In vitro complex

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IN VITRO COMPLEX

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TABLE OF CONTENTS

Acknowledgments..............................................................................................................i
Abstract.............................................................................................................................ii
Introduction.......................................................................................................................1
Chapter I: Overview of the Exhibition.............................................................................4
Chapter II: The Great Divide?..........................................................................................7
Chapter III: Aesthetics of the Transitioning Landscape.................................................11
Chapter IV: Technological Landscape............................................................................17
Chapter V: The Narrative, the Symbolic, and Our Relationship to the
    Landscape....................................................................................................................24
Chapter VI: The Digital Landscape..................................................................................30
Conclusion.........................................................................................................................37
List of Figures....................................................................................................................40
Bibliography......................................................................................................................41
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Abstract

Contemporary technological developments allow for greater manipulation of the natural world than ever before. While the increasing variety of synthetic materials, techniques, and equipment employed in horticulture and urban development are reshaping the land, sophisticated digital imaging tools, ranging from computer-generated graphics to 3D modeling and rendering software, are changing the way we design and represent landscapes. Through technology, we are continually imitating, reconstructing, and perfecting the natural environment. As a result, the physical and conceptual borders between the organic and synthetic elements, the “born” and the “made,” in our physical environments are becoming progressively obscured, as are the lines between representation and reality.

*In Vitro Complex* offers a visual exploration of the dynamics between nature and technology within the context of the contemporary developing landscape, and examines the effects of imaging technology on the contemporary perception of, and our relationship to, the natural world. Tracing the history of technology and landscape art over the last 150 years shows how man’s ability to shape the western landscape, both physically and through imaging technology, affects our perceptions of nature. This thesis questions how technological progress shapes our relationship to the subject of landscape and its representation in present-day culture. It examines the artwork of *In Vitro Complex* against a backdrop of other contemporary artists who, through various approaches ranging from documentary to staged photography to digitally manipulated and computer-generated imagery, document and interpret the effects of technology on the physical environment and explore contemporary culture’s relationship to the natural world.
Figure 1: *In Vitro Complex*, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15–23, 2007
Introduction

Speckled with rectangular patterns displaying blankets of vegetation, layered with gridded sections of plastic netting draped over roadside embankments, painted and stenciled in vibrant colors, plowed into symmetrical bands, shrouded with burlap, meticulously manicured and uniformly arranged—such describes the contemporary developing landscape, which makes for a strikingly unusual visual experience when examined at close range. Yet before the transformation is complete and all of the artificial elements become fully integrated into the physical environment, these transitional sites oscillate between creation and destruction, serving as “backgrounds for our collective existence”¹ and reminding us of the increasingly synthetic and technological infrastructure of our contemporary world. These hybrid and genetically ambiguous

Figure 2: Anna Druzcz, “Vista I,” 48” x 48”, LightJet print, 2007
environments have had a formative influence on the photographic work in my art installation, *In Vitro Complex*, and the underlying concepts discussed in this thesis.

Defined in anthropological terms, landscapes are products of the dialectic of biophysical environments and culture and refer to the material manifestation of the relations between humans and their environments. The construction of landscapes occurs as a twofold cultural process that is directly influenced by the presence of technology. First, there is the physical transformation of land by the human hand—hardly a place on earth now remains without the footprint of human activity. Second, the landscape is mediated through technology and its devices, such as the camera and, now, the tools of digital photography. It has been aesthetically processed, modified, arranged, and mediated through the cultural prism, even if just by the act of looking and selecting a specific view from a continuous landscape without even being visually represented. Estelle Jussim and Elizabeth Lindquist-Cock observe this characteristic of landscapes:

> Even if a landscape could be found that was an entirely unspoiled natural view, it would be seen through the lens of a powerful visual culture. Not only is there no such thing as natural landscape, but there is no innocent eye to look at it.

Landscape is thus defined not as a natural phenomenon but as a cultural construct and, as such, it is not fixed but rather part of a continuously changing set of relationships, including the relationship between nature and technology. The premise of this thesis is to explore the artwork of *In Vitro Complex* in the context of this shifting relationship as it has evolved since the Industrial Revolution. In the words of contemporary visual artist Diana Thater, “any depiction of the landscape is a depiction of the culture that created it.” Thus, our cultural values are reflected in the ways we shape and interact with our physical environments and their representations. *In Vitro Complex* explores this and tries to decipher our contemporary relationship to and concept of nature.

Growing increasingly curious about the reasons informing our cultural preoccupation with landscaping, I also became intrigued with what these man-shaped environments reveal
about our cultural relationship to the natural world and, subsequently, how they influence our concept of nature. The subject of physical transformation and synthetic recreation of natural environments quickly captured my interest and imagination. In comparison to urban metropolises, the topographies of roadside embankments are reminiscent of the countryside and represent the less apparent but far more pervasive and persistent reconstruction of the natural landscapes that surround us.

Photographically documenting technologically transforming landscapes constituted the initial step in my creative process. As my interest in this subject deepened and my research progressed, I became even more aware of the innumerable traces of altered nature within my daily settings and increasingly interested in exploring the various ways in which we physically and visually modify the natural world. Selecting photographic material for my artwork was initially instinctual, but I very quickly began to purposefully hunt for places where ecology collides with technology and science. From neighborhood front lawns, parks, and gardens to greenhouses, farms, tree nurseries, and parking lots, I sought out places where nature has been synthetically recreated, visibly contained, arranged, and allocated to designated areas. I also constructed and photographed elements and environments representing my interpretation of altered nature inside my studio. Further in my process, I digitally combined my photographic material into single compositions with the intention of creating images that encapsulate the broader scope of the biotechnological synthesis taking place in our contemporary culture, heighten our awareness of the world around us, and question the role of evolving imaging technologies and the culture of visual representation in changing our relationship with the natural world. Vacillating between document and fiction, In Vitro Complex is a visual exploration of how contemporary technology is transforming and shaping our perception of the natural environment.
Chapter I: Overview of the Exhibition

Upon entering the exhibition space, the viewer is confronted with manifestly altered digital panoramic landscapes in heavy steel frames. Each individual image reveals a landscaped environment, reconstructed from intertwined organic and synthetic materials, infused with technology, information, and imaging. The lines between the contrasting natural and artificial elements are hard to distinguish, where natural vegetation, bare soil, and skies are interlaced and progressively replaced with their artificial counterparts of sod carpeting, pavements, and visual reproductions. The large scale of the images showcases the significant, intricate details embedded in each composition, such as plastic netting between the mounds of soil, wires and tension cords twisting around the branches of bonsai trees, and tears in the canvas draped over

Figure 3: *In Vitro Complex*, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15–23, 2007
the ground. Even a casual glance reveals shaped hedges that resemble boulders of stone, and natural horizons eclipsed with imitation canvas backdrops. Full of subtle visual allusions and ambiguity, the landscapes coalesce into symbions of nature and technology.

Within the *In Vitro Complex* exhibition, a sense of tension between the organic and nonorganic elements permeates not only the work’s content but also its form and presentation. When deciding on the appropriate display, I have deliberately chosen materials with highly synthetic and technological connotations to further emphasize the contrast between the natural and the fabricated elements in the work.

As opposed to any other material, welded steel to construct the frames infuses the work with industrial undertones. For the substrate, I have chosen the lustrous, Kodak ENDURA

metallic surface paper to further underscore the contrast between the seemingly natural subject matter and the synthetic quality of the paper it is printed on. Meanwhile, the title of the exhibition succinctly underscores the highly complicated relationship of interdependence and convoluted systems between nature and technology represented within the landscapes, as well as the anxiety induced by the dynamics between the natural and the artificial matter. According to the Merriam-Webster Dictionary, the literal translation of the Latin phrase “in vitro” means “in glass.” It is often used in reference to laboratory experiments conducted in a highly controlled, artificial environment outside of the living organism and is most commonly used in the expression “in vitro fertilization.” In the context of the displayed artwork, the phrase refers to the practice of artificially recreating natural environments with synthetic materials applied in the practices of horticulture and landscaping and the highly mediated representation of nature in visual culture. The term “complex” offers a double meaning, suggesting the intricate and interwoven structure of the relationship between nature and technology as well as the growing concern about the consequences of human interference with and manipulation of nature in the progressively technological future.
Chapter II: The Great Divide?

Where technology and nature are traditionally seen as contradictory and opposing forces, they now appear to merge or even trade places. Nature, once chaotic and wild, has become tame in the hands of technology. As artist and theorist Koert van Mensvoort points out, “While old nature, in the sense of trees, plants, animals, atoms, or climate, is increasingly controlled and governed by man—it is turned into a cultural category—our technological environment becomes so complex, omnipresent and uncontrollable, that we start to relate to it as a nature of its own.”

Throughout the In Vitro Complex series this shift in perception is represented by the hardscapes multiplying throughout the landscapes while the organic world is receding.

Uncovering the parallels between the fundamental structures of the natural world and their relationship to manmade iron ornaments was the focus of most of Karl Blossfeldt’s career. By greatly magnifying the details of plant forms and photographing them in a very straightforward, almost scientific manner, he abstracted the organic elements to shapes and structures that resemble the forms of architectural and other artistic styles throughout history, suggesting that art mirrors nature’s designs. Motivating him was the notion that although nature and art—synonymous with technology—are profoundly different, there exists a fundamental interdependence of man’s world and the plant world. Within In Vitro Complex, the highly ambivalent relationship between nature and technology and the intricately convoluted interdependence of the two is visually explored through the intentional ambiguity constructed between the opposing organic and synthetic elements in the images, where the multiple natural and artificial

Figure 5: Karl Blossfeldt, “Haarfarn (Maidenhair fern)” from Urformen der Kunst, 1928
features of the landscape are portrayed as deeply interwoven and even interchangeable. The reflective surface in the foreground of “In Vitro Complex VII” (figure 17) can just as easily be interpreted as a highly polished, veneer-covered concrete—a manmade element—as it can be a reflective pool of water—an organic element. Likewise, the meticulously sculpted hedges in “Landscaping Nature V” (figure 23) could easily be mistaken for shaped boulders. This pronounced ambiguity is constructed in an attempt to reveal a parallel between the two spheres.

The medium of photography has allowed for the making of such a connection between the organic and the technological, hence changing our relationship with nature. The early-twentieth-century approach of Blossfeldt has rendered technology and nature as equivalent through the photographic medium. Current digital imaging tools provide even more options to uncover and explore the parallels between nature and technology. In the images of contemporary artists such as the Austrian Dieter Huber, technology and nature fuse together through digital manipulation. Huber cleverly engineers an ambiguity between nature and the technologically transformed plants in his Klone series. These hybrid images establish a connection to genetic engineering, biotechnology, and changing notions of the organism in the age of new technologies. Huber’s “Klone #76” (figure 6) and “Klone #100” (figure 7) appear very plausible
and realistic, but oddly unnatural. The deceptively photorealistic rendition as well as the scientific objectivity with which Huber presents these mutated objects further enhance the perception of the images as believable reality.

In addition to the ambiguity between the natural and artificial elements within *In Vitro Complex* compositions, there is also a pronounced obscurity between the natural elements and what we only perceive as being natural, since over time these artificial ingredients have become so integrated into our perception of nature that they are now naturalized. For example, the cultural idea of a neatly clipped lawn around the suburban house, an aesthetic necessity believed by many American homeowners, has over time become naturalized, even though it is a technological construct. David Nye observes this phenomenon in detail:

> The ground itself has been graded and leveled. The seed is usually a mixture of several kinds of grasses carefully bred and selected. Weeds, that is, the plants that have been socially defined as undesirable, have been eliminated, often by spreading chemicals over the lawn, which usually is fertilized as well. To keep the lawn looking well, the homeowner employs mowers, rakes, and various devices to trim edges and corners. And if it does not rain enough, the homeowner will set up sprinklers. The entire artificiality is evident in the fact that it would never survive in its present form without constant technological assistance.³

Because, traditionally, landscapes are expected to depict nature, when natural elements are present, even the artificial elements within them at first glance appear familiar and natural. “*In Vitro Complex XI*” (figure 8) depicts fields with hay bales in the background, which, as the eye moves through the composition, transition into giant concrete pipe segments on a construction site in the foreground. First, there is the obvious contrast between the manufactured concrete cylinders on hard paved surfaces and the bales of hay over the rolling hills. Another dichotomy unravels more subtly upon the realization that the natural rolling fields and hay bales are, despite initial associations with the countryside and nature, also a manmade construct, one that we tend to associate with nature more so because we have gotten used to it. “Human beings have repeatedly shaped the land to new uses and pleasures, and what appears to be natural to one generation often is the end result of a previous intervention. Today’s forested hillsides in New England were cleared pasture in 1840, and some of the apparently wild moors in Britain were
once thickly forested, as was the now mostly open countryside of Denmark.” The hay bale image reminds the viewer that hay stacks have changed shape over time into mechanically produced hay bales arranged on a rolling hillside, which soon will give way to urban development and construction. This dichotomy is one of many that demonstrate the complex contradictions in our attitude toward nature and technology, particularly as we try to bring the two together.

Landscape and technology are not opposite, but interweaving. Technological changes produce landscape changes. For example, changing agricultural technology produces changes in agricultural landscapes. Andy Clark believes that nature equips us with an innate predisposition towards inventing tools and technologies to control, imitate, and recreate the natural world—that nature itself is intrinsically and fundamentally technological.
Chapter III: Aesthetics of the Transitioning Landscape

Throughout history human societies have been reshaping the land in an attempt to create more functional or aesthetically pleasing surroundings, but never before did we have access to such a broad variety of techniques and synthetic materials that enable us to quickly and efficiently construct superficially natural environments, not to mention technologies that allow us to design these environments. Although, officially, the discipline of landscape architecture is only a few centuries old, the history of the practice is as old as civilization itself. The designed landscapes discussed in this paper are the result of advancements made in landscape architecture, as well as the desire to aestheticize and control our environments, which creates the demand for landscaping in the first place. Our technological and scientific capabilities play a key role in aestheticizing nature. Imaging technology allows us to visualize what we previously could not have imagined, while developments in synthetic materials and landscape architecture technology and techniques allow us to make these visions a reality. These new modified landscapes then feed into our visual culture and shape our relationship to the natural world.

The landscaped garden in “In Vitro Complex IX” (figure 9), formed of multiple sections of manicured lawn, addresses this phenomenon. The underlying manmade structures and sharp-edged architecture consisting of cones, cubes, and spheres are covered with meticulously trimmed grass. Arranged on top of a staggered, pyramid-like structure are neatly shaped hedges. The geometrical and rectilinear design of this fabricated “garden” is its predominant aesthetic feature. The artificial construction of this site is further emphasized by the use of internal boundaries between the different levels and sections. The concept of a garden, defined in the Oxford English Dictionary as an “enclosed piece of ground devoted to the cultivation of flowers, fruit, or vegetables,” by its very definition implies the use of boundaries and divisions. Within In Vitro Complex, boundaries are utilized to emphasize the dichotomy of the nature-technology relationship and, as such, become a metanarrative throughout the work.

In Technologies of Landscape: From Reaping to Recycling, David Nye points out that,
“in the English language, landscape is a verb as well as a noun, referring to an active process in which human beings don’t merely intervene, but improve a site so that it becomes a more useful or pleasing prospect.”

As opposed to documenting the fully established landscapes, *In Vitro Complex* takes a behind-the-scenes look at the process of creation and transformation of these environments, focusing more on their synthetic ingredients and the artificial construction before it disappears from view. The resulting images therefore, create an opposite effect, indicating that in an attempt to enhance our environments, we create sites that appear natural and beautiful only on the surface, with grotesque and highly technological infrastructure beneath.

Modifying plants through techniques of pruning and restraint into aesthetically more pleasing and, ironically, more “natural-looking” forms, is at the core of horticulture practice, where trees, shrubs and other foliage are carefully arranged, shaped and continually maintained.

Figure 9: Anna Druzz, “In Vitro Complex No. IX,” 48” x 60”, LightJet print, 2007
The bonsai tree exemplifies the idea of creating deformity in nature in pursuit of creating an aesthetically superior specimen. The philosophical paradox of reshaping nature to look more natural inspired “In Vitro Complex V” (figure 10), in which the contorted roots of the two bonsai are suggestive of artificial manipulation, as is the unnaturally twisted, burlap-bound topiary in “Vista I” (figure 2).

Various types of containers are yet another significant visual clue in these images, which suggests artificial and highly controlled growth environments. “In Vitro Complex III” (figure 11) depicts an array of rectangular containers filled with water and floating pads of tropical water lilies, which are propagated and raised inside built ponds. These large tubs of water in which the plants are submerged constitute a surrogate transitional environment. Just like the greenhouses and nurseries found in the background of “In Vitro Complex V” (figure 10), these containers are presented as metaphorical laboratories where nature is engineered according to strict

Figure 9: Anna Druzcz, “In Vitro Complex No. V,” 48” x 60”, LightJet print, 2007
specifications. Technology presents us with options and makes selection of preference available in the construction of both the physical environment and the digital compositions within the *In Vitro Complex* project. Contemporary science and technology allow us the freedom of choice when it comes to planting this tree as opposed to another type, or choosing hard surface over grass or, thanks to advances in genetics, determining the presence or absence of specific characteristics in our vegetation. The oval flowerpots within each tub read as embryos, while the identifiers emphasize the codification and classification of the natural world. This particular image perhaps best illustrates the title of this exhibition. Similarly, “In Vitro Complex VII” (figure 17) depicts an organic mass of “flesh” pierced with uniformly distributed, cylindrical plastic containers. Reminiscent of glass vials found in laboratories, these structures provide temporary shelter over the young saplings planted inside.

The pervasiveness of technology in the treatment of our physical environment is

![Figure 9: Anna Druzcz, “In Vitro Complex No. III,” 48” x 60”, LightJet print, 2007](image)
comparable with our treatment of the human body. Similar to how we demarcate the earth with farming equipment and penetrate it by drilling and mining, with the help of modern technology man progresses deeper and deeper into the human body, penetrating it with prosthetic devices. This invasive use of the latest techniques, substances, and prosthetic implants to enhance the efficiency of our organs, or to aesthetically enhance our appearance, is now commonplace. Comparable to the constructed landscapes, the elements of our biological bodies are becoming increasingly replaceable by their more efficient and reliable artificial counterparts resulting in loss of boundaries between body and technology. “Research continues in trying to find artificial substitutes for almost every organ in the human body and although fully implantable organs are still mostly science fiction, the technology is rapidly making that fiction our future.”¹⁵ Technological innovations surpass the constraints of nature and biology, molding our mutable flesh, in parallel with our environment, according to our own ideas of beauty.

To demonstrate the connection between the human body and the land I subtly integrated traces of human physiognomy into the landscape. The anthropomorphism of the environment is depicted in the transformation of landforms into contours of human forms and subtle traces of human features integrated into the landscapes. The cracks in the dry surface become varicose veins while the heavy folds in the erosion blankets are reminiscent of folds of skin. All these elements fuse into one enormous, cybernetic organism, simultaneously natural and synthetic. For example, the rolled-out bandages in “In Vitro Complex I” (figure 12), combined with vegetation blankets and linear plow marks, construct an analogy between the transformation of the land and surgical operation. In other images, the trimmed tree roots and branches are metaphors for amputation and other surgical modification of the human body. As a barrier between the interior and the exterior, the surfaces within the images, synonymous with human skin, play a key role in each of the compositions.
Figure 12: Anna Druzcz, “In Vitro Complex No. I”, 48” x 60”, LightJet print, 2007
Chapter IV: Technological Landscape

Barely a couple of centuries ago, nature was perceived as the all-powerful creative and destructive force to be reckoned with and a power to be guarded against. Under the skillful brush of nineteenth-century naturalist painters, fueled by the Darwinian perspective of life and its view of man’s futility against the forces of nature, this perception translated into visual depictions of insurmountable vistas, treacherous and impenetrable. Yet within two hundred years a dramatic shift in perception has taken place. With new technology in hand, the once-feared land became manageable. In the face of unstoppable technological progress, it is now nature that appears fragile, easily manipulated, and replaceable.

During the late nineteenth and twentieth centuries, the American landscape underwent extensive transformation by industry and technology. Over the last two centuries modernizations in technology—in particular innovations in transportation and communication—have had a great impact on the western landscape. Consequently, complex changes in our relationship to nature and the landscape took place. For example, photography was the perfect medium to advertise and promote the sublime vistas of Yosemite and Yellowstone, triggering the public’s desire to explore them. By documenting these uniquely distinctive landscapes using massive glass-plate and stereoscopic cameras, artists such as Carleton E. Watkins and William Henry Jackson contributed to the public’s awareness of the grandeur and beauty of what later became the country’s first national parks. Moreover, transportation—the train and automobile—were also largely responsible for influencing the way we explored and experienced the land. However, these technologies proved to be something of a double-edged sword:

Artwork, photographic images, and written descriptions of the sources of that allure turned landscapes into tourist spectacles. Before long, American landscapes would need to be preserved from tourists as much as they were preserved for them. It is ironic that both the establishment of America’s first national park and the subsequent preservation of additional wilderness areas are deeply in debt to advances in technology, specifically the development of transcontinental rail transportation and the invention of photography.

As permanent as the changes to the physical landscape, so were the changes to our perception of it. Landscapes transformed into something to be viewed through glass windows passing by. It
was only a matter of time before what was at first a welcome change was scorned. Rhonda Howard notes this shift in attitude: “By the beginning of the twentieth century, most Americans were ambivalent about technology; their ambition to advance as a powerful cosmopolitan, industrial and agricultural nation conflicted with a reflex reaction: the desire to reject technology and return to a simpler life.” Communication technology, too, initiating with the telegraph, radio, and telephone and advancing to the television and finally the computer, has brought the landscape to us, isolating us further from a direct experience of nature. According to Howard, “Following this route, by the middle of the twenty-first century technology will have completely isolated human beings from the natural landscape and their constructed world as they know it.”

By the 1990s, our cultural perception of technology changed from adoration to disillusionment, and technology was increasingly represented as dysfunctional, even as it improved in capability.

As a vehicle for externalizing ideas, art serves as a mirror for our culture, allowing us to reflect on our collective concerns, values, and motivations. The tradition of landscape representation is a crucial element in defining our relationship with the physical environment. Visual representations of the natural world in contemporary art practice offer greater understanding of our society’s relationship to nature and our adopted concept of the natural. Similarly, contemporary art reflects the computational reality of the twenty-first century. Within the work of many contemporary photographers, including Edward Burtynsky, David Maisel, Stephane Couturier, and Wout Berger, nature is depicted as fragile. Collectively, these artists document the negative impact on the land of the use and misuse of technology. In their work, the modification of nature is a byproduct of either a mining practice or consumerism, such as in the case of recycling and waste management centers.

From mining sites to places of manufacturing to recycling plants, Edward Burtynsky’s photographs depict environments “where modern industrial activity has reshaped the surface of the land.” Focusing on the practices of quarrying, rail cutting, oil refining, and shipbreaking, he locates and documents the largest industrial incursions into the land. Despite their
environmentally conscious perspective, Burtynsky’s large-scale color photographs, he claims, are intended to be equivocal in terms of their judgments or opinions, offering what the artist refers to as “an open narrative,” where the viewer is meant to walk away from the images with his or her own interpretation of the work depending on their perspective and agenda. Similarly, the In Vitro Complex images aspire to heighten the awareness of our contemporary treatment of the natural world without apparent criticism, but rather by offering an alternative viewpoint and inspiring curiosity about our relationship to the natural world.

The depictions of artists such as Burtynsky tend to view the modification of the environment, however impactful, as unintentional—more careless than malicious. I, on the other hand, have focused on the intentional changes made to the environment for the purposes of mainly aesthetic improvement. Focusing on the practice of landscaping, In Vitro Complex explores the technological transformation of the land but goes further by incorporating the broader context of digital imaging technologies and drawing the parallel between the beautification of the environment and the digital enhancement and manipulation of reality in digital culture. Although In Vitro Complex focuses mainly on urban development and landscaping rather than industrial activities, the impact of human encroachment on the natural landscape and the transformation of land through technology are quite similar.
A sense of formalism and geometry are undeniable characteristics of the developing landscape. We associate nature with organic and flowing forms, whereas manmade objects are typically highly geometrical in design or at least have a defined shape. In nature no two trees look alike, but manufactured bricks are indistinguishable. Hence, as a referent to technology, geometrical design plays an important role within this body of work. Each composition can be deconstructed into highly distinctive elementary shapes of triangles, rectangles, and ovals, synonymous with manmade structures within urban and industrial settings. The large triangle that dominates the frame in “In Vitro Complex VII” (figure 17), the numerous rectangular baths in “In Vitro Complex III” (figure 11), and the staggered rectangular structures in “In Vitro Complex IX” (figure 9) are just a few examples. These rudimentary geometric shapes stand in stark contrast to the organic structures found in nature and heighten the sense of a great divide between the realms of human technology and nature. Such geometric and structured compositions of manmade landscapes are even more pronounced when captured from an aerial perspective, like the surveys of Southern California photographed by David Maisel. Documented from the air, Maisel’s views of transformed environments appear highly geometrical with flat fields of color. His *Black Maps* series, focusing on the destructive effects of strip mining, deforestation, environmental degradation, and toxic waste, depict the structured systems of human efficiency from a bird’s-eye perspective. Despite their negative connotations, the aerial perspectives in Maisel’s skillful hands transform the terrain and flatten it into eye-catching geometric designs, as seen in his “Terminal Mirage 22” (figure 14).
In my own work, I use the notion that nature is organic and manmade materials are highly geometric to my advantage in illustrating the ambiguity between nature and technology. Captured from a different angle but no less intriguing, Stephane Couturier’s photographs of housing developments in the suburbs of San Diego and Tijuana are structured and attractive. Within “Olympic Parkway No. 1” (figure 15), the sod carpeting and other vegetation fabrics are spread over arid hills in highly geometric patterns and painted in unnatural colors, as suburban development rearranges nature and transforms the desert into a thriving oasis. A significant part of such transformation is the replacement of naturally pervious soil with hardscapes, such as pavements. Whereas we traditionally think of the majority of the earth’s surface as expanses of exposed soil and vegetation with only a small percentage of area covered with manmade hardscape infrastructure, within In Vitro Complex these dynamics are reversed. Throughout this project, the landscapes and synthetic elements are proliferating, covering up and replacing the organic world, creating environments that challenge the survival of natural elements. Each image to some varying degree features a shallow, organic world situated upon an impervious hardscape surface. The skin-deep layers of bare soil and natural elements are scarce and held together only by the synthetic mesh.
“In Vitro Complex VII” (figure 17) features a shallow landmass pierced with uniformly distributed plastic tubes encasing young saplings. Human control over nature within this particular image is reminiscent of the tightly framed, intimate views of seedlings struggling for survival within the hostile environment of Wout Berger’s photographs. Centering on the commercial exploitation of nature and documenting urban development near Amsterdam,24 Berger’s series Ruigoord depicts large, sandy plots of land seeded with wildflowers and sprouting stems. This type of preparation of grounds for urban development is a common practice intended as a protective measure against erosion. While Berger’s work portrays the inferiority of nature as hopeless, within “In Vitro Complex VII” the power struggle between technology and nature is more balanced. While in the foreground the natural environment appears to be conquered, in the background nature’s resilience and ability to adopt in the face of human technology is represented in the form of a manmade utility pole being overtaken by entwined vines.

Weaved together from the synthetic and natural elements, the tapestry of the In Vitro Complex constructed landscapes, unravels in multiple layers. The alternating and overlapping layers of artificial and organic elements within the compositions sometimes conceal and at other times reveal the technological infrastructure beneath the surface. Throughout this body of work, the border between the exterior and interior layers is consistently breached through the crevices and gouges in the earth’s surface, which reference the process of construction, revealing the
underlying technological wireframe upon which the seemingly natural world is constructed. This interplay between the surface and the interior becomes a metanarrative that runs throughout the exhibited work.

All of these artists document what already exists at a given time and place. The resulting photographs depict scenes with almost scientific objectivity, without editorializing or adding narratives. Similarly, photographic documentation of these transitional environments constitutes the foundation of each of my compositions. It is the primary step in my process. The physical landscapes are not only representative of our culture; the visual landscapes are as well. While Burtynsky and his contemporaries show the effects of technology on the physical landscape, they do not address the idea that landscapes are a cultural construct fed by images as much as technology, as I do.

Figure 17: Anna Druzcz, “In Vitro Complex VII,” 48” x 60”, LightJet print, 2007
Chapter V: The Narrative, the Symbolic, and Our Relationship to the Landscape

In the 1930s and 40s, artists including Henry Billings, Lewis Hine, and Ralph Steiner often juxtaposed people and machinery to suggest relationships between the two. Portraits taken in front of complex machinery that suggest the “smooth functioning, almost mechanical, of the human mind, such as in Ralph Steiner’s portrait of Louis Lozowik, have contributed to the transferring of ‘machine attributes to humanity’ while also attributing human qualities to machines and technology.”

Susan Fillin-Yeh, curator of The Technological Muse exhibition, references “The Mirror: Enigma” (1934) by Helen Lundeberg and “My Father Reminisces” (1937) by Ida Abelman, where “products of technology evoke memory, nostalgia, mystery—non-technological qualities.”

A pervasive human presence emanates from the desolate sites of the In Vitro Complex photographs, from every manmade and synthetic element within the landscapes: the erosion blankets, sod carpeting, burlap fabrics, to construction fences, blocks of concrete pavements, and farming equipment. The gauges in the ground and tire tracks are all portentous reminders of human encroachment on the land. This presence is depicted as an indomitable will and energy that consumes all nature within its path, only to recreate it in a new format.

Wrapped, covered, and contained nature is a reoccurring motif throughout the In Vitro Complex. In our culture, the practice of wrapping trees in burlap is intended as a protective measure against inclement weather for species of plants that have been transplanted to climates in which they are biologically unequipped to survive without human care. Despite this reasoning, the bound trees within the images do not convey the comforting feeling of being protected. On the contrary, their confinement reads as disturbing and conjures up feelings of unease. In “Landscaping Nature I” (figure 18) and “Vista I” (figure 2), the ambiguous shrouded shapes, resembling human figures draped in burial shrouds, are endowed with a detectable sentience. Using the tree as a symbolic representation of the self has been established through a long tradition in visual representation. With their roots buried deeply in the earth, their branches
extending up to the sky like outstretched arms, trees have an inherent attractiveness to associative thinking and carry great symbolic potential. In the introduction of his book, *Trees: Woodlands and Western Civilization*, Richard Hayman claims, “Trees are evocative and evoke through the medium of cultural memory and imagination.”

Within this work, human presence is also detectible in the natural elements, and an analogy is created between the element of the tree and the human. Whether they are bound with burlap, truncated or disfigured, life-size or dwarfed, the trees within *In Vitro Complex* take on a figurative element. By relating to the repressed and manipulated trees we begin to question whether they are meant to represent us. Once this connection is established, the interpretation of the work becomes more complex. It is no longer explicitly about the struggles between the environment and human technology but also becomes a representation of the conflicts between our biological bodies and

Figure 18: Anna Druzcz, “Landscaping Nature I,” 48" x 60", LightJet print, 2007
our technological minds—in other words, the internal struggle of the dual nature of man, where the natural elements symbolize the biological aspect of our humanity while the synthetic materials are representative of the technologically driven, cultural aspect of our being.

As impressive and awe-inspiring as our scientific and technological innovations can be, the repercussions of the inappropriate use of technology in our relentless pursuit of perfecting nature are often viewed as truly terrifying. This unease, caused by a potentially devastating outcome of our actions and a sense of nostalgia for a less complicated past, echoes throughout the intensely broken environments within this body of work. Vacillating between creation and destruction, with visible remnants of human influence foretelling of something terrible that happened or is just about to take place without any hope of intervention, the desolate sites transpire with an apocalyptic or primordial atmosphere. A muted color palette of cool earth tones and metallics reinforces this somber mood. Consistently, the turmoil in the foreground exists in front of the same exact backdrop, which suggests that these events are part of a sequence. This constant wiping out and starting over again within the same settings parallels the cycle of evolution from nature to technology. Within this alternate world, the rhythmic construction, destruction, and reconstruction is an inevitable part of the story. To venture beyond the context of strictly environmental concerns and the human footprint on the environment, the images are manipulated into theatrical narratives that remove the documentary limitations of presenting only that which is right in front of the lens and allow me to explore the relationship between nature and technology freely and without boundaries. This manipulation of images also permits for the examination of these dynamics in a much broader context. This is partially accomplished by introducing a perceivable ambiguity between the multiple, interwoven layers of reality and fiction in the images. By referencing elements that exist in the real world, the individual photographs that constitute the foundation of each final composition are rooted in reality. Despite the obscured digital collaging and manipulation of the final images, this photo-documentary base
on which each image is constructed enhances the credibility of the final artwork as a believable reality, even though the depicted scenes appear unfamiliar and otherworldly.

Digital manipulation, including rearranging, overlapping, incorporating fabricated elements, and combining photographs into final compositions, accounts for the fictional element within my work. Digitally constructed photographs of alien, desolate landscapes help to conjure up visions of an apocalyptic or primordial world. These fantastical components transcribe the natural world, reinventing it in implied narratives that revolve around the human reconstruction of nature. The theatrical and narrative quality of the final compositions relates to the collaborative work of Robert and Shana ParkeHarrison. In their artwork, the theme of environmental scarring caused by human impact on the land, presented from a dystopian point of

Figure 19: Robert and Shana ParkeHarrison, “The Exchange,” 1999
view, is depicted within fabricated environments featuring elaborate sets, machinery, and painted backdrops.

The artists further manipulate the photographic process through alternative darkroom and printing techniques, resulting in highly imaginative, illustrative monochromatic images, which, similarly to mine, are devoid of specific space and time. Describing their work, Robert ParkeHarrison states, “I love to try to capture that quality of the Earth looking like the world’s just started or been destroyed and is starting all over again.” Events within their work revolve around a single anonymous figure of the Everyman who struggles with his tasks to reverse the detrimental effects of the human footprint on the environment. Much like the Everyman is a character within their work, the ambiguously wrapped shapes become characters within the visual narratives in In Vitro Complex. Yet while the ParkeHarrisons focus mainly on the dynamics between man and the environment, I concentrate on the dichotomy between nature and technology, where man is representative of both.

Figure 20: Christo and Jeanne-Claude, “Wrapped Trees, Fondation Beyeler and Berower Park,” 1997-98
Although wrapped nature can be found anywhere, a single wrapped tree in someone’s garden does not evoke the same effect as an installation of 178 wrapped trees experienced at the same time. Known for temporary, large-scale environmental works, artists Jeanne-Claude and Christo, understanding the impact of an aesthetic experience evoked by transformations of land created on a monumental scale, choose to wrap natural and manmade structures themselves. Their ambitious *Wrapped Tree* project in Berower Park, Riehen, Switzerland, consisted of creating individual patterns for each of the 178 trees and was realized with 55,000 square meters of woven polyester fabric and 23.1 kilometers of rope. Their built environments exist only as temporary installations, and the ethereal quality of their work resonates within the transitional environments of *In Vitro Complex*.

The developing landscapes, discussed throughout this thesis, are ephemeral, existing only temporarily, as time gradually erases the evidence of synthetic materials used in their construction and nature slowly begins to adapt and reclaim the assembled sites. What remains is the captured photographic record, which allows us to observe and scrutinize these environments long after they disappear from view. While the medium of photography has allowed us, over the last 150 years, to mechanically suspend time to observe the physical world and record the transformation of the landscape, digital imaging technology allows us to manipulate it and further alter it in innumerable ways.

To convey a much broader and more accurate depiction of the intrusive implementation of technology and its impact on the natural environment, I digitally combine and arrange the individually captured photographs from different sources into multilayer compositions, more revealing of the prevalence of manipulation of the natural world. Bringing these dispersed visual elements and instances of augmented nature into single compositions, *In Vitro Complex* series convey the technological impact on the natural environment on a much larger, accumulative scale. Only, when considered collectively, do we experience the full visual impact of the practices in our contemporary culture.
Chapter VI: The Digital Landscape

Technology, the driving force behind photography since its invention, allows us to manipulate the natural world through images and enables us to invent new ways of seeing. Photography has permanently changed the way we see and experience the natural world. During the extension of the American West, photography inspired us to travel and explore lands by providing us with otherwise unobtainable pictures and knowledge about places and things never before imagined. For example, in 1880 advertisements and artwork of nature luring tourists to Yosemite and Yellowstone proliferated, turning the landscape into tourist attractions while at the same time allowing people to experience exotic views in the comfort of their homes. With more and more people visiting these new national wonders, the need and desire for preservation of these places arose. Similarly, the impact of the latest digital imaging tools cannot be overstated. Just like photography has changed the way we see the world, digital imaging is now further shaping our perception. Digital imaging, including photographic equipment, computer software, and the latest printing technologies allow flexibility and freedom like never before, allowing for multiple kinds of manipulation and a seamless fusion of art forms, blurring distinctions between reality and fiction. More than any other medium before, it has allowed us to easily combine what we see with what we imagine, thus permitting us to reconstruct reality according to our own aesthetic ideas. Among the infinite number of ways that digital manipulation allows us to alter images, the one that I explore through my work is the ability to stitch multiple images into new compositions. Digital imaging allows us to visually depict places that don’t exist but are only imagined with a photorealistic rendering. It “allows us to alter any scene (existing pictures) or create new realities from disparate parts with convincing results.”

The perception of photography as a truthful medium capable of automatically recording exactly what is in front of the lens was discredited a long time ago. The camera, as any other mechanical device, has its limitations and often the captured photographs do not accurately reflect what is in front of the lens, or they limit what we want to express. There is no such thing
as an unmediated record of reality. We now know that it is up to its operator to manipulate the process with the controls of the camera, to reveal a truthful reflection of a particular place as it has been perceived and experienced at the time of pressing the shutter release. Hence, photography has always entailed manipulation. In the nineteenth century, the French photographer Gustave Le Gray, unable to accurately reproduce a scene from a single negative, overcame a technical limitation of this still new medium of photography by inventing a method of combination printing from multiple, separately exposed negatives. Combination printing has historical precedents for the characteristics now associated with digital imaging. Nevertheless, in comparison to other media, a photographic print always refers to a specific place and time, while digital photography has no base. By always referring to a specific object in time and space, the photographic records of altered nature that I composite into my work ground *In Vitro Complex* in reality, while the digital collaging and layering of the individual elements into new compositions convert these photo collages into a new kind of reconstructed documents.

The photorealistic rendition within the *In Vitro Complex* series helps to create that illusion. The individual photographic elements that make up each composition are fused together only enough to create an illusion of seamless rendering at first glance. When examined at a closer range, the impression of a seemingly continuous scene is shattered by visible traces of overlapping, layered edges of multiple planes of subsequent photographs. The overlapping edges are suggestive of peeling away, and upon closer examination the tapestry of each composition visually unravels into multiple layers. Merging and overlaying images is an intrinsic and distinctive characteristic of the digital medium, of which Le Gray’s combination printing methods were an early precursor, and it is these techniques within the *In Vitro Complex* images that reflect on the medium’s language and aesthetics.

Although every element within the images has been photographically collected from the surrounding physical environment, the new arrangements make these landscapes read as invented places. This palimpsest of visual information exists without a distinctly original base.
There is no one, original negative for each composition that refers to one specific place on earth. The technique of photo collage enables these sites to be read as places of nowhere in particular and everywhere at once. Similarly, the digitally devised landscapes of Spanish-born artist Joan Fontcuberta appear “plausible and enticing but refer to no place on earth.”35 Digital imaging allows us to visually depict places that don’t exist but are only imagined with a photorealistic rendering. It “allows us to alter any scene (existing pictures) or create new realities from disparate parts with convincing results.”36 Rather than venturing into the great outdoors, Fontcuberta creates his depictions of the natural world on his monitor, allowing the computer to concoct its own landscapes with landscape-rendering software and scanned-in photographic data. The artist appropriates iconic images of well-known photographers and painters and combines them with images of nature, landscape, and his own body parts. The resulting artificial landscapes “underscore how mediated and manipulated our contemporary orientation to nature really is.”37 Fontcuberta’s landscapes are constructed strictly from data and information, having little to do with the physical landscape. Like me, he uses sampling from different elements to

Figure 21: Joan Fontcuberta, “Orogenesis: Stieglitz,” 2006
construct these views. Even though these images are not real, the photorealistic rendition and our cultural understanding of what landscapes look like trick us into believing in their existence. More so, these images inspire a longing for pristine nature that existed only in our minds. My images also express a certain nostalgia for the untouched landscapes. Such a response confirms the argument that landscapes are not natural but cultural constructs created through technology in our mind’s eye. These images appear real even though they have nothing to do with the real, proving how completely removed from nature we really are. Comparably, the fictitious places within the seamlessly collaged and digitally manipulated landscapes of Oliver Wasow are constructs in which nature and culture meet in the world of cyber reality.\textsuperscript{38} Much like the dichotomies examined within the \textit{In Vitro Complex} series, Wasow’s works investigate the synthesis of a variety of contradictory forces: the manmade and the natural, the past and the future, tranquility and disaster.

Visual representation shapes our understanding of the physical world. It is because of visual representation that we have acquired the term “landscape” in our vocabulary and began seeing landscapes in real life. Initially, when it was first introduced into English it did not mean the view itself, it meant a picture of it, an artist’s interpretation.\textsuperscript{39} As Simon Schama argues, “Landscapes are culture before they are nature; constructs of the imagination projected onto wood, water and rock.”\textsuperscript{40}

According to author Malcolm Andrews, landscape is a process and the conversion of land into landscape happens in our mind. Before capturing its image or recording it in any other

Figure 22: Oliver Wasow, “Untitled #339,” 1996
way, by simply selecting and framing a site, we process land into a landscape. Landscapes are defined by the boundaries of the frame, without which they spill into a shapeless gathering of natural features. Even if the landscape exists only in our mind and never gets translated into a visual representation, there is no such thing as an “unframed landscape.” Just by looking at a site, we make decisions of what to include and what to exclude from the framed view. The digital fragments within my work address this sampling. The translation of a landscape into a physical image visually shows the process of selection, of sampling different scenes in digital image construction. My images question the sampling and perception in forming our relationship to the natural world. The framing around the different overlapping visual layers within my compositions refers to that process of mental and physical selection of the individual landscapes. Being built up and collaged from many different elements references visual plans and schemas for landscape development used in landscape architecture.

The images of *In Vitro Complex* also reference the mediation of landscapes through the mediums and technologies of visual representation from traditional landscape painting to photography and digital imaging. The significance of visual representation in the transformation of our environment and our changing concepts of the natural echoes through the references to imaging technology and the history of visual representation within my artwork. Subtle references to traditional landscape painting and early photographic and digital processes resonate throughout. The landscapes are constructions of visual representation technologies that have shaped the visual culture of landscape representation. The mirror-like surface of the metallic paper and the smudged edges of the photographic images evoke qualities of a faded daguerreotype and references the beginnings of mechanical reproduction, whereas the traditional, rectangular landscape format and canvas-depth frames, which are much deeper than the standard frames used for photographic prints, reference traditional eighteenth-century landscape paintings. The rips in the suspended canvases of “Landscaping Nature V” (figure 23) allude to the break from the nostalgic representations of nature in picturesque landscapes. The consistent obscuring
of the natural landscape is suggestive of the visual representations preventing us from seeing or even knowing the real nature; it physically blocks our view with hanging canvases, backdrops, printed skies, etc. It symbolizes the cultural change in our perception of landscape as well as the idea that perception of nature at any given time is not static, but a cultural construct dependent on the sociopolitical views of the times.

The digital medium of the In Vitro Complex images is used as not only an aesthetic tool to effectively collage the elements together but also, as with the work of Fontcuberta and Wasow, a platform to comment on the medium itself. In Vitro Complex reflects on the medium of digital imaging itself. One of the characteristics of the medium is the sampling of images from different parts. As opposed to the continuous-tone traditional photograph, the digital image is made up of pixels. Just as the digital image is comprised of independent, square picture elements

Figure 23: Anna Druzcz, “Landscaping Nature V,” 48” x 60”, LightJet print, 2007
(pixels), my compositions consist of individual photo elements, independent units of information about the landscape. Just as, for Roy Lichtenstein, the Ben-Day dot was more than simply a byproduct of the process used to create halftones for photoengraving, the layering visible in my images is a reference to an aesthetic of digital reproduction. By making visible the infrastructure of digital image compositing, the pixilation and photo collaging, I present a symbolic rendering of the effects of digital imaging.

Digital imaging has allowed for options and flexibility like never before to visually represent anything in a photorealistic manner. The excitement surrounding the newest imaging technology is that “we can visually convey anything we can imagine” and “perhaps we’re too quick to go create something visually in 3-D, without actually assessing the long-term impacts on the environment.” Meanwhile, the ability to seamlessly merge and morph pictorial elements has significant cultural implications. Digital imaging challenges traditional photography’s documentary nature and has a profound impact on the visual culture. Digital manipulation is yet another way of recreating nature through technology. The merging of elements, content sampling and creating images without an original base, intrinsically characteristic of the digital medium, mirrors the construction of landscaped environments in reality. Technology thus allows us to manipulate nature by physically shaping the land as well as by manipulating its representations: “It allows us to consider reality as mutable, not fixed, and to think of space and time as fluid, not static.” It challenges our belief and changes our experience of the world. The In Vitro Complex landscapes depict land that has been technologically and aesthetically processed, both physically and visually, by my artistic intention and technique of selectively capturing and rearranging the elements within it. By composing the multiple landscape elements into new compositions, I further shape and manipulate landscapes to demonstrate both the great potential and unintended consequences of applying digital technology to landscape design.
Conclusion

Nature progresses without human intervention and is in itself a constant. However, the concept of nature is constantly evolving in line with human technological and scientific progress and within the last 150 years has undergone drastic changes. Indeed, humans have been shaping the land since the very beginning of civilization, and even though the term “landscape architecture” has only recently begun to be used, its history spans the development of agriculture, urban development, private gardens, and public open space, among many others.

However, today, technology has made a huge difference in the practice of landscape architecture, and imaging technologies play a vital role in contributing to physical changes in the environment by providing us with the capability to produce visual representations of the natural environment. Landscape architecture technologies go hand-in-hand with imaging technology, from initial drawings, painting, and etchings to photographs, collages, layered images, model making, and other techniques. Being collaged from many different elements, the In Vitro Complex landscapes refer to the importance and connection between digital imaging, visual representation, and landscape architecture and development.

The role of imaging technology cannot be underestimated. Still, while the excitement of new digital technologies is their power to visually render environments limited only by the imagination, at the same time they raise concerns about their long-term effects on the environment. These new altered landscapes are proliferating all around us. They are part of our daily existence. As the boundaries between the organic and the artificial dissipate, they become rapidly accepted and naturalized. Composed of an amalgam of natural and synthetic materials, they become synonymous with our contemporary idea of “nature.” But what are the consequences of these highly manipulated and altered environments on our relationship to nature?

While some artists discuss the environmental consequences and others take a more theoretical and romanticized approach, I look at the relationship between technology and nature
not only as a tool that shapes the physical landscape, but also as a tool that constructs the larger contemporary landscape. In looking towards the future, Rhonda Lane Howard states:

Our land will continue to be commodified, we will continue to innately seek out the natural (or a virtual natural) land for refuge, we will be forced to negotiate new relationships with constructed environments, view them with new technological mediators, address environmental concerns through them, and finally create solutions. The ground will continue to shift and so too will our relationship with it.\(^{35}\)

Time and time again, technology has altered the environments that surround us and mediated our view of the landscape. It is only a matter of time before the new scientific and technological developments push the boundaries between the natural and the artificial even closer together. In the future, as new hybrid environments are created and new tools to capture and represent and

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Figure 24: *In Vitro Complex*, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15-23, 2007
interpret them with are developed, our perspectives of nature will continue to evolve and transform along with the future landscapes, which are now difficult to even imagine and speculate about. Yet although we will adapt our views and redefine our relationship to the land, the questions brought forth in this thesis will remain the same.

As I progress beyond this body of work, I move on with the intention of revisiting and reexamining the concepts contained in this thesis against the backdrop of future technological and scientific innovations in the years to come. In the meantime, our ambivalent attitude toward technology and nature remains as conflicted and hybrid as the In Vitro Complex landscapes.

Figure 25: In Vitro Complex, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15–23, 2007
LIST OF FIGURES

Figure 1: In Vitro Complex, gallery entrance installation view, SPAS Gallery, Rochester Institute of Technology, March 15-23, 2007 .............................................................. iii
Figure 2: Anna Druzcz, “Vista I,” 48” x 48”, LightJet print, 2007............................................. 1
Figure 3: In Vitro Complex, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15-23, 2007 .............................................................. 4
Figure 4: Anna Druzcz, “Landscaping Nature V,” exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15-23, 2007 ............................... 5
Figure 5: Karl Blossfeldt, “Haarfarn (Maidenhair fern)” from “Urformen der Kunst,” 1928 ............................... 7
Figure 6: Dieter Huber, “Klone #76,” 1997 .............................................................................. 8
Figure 7: Dieter Huber, “Klone #100,” 1997 ............................................................................ 8
Figure 8: Anna Druzcz, “In Vitro Complex No. XI,” 48” x 60”, LightJet print, 2007 .................. 10
Figure 9: Anna Druzcz, “In Vitro Complex No. IX,” 48” x 60”, LightJet print, 2007 ................. 12
Figure 10: Anna Druzcz, “In Vitro Complex No. V,” 48” x 60”, LightJet print, 2007 ................. 13
Figure 11: Anna Druzcz, “In Vitro Complex No. III,” 48” x 60”, LightJet print, 2007 .............. 14
Figure 12: Anna Druzcz, “In Vitro Complex No. I,” 48” x 60”, LightJet print, 2007 ................. 16
Figure 13: Edward Burtynsky, “Kennecott Copper Mine #22,” Bingham Valley, Utah, 1985 ............................... 19
Figure 14: David Maisel, “Terminal Mirage 22,” 2005 ............................................................ 20
Figure 15: Stephane Couturier, “Olympic Parkway No. 1,” triptych, San Diego, 2002 ............... 21
Figure 16: Wout Berger, “Ruigoord 2,” 2002 ............................................................................. 22
Figure 17: Anna Druzcz, “In Vitro Complex No. VII,” 48” x 60”, LightJet print, 2007 ............. 23
Figure 18: Anna Druzcz, “Landscaping Nature I,” 48” x 60”, LightJet print, 2007 ................. 25
Figure 19: Robert and Shana Parke-Harrison “The Exchange,” 1999 .................................... 27
Figure 20: Christo and Jeanne-Claude, “Wrapped Trees, Fondation Beyeler and Berower Park,” 1997-98 ................................................................. 28
Figure 21: Joan Fontcuberta, “Orogenesis: Stieglitz,” 2006 ....................................................... 32
Figure 22: Oliver Wasow, “Untitled #339,” 1996 ................................................................. 33
Figure 23: Anna Druzcz, “Landscaping Nature V,” 48” x 60”, LightJet print, 2007 ................. 35
Figure 24: In Vitro Complex, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15-23, 2007 .............................................................. 38
Figure 25: In Vitro Complex, exhibition installation view, SPAS Gallery, Rochester Institute of Technology, March 15-23, 2007 .............................................................. 39
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