

FROM ASPHALT TO FIELD - PARKING LOTS AS TRANSITIONAL URBAN LANDSCAPES

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1 **ABSTRACT**

It is time to reconsider the amount of impervious surface that covers so much of our country and come up with a plant-forward alternative. Much attention has already been devoted toward questioning the amount of area given to cars. Equal thought should be given to the empty lots that dot the urban fabric, those oceans of paving that surround big-box retail developments and sports complexes and are only full a handful of days out of the year. Landscape Architects have the skills, and the creativity, to turn these surface lots from locations back into places that can benefit both city residents and the urban environment. What critical thought and scholarly writing exists on the topic of parking lot design is largely focused on functionality and efficiency. How to move the most cars in and out of the lot in the quickest and safest manner possible. Very little consideration has been given to the aesthetic or environmental implications of parking lot design. Through the study of the history of parking lots in the United States and a critique of today's current "green" parking lots design strategies, this paper aims to begin a conversation, and transform the discussion, of what parking lots could contribute to the urban landscape. Why keep to the accepted formula of aisles, parking bays and medians. Why stop there? Why can't parking lots be dynamic parts of the urban fabric - active fields where the median and the bays become one continuous planted whole? These fields will soften the site and decrease the heat island effect during slow retail months and can be mowed down during periods of high traffic. Let the choreography of the planting reflect the choreography of our activities as consumers. The field to fallow ratio illustrates the temporal - planted in the off-season, more parking available during holidays or sports seasons. The landscape becomes the framework for the program, turning a location back into a place while addressing the variabilities of its users and imperviousness in the city fabric.

1.1 **Keywords**

Parking, Impervious, Pervious, Urban, Contextual, Temporal, Fields

2 INTRODUCTION

Imagine pulling into a Best Buy and parking in a tall grassy meadow or running into Home Depot and brushing up against Russian Sage. This could be a reality if we treat parking lots like fields - allowing them to lay "fallow" when spaces are in high demand and planting them when business slows down after the rush of the holidays. Although called "parking" lots, the amount of time that they are actually used for parking is minimal. We should either call them something else entirely or rethink the whole design.

Parking lots are a conundrum, on the one hand they are a necessary part of our everyday life - ensuring that we accomplish our daily activities with relative ease and providing a locale for complex social behaviors that extend beyond the physical act of parking. On the other hand, they are typically large swaths of impervious surface that increase the heat island effect, eliminate ecosystems and jeopardize animal corridors, and strip soil of all nutrients and organic content. Eran Ben-Joseph writes about this conundrum in his book, *Rethinking A Lot*, saying "Parking lots may be utilitarian and practical, unexceptional, and even unpleasant, but their magnitude and sheer frequency of occurrence merit greater attention. The task is first to rediscover their virtues and common good, and second to elevate their design above mediocrity." (Ben-Joseph 2012: 4)

Aerial photographs of Baltimore, MD, reveal enormous expanses of paved surface lots at big-box retail stores both within the city and in the surrounding counties. These lots contribute to storm water runoff entering the Chesapeake Bay watershed and are generally underused except for peak shopping days between Thanksgiving and Christmas. The parking lots around the Ravens Stadium are equally seasonal in their use and could be reconfigured to provide more green within the heart of the city. Fig. 1. There are many challenges to this proposal and they need to be addressed in order to make progress, but with some creative thinking and the strategic use of an appropriate palette of plants parking lots can become fields and help to soften the urban landscape and heal the impervious nature of the city.

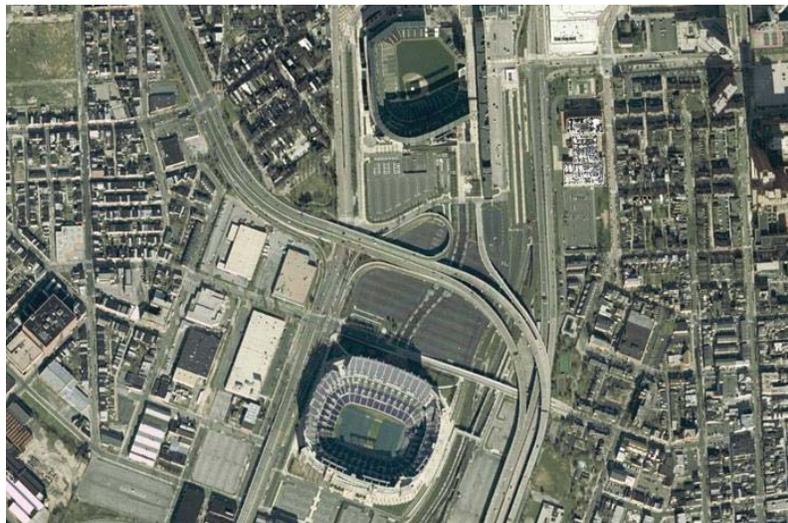


Figure 1. Aerial View of Camden Yards and Ravens Stadium, Baltimore, MD

https://upload.wikimedia.org/wikipedia/commons/8/8b/Camden_Yards_Sports_Complex_satellite_view.png

3 REGULATIONS

Current design regulations for parking lots are lacking, to say the least. Time-Saver Standards for Landscape Architecture, the long-standing reference book for Landscape Architects, devotes six pages to the site planning and layout of parking lots. Six pages out of a book of over nine hundred. The first sentence under the heading "4.2 General Layout of Parking Areas" states, "A major consideration in the design of any parking lot is simplicity." (Time-Saver Standards 1998: 342-20) Simplicity is fine, boring and monotonous and completely impervious is not. The Wiley Graphic Standards, a guidebook usually used as a reference for professionals, includes four pages on parking lots in its Student Edition. The first sentence under the heading of Parking Lot Design states, "Parking lots should offer direct and easy access

for people walking between their vehicles and the building entrances.” (Wiley Graphic Standards 2007: 166) Emphasis is placed on pedestrian safety, ease of circulation, and standard dimensions. No discussion is given to aesthetics or the integration of the parking lot with its immediate surroundings. This Student Edition is 436 pages, so less than 1% of a book on urban design and planning policy is dedicated to the design of parking lots, which occupy such a major percentage of our urban land. Design regulations and requirements for off-street parking are more concerned with screening the parking from its neighboring streets and lots, concealing the parking lot rather than engaging its design with the immediate context. Additional requirements include minimal tree coverage, detailed dimensions for setbacks and general recommendations for paving.

To give another example of the uninspired nature of general parking lot design, developers rely on standard formulas when calculating how many spaces should be included for a certain structure. In the early 1980's the Institute of Transportation Engineers created two handbooks, Trip Generation and Parking Generation, which suggest a number of peak parked vehicles per unit of particular land use: typically, 4 parking spaces per 1,000 gross square feet. This ratio has been used in most transportation models and, as often becomes the case with such standards, has been taken for granted. (Ben-Joseph 2012: 8) Parking lots are often built to accommodate the anticipated crowd of customers on the busiest shopping days of the year - the day after Thanksgiving, being an obvious example. As a result, a typical single-story commercial building requires a minimum of one-half to three-quarters of the site dedicated to parking. Various studies suggest that this results in a serious oversupply of parking, and that even at peak demand only two to three spaces per 1,000 square feet are utilized. (Ben-Joseph 2012: 8) As a result these formulas have had a great influence on how our cities and towns look, feel, and function.

4 HISTORY

How did we get to this point where we have paved over our country? A little background on the history of the parking lot will shed some light on why we find ourselves in this predicament. The domination of parking lots and the vastness of their impervious nature can be traced back to the years following World War I. With the automobile more readily affordable to Americans of all financial means, thanks in part to the Ford Motor Company and General Motors Corporation, there were suddenly many more cars on the road. (Jakle and Sculle 2004: 2) This rise in traffic overwhelmed the city and rural streets and the parking of cars along curbs only added to the congestion. In an attempt to attract frustrated customers, merchants began to provide off-street parking. As described in *Lots of Parking*, “Commercial buildings were moved back from sidewalks and streets, and business premises were increasingly configured to be seen across parking lots through automobile windshields.” (Jakle and Sculle 2004: 3)

The primary concern of the parking industry – whether merchants, traffic engineers, or planners, was functionality. The whole act of parking received little thought beyond the practical. John A. Jakle and Keith A. Sculle note in their book, *Lots of Parking: Land Use in a Car Culture*, that “Parking was not expected to contribute to the visual enjoyment of the landscape.” (Jakle and Sculle 2004: 7) But was it meant to reduce the beauty of the landscape as it does currently? Most scholarly writing on parking focuses on the pragmatic issues of safety and efficiency and is less interested in the social or environmental implications of its design; certainly, no real discussion is given to aesthetics. This concern with parking lots as purely facilitative was emphasized by Henry Evans in a 1945 edition of *Traffic Engineering* where he decried the attributes of a “good lot” as being “one that offered a minimum of inconvenience, that is, delay and accident hazard to the motorist. Size and shape, grading and surfacing, lot enclosure, marking of parking stalls, positioning of entrances and exits, layout of aisles for car movement, and illumination.” (Jakle and Sculle 2004: 98) Mark C. Childs provides an exception with his book, *Parking Spaces*, in which he writes that “the typical design of parking lots as simply mere functional expanse of cheap asphalt and net of white lines is wasteful and destructive.” (Jakle and Sculle 2004: 96)

5 GREEN PRACTICES

Over the past two decades there have been attempts by planners, developers, and landscape architects to adopt a “greener” approach to the design of parking lots within cities and their surrounding suburbs. Design principles including Storm Water Management, Best Management Practices, and Low Impact Development have generated new ways of viewing ecology and the environment as contributors to the design at the conceptual phase and no longer as an afterthought. Strategies such as using pervious paving for the parking bays, wetland plantings and low medians designed to capture rainfall and run-

off from the aisles, and wider medians to accommodate canopy trees that will decrease the heat-island effect are positive initiatives, but they continue to fall short. These “green” designs still include the expected bays, medians and aisles of the Time-Saver Standards and Wiley Graphics descriptions and do not do enough to become dynamic parts of the urban fabric. Why can’t parking lots become active fields where the median and the bays become one continuous planted whole? Pushing the envelope of what a parking lot really can become?

6 PRECEDENTS

Some projects have begun to ask such questions and consider parking in a new way. As with so much that is both environmental- and design-related, European countries seem to have taken the lead in rethinking what a parking lot can be. There are advances in alternative surface materials, such as an ultra-porous concrete that is being tested on the streets of Rotterdam. Rainaway, an Eindhoven-based company, and Tarmac, a UK-based company, are promoting water-permeable tiles. The city of Copenhagen has been recognized as one of the world’s most environmentally sensitive cities. In 2010, Copenhagen adopted a policy requiring green roofs for all new construction with roof slopes of less than 30 degrees. More relevant, however, is the city’s adoption of green parking lots, two examples of which are at the University of Copenhagen, Royal Danish Academy of Fine Arts, and Technical University of Denmark in Lyngby. Fig. 2. (<http://buildabetterburb.org/copenhagen-green-city-green-parking>) Both university’s showcase landscaped parking lots with permeable pavers that simulate natural hydrologic functions and beautify the entrances to the institutions for visitors, students and faculty.



Figure 2. Parking Lot at the Technical University of Denmark in Lyngby
<http://buildabetterburb.org/copenhagen-green-city-green-parking/>

Two larger-scale projects provide insight and precedent for the parking “field” proposal and, in this light, are valuable contributors to the field of landscape architecture. Bluewater Shopping & Retail Destination in Kent, England, is the second-largest shopping mall in the United Kingdom. Occupying 240 acres, it is located on the site of a former chalk quarry and a large part of the program was the reclamation of land lost to mining. Bluewater was designed by CivicArts / Eric R. Kuhne and Associates who took their cue from the agrarian countryside surrounding the great estate homes of Kent County. In an interview from 2012 Kuhne states, “The Bluewater car parks were designed as urban orchards based on the reputation of Kent County as the Garden of England and one of the highest fruit producing counties in the UK. We achieved over one tree for every two spaces, covering nearly 6,000 spaces, and heavily landscaped verges surrounding each surface lot.” (<http://buildabetterburb.org/qa-with-architect-eric-r-kuhne-about-bluewater-mall-parking-and-landscaping/> accessed February 8, 2018). The siting of the roads follows existing quarry topography, bike paths and walkways connect the parking lots to the open space. Over time, Bluewater’s parking orchards will become a solid canopy of trees shading the cars and revealing the architecture of the mall above the treetops. (<http://buildabetterburb.org/qa-with-architect-eric-r-kuhne-about-bluewater-mall-parking-and-landscaping/> accessed February 8, 2018). As Ben-Joseph

writes in *Rethinking A Lot*, Bluewater has “a parking landscape, where the lawns, lakes, and foliage are carefully meshed with the required areas of tarmac to accommodate cars.” (Ben-Joseph 2012: 124) Now, can we push this idea further and remove the requirement of tarmac?

Another precedent that questions the traditional layout of a parking lot is Fiat's LingottoFactory in Turin, Italy. A massive industrial complex, the original building was a third of a mile long and built entirely of concrete and posed a number of challenges to the design team selected for its adaptive reuse in the 1980's. Not only was its size daunting, but there was the added issue of how to integrate the industrial building with the surrounding urban context. Renzo Piano was selected for his scheme that centered on a strategy of blurring the lines between the building, its surrounding infrastructure (parking lots), and the larger landscape. The design team brought the building into the landscape and the landscape into the building. Piano recognized the parking lots around the buildings as an opportunity to connect the sheer size of the architecture to the more human-scaled fabric of the city. He created a series of parking lot gardens by getting rid of the expected islands and curbs and planting rows of trees in a dense grid. An early description of his design concept states, “The unifying and connecting feature of the whole scheme will be nature. Nature re-conquers the spaces left vacant by industry and railways, thus healing the wounds inflicted between the area and its surroundings.” (Domus 675, p. 38)

Despite these two forward-thinking projects, surface parking lots are very rarely creatively designed, and have won very few design competitions or professional awards. Since 1990 the only parking lot design to win an award from the American Society of Landscape Architects was by Michael Van Valkenburg Associates, Inc. The project, titled “12,000 Factory Workers Meet Ecology in the Parking Lot”, was for the Herman Miller furniture manufacturing and assembly plant in Cherokee County, Georgia, and incorporates ecological design principles to mitigate storm water runoff while providing spaces for more than 500 cars and 120 semitrailers. (Ben-Joseph 2012: 4) A decade earlier, in the mid-1980's a competition was held for the design of a municipal parking lot for about 300 cars. The competition, sponsored by the City of Columbus, Ohio, and the Irwin-Sweeney-Miller Foundation, was intended to unveil new approaches addressing function and aesthetics in parking lot design, while exposing the lack of energy typically afforded such projects. The winning entry was by Eric R. Kuhne & Associates (of Bluewater Shopping and Retail) who transformed the parking lot into a park inspired by European urban plazas. In typical fashion, nothing ever transpired in either built form, or planning policy, and we find ourselves in a similar discussion over 30 years later.

7 INCREMENTAL CHANGES

One could argue that the relationship between parking lot and park is a metaphor for the more general relationship between the city and nature. Just as the disregard of natural processes in the city results in high cost and infrastructural damage, so, too, does disregard of ecology in a parking lot result in future costs and increased flooding. Anne Spirn writes about the symbiotic relationship of the City and Nature in her book, *The Granite Garden*, where she maintains that the cost of disregarding nature extends not only to the physical wellness of the city, but also to the quality of life of its inhabitants. (Spirn 1984: 10) Spirn continues by stating that change does not need to include major overhauls of infrastructure in order to make progress, but that these changes can instead be made up of small individual projects. She writes, “Incremental change through small projects is often more manageable, more feasible, less daunting, and more adaptable to local needs and values.... Solutions need not be comprehensive, but the understanding of the problem must be.” (Spirn 1984: 10) Landscape Architect, Margie Ruddick, in her book *Wild by Design*, takes this notion a bit further describing the “Reinvention” of a site as including a variety of actions including, Cleaning up, Reframing, Deconstructing, Rewiring, Transforming, and Re-programming. (Ruddick 2016: 46) This process of reinvention can be viewed as a method of incremental change and can be applied to the design of the parking lot in order to create something that is better integrated with the life of the community, and with its immediate context. Ruddick writes, “In reinventing sites, we are often like surgeons, taking whole parts of the body apart but leaving enough intact to keep the patient alive.” (Ruddick 2016: 46) This paper recognizes the parking lot's function and purpose in our society but proposes a transformation, or rewiring of its parts, so that it is more environmentally friendly, more visually aesthetic, and better connected to its surroundings.

Long ago parking lots ceased existing as places and became instead vast spaces for the storage of automobiles. The book, *Lots of Parking*, poses the question of how parking impacts the human habitat as landscape. (Jakle and Sculle 2004: 15) Noting that places “have symbolic meaning as well as physical

substance,” its authors suggest that places exist in the landscape as messages waiting to be read in different ways by potential users. (Jakle and Sculle 2004: 15) Therefore, parking lots have the potential to symbolize a variety of meaning, and it is in the act of incremental change that we can hope to accomplish a transformation of standard parking lots from spaces back into places that contribute, favorably, to one’s experience of their surroundings. Beginning with smaller parking “gardens” might help facilitate this transformation at the larger, big-box, scale further down the road. An example of such an incremental change includes the Parking Garden at Olympic College in Bremerton, WA. Designed by SvR Design Company in 2011, this project was the first part of an overall master plan that focused on the development of a series of campus open spaces linked by a hierarchy of pedestrian, bicycle and vehicular circulation systems. This newly constructed student parking lot includes LID technologies, such as weirs, perforated curbs, and rain gardens in the medians. <http://www.svrdesign.com/olympic-college-parking-garden/3cqtnkegki4mus8uw1w7uh2j1pfif> Fig. 3.



Figure 3. Olympic College Parking Garden, Bremerton, WA, by SvR Design Company
<http://www.svrdesign.com/olympic-college-parking-garden/3cqtnkegki4mus8uw1w7uh2j1pfif>

A smaller, but no less lovely example of this notion of parking “garden” can be seen at the Hawksbill Greenway Foundation in Luray, VA. With over two miles of walking trails, the Greenway provides its users with a setting from which to enjoy the beauty of Virginia’s Shenandoah Valley in a unique urban context. The parking lot is completely constructed of permeable pavers and succeeds in blending seamlessly into its surroundings, providing its users with a calming entry and exit experience from the park. Fig. 4.



Figure 4. Parking Lot at Hawksbill Greenway Foundation
<https://hawksbillgreenway.org/welcome/attachment/permeable-paver-parking-lot/>

Some malls and big-box retail stores have begun to recognize the overly large expanses of asphalt surrounding them and are addressing this in various ways. It is common to find sheds, outdoor structures, and landscape materials displayed in sections of parking lots outside of Lowe's and Home Depot. Christmas tree lots spring up the day after Thanksgiving - complete with lights, fencing, piped music and general holiday cheer. Farmer's markets appear on weekends from May through October, reflecting the change of seasons as cool season lettuces give way to tomatoes and finally to apples and gourds. Some Wal-Marts even offer overnight parking to campers and recreational vehicles. Recognizing that the outer regions of the lots are unlikely to be occupied, managers reason that the campers constitute a customer base since they can stock up on goods while in the lot. (Ben-Joseph 2012: 28) However, despite this smattering of creativity, parking lots remain largely under-used, contributing impervious surfaces, light pollution, and heat to urban areas for the majority of the year.

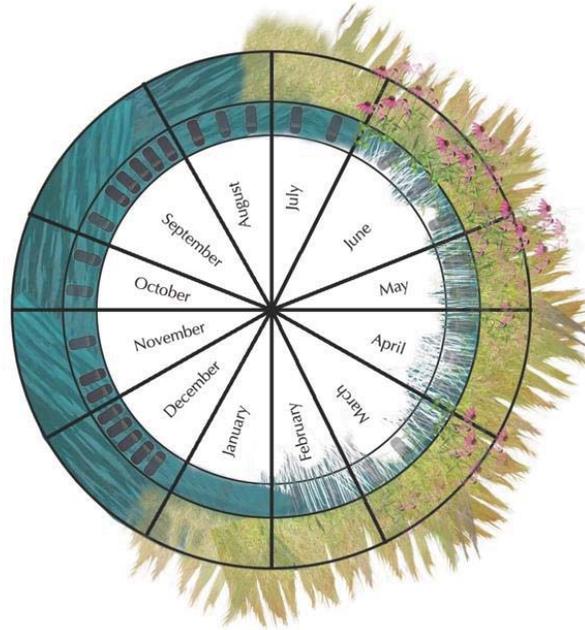
As the high-demand for parking lots tends to be seasonal, Black Friday and holiday shopping for big-box retail, and late summer through fall for football stadiums, surface lots could be treated like fields instead of lying empty for months at a time. Parking lots could become dynamic parts of the urban fabric - active fields where the median and the bays become one continuous planted whole. The planting would cycle with the seasons, lending visual interest and vitality to the site. This strategy of planting the entire lot would decrease the heat island effect, provide corridors for wildlife, and minimize stormwater runoff during slow retail months, while being easily mowed down during periods of high traffic. The choreography of the planting reflecting the seasonal choreography of our activities as consumers. Fig. 5.



Figure 5. Rendering of Parking Field, (2018) by Author

Of course, there will be challengers and challenges to this proposal. Some stadiums are used for other events during the off-season, so how would this be accounted for? Perhaps identify certain sections of the parking lot to be designated for special events and create a hierarchy of lot treatment. Maintenance crews might ask how snow removal would be addressed - could the planting be plowed, would this change the strategy of using large parking lots for dumping snow after big storms? An argument could be made that a large expanse of pervious surface (parking "field") is a better location for dumping piles of snow than the currently accepted practice of dumping snow on asphalt or concrete surfaces. The snow melt would be absorbed directly into the ground, thereby treating the runoff on site. Table 1.

Table 1. Diagram Illustrating Seasonal Planting Strategy, (2018) by Author.



8 PLANTING STRATEGIES

In order to create successful and viable parking fields, the selection of an appropriate planting scheme must be achieved. Some considerations in the plant selection include how long one needs for a meadow or field to take form. Which plants will fulfill the desired aesthetic in the amount of time needed and in the “off” season when the parking lots are not in use? According to expert James Hitchmough in his book, *Sowing Beauty*, one should select plants well-suited to the climate in which they are planting. In other words, ask how warm are the summers, how cold are the winters, when is the growing season, and what is the typical rainfall during that growing season? The general context of big-box retail lots and stadium parking is such that any watering or irrigation would be minimal to none, so selected plants must be drought-tolerant and hearty. Hitchmough also claims that less-productive soils allow for a greater density of species, which is positive for sites previously covered in asphalt, and therefore presumably lacking in nutrients. (Hitchmough 2017: 37) Two planting typologies fit with both the desired time frame of the parking “field” planting and the heartiness required of such settings: the Summer-cut Grassland and Meadow, and the Prairie.

The Summer-cut Grassland comprises plants that begin their growth in spring, typically peak in their flowering in June or July, and are cut down in early August. This general growth cycle parallels the use cycle of football stadiums and big-box retail stores, which are not typically in high demand during the spring and early summer and are just getting into full swing in late summer with the onset of back-to-school shopping and pre-season games. The act of cutting and removing the plant material is what curbs the invasion of weeds, and invasives like Tree of Heaven, and allows the meadow to perpetuate the following season after the last of the shopping rush has ended. Cool-season species are applicable here, as they grow from winter to summer, and include such species as *Agrostis gigantea*, *Festuca glauca*, and *Poa annua* - often familiar as lawn grasses.

The second planting typology that would work well in a parking “field” strategy is the Prairie. The term prairie derives from the French word for grassland and is applied to a vast range of grasslands found in North America. James Hitchmough describes two classic types of Prairie grasses: tall-grass prairie, which can be found on more productive soils, and short-grass prairie, found on much less productive soils. (Hitchmough 2017: 86) Again, one could reasonably argue that soils found on sites that have been paved over for years are generally compacted, shallow, and have been stripped of vital nutrients, therefore falling squarely into the low-productivity category and ideal for short-prairie grasses. Plants that could provide the framework for the parking “field” or Prairie, are *Schizachyrium scoparium*, *Bouteloua curtipendula*, and *Sporobolus heterolepis*, which are easy to obtain and available as seeds or plants making them

a practical source for less productive soils. The Prairie is an important model for designed naturalistic vegetation and includes species, like Aster and Solidago, that flower later in the year thereby extending the growing season and adding visual interest to this newly proposed urban landscape. (Hitchmough 2017: 87) Other examples of applicable species with high-design potential found within North American prairie communities include: Aster sericeus, Coreopsis purpurea, Echinacea tennesseensis, Euphorbia corollata, Geum triflorum, Liatris aspera, Liatris scariosa.

9 CONCLUSION

Unless changes are made to the way we think about parking, flooding will persist, or even increase, chemicals will continue to drain into our sewers and watersheds, and the temperatures of our cities will continue to rise. None of these trends can be addressed until a long-established practice is altered. By completely rethinking the layout of the parking lot, replacing acres of impervious surfaces with fully planted “fields” or prairies, we can achieve places that are environmentally sensitive, pleasing to the eye, and spatially effective. These “fields” can be inserted into any context: the cool, dry conditions in the Northeast, the wetter conditions of the Northwest, even the hot, arid, desert environment of the Southwest. A deeper investigation into the appropriate species of plants needed to accomplish a successful sense of place will be required. Regardless of context, these “fields” will treat storm water runoff on site, decrease the heat island effect during the slow retail months and can be mowed down during periods of high use. The choreography of the planting reflects the choreography of our consumer activities. The parking experience becomes an adventure - which areas will be wildflowers and grasses? Which will be mowed and accessible? We should build on the success of Bluewater and the smaller “parking gardens” that are beginning to take root both nationally and internationally, and make this the rule and no longer the exception. Again, the landscape becomes the framework for the program, turning a space back into a place while addressing the needs of its users and the vulnerability of the urban fabric.

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