mega trends that will define the future of urban forest management:

1. **Urban growth and demand on the land.** The combination of shifting demographics, population growth, changing land use patterns, trade patterns, and infrastructure can be referred to as the human network. This network is criss-crossing the landscape and imparting a demand measured in terms of resource limitations, pollution, depletion, erosion, fragmentation, invasive species and the loss of biological diversity. The future of urban forest management will require not only managing natural systems to restore their functionality, but also managing the human network to minimize the breakdown of these natural systems.
2. **Managing for scale (across multiple boundaries).** The human network has developed across the globe and across this continent irrespective of geographic or geopolitical boundaries; similarly, the environment doesn't recognize jurisdictional boundaries. What happens up stream doesn't stay up stream. Examples of extended human networks in the US include the Piedmont Crescent, the Florida Peninsula, the NE Corridor, and the SW Basin. These places are huge economic engines. The challenge is keeping scale in mind while planning and managing the urban forest. Thinking globally gives you perspective, the North American Scale places issues in context, at the mega region utility begins to emerge – it enables prioritization, and allows for integration of programs, practices and policies; then at the sub-regional or local scale on the ground applications occur. The best way to address scale is to meet with your colleagues from neighboring towns over coffee once a month.

3. **Technology and nature.** Technology in urban forest management is nature's friend. With remote sensing and computer aided mapping, we can see and map the resource and how it's changing. Through analysis, we can understand what that change might mean and we can select a condition that is desirable or acceptable. We can use technology to store and share information, and communicate the urban forestry story; and finally, technology can help us establish targets, make changes on the ground, and monitor the results of our work.
4. **The public policy frontier.** The way policy decisions are made will change and will not change. The non-change is that the public will always be engaged in local decisions; however the definition of "local" comes into question. Certainly, the relevance of scale will come into play (for example, the allocation of water within Chattahoochee, Flint, Apalachicola River Basin is a scale that affects interests in three states.) There will be tremendous advances in decision support tools so communities will be able to see the impacts and understand the consequences of their decisions in advance. This will lend itself to the construct of scenarios. Decisions and monitoring should be science and performance based.
5. **Application of ecosystem services.** The ability to quantify ecosystem services is becoming increasingly important, especially as we struggle to justify management budgets to those who see urban forest programs as community amenities. Remember, it is not only the values of the services our forests provide, but also the costs that are avoided
6. **Resilience, adaptation, and mitigation.** I no longer feel that building a storms element in your urban forest management plan is sufficient. Most of our thinking on this topic is focused on reducing risk and preparing a response. There is a set of questions that I encourage you to ask in your management planning that will better enable your urban forest to respond like a system: How well do you understand systems behavior? What are your vulnerabilities? What are your adaptive capacities? How do you build resilience? How do you manage for disturbances? Then finally, how do you manage risk?
7. **Energy and climate change.** There will be an increasingly proactive roll for urban forestry as one of our front line defenses in energy security and climate change, and I strongly encourage all of you to play a leadership roll. Build strategies into your plans that establish local canopy goals to reduce urban heat islands, increase carbon sequestration, and reduce greenhouse gas production. Build programs that utilize trees as a renewable energy source. Implement programs to plant trees, strategically reducing energy consumption; and, create policies and plans that preserve existing trees during development and construction.
8. **The human bond with nature in communities.** This nurtures localized integration of the human network with natural systems. There are so many ways to build nature into our cities, low impact development options, bio-swales and bio-retention, vertical gardens and green roofs, urban agriculture, the conversion derelict land and commercial space to open space, and green infrastructure – the connectivity of nature and culture with corridors, hubs and nodes.
9. **Unity of knowledge, and the overlapping of disciplines.** Consilience means the "jumping together of knowledge". This is a term made popular by (biologist-humanist) EO Wilson in an attempt to bridge the gap between science and the humanities. Wilson believes that in the process of locating new avenues of creative thought we will arrive at an existential conservatism, in other words we create and conserve in order to survive. We no longer have the luxury to maintain a single focus on the resource we manage – we simple cannot do it ourselves – but a multidisciplinary perspective and the unity of knowledge will lead to undiscovered efficiencies, more effective results and a more humanizing effect which in turn, will lead to more livable cities

10. **Thinking within a new framework.** The planet is an organism much like the human body, and that organism is made up of two significant systems the natural system and the human network. Rather than us being in conflict with natural systems, we must learn to compliment one another – in effect co-evolve. This requires a new framework – a new way of thinking in which we manage the human network, recognize our interdependence with nature, employ systems theory, move toward high efficiency, low impact systems, restoring ecosystem functionality.

I realize this is a lot to take in, but what I am suggesting is that you challenge your thinking – take a longer view – a 21st century landscape view, as you plan to manage your urban forest. I also encourage you to challenge the other speakers at this conference to incorporate some of these considerations as they discuss management, policy, and working with the public.

Thank you.