Aesthetic education in the Anthropocene

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Aesthetic Education in the Anthropocene

by

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A Dissertation

Submitted to the University at Albany, State University of New York in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

Rockefeller College of Public Affairs and Policy

Department of Political Science

2020
<table>
<thead>
<tr>
<th>ABSTRACT</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFACE</td>
<td>V</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>CHAPTER 1 - THE ANTHROPOCENE AND THE DIGITAL REVOLUTION</td>
<td>14</td>
</tr>
<tr>
<td>CHAPTER 2 - EXPRESSIVE AND UTILITARIAN FORMS OF INDIVIDUALISM</td>
<td>53</td>
</tr>
<tr>
<td>INTERLUDE I - AESTHETIC AMBIGUITIES</td>
<td>84</td>
</tr>
<tr>
<td>CHAPTER 3 - AESTHETIC EDUCATION, POLITICS AND ECOLOGY</td>
<td>108</td>
</tr>
<tr>
<td>INTERLUDE II - SCIENTIFIC AMBIGUITIES</td>
<td>152</td>
</tr>
<tr>
<td>CHAPTER 4 - THE CONTRIBUTION OF SCIENCE TO AESTHETIC EDUCATION</td>
<td>170</td>
</tr>
<tr>
<td>CHAPTER 5 – EXPANDING AESTHETIC EDUCATION FOR THE ANTHROPOCENE</td>
<td>216</td>
</tr>
<tr>
<td>REFERENCES:</td>
<td>231</td>
</tr>
</tbody>
</table>
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Abstract

This big picture study wrestles with the environmental crisis and the digital revolution, two grand themes of our century. Their grand scale is evident in their global significance, which we can anticipate will only grow in coming decades. Will these collective developments be met in such a way that democracy and individuality can be expanded and preserved? This study contributes to this query, offering a new articulation of aesthetic education that draws on a discourse reaching back to Friedrich Schiller, while incorporating many contemporary theorists. The study suggests that the environmental crisis and the digital revolution are creating a perfect storm in regards to the formation of perception and feeling in our individual experience. To foster democracy and voluntary collective action in the face of this storm a new quality of connection to the natural foundations, beings and elements of planetary life is required. The digital revolution is complicating this need by opening virtual horizons only loosely connected to these foundations. Drawing on multiple thinkers the study shows how conventional culture and pedagogical philosophies often threaten to intensify this storm rather than to calm it. The ultimate contribution toward this dilemma is a new view of aesthetic education that suggests the most important area for widespread pedagogical reform and innovation is in aesthetic knowledge practices in the natural sciences. The author presents his own experience with these aesthetic knowledge practices, as well as examples from prolific researchers in physics, botany and zoology. He offers both a critique of the convention that presents a strong divide between the two cultures of the sciences and the humanities and also a positive vision, and justification, of a closer union.
Preface

Like all intellectual projects, the following was influenced and supported by many people and experiences. I am thankful to my whole family, and Andrea Bergsma, for their various forms of encouragement (or their robust tolerance) during my time working on this project. I had the good fortune of encountering Morton Schoolman early on at the University at Albany, whose lifelong interest in aesthetics made this research project feasible. I am indebted to Dr. Schoolman for many things, not least opening multiple doors for me at the university and chairing my dissertation committee. I will not be able to express here how fortunate I was that Heinz-Dieter Meyer and Peter Breiner were willing to serve on my dissertation committee as well.

This work would not be thinkable without the various forms of support offered by Craig and Henrike Holdrege and the Nature Institute. The infinite patience, active support and comradery from my colleague Laura Summer must also be noted. I am grateful to Terje Sparby, Luke Fischer, Catherine Read and Kai Naor for their thoughtful engagement with drafts of this document and to Nadia Bedard and Tom O’Keefe for their help with editing at early points. I am thankful for the early advice of Sean McKeever, who was finishing his dissertation when I was entering the political theory program, and to Sally Friedman, who supported early versions of this text in her research and writing classes. I also made good use of a few “can do” dissertation mottos that I picked up from Julie Novkov early on, they became anthems for me over the last couple years.
I was born in Alabama, and raised in the southern states. While my educational experience was certainly not typical of the south, I grew up with the feeling that stories of segregation were from a distant past. As a white boy I was spared the experience of racism and discrimination still very present for many in southern cities and towns. Growing up I came to understand some of the forms of discrimination and prejudice that still plague our society. I also gradually understood how distorted my sense of time was and how recent desegregation was and the civil rights movement that culminated shortly before my birth. It is this latter fact, and my growing understanding of the terrible status quo of racial segregation that constituted life for so many, that my admiration and appreciation for the civil rights movement grew. It was not until I was in my thirties that I realized I grew up miles from the famous Highlander Folk School where the disciplined and active practices of civil disobedience were taught. It was there that Martin Luther King Jr heard Pete Seeger sing the song that was to fuse with the memory of the movement, we shall overcome.

I am grateful to have matured in a society where fighting prejudice was squarely considered a national ideal. Socially I was able to receive an attitude that would have required active justification in the south just decades before. To engage in civil disobedience in the old south was to be a nuisance to law and order, to be an agitator and anarchist, to be someone who wanted to solve social problems through radical means that would disrupt the enjoyments of the societal foundations they promised to make accessible to a historically brutalized minority. This required of protesters a deep conviction and a willingness to suffer social shaming, if not outright violence, in pursuing a step forward in social justice in the USA. Many argued that the civil rights movement was destructive and chaotic movement with no political
or social understanding. This docile and domestic criticism may not seem like much of an argument to us today, but it deserves our attention.

As Martin Luther King jr sat in the Birmingham jail after being arrested for “parading without a permit” during a civil rights action an open letter was penned and signed by a number of ministers and rabbis from that city, and published in a local paper. These spiritual leaders openly came out against the civil rights movement, while in the same breath lauding the striving for racial justice. They referred to the leaders of the civil rights movements as I have indicated, as agitators and sowers of seeds of chaos. It was this article that inspired King’s famous letter where he proclaimed he arrived at the regrettable conclusion that the greatest enemy to the civil rights movement was the moderate and undecided white citizen. They were a greater enemy to the movement than the Kul Klux Klan, or the outspoken racist. He had invoked this slovenly portion of our character before by referencing the story of Rip Van Winkle who was so enthusiastically engaged in romping through the Catskills, drinking and playing games, that he slept through the revolutionary war. We easily forget that the wide acceptance of social justice basic to our current society was infused with this quality through the sacrifice and selfless dedication of an active minority. Would I have grown up in a desegregated south if the civil rights movement had not used boycotts, freedom rides and sit ins to force the issue? I do not think I would have.

Today our attention has been drawn forcefully beyond our national boarders to the ecological and climate crisis. I have recently been reading about the mobilizations and actions of young and old whose sole purpose, like the civil rights activists, is to force a question on a drowsy society. Whether it is obstructing busy intersections in major cities or supergluing
oneself to subway cars or highways, the intentions are the same. In September of 2019 the largest student led global protest in history took place, with school walkouts on every continent. This protest was to call governments to take climate action. It was inspired by a young woman, Greta Thunberg. Her impassioned speeches and actions have earned her global attention. She has called on leaders to wake up from the “fairy tales” of infinite economic growth and to declare a climate emergency before it is too late. In the same breath she chastises the older generation for their lethargy and lack of will to face the facts.

Certainly, anyone familiar with the nefarious hidden intentions that can parade under noble causes when declaring states of emergency will feel uncomfortable with the seeming naivety of her suggestion. The good we associate with the concept of sustainability can be misleading. As theorists have recently pointed out, “sustainable” intentions often involve interpreting nature as a rather flat and muted supply of natural resources that need to be strictly controlled by centralized government.¹ The thinking that might determine the use of these resources is to be value free, ahistorical and determined by science. It will not be informed by local custom or history. Some theorists are characterizing an immanent society with a severe lack of freedom in face of the fruits of our current aloofness. They suggest that the experience of liberty that has been enjoyed on the scale that it has is only possible given certain conditions, which are disappearing. We might achieve a “sustainable” future informed by strict governmental control, fear and an impoverished view of the natural world. Two versions of peace were articulated in the last century in the Christo-Judaic notion of peace by

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Emmanuel Levinas and Martin Luther King Jr.\textsuperscript{2} One was based on the presence of law and order and the other based on a revolution of values that supported a blessed community. Similarly, there seem to be at least two faces to the concept of sustainability.

The majority of the criticisms and attacks leveled against Greta Thunberg and other activists do not exhibit so much thoughtfulness. They appear as a new variety of the moderate King addressed in his famous letter, animated by a love of law and order, unaware that soon we may not have a conscious choice as to which variety of sustainability we would like to pursue, as demonstrated by collective responses to Covid-19.

At the end of King’s life he was pensive in regards to the legacy of the civil rights movement. He was well aware that much of the legal change that had been achieved did not reflect the values of many communities around the country. They had, after all, in large part been achieved through varieties of coercion. This was evident through the simple refusal to desegregate without the assistance of the national guard. What is a policy revolution without a revolution of values?

A legal code that is not a reflection of the social values of a community cannot be sustained without coercion, social or physical. Looking further back, to the revolution in France, we see a new republic founded on principles of liberty, equality and fraternity cleaning off the platforms of power with blood. The sheer scale, and seemingly capricious nature, of the executions turned many of the most radical enthusiasts of the revolution against it. It was in

\textsuperscript{2} See Emmanuel Lévinas. \textit{Emmanuel Levinas: Basic Philosophical Writings} (Indiana University Press, 1996), 162 and Martin Luther King. \textit{A Testament of Hope: The Essential Writings and Speeches of Martin Luther King, Jr} (Harper Collins, 1990), 627.
this moment that Friedrich Schiller penned his famous political treatise *On the Aesthetic Education of Humankind*.

This treatise was an attempt to indicate that the sensibilities of a people, whether they are open to differences and singularity in their whole approach to life, was actually deeply connected to the potential of democracy. People should not be sacrificed for ideals in a democratic action. He advocated a type of culture that brought together feeling and rationality, body and mind, thought and perception. This new way of being required a tolerance of ambiguity in relating to the usefulness of objects, and their exact meaning. It required a flexible life of feeling that willingly tolerated difference. His argument was that a pedagogy and culture rooted in the arts and beauty would be the ideal foundation for a democratic republic, where values that informed the laws and codes of democracy were also present as sensibilities in the people. This was to be, of course, a very different democracy than what we know from the city states of Greece. The interiority that was possible in this new republic was on a different register. Many saw, and see today, Schiller’s move from political discourse into aesthetic philosophy as a retreat from the hard realities and pressures of concrete questions of justice and freedom, as a retreat into the fairy world of art and dreams.

Schiller’s treatise, and what Charles Taylor has called the expressive turn, has permeated our popular life and social imagination. During the 1960s there was a strong resurgence of its significance and power and we are animated today by its presence and its wake.

The following project should really be understood as an expansion of Schiller’s work. Schiller’s work was tied to his time and context and adopting his ideals uncritically would
require closing one eye to what has changed over the last two centuries. This requires a critical approach to his thought and a new evaluation of its significance. The notion of aesthetic education I have developed encompasses a broad orientation and engagement with life. It offers a potential path whereby the natural conditions of terrestrial life would voluntarily and joyfully be integrated into regular discourse and concern. It does this without negating the core feat of Schiller’s achievement, an education of receptivity to the self-display of others. One of the most important notions of originality, with its focus on expression, grew from Schiller’s work. It interprets the dignified person as emergent through freedom of thought and belief, the exercise of authenticity, and a widespread view that each person should be approached as an author of their own life, a singularity.

Clearly, the civil rights movement largely grew out of the free spaces of the African American churches and the communities. The discourse was markedly Christian and theological in character. Without being able to enumerate the complex forces and conditions that animated this movement it is intriguing to consider the significance of the aesthetic style of apprehending the other in the process. We can see this movement unfolding within an emergent culture that encouraged the valuation of the individual, independent of perceptible traits that would allocate them to certain roles in society. One can view this culture as a seed bed for the call that a person should not be judged by the color of their skin, but by the content of their character. It is intriguing to consider how Schiller’s cultural contribution, and the expressivist turn, played an important part in one of the most significant, non-violent expansions of the democratic enterprise in our history.
What I have tried to articulate in this study will perhaps impress many people as an unimportant diversion, as an aloof meditation that does not grasp the severity of the social and ecological crisis we are facing, or the level of direct actions that are required to address it. To those encouraging civil disobedience, I have no doubt that unrest and civil disobedience will be a salient feature of coming decades. For eco-pragmatists and ecomodernists the following study may also seem a diversion.\(^3\) It is intended as a theoretical and cultural contribution toward the fostering of sensibilities and values that can sustain a voluntary, green revolution, with minimal coercion and violence. This study is focused on cultural dynamics and material conditions that participate in forming our identities and collective practices. It is an exploration and criticism of the practices, meanings and sensibilities that support our aloofness to the beautiful, limited globe in whose life we participate as well as a contribution to a more durable and holistic aesthetic culture, pedagogy and education.

Introduction

In the following study an expanded theory of aesthetic education is presented. It is situated as a theoretical engagement with pressing social, cultural and ecological problems of our moment. It rests on an orientation that reveals the importance of aesthetic judgment in social and political life, and the constituting of our relationship to the planet in whose life we share. Aesthetic judgement is rooted in experience and perception. It connects us in unique ways to one another and the greater world and is characteristically pictorial. Aesthetic experience can situate an object, or an experience, as a world in itself for us (a typical modern orientation to works of art). Understandably, we mostly associate this with the humanities and the arts. The theory of aesthetic education I explore involves the education of sensibilities that make us more receptive to the appearances and contours, the abundant and expressive dimensions, and the particular finitude of earthly life. The ability to apprehend expressive displays also makes us receptive to non-human sentient life, rendering us receptive to understanding animal experience. It is an expansion of a notion of aesthetic education that dates back centuries wherein the same sensibilities, working in a different direction, render us receptive to uniqueness and difference in social and political life.

The theory is one thing, and its importance another. The motivation for this study is to be found in current global developments and the challenges they present. From the perspective developed in this study the humanistic dimensions of aesthetic judgement that are widely appreciated contain both a key, and a possible obstacle, for meeting these challenges. The key is in the characteristic dynamics of aesthetic judgment, the obstacle is in limiting the gifts they
can offer to the humanities and human, social life. In what follows I present a case for a shift toward aesthetic education that places one foot in the humanities and the second in the natural sciences. The justification of this shift is in part conceptual and in part situational.

It is largely through the natural sciences that we foster our awareness and knowledge of the foundations of life on the planet. A study of the practices and the philosophy of most modern natural science reveals a very powerful culture, as does a study of recent history largely propelled by this culture. One characteristic of this practice is a decisive turn toward abstract and non-pictorial representations, often in the form of mathematical formulas. More widely, it is commonly understood that the development of aesthetic judgment is rightly situated within the arts and the humanities. The following theory shifts this inherited notion into a questionable position and poses the following question: Would an aesthetic education appropriate to our time involve an education of certain aesthetic sensibilities that can only be sought in natural scientific practice and instruction? What could a comprehensive aesthetic culture and education look like? The following study is a contribution to this question. In what follows I will introduce the parts of the study, and how the watershed moment emerging through the Anthropocene and the digital revolution reveal its importance.

An orientation to significant facets of the Anthropocene and the digital revolution are presented in the first chapter. The picture presented in the chapter is two-fold. Firstly, we have entered into a planetary moment when the desirability of any future is directly connected to our ability to act out of an increased awareness of the life and dynamics of our natural, terrestrial context. Secondly, a technological revolution is unfolding that diverts our attention and awareness away from this natural context. The weakening of our awareness of our
common terrestrial situation emerges as an obstacle to positive collective action. These two
developments are characteristically global, material conditions of contemporary life. Further,
their weighty significance and dependence on coordinated action stand out.

The content of the first chapter might be enough for one to feel one understands how
suicide has risen to the second most significant cause of death for young adults between 15 and
24.4 Recent decades have seen the public discourse move from one of hope to one of despair
and cynicism.5 It is understandable that in coming generations the apprehension of a quickly
intensifying ecological and social crisis, and the disregard it Is afforded in the life and structure
of society, could become a growing cause of suffering. The ecological and material factors, so
clear and finite, increasingly stand like majestic presences with solemn gazes; We will persevere
in our nature, your ignoring of it will not make us malleable to your desire. Water promises to
continue in its life of interconnecting, and to spread any poisons we unloose in it around the
planet. Carbon’s alliance with warmth remains unchanged even as our spreading it in the
atmosphere shifts temperatures which, in turn, threaten to reverse powerful ocean currents
that shape climates and habitats for countless living and sentient beings. An austere and
steadfast aspect of the life of the earth is presenting itself more and more, promising; If you
cannot come to terms with my finitude, interdependent nature and shape, your challenges will
grow exponentially.

Where to go from here if your eyes and mind are open? There are horizons of experience where the pressure recedes or disappears, even if just in intervals. Today an EMT may think of the number of situations they were called to where a greater amnesia was obtained through opioid abuse, resulting in a near, or actual, overdose. Some humanists may think of the theological and religious practices that many seek to lift their consciousness into other contexts and conditions. But there is a new excarnating, disembedding power that is permeating our lives, and multiplying its points of influence, in wave after wave of the media and digital revolution.

The scope and speed of change in our technologies is so great that one easily feels our judgement is too feeble to grasp its significance and engage its peculiar dynamic. We can certainly make out much already. Our lives are increasingly permeated by digital media. These are areas of experience and perception that open onto digital environs, changing the very texture of our lives. We can see that these increasingly engage our attention and activity even while the stern gaze of the moment burns at a distance.

The human being is no simple self-contained unit. We can see in our use of computer phones that a device need not be implanted in us physically in order to become an enduring part of our constitution. It is a crude view that expects the first cyborgs to require an implantation of hardware. The power of the image of the cyborg is that it presents in picture form the human and the machine as a single body, but the deeper meaning of this unity is easily recognizable in much of contemporary life. At present our lives are co-constituted by technology in unprecedented ways. In the first chapter I bring these two areas of our material
life (the environmental and the technological) into focus and decipher the questions it seems they are posing.

Technology and material conditions point toward language and culture, our practices in education, social life and the economy. The very act of speaking and listening as participants in language communities forms constitutive intangible aspects of our consciousness, meaning, values and moral potentialities. These overspill localities and regions and events. Some constitute discourses very loosely connected to any specific place or region. These have a meta-topical character. We participate in these meta-topical, intersubjective spaces where intangible values, meanings and forces shift the very significance of our material life and conditions.

Through our sensorial openness to the speaking and acting of others we apprehend their biographies, the motivations of their actions and their peculiar constellations of feeling and sentience. It is through apprehending the sensorial self-display of non-human sentient life that we sense other forms of animal experience. This variety of aesthetic sensibility is not simply a question of personal orientation and meaning, it plays out in our public life, collective discourse and collective action.

This cultural facet of our dilemma is presented in the second chapter. I show how the material challenges presented in chapter one are compounded by certain cultural factors. I do this through an exploration of two popular and dominant styles of interpreting subjectivity that are playing out in the USA. While I present the work of various theorists, the main aim of this chapter is to draw out the characteristics of the two dynamics in our social imaginaries. Charles Taylor has offered an insightful articulation of social imaginaries, as opposed to social theory. The imaginary is constituted not of theories, but images, stories and legends. Unlike theory, it
plays a meaningful constitutive role in the normal daily experience of the majority (not the minority) and it constitutes the foundational understanding that supports common practice and judgements of legitimacy. From one perspective these two dynamics tend to work against the variety of aesthetic education at the heart of this exploration. Each dynamic also contains an important element. The following presentation suggests that only when they are rigidly isolated from one another do they pose obstacles to the type of education explored in the latter part of this study. In other words, these two potentialities can be brought into a reconciliatory balance by being integrated.

One of them (expressive individualism) guides us to focus on our personal wellbeing, passions and self-fulfillment, and it is imbued with a deep conviction that in doing this, no matter how narrow our focus, we will be led to the good. Today this is intimately connected with our domestic lives and lives as consumers in the global economy.

The other (utilitarian individualism) guides us in framing the greater world and other beings as inert objects for use and control embedded in a matrix of order. In turn this second orientation accommodates values of achieving, of using and control. This is most clearly present in our view of public and vocational life, and our scientific, technological culture.

It turns out that these interpretations of subjectivity are intertwined in a dynamic with the ecological crisis, and the digital revolution, in a way that amplifies the danger of our predicament. Life on the planet is at a tipping point whose direction is dependent on human attention to the most fundamental dynamics of interdependence and at the same time we are

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in the midst of a digital revolution that is accompanied by a powerful diversion of attention into virtual environs. Two of the most powerful forms of subjective interpretation lead us into different forms of alienation from our concrete terrestrial and social embeddness. One form of alienation appears as a characteristically distanced and buffered subjectivity. The other form of alienation appears as characteristically submerged in the search for personal bliss, insensitive to the nuances and contours our immediate terrestrial proximities might offer us. The characteristic interaction of these material and cultural activities is alarming.

There are certain political and social theories that do not fit neatly into the two forms of subjectivity. They present certain ambiguities in their claims. These lead us to an interlude where I explore some of these ambiguities. In an interlude is that they present facets of aesthetic experience that point toward important constituent dynamics of a future, comprehensive, aesthetic education. Instead of values of control or hyper focus on personal wellbeing, they suggest intensive methods for inspiring sensibilities of solidarity and concern for other people, beings and the planet. They suggest a path toward a greening of our economy and social justice is connected with imagination and acts of subjectification. These theorists develop certain ambiguities that I argue are important openings into the significance of aesthetic judgement. The notion of aesthetic culture they present seems to escape the subjectivities presented in chapter two. These ambiguities circle around the aesthetic, and the moral significance of acts of subjectification and an associated process of renewal. The notions of aesthetic culture that these theorists present largely fit well into the traditional confines of the aesthetic. They are identified in rhetorical, artistic and imaginative horizons of activity and experience. In the context of this study, I beg the question whether their focus on the
humanistic practices contributes to the tendency for them to be associated with the common expressive individualism presented in chapter two. While they offer insights into the positive potential of the aesthetic, I present the question of whether their intentions could be taken further, for their interpretations of aesthetic culture do not extend into natural scientific practice.

In the third chapter I set out to trace important strains of modern social and political discourse that relate to the question I close the interlude with. This allows the dilemma of the significance, and the limits, of aesthetic culture to come into sharper focus. The question I present is: What significance does the transgression of the limits of traditional aesthetic education have for the coming century?

It is in Schiller that we find an important originator of the stark dichotomy between scientific culture and the arts, as well as an advocate for the collective significance of aesthetic education. An exploration of modern notions of aesthetics and art, and one origin point of the cleft between the search for understanding and the search for beauty, is presented in this chapter. In the Aesthetic Letters of Schiller\(^7\) it is possible to identify a treatise that powerfully poses the question of the political and social significance of aesthetic education for democracies. It is here that a form of freedom, as play and aesthetic experience, is positioned across from, and against, moral freedom. The aesthetic condition appears as an ideal for freedom that exists outside of typical relations of logic and pleasure, in a place out of time. The

way Schiller interprets the collective, social and political significance of aesthetic judgment is instructive for the approach of the present study.

For Schiller aesthetic education is almost entirely situated within the realm of the arts and humanities. Schiller is able to lift many of the peculiarities that can be discovered in artistic experience to full consciousness through contrasting them to experiences of truth and science. Using the comparative method, it is the contrast of beauty with truth that he uses to bring beauty into focus in its particularity. A number of important and insightful contributions to the importance and significance of aesthetic judgement emerge in these discussions. Viewing his thought in its historical context the problematic dynamics of freedom and collective action appear as central. Viewing the tradition of aesthetic education from our vantage point in time it must include problematic dynamics of freedom and ecological interdependence.

It is Hannah Arendt who stands out with her nascent theory of aesthetic education. I dedicate a considerable amount of attention to her for not excluding the natural sciences from the pedagogics of aesthetic sensibilities. I suggest orientations constituted by a strong demarcation between the humanities and the sciences will in the end all tend toward the subjective disembedding of personal well-being. This makes them vulnerable to the increasing social engineering and grooming of aggressive marketing and propaganda, that promises this wellbeing through consumption and style, or political allegiance.

Characteristics of aesthetic experience that emerge in this chapter include non-rivalry, or collective endurance, the education of sensibilities receptive to difference, the revelatory power intrinsic to apprehending expressive displays, speaking and acting, the sensibility to the
singular and particular (as opposed to the universal) and the characteristically open nature of aesthetic experience.

Having presented the divide between the arts and sciences, and gathered characteristic features of aesthetic experience, I turn to theory and practice in natural science. I present significant developments from the philosophy of science, the hermeneutics of natural science and the practice of natural scientists. The significance of practice is central to recent developments of the theory of science, as well as the hermeneutics of natural science. This framing gives particular significance to the presentation of select scientists who have developed aesthetic research practices.

While I present these scientists in the context of pertinent contributions to the philosophy of science, it is the copious examples their bodies of research provide that I find to be most crucial. I am, however, only able to offer a glimpse into this, due to the scope of this study. Moreover, it must be remarked that due to the very nature of aesthetic research practices in the natural sciences my form of presentation is severely handicapped. While writing and publication form an important part of the work of these scientists, it is the actual phenomena and appearances themselves that form the bodies of their theories. Particular aesthetic horizons are developed to be both open and abundant while at the same time exercising the function of a theory. This gives the whole tenor of the work a pictorial character, something distinct from a text. The aesthetic research practices I focus on are Goethe’s primal phenomena, Maier’s expanded notion of expressivism, Holdrege’s Portrayals and Portmann’s judgments of “expressive display”.

This last chapter serves to show that many of the characteristic features of the knowledge practices of these scientists are easily presented as variations of similar modes of experience we have come to associate with the human sciences and the arts. It is a contribution to the hermeneutics of extant practices of aesthetic natural scientific research practices. This does not involve the undermining of the modern scientific project by presenting it as thoroughly socially constructed. While the current temper of culture will easily assume the methods of these scientists more akin to expression than reception, which is crucial for empirical research, I try to show in the chapter varieties of aesthetic judgement and research particular to the sciences that are not reducible to methods in the arts or human sciences.

The study culminates with an image of an expanded aesthetic culture with promising features as regards to the formation of subjectivity and experience. In essence its practice entails the education of sensibilities that are able to enter into more intimate connection with the finite and terrestrial beings, elements and forces of the earth. It facilitates this in such a way that brings warmth and depth to our inherited distanced, utilitarian orientations. At the same time it situates and contextualizes the excessively self-involved expressive subject and consumer. The terrestrial context, that we have practiced approaching as a set of invariant forces and objects governed by mathematical function and law, is deepened and thickened. The highly personal and expressive variety of individualism prevalent in our self-understanding and action finds a refreshing humility in being situated in the natural context that supports its life.

This form of education and cultivation of subjectivity and sensibilities preserves the promising tendencies long acknowledged in aesthetic education. These, in so far as they are developed in relation to the non-human terrestrial, are presented as supportive of lifestyles
and economies of ecological regeneration. As I show, they have long been directed to art and beauty, as supportive of collective, voluntary forms of governance. They support our ability to be more open to difference by training our feeling and mode of apprehending to approach existing and appearing others without preestablished logical frames, or as simple objects of pleasure, but rather as sites of surprise, play and revelation.

This attitude is core to the modern conception of the dignity of the individual. Aesthetic judgement is also the interface wherein we apprehend meaning, value and purpose in others, in public discourse, private conversation and public actions. Our sensitivity to ethical life, in the world, is dependent on the vitality of our ability to take in others as expressive displays. While the expanded aesthetic culture presented here does not negate these, an analysis suggests it may buttress them against hubris through the above mentioned thickening of the interdependent, finite context of terrestrial life. The expanded notion of aesthetic education, that is directed toward the terrestrial, as well as the social and political, suggests a capacity of receptivity to the unique dynamics of planetary life. Such an education promises to encourage an enduring awareness and sensitivity to the finite, constraining foundations of shared life. This awareness should not be the possession of a few, but should be a public, widely shared capacity. It is not dependent on nationality or religion. It situates itself in a particular exercise of the aesthetic, pictorial and finite capacities of judgement common to all people.

The aesthetic knowledge practices presented in the last chapter are being cultivated on the fringe. They all belong to the phenomenological orientation, one that seeks knowledge through tending to processes of perception and experience. This study offers a unique contribution in focusing on the pertinence of these knowledge practices given the
environmental crisis and challenges of collective action and democracy. These scientific approaches appear as both nascent sites for a public regime of education and as delicate forms of practice when compared to our well established modes of inquiry.

All democratic impulses pass through elite phases. We are very far away from the widespread, public, comprehensive aesthetic culture indicated in the following pages. It would require a significant transformation in the story, practice and instruction of natural science at all levels of society. Given the public dimension of democratic education, it is such a widespread dissemination of culture and practice that would be required to counter some of the destructive tendencies alluded to in what follows. The scale and timing of the needed change is daunting, especially as one imagines the isolated experiments and localized efforts that will be required to forge both a narrative and path of action sufficiently accessible to all. Despite these challenges, an aesthetic culture that promises to bring the powers of aesthetic judgement into natural science and the potential to transform our connection to terrestrial elements, processes and beings while offering us a redemptive path to humility, can encourage action.
Chapter 1 - The Anthropocene and the Digital Revolution

“The Anthropocene... is a new word that comes from its Greek roots: Anthropos, meaning humankind, and -cene, meaning epoch or period of Earth’s history. The Anthropocene is the era- our era- in which humanity, through the massive impacts of the world economy, is creating major disruptions of Earth’s physical and biological systems.”

In the following chapter I present two global and material conditions of experience that provide a context for the expanded theory of aesthetic education. The notion of comprehensive aesthetic education is not only about achieving sustainability in its limited sense, but of a pedagogy of insight and sensibility that could support personally motivated, voluntary participation in interdependent terrestrial life. The two material conditions introduced in this chapter play an important part in revealing the significance of the theory. One is the environmental crisis, the other the digital revolution. Being global in nature they inherently bring up the challenge of collective action and strategy on the largest scale. In the first part of the chapter I present common scientific understandings of the environmental crisis, and characteristic questions of collective action that emerge in connection with it. In the second part I turn toward the digital revolution, focusing on the non-neutrality of digital experience, and how this shapes our experience of ourselves and our lives. This involves a presentation of the connection between theory and practice and the chapter ends with a presentation of two ways that culture has been understood to inform the use of modern digital technologies, and the ethical ramifications they imply.

Over the last half century global awareness of the interdependence of life on earth has grown, as have the existential challenges of this interdependence. This is not only a reference

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to climate change, but a multifaceted environmental crisis connected to human economies and population. Political and social theory, along with certain knowledge practices originating in Europe, are inextricably connected to the origin story of the crisis.

The surface level origin of this crisis appeared some three centuries ago with the reorganization of certain national economies along industrial lines, most notably in England. This reorganization was in part driven by certain measures of growth in the economy, quantitatively measured productive output of individuals, and the global population as a whole. The “productive output” of individuals at that time was radically transformed. This transformation marks the first movement from a relatively regional agrarian economy to a global industrial economy. Until this time the growth of human economies was simply inconsequential in all of history. Global productivity was simply related to population. The “productive power” of an individual remained relatively stable. Shifting attention toward economic productivity as a variable that could be increased was revolutionary. The material productivity (and consumption) of the individual, and the world, began to rise in unprecedented ways.

The miraculous and profound economic power of industry, which defied the expectations of an invariant power of production, led Marx to see in the tools of production of the capitalists the foundations for a humane, communal society9 and Keynes to see this productive power, coupled with self-interest, leading us toward to an age of freedom and plenty.10 The difference in political worldviews of these thinkers is dramatic, but the social and

political futures they described both rested on the revolutionized means of production. Marx did indicate that under communism life would increasingly be directed toward aesthetic pursuits, which have a low impact on the environment, still the foundation of his theory rested on industrial production with little attention to implicit questions of sustainability.\textsuperscript{11} This has led G. A. Cohen to argue that the traditional Marxian techno-utopian theory, and its promise of individual freedom in communism, is only possible if one ignores the environmental crisis.\textsuperscript{12} More recent theory suggests that economic processes are best characterized and understood as unfolding within finite spheres of experience. This is leading toward a shift of attention away from growth, toward sustainability.

The growing clarity of the interconnection between ecological sustainability and political theory is leading to an emergent need for a renewed understanding of our individual and collective lives, along paths that transgress traditional boundaries. Oxford recently published a “Handbook of Environmental Political Theory” (EPT) where use is made of “tools and techniques honed by political theorists-conceptual critique; normative analysis of structures of power; close reading of texts; nuanced and multifaceted understandings of political values including democracy, justice, and freedom; and eclectic methodologies drawing upon diverse disciplines- ... to develop insight into contemporary environmental challenges.”\textsuperscript{13} The environmental crisis and political theory clearly intersect with immediate environmental

\textsuperscript{13} Teena Gabrielson, Cheryl Hall, Cheryl Ann Hall, John M. Meyer, and David Schlosberg. The Oxford Handbook of Environmental Political Theory (Oxford: Oxford University Press, 2016), 3.
dilemmas. Philip Alston, UN special rapporteur on extreme poverty and human rights, describes the increasingly immanent possibility of a “climate apartheid” as a result of climate change.\textsuperscript{14} This would be a process wherein the wealthy are able to escape the present and impending heat and hunger accompanying climate change. George Kateb, no doubt with events like this in mind, has suggested that the increasing pressures from the natural foundations of life will require an elimination of individuality and political freedom as it has been understood in the United States in recent centuries (this is something that may be easier to imagine after the recent collective actions of governments during the global spread of covid-19).\textsuperscript{15} In another recent book \textit{Sustainability in the Anthropocene: Philosophical Essays on Renewable Technologies} a collection of thoughtful and prescient contributions in this context has been put forward. Not trying to magically produce a sustainable society, the authors express their intention to perform the “ongoing work of keeping open this site of meaning and identity formation in the face of the threat of collapse under totalizing economic program and attempting to shape our understanding of ourselves and our relation to nature in ways that are richer and more open to the possibilities of goodness and meaning.”\textsuperscript{16} The present study is offered as a contribution to these efforts.

Since 1800 the population has grown from around 900 million to around 8 billion. In addition, the amount of resources used per person has increased by about 38 times.\textsuperscript{17} This

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\textsuperscript{16} Dan Bradely. \textit{Introduction: Sustainable Technologies in the Anthropocene}, xiii.

\textsuperscript{17} Sachs, \textit{The Age of Sustainable Development}, 184.
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growth is connected to many of the interdependent environmental challenges we are facing.

Climate change, which is related to an increase in gases that, in essence, insulate the earth (such as carbon dioxide, methane, nitrous oxide; apropos greenhouse gases), making it warmer, is one of the most pressing. The crisis is largely invisible and slow moving (relative to human judgement of change). It is not a local crisis, but a global crisis, affecting everyone on the earth. Many of these gases are released through core productive practices of our economy, especially our use of fossil fuels. To grasp the centrality of these industries we need only consider that ranked by revenue, seven of the ten largest companies in the world are gas and oil companies.\(^\text{18}\)

Global temperature increases are multi-pronged in affect. Some of the expected affects, listed by Sachs, will be seen in our food production, displacing yields to higher latitude countries, which is connected to falling yields in many current “developing” countries. This shift in agricultural production is unfolding in a time when an estimated 75% of land has suffered degradation through the expansion of deserts, deforestation or pollution. The availability of freshwater will decrease significantly, while rising sea levels will threaten major coastal cities. There will be a continued loss of biodiversity\(^\text{19}\) and many coral reefs.\(^\text{20}\) An intensification of extreme weather, forest fires, droughts, flooding and heat waves is expected. There could be

\(^{18}\) Ibid., 396.

\(^{19}\) See Elizabeth Kolbert’s \textit{The Sixth Extinction}: An Unnatural History (London: A&C Black, 2014). This is also connected to the increase in global traffic and trade. Bio-diversity is directly related to relatively isolated eco-systems. It is estimated that 10,000 species are being moved around the world just in ballast water, page 198. This inter-connecting of previously isolated eco-systems leads to a loss of biodiversity. It is estimated that if the world was a single continent it would only contain about a third of the mammalian species as currently exist, see page 213. Also see, \textit{Field Notes from a Catastrophe}: Man, Nature, and Climate Change (New York: Bloomsbury Publishing USA, 2015).

\(^{20}\) Kolbert, \textit{The Sixth Extinction}, 130.
large, irreversible shifts in the global climate system, such as the possibility of a disruption of the Gulf Stream. It is estimated that the stream has weakened nearly 15% since 1950. Extreme climate changes for people living in Western Europe, Africa and the eastern US will result if this trend continues.²¹

Relatively independent of rising temperatures chemical pollution, biodiversity loss, the degradation of land and the unsustainable use of freshwater all point toward impending crisis.²² Drawing on very basic knowledge of the trajectory we are on, “the fact is we should be truly scared.”²³

Given the severity and global nature of the threat the limited action presents itself as a global challenge. How can the identification with the facts of climate change, and any resulting feeling of individual, and collective, moral imperative for action, be elevated to the position in our public discourse that they seem to deserve? The seriousness of this challenge comes through the tone of some of its most articulate protagonists. Elizabeth Kolbert, who has helped tell our most recent environmental story through her writing, reflects, “a disruption in monsoon patterns, a shift in ocean currents, a major draught … could easily produce a stream of refugees numbering in the millions. As the effects of global warming become more and more difficult to ignore, will we react by finally fashioning a global response? Or will we retreat into ever narrower and more destructive forms of self-interest?”²⁴

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²² Sachs, The Age of Sustainable Development, 41.
²³ Ibid., 406.
²⁴ Kolbert, Field Notes from a Catastrophe: Man, Nature, and Climate Change, 188-89.
Bill McKibben, reflecting on the aloofness evident in our response, offers a melancholy estimation of the narrowing circle of our interests, characterizing a general orientation that suggests “each of us as individuals, are the most important things on earth. This belief is so strong in us that we begin to imagine that things we have not created are not real.” For McKibben this second point is a new problem, specific to the current “subspecies that inhabits the western world.” No one living in the Adirondacks a century ago “was in any danger of forgetting that the world was real”, a development that culminates in our inability to “muster enough concern to actually change the ways in which we live so as to protect the natural world.”25

Jan Kyrre Berg Friis recently characterized an obstacle related to the sensibility expressed by McKibben. He has pointed out that one facet of the cleft between the natural world, or the elements we encounter in our daily life as consumers, is their intrinsically foreign nature. Consider the common occurrence of holding a cup that one would like to recycle, yet being unable to act due to a disconnect. What is the cup made of? I do not know, neither do I know what recycling bin it goes in. I am lacking information and knowledge on the most basic level. I do not have intimate knowledge of these relations, they are somewhat removed and abstract. These types of dilemmas arise on our left and right, revealing a troubling dynamic between our disconnect from the material elements of our lives and our ethical intentions.26


26 Jan Kyrre Berg Friis. “Is This the End?”, In Sustainability in the Anthropocene: Philosophical Essays on Renewable Technologies, 34.
These inquiries and explorations are sometimes met with little sympathy. They can be characterized as alarmist in tone. They do not lead to a proper estimation of our current situation and do more harm than good. These theorists suggest our current situation is not as bad as it seems if one takes a bird’s eye view, indeed, it is even something to be celebrated on the whole. Steven Pinker is one prominent spokesperson for this view. He argues that “major indicators of human well-being ... have increased over time—contrary to the fatalistic, pessimistic view of the world that one can get from reading the news, which concentrates on salient negative events, as opposed to gradually improving trends.” These positive trends are due to “the use of reason and science to improve human well-being.” According to Pinker climate change will be addressed through scientific trial and error, employing reason and the scientific method. We need to stay true to rationalism and the ideals of science, for they are our best allies in facing the inevitable challenges of our time. This view of history suggests that there has been a relatively linear progress that is to be understood as coupled with the growth of rationalism and its values.

Friis has pointed out that Pinker’s presentation of rationality and science presents them as free of bias. Living into Pinker’s presentation one understands that bias is bad, and that science and rationality are free of them. Friis goes on to point out that science is formed by a “training – that is embodied skills and experiences- and it is also informed by the individual’s

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28 Oliver Milman, ‘Could Sprinkling Sand Save the Arctic’s Shrinking Sea Ice?’, The Guardian, 23 April 2018, section Environment/Climate Change.
social background, family, traditions, education, and its relation to specific contexts” and further that science, and all technological developments from the last few hundred years, rest on intuition. For Friis, Pinker does not offer a nuanced account of his own views, and he goes on to show how they reveal political and ideological resonances Pinker never admits. He goes on to present the notions of scientific progress and capitalism as the animating interpretive core of Pinker’s perspective. He speculates about the psychological dissonance this will increasingly produce. “To pursue progress thinking yet at the same time being painfully aware that the Earth’s biosystem is finite must be a complicated and disconcerting affair.” He suggests, counter Pinker, that a change in political and economic culture, and also a change in attitudes and habits, requires different knowledge related to our local economy. He makes indications of the kind of education this would require, but this does not seem to include a highly developed regime of aesthetic knowledge practices particular to the natural sciences. He does indicate that it would include an awareness that science and technology interact and shape the source of value in people’s lives, and should be viewed and engaged accordingly.

Robert Crease has pointed out that the interpretive ground of natural science situates theory as the primary activity of knowing, highlighting Democritean, Platonic and Kantian varieties. These direct attention away from experience and perception, and in “the modern version of this myth, science allows us to rise above our merely human concerns and perspectives- our history and culture, to become spectators to the ‘fundamental furniture’ of the universe, and in its various versions this furniture is conceived as being … real, ideal, or

29 Jan Kyrre Berg Friis. “Is This the End?”, In Sustainability in the Anthropocene: Philosophical Essays on Renewable Technologies, 32.
30 Ibid., 34.
 unknowable.”31 The truth of nature is interpreted as encoded and to be confirmed, in their deductible purity, through experimentation. This situates the known behind an impassable barrier, above human time and history. Nature thus takes on a hue of pure deducibility, transparency and precision. Crease points out that the mythic account of science is bound to lead to disappointment and possibly disillusionment. The balancing act Crease suggests is to move between the political, economic, institutional, psychological forces at work in “concrete historical, cultural, and social context” on the one hand, and what stays the same in scientific research in varying contexts on the other.32

Trish Glazebrook has presented how the shortcomings of these biases directly pose challenges to anyone seeking sustainability in a presentation of the history of nuclear energy. She refers to the deception, and also the self-deception, involved in the move in recent decades to suggest nuclear power is an acceptable alternative to fossil fuels. She relates the well-known nuclear disasters, and some lesser known, the provincial turbidity that masks leaks and accidents, the lack of transparency in the industry, and evidence of the lack of safety protocols in routine replacement of fuel cells. These safety practices were to avoid the release of radioactive water that would render hundreds of square miles contaminated. The common faith in these technologies, and their safety, point toward a deception, and self-deception, of a way of knowing that cannot take into account the finite, contextual and historical facets of such projects. She relates that “there is simply nowhere on the planet sufficiently geologically stable to guarantee no rupture and leakage”. The characterization of this history is a “blindness, an

32 Ibid., 9.
oblivion, and a deeply unconscious self-deception made possible by a globally dominant, technoscientific knowledge system”. As with Crease and Friis, Glazebrook points toward the reified and abstract characteristics of this variety of knowledge. In light of her descriptions the air of unbiased and transparent certainty that accompanies this fashion of research is to be read as much as a symptom as a revelation of fact.

In the expanded theory of aesthetic education the nuanced exploration of the peculiar and “biased” orientations offered through modern science are important. Clearly this is not because biases are bad, but because they are not neutral. The recurring trajectory for change suggested in the theory of comprehensive aesthetic education reaches into the practice and instruction in natural science, suggesting natural science could foster sensibilities that would enable the connection with local terrestrial processes, economic production and consumption, that McKibben, Friis and Glazebrook suggest are lacking.

In the remaining portion of the chapter I will turn from the global environmental conditions in which our thinking is contextualized and turn toward the second emerging global, material condition of experience, the digital revolution. Before turning toward the technologies themselves I present a theoretical framework toward understanding the connection between practice and interpretation.

Our public discourse, its origin and emergence, cannot be understood as materially or spiritually determined. History reveals “‘material’ practices carried out by human beings in space and time, and very often coercively maintained, and at the same time, self-conceptions,

modes of understanding. These are often quite inseparable ... just because the self-understandings are the essential condition of the practice making the sense that it does to the participants. Just because human practices are the kind of thing which make sense, certain “ideas” are internal to them; one cannot distinguish the two in order to ask the question, which causes which.\textsuperscript{34} The practice of scientific experimentation is informed by the interpretations of scientific activity introduced above. The experiment, as practice, is an action that is performed, taught and reflected on, and it is informed by certain interpretative positions.

In what follows I will focus on the non-neutral effects of an increasingly technologically constituted life world. While I focus on it, interpretative dimensions will regularly be highlighted. In the next chapter I will turn more explicitly toward interpretive dimensions we are contending with in contemporary forms of subjectivity. While this chapter is dedicated primarily to the non-neutral influences of modern technology, it is important to briefly touch on their interpretive dimensions.

One crucial interpretive dimension appears in the modern scientific paradigm that was discussed above in relationship to interpreting the global situation we find ourselves in. The interpretation of the closed whole of lawfully constituted systems, corelate with phenomena, emerged during the scientific revolution, with the mechanical instrument as the metaphorical leitmotif.\textsuperscript{35} The metaphor itself is not in the end as significant as the more subtle shifts that accompany its emergence, including a decisive paradigmatic shift related to our sense of the real.

\textsuperscript{34} Charles Taylor. \textit{A Secular Age} (Cambridge: Harvard University Press, 2009), 212.

\textsuperscript{35} Arne De Boever, Gilbert Simondon: \textit{Being and Technology: Being and Technology} (Edinburgh: Edinburgh University Press, 2012).
Heidegger famously interprets this way of representing as containing the potentiality of the technological world.\textsuperscript{36} Nature is represented as calculable in advance. The world is a calculable coherence of forces. This casting of experience into a closed, ordered whole turns experience into a kind of storehouse of inventories that can be mastered. He contrasts this with both premodern forms of knowing and experiences of modern works of art. And these are both endangered by this modern orientation. To be in the presence of technologies essence is to experience something not only hiding a former way of revealing, but of revealing itself.\textsuperscript{37}

The crucial feature of this style of interpretation involved a revolution in the reality function of the hypothesis. Before, the only purpose of the hypothesis was to “save the appearances”. It is difficult for us to understand that it was understood as a clear mistake to “assume that they tell us anything about ‘reality’—let alone about the entirety of reality. Extrapolating the restricted concepts and hypothesis of any science, from the self-limited domain of phenomena proper to the discipline onto a universal cosmological scale, will therefore be to take an unjustified leap from ‘appearances’ to ‘realities’ and so involve an illegitimate inference.”\textsuperscript{38} The new view reduced the being of the phenomena in its hypothetico-deductive method, understanding nature as intrinsically ruled by mathematical functions. In the earlier view, while there were hypothesis, these were never understood to exhaust them. The transformation of the nature of hypothesis is extended from an interpretive level to a regime of practice in the theory driven method of the modern experiment. The method involves the

\textsuperscript{36} Martin Heidegger. \textit{The Question Concerning Technology, and Other Essays} (New York: Harper Collins, 1982).

\textsuperscript{37} Ibid., 21-27.

conceptual creation of a closed whole and the arrangement of experience as experiment that includes explicit assigning of functions to phenomenon. In later chapters I will return to the constitutive significance this form of interpretation and to a more detailed exploration of this paradigmatic turn. This much is offered as a preface to the following discussion of the digital revolution.

It is the non-neutral effects of technology that are particularly pertinent for this chapter. Meaningful constitutive affects clearly emerge from the use of technology and the arrangement of material life. While it is illuminating to grasp the emergence of technology from an interpretive practice, it is also true that our interpretations emerge from the life field constituted through our use of technological presences. The philosophy of technology has shown the inadequacy of the view that technology is a passive tool directed by a user, neither beneficial nor harmful. Understanding technology requires insight into how it “transforms our experience of the objects in the world non-neutrally”.

The magnificence and power that modern science has demonstrated in recent centuries, enumerated by Pinker, support a definite legitimacy. The purpose of this study is to explore the possibility for positive cultural shifts through trying to understand how natural science could sensitize, as opposed to desensitize us, to our local, terrestrial contexts and experience. This requires a more layered analysis than we find in arguments such as Pinker’s. It is relevant to inquire if a sense of separation from the greater natural world might be contributing to the evident lack of connection with the current environmental crisis and

receptivity to collective action for the common good peculiar to the Anthropocene. And surely we can also feel that, if true, this would mean our best intentions, when applied out of habit, will only intensify an already dangerous situation.

The suggestion in this study, that an expanded notion of aesthetic education could play an important role in facing the environmental crisis, is ambitious. The scale of the problem is global, and the emergent consequences of the crisis are already dire. The magnitude of the challenge is humbling. For the expanded notion of aesthetic education indicated in this study to make a difference it would require widespread and diverse development and implementation. As it is a theory that claims its significant in enabling voluntary collective action toward the collective environmental good, it is democratic. What is democratic must be highly accessible and public. Thus it implies a widespread reform of natural scientific education and practice on all levels of society. It also implies a shift in the type of scientific culture and research that are funded and encouraged.

In suggesting the common good particular to the Anthropocene is connected to this type of education I do not suggest that it will easily be implemented, nor that it is solely connected to this good. In the last chapter I point toward the interface between aesthetic education and cycles of production and consumption in the economy. The present study of an expanded notion of aesthetic education does not only exclude important implied reformations of economic life, but also democratic governance. This study does not suggest that an expanded aesthetic education can bring balance to the global crisis on its own. It is presented as a theory of importance for those seeking voluntary collective action toward the good in a century demanding environmental sustainability.
The Bifurcation of the Foundations of Sentience

The digital revolution is emerging in every life sphere. One of the most astonishing characteristics of its emergence is its speed. The technologies are “overtaking and redefining everything familiar even before we have had a chance to ponder and decide.”40 In the USA it appears that near 70% of 19–29-year-olds access their news online, while over half engage the news through social media sites.41 With the screen as its primary interface, it mediates experience on average 8-10 hours per day. Digital presence is growing in the workplace, the distribution of news,42 communication,43 social life,44 healthcare,45 education,46 dating47 and sexuality and commerce.48 Theorists like Nick Couldry are currently exploring how digital technologies are being integrated into areas of work and leisure leading to Mixed Reality (IMR), Augmented Reality (AR) and the emerging Virtual Realities (VR) where experience is almost entirely mediated through digital technology. He lists significant developments in the assemblage of digital technology.

42 Ibid.
43 With cell phones replacing landlines it is not simply a matter of a different device for transmitting the voice but for an increase in digital communications, texts and images.
Wave upon wave of newly saturating media has flowed over inhabitants of richer countries:

1. The move from a limited number of terrestrial television channels to hundreds of cable or satellite channels;
2. Increasingly fast and continuous access to the internet and World Wide Web;
3. Media access from transportable or ‘mobile’ phones;
4. Radio and press’s move online through digitalization and newspaper websites;
5. The massive growth in online content delivery networks for both top-down distribution and horizontal exchange of photos, film, television and music;
6. Social networking sites such as Facebook as a new interface for linking to any of the above, or simply for contacting our friends and mobilizing our supporters;
7. Many-to-many interfaces for continuous broadcasting in time and space, such as Twitter;
8. Media application for iPhones, android phones, blackberries and other mobile devices.”

The materiality and practice of our lives surely reflect many of the elements listed above. In the following pages I present some of the salient non-neutral effects pertinent to the theory of expanded aesthetic education and summarize them.

One non-neutral facet of digital developments is a metamorphosis of presence. Presence is understood in media theory as “a psychological state or subjective perception in

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which even though part or all of an individual's current experience is generated by and/or filtered through human-made technology, part or all of the individual's perception fails to accurately acknowledge the role of the technology in the experience.”

Virtual reality technologies can lead to a shift in presence whereby the “here-and-now,” one’s particular spatial and temporal context is re-placed. Presence makes the shift to fully and naturally unite with technology intuitive.

The futurist Ray Kurzweil, founder of the Singularity University, suggests that “By the 2030s, virtual reality will be totally realistic and compelling and we will spend most of our time in virtual environments. By the 2040s, even people of biological origin are likely to have the vast majority of their thinking processes taking place in non-biological substrates. We will all become virtual humans.” It is difficult to ascertain how the tremendous strides in technology will continue to unfold. It is clear that life will continue to be transformed through MR, AR and VR developments in the near future.

Our observations are led by an interest in understanding how technological use effects certain sensibilities. In order to bring these to light it is important to dwell on the basic, and general conditions of sentience.

We need to differentiate between technologies that have emerged as part of globalization and digital technology. If one focuses on the unfolding digital/media revolution within the context of the last centuries it easily appears as an incremental intensification of

globalization, technological advance in transport and communication, and colonization. Marc Augé developed a notion of non-places as characteristic of “super-modernity” that illustrates one such example. Places are “the idea, partially materialized, that the inhabitants have of their relations with the territory, with their families and with others.”

Through advances in communication and transportation non-places emerge, which characteristically lack history, whose significance is measured in quantitative time, and which allow individuals to traverse them in relative isolation and anonymity. Time itself is problematized, the excess of events, in cacophonous disorder, leads to the problematization of simple temporal pictures of development and progression. The individual, decontextualized, experiences a certain variety of feelings of freedom.

Characteristics of the non-places described by Augé resonate with many descriptions of the digital experiences of presence, but there are important differences. The radical nature of the digital revolution comes into view when we consider the fact that a primary characteristic is its emergence as a source of communicative signs and sensations, not simply of speed and connection through transportation. The constitution of human sentience proceeds from two directions, one physiological, the other interpretative. It is when we turn toward the material foundations of sentient life that an important bi-furcation comes to view.

Nagel has explored the difficulties presented to anyone focusing in on the relationship between the body and consciousness, while emphasizing the need to “seek a form of understanding that enables us to see ourselves and other conscious organisms as specific

expressions simultaneously of the physical and the mental character of the universe.” Our purpose here is simply to bring to light that part of conscious experience that we can relate to material/physical processes. Until relatively recently the greater portion of the material foundations of sentience, the emergence of sensation, interiority and feeling, were directly connected to encounters with terrestrial beings, elements and forces. It is important to discern one area that offers sources of sensation, even those Augé refers to, as fundamentally tangible. We can indicate the indigenous stuff of materially conditioned sensation as an array of sources of sensation with a terrestrial character. Even travel that generalizes spatial judgment, constituting non-places through high speeds, is felt as propulsion and explosion, air resistance and metal’s strength.

The center of gravity of experience in the digital age moves into signs and symbols of communicative light, away from the conscious engagement with materiality and hardware. When we consider the portion of sentience enabled through our digital technologies what comes to the fore is their relative invisibility. This is true of the elements that enable them, namely electricity and electric light, as well as the extra or sub-terrestrial hardware sites that constitute them. The activity of light is highly elusive, bringing all things to view, except itself. While specific tools and techniques of the digital revolution are “built on the realization that complex information can be stored as 0s and 1s (bits) and that these bits of information can be processed and transmitted with unimaginable speed and precision through new inventions


such as transistors (to process and store the information) and fiber optics (to transmit massive amounts of information)\textsuperscript{55} the greater user experience is largely a world of sensation and signs conditioned by the shape of the tool and the culturally constituted texture of the experience.

It is important to focus on the basic characteristic of the material foundations of this technology so instrumental in providing sensation and horizons of experience. If, as a typical user, one compares the materiality, “the mechanics” of today’s computer phone, to the world of horizons, chambers and options accessible through navigating a world of signs and communicative portals, the insignificance of the former is astounding. One can gather some practical knowledge of battery charging on a regular basis through use of the technology though it is clear that hardly a person would be able to describe the material components of their phone, the type of electric production their region relies on, nor the electric plants location.

The shrinking into invisibility appears in the basic phenomena of the computer chip whose tendency is toward the micro, the invisible. The tiny, high tech material object is a largely invisible world of material events that provide the foundation for an unprecedented galaxy of sentience and virtual interpretive spaces. This is a fundamental characteristic of the revolution we are experiencing: on this most basic level, the material conditions of sensation, there is a bifurcation. The material dimensions of digital technology tend toward invisibility. This does not only appear in the micro-chip, but the sites of broadcast facilities, transmission towers, cables, satellites and responders recede into the background of our consciousness.

\textsuperscript{55} Sachs, \textit{The Age of Sustainable Development}, 84.
This is even expressed through the focus of emerging research. Lisa Parks is the unusual researcher in this regard. She has taken up comparative studies exploring the contours of the digital revolution through field work, highlighting the dramatic difference between geophysical excursions to the material sites of our digital infrastructure and navigation experiences mediated through “Google Earth and seen in StreetView, accessed through Google’s search engines, or streamed from YouTube’s archives”.56 The marked lack of research into the material infrastructure is indicative of the center of gravity of these technologies that is situated in their communicative signs and horizons of electric light.

Joel Mckim has drawn together characterizations of a similar hue, pointing to the excess of what makes up the use object, yet remains hidden from view, a use object animated by a kind of “alien phenomenology” of source code. The sheer magnitude of what remains hidden, of its complexity and scope, stands out as characteristic. According to Mark Hansen and Bernard Stiegler we are all participating in “the creation of “a technological life world” of calculation and predication, to which we contribute (our data, communications, desires, and relationships), yet to which we also have no direct sensory access.”57 This is fundamentally “non-phenomenological”, in the most practical sense, there is a “growing recognition that much of our contemporary media operate on a level that is actually radically inaccessible or removed from the human senses.”58 Thus our participation in digital media opens a majestic

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58 Ibid.
world of light, signs, tools and connections while veiling the material processes and foundations it is built on. This separation of participation and use from the sense experience of fundamental processes and dynamics appears as a reoccurring signature of the digital revolution and is directly related to a separation from the sensorial apprehension of terrestrial experience. I will refer to this as a terrestrial thinning.

One of the projected growing points of the material foundation for these technologies are satellites. Private companies are vying for licensing rights from the FCC to expand the basic digital infrastructure of the planet. Astronomers around the world are protesting the development as the starry world of light is increasingly polluted and blocked by these machines. The materiality of digital technology tends toward the micro of an anonymous hardware, shifting the center of gravity of the user into a realm of software and communicative signs and symbols, it is being removed from the elements that make up the miraculous and rare life supporting planet and being positioned in extraterrestrial spaces.

For anyone familiar with some of the constellations of experience from the past this new image of the human constitution might call up strange resonances. Ken Hillis has observed that, “Fantasies of disembodiment are socially diffused more so today than at any time since the Middle Ages and are intimately linked to contemporary technologies.” A Florentine of seven hundred years ago might look up to the starry skies as the homes of planetary

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intelligences and imaginations, the cosmos populated by stories and life. Between the moon and the earth’s surface one entered an element of perpetual decay and chaos, of coming and going, of emerging and disappearing, of disease and decay. Here water, air, earth and warmth, and all Shakespeare’s sickly vapors of the night, constituted the human life world. This chaotic flux was the fate of all who lived beneath the moon, or in the sublunary sphere. Those who surrendered totally to its power, were called lunatics, after the moon. The source of all culture, life, consciousness and interpretative creativity resided above the moon, which marked its territorial limit. Access to the ontic root of reality was through prayer, dialectic, contemplative and aesthetic activity. Dante was not known as the author of the divine comedy but as the man who had been to hell. The world of the stars (astral world) constituted the astral body of the human being (the imagination, thinking and sensations) and formed a source of experience and knowledge that was privileged across from the terrestrial.

What characterized the interpretive image of the Florentine, is revealed in the material image of the modern. The former reveals a theology of extra-terrestrial emphasis, the latter a technology of the same. Both lead us into worlds of light not accessible to terrestrial phenomenology. The satellite can be understood as an image for the material foundations of the digital revolution that exist on a “level that is actually radically inaccessible or removed from the human senses.” Just as the worlds of light it opens lead us away from it.

Thus a non-neutral effect of the use of digital technology is a bi-furcation of sentience, with one variety leading into the light, with the other remaining connected to the terrestrial.

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we can make out a terrestrial and an extraterrestrial material foundation of consciousness. In
the satellite the very material foundation of extraterrestrial sources of sentience are
characteristically removed from the dynamics of the terrestrial, living, planet. This material
inaccessibility is reflected in the user experience as the opening of worlds of radiant
communicative signs and horizons of experience that are characteristically untethered by the
limits of a finite planet.

Turning toward the light that is disconnected from terrestrial conditions of emergence
we can make further observations. They have been highlighted in the writings of Steven
Talbott.\textsuperscript{62} Digital experience allows for actions at great distances, almost instantaneously, with
minimum friction. This frictionless character of communications, information sharing and
commercial transactions is profound. The acting subject, through this technological medium is,
in one manner of speaking, untethered and freed. The objective side of this is a thinning of
place. Certain constraints of time and space disappear. The digital platforms cannot offer real
places with thick specificity, history and enduring qualities, nor the grounding and structuring
effect actual land contributes to experience. Here the previously mentioned resonance with
non-places is evident, as is the terrestrially undetermined world of digital life. One central
concern Talbott voices is the possible increasing “inability of children, by the time they have
grown up, to experience an organic and deeply motivating connection between themselves and
the larger society or between themselves and the physical world.”\textsuperscript{63} The view suggests the
understanding and familiarity with the earth as a home, as a precious foundation for life and

\textsuperscript{63} Ibid., 264-5.
experience, is a prerequisite for our care for it, for our voluntary action to live in accordance with its limits and nature. The separation from the basic contours and histories of terrestrial places and events that our digital technologies can facilitate are an aggravating factor in the situation outlined at the beginning of this chapter.

Integrating modern digital devices into our lives alters aspects of our experience of constraint, time and endurance. We experience ourselves in the presence of infinite impressions and information that previously would be felt at a distance, held back from us by the constraints of time and space. These constraints of time and space also constitute the history and specificity of places and collectives. Nick Couldry has pointed out how the underlying event that appears in a variety of expressions of the digital revolution is ‘a sense that the co-ordinates of our daily actions, the dimensions of our daily world, have, somehow, in some respects, been altered. Accelerated internet access as we move or stay still means that almost at every point in space and moment in time, we’re potentially in touch with what is happening at every other point in space and time, and we’re able to draw on a vast cache of information from the past or the present.” This characteristic thinning of place is captured by Couldry as “supersaturation”. It is when the capacity of dissolution in a situation is so excessive that a state is created that is “not a stable state, it’s an in between state.”64

This intensification of ambiguity of places thick with history and specificity, is captured by Tim Barker in a study on modern journalism, the television, cinema and computer. The temporal dimension of place is constitutive of its particularity. Barker focuses on the composite,

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64 See Nick Couldry’s contributions to the dialogues in Markham, Tim, and Scott Rodgers. *Conditions of Mediation: Phenomenological Perspectives on Media*, 2017, on 69 and 85.
collage like character of modern digitally mediated experience and how, on a temporal level, this particularity is weakened. These “places” are constructed from material characteristically ephemeral and malleable. The dissemination of information in this form through screens “ultimately produce a cultural experience of being out of time, as the signal originally recorded is continuously disoriented from ‘real-time,’ repeated, remixed, and rearranged. The events recorded and aimed at television screens in order to be documented as history simultaneously lose their historical character ... [producing] a cultural mode of spectatorship that is further distanced from the temporality of the original events.”

Couldry’s description of supersaturation, wherein experience becomes an unstable state without a clearly crystallized contours, and Barker’s description of “being out of time”, point to a form of experience that is unstructured by the finitude and clarity that make up the material conditions of life. Grasping the structure and form of these conditions is connected to our very feeling for truth and reality. As these contours recede in definition the very question of our ability to sense the gravity of the non-negotiable shapes of our lives is called into question. The flip side of a majestic freedom in a world of light and speed, a supersaturated state, is the thinning of restraints.

Sherry Turkle set out the results of her attempts to understand how computers were “changing us as people?” in her book *alone together*. She characterizes the common experience of spending time with a person who is “connected”, who is straddling a multiplicity

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65 See Tim Barker’s ‘Media In and Out of Time: German Media Science and the Concept of Time.’ In Markham, Tim, and Scott Rodgers. *Conditions of Mediation: Phenomenological Perspectives on Media*, 2017, 125-135.

of worlds. The very distinction between virtual places and actual can blur, and the varying commitments that each evoke. Another striking characteristically new feeling is that “being alone can be a precondition for being together because it is easier to communicate if you can focus, without interruption, on your screen. In this new regime, a train station (like an airport, a café, or a park) is no longer a communal space but a place of social collection: people come together but do not speak to each other. Each is tethered to a mobile device and to the people and places to which that device serves as a portal.”

Leaving a place can be signaled by putting a phone to your ear, or glancing down. This also marks the entrance into the worlds of light and communicative signs whose materiality evades us.

She focuses on the further crystallization of a feeling of connection that is achieved through “cycling” through the various digital “places” where one is active. This cycling develops into a sense of “continual copresence”, or, a “continual partial attention”. She draws out how this is shifting the very bedrock of communities that have been “constituted by physical proximity, shared concerns, real consequences, and common responsibilities.”

The terrestrial places where one once would seek human encounter are no longer conducive to such. In one interview she was told “I walk down the street, and I’m the only person not plugged in. No one is where they are. They’re talking to someone miles away.”

Through dialogue with psychologists, psychiatrists and social workers Turkle relates the growing “number of patients who present in the consulting room as detached from their bodies

67 Ibid., 155.
68 Ibid., 161.
69 Ibid., 239.
70 Ibid., 277.
and seem close to unaware of the most basic courtesies ... Their detachment is not aggressive. It is as though they just don’t see the point.” This echoes Talbott’s inquiry related to society and natural context, and McKibben’s characterization of the unreality of the unmade world. Turkle draws this together with a strong decline among college students over the last thirty years, in interest in other people, and in their capacities of empathy.71

In Digital Sensations Ken Hillis develops similar orientations. He characterizes immersive virtual environments as “a form of cosmographic mapping ... offering both the promise of an escape from history with a capital H, and the encrusted meanings it contains, and an imaginary space whereby to perform, and thereby possibly exorcise or master, difficult- even contradictory- real world historical and material situations.”72 This is a continuation of the ancient project to use technology to evolve subjectivity and human nature. He draws out how metaphoric spaces that are presented through digital technologies shape our notions of place and landscape, and feeling for space.

Hillis also points out that the values that are presented as desirable, and which fuel the development of VR, are individualistic understandings. These offer a disembodied data scape, supporting pluralism. They are a frontier for unimpeded individualism and self-realization, a kind of digital California (where it turns out virtual living is more pronounced). This involves exchanging “communications technologies for the reality of places and dispenses with, for example, empiricism’s concerns about sense data and how things are understood as true

71 Ibid., 293.
and/or real.”  

While “it remains the case that most people on the planet acknowledge the reality of a natural, living world and our meaningful and interdependent engagement with it ... [at] the same time ... technology helps foster an estrangement from this world, which flows from technology’s utility in ‘pushing back’ an often hostile natural world that for millennia was perceived as limiting human intentionality. VR creates a world of spatial representation in which our bodies, always existing along a freighted and leaky continuum between nature and culture, have been set aside. Although cultures organize their members’ conceptions of the natural world, each of us, as sentient individuals and in groups, engages with a natural world exterior to ourself. This is how we grasp the meaning of space and how it interrelates with real places.”  

The transformation of the texture and scale of the experience of space, places and relations, being ushered into the constitution of experience through digital media, are clearly pertinent to ethical life. The “ethical issues of the local- the spaces of family, friendship, institutions – are also entangled in, and transformed by, the flows of media on all scales.”

Couldry draws a parallel to the ethical demands that must follow this shift in our sense of place and action to the emergence of environmental ethics in the dawning awareness of how small-scale actions have cumulative impact on the global environment half a century ago. One iconic moment appeared through the widely circulated images of the earth from outer space.

73 Ibid., xv.
74 Ibid., 202.
75 Couldry, Media, Society, World: Social Theory and Digital Media Practice, 28.
a comparative ethical attitude emerging through our new technological constitution? What would it entail for a similar realization to emerge that clarified the connection between digital experience, and the use of technology, and the fragility of earthly life?

Consciousness has always existed in non-spatial horizons that are partially culturally constituted. This was clearly characterized by Augé in his study of non-places. This is not something that is peculiar to modern experience as it is co-constituted by digital technology. Theological and metaphysical orientations, that can command more or less of subjectivity, easily “displace” us. The paintings of Giotto and the Ethos of Francis of Assisi appear as moments of transition from a non-terrestrial theological constitution to one more earthly. But even these naturalistic, earthly orientations, typical of the modern era, that we see emerging in a germinal form, are constituted by openings and various qualities of time that cannot be understood as crudely coinciding with natural bodies and sensorial experience. It is instructive to note that a degree of interface with sensorial perception exists on a spectrum. Returning to Crease, the goal is to see scientific practice “within the realm of human history and culture and to maintain an irreducible tie to human practices even as it discloses phenomena with some degree of independence of any particular historical and cultural context.” The situational argument of the Anthropocene suggests that an increase in terrestrially (not digitally) conditioned forms of sentience is a desirable and positive goal.

A depiction from the modern phenomenological practice is full with openings that intersect with a variety of terrestrial sensorial elements. Eva-Maria Simms sketches such a

76 Ibid 181.
description in her *Place, Space and Hermeneutics*, where she uses a more traditional language in place of the philosophical/phenomenological, “I am a body within a soul. Consciousness bursts the barriers of the skin and dematerializes the way we conceive of the body. I walk not only through a material world, but also a world already meaningful because it is the world of soul, and I am of it.” And further; “The soul in which the body lives has no boundary, even though it has an ever-shifting horizon. I walk past the stand of trees in the grove, hear the birds sing in the thicket and the squirrels rummaging around in the leaves on the ground. I sense the swirling of their being as it intertwines with my eyes and ears and my skin and feel the starkness of the winter trees with their life forces in the ground and in the air, responsive to the soil, water, wind and light.” 78

In pointing to the danger of the blurring of terrestrial finitude there is no need to advocate for a hyper focus on limitation. We can recognize that on a spectrum of cultural openings Simm is cultivating them in close proximity to terrestrial sensation. Sensations that are unmediated by technology emerge that are multi-faceted, opening out into interpretive and living spaces and beings. In later chapters I will show how through fostering aesthetic knowledge practices in the natural sciences the specificity of the earth is amplified and multiplied, not reduced. The important observation is that there are openings which proceed through sentience, thickly conditioned by the terrestrial elements and dynamics of the earth, not digital technology.

The view I am developing seeks instruction by emphasizing that indeterminate spaces

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are increasingly constituting experience but that they are significantly separated from the elements, beings and forces of that make up terrestrial life. On the material level we can see that digital technology characteristically has a footing in sub-terrestrial, extra-terrestrial and in the largely invisible forces of electricity and light. On the one hand the material furniture appears in the infinitesimal, under the earth or ocean, in towers, or in extraterrestrial spaces. Our conscious engagement unfolds in worlds of light. These virtual spaces can be characterized as lacking temporal and spatial specificity. The temporal location of any digitally constituted place is loosened from the sense of time terrestrial experience facilitates. The peculiarity of terrestrial spaces, from both geological and human perspectives, does not exist in these horizons of experience. This lack of conditioning easily evokes feelings of being unfettered, encouraging radical individualism and accommodating pluralism. As Turkel has shown, shifting into our virtual constitution is often preferable even when we are in terrestrial proximity of one another. This “new space and time” are best engaged when we agree not to engage on the terrestrial plane simultaneously.

These characteristics of the digital revolution have been chosen in light of the focus of this study. As a study proposing an enlarged notion of aesthetic education, at its core is the fostering of sensibilities, qualitative forms of judgement and feeling. The foregoing is to be understood in this way, namely as partial, incomplete and focused. These non-neutral facets of digital technology appear significant to the theory of aesthetic education during the Anthropocene.

**Values and Intentions in the deployment of Digital Technology**
The foregoing is not a suggestion that a technologies non-neutral effects are determined by its mere presence. Technology is animated and constituted culturally as well as technically. When the machine was elevated to the leading metaphor in metaphysics during the scientific revolution, and thinking and knowledge practices were shaped in the same image, the non-neutrality of technology also shifted. In broader society the interplay of the interpretive and the technological amplify certain aspects of non-neutrality implicit in the tools. When we consider, for instance, the thinning of connection to greater society and unmediated terrestrial conditions of experience it is easy to see how certain social and political interpretations accentuate these tendencies.

Engineers and developers report how the most powerful emerging communication and media technologies are being designed to keep people plugged in, regardless of what their own best interests or what their inclinations might be. One early developer of the i-phone described being “conflicted about the ethics of exploiting people’s psychological vulnerabilities,” while musing: “It is not inherently evil to bring people back to your product. It’s capitalism.” In this line of work the digital platforms are often referred to as attention economies. The aim is to capture attention and to sell it to advertisers. While one sometimes hears this process explained as analogous to a benevolent shopkeeper who displays the items you appreciate when you enter a store, this is a simplistic way to make sense of an unprecedented situation. The ads are designed in the same way as the digital platforms, to subliminally encourage

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79 Boever, Gilbert Simondon: Being and Technology: Being and Technology.
80 Paul Lewis, “‘Our Minds Can Be Hijacked’: The Tech Insiders Who Fear a Smartphone Dystopia’, The Guardian, 6 October 2017, section Technology
consumption. When using Facebook “we are also being used.”\textsuperscript{81} This resonates with reflections on the ethical dimension of technology developed by Trish Glazebrook and Shashona Zuboff.

A study of the scale and sophistication of these “window tables” led Shashona Zuboff to interpret the emerging power relation as instrumentarianism, which “shapes human behavior towards other’s ends. Instead of armaments and armies, it works its will through the automated medium of an increasingly ubiquitous computational architecture of “smart” networked devices, things, and spaces.\textsuperscript{82} The space we live in is integrated into these networks. The horizons of communicative signs are, in part, shaped to incite dormant subjective appetite and action. Reflecting on the earlier portions of this chapter we see patterns of consumption being encouraged through encounters with virtual contexts. These contexts possess, in differing degrees, the characteristics alluded to earlier. Our material consumption, and participation in the basic eco-system processes of the planet, is less informed by actual apprehension of terrestrial life than it was fifty years ago.

Shoshana Zuboff has described the many ways that participation in society requires the use of digital technologies, and these are increasingly being shaped by a logic of manipulation. While many know that they are being monitored and psychologists, marketers and technological companies are working together to find ways to influence their lives without their knowledge, the felt need to live an effective life overrides the injustice of these practices, leading to a psychic numbing that inures us to the realities of being “tracked, parsed, mined,

\textsuperscript{81} Markham and Rodgers, Conditions of Mediation: Phenomenological Perspectives on Media, 9.
\textsuperscript{82} Zuboff, The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power, 8.
and modified”. Zuboff suggests this numbness obscures a collision between a “centuries old story of modernization and a decades-old story of economic violence that thwarts our pursuit of an affective life”.

While the problem of environmental sustainability clearly emerges during the industrial revolution, even though we are now only becoming conscious of it, Zuboff suggests we are now facing a technology that threatens our innermost nature, leading her to write “if industrial capitalism flourished at the expense of nature and now threatens to cost us the Earth, an information civilization shaped by surveillance capitalism will thrive at the expense of human nature and cost us our humanity.”

Political and social dimensions are also significant. A former Google engineer become technological ethics consultant, Tristan Harris, reflects on the new technologies, “I don’t know a more urgent problem than this ... It’s changing our democracy, and it’s changing our ability to have the conversations and relationships that we want with each other.” This is evidenced by the sophisticated deployment of technologies during recent political campaigns in the USA or in the period of time leading up to the vote on England’s exit from the European Union. This involves actions aimed at guiding political life by engaging society through subconscious means, for instance, through repeated exposure to misinformation. Individuals are targeted for manipulation as they are with advertisements.

83 Ibid., 11.
84 Ibid., 37.
85 Ibid., 347.
86 Alex Hern, ‘Cambridge Analytica Scandal “Highlights Need for AI Regulation”’, Guardian, 15 April 2018, section Tech
87 Ibid.
Zuboff suggests the nature of the technology and current global threats easily justify manipulation. The capacity of our networks and their potential to address the urgent problems we are facing make collective action more a question of engineering than voluntary collective solidarity, or authoritarian rule by force. “The velocity of instrumentarian society leaves us no time to get our bearings, and that speed is repurposed here as a moral imperative demanding we relinquish individual agency to the automated systems that can keep up the pace in order to quickly perceive and impose correct answers for the greater good.”

Michael Sandel also compares the dangers democracy faces today with the rise of the social media giants to the emergence of monopolistic industry in the early 20th century. The commodification of personal data has led to a demand for personal information and a culture of constant stimulation and distraction. A public discourse requires a certain level of “attention, deliberation, listening, learning, argument and the capacity to draw logical conclusions.” Sandel observes how the public discourse, which has been increasingly dominated by a technocratic language of economic determinism, becomes an urgent social crisis when it is paired with this depletion of attention. It is in perpetual danger of “crude, narrow minded and intolerant” forces. Focusing on the depletion of focus and concentration, it is evident that Sandel interprets the effects of current technological culture and practice to be dissipating local knowledge and social and political connection.

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90 Ibid.
These perspectives are offered at the close of this chapter one step back from the materiality of technology, and the non-neutrality as it appears in our transformed experience. These point toward some larger interpretations of the significance of technology for economics, social life, culture and politics. In this study our focus is the expansion of the notion of aesthetic education, and this view will lead us to pick out particular elements from the foregoing. At the end of the study I will return to an exploration of values intrinsic to different forms of scientific judgment and practice and the connection between the notion of expanded aesthetic education, as well as economics.

*Aesthetic Education- Mediating the Amplification of the Subjective and the Thinning of the Objective*

The non-neutral effects transforming the texture of space and place present a world of light and images where the limitations of the earth are altered in significant ways. These accommodate themselves well to certain cultural patterns and practices. In the next chapter I will treat two interpretations that are particularly pertinent today. They can be characterized as follows. In one, expressive individualism, personal interests, authenticity, expression and action are amplified and cultivated. In the second, utilitarian individualism, fundamental ecological, social or political contexts are thinned into “unreal” intimations, a tendency that I suggest is connected to an excessive theoretical and rational engagement with the collective dimensions of life. Focusing on these two dynamics in our interpretation of ourselves and our lives reveals another dimension of the situation explored in this first chapter. The interplay of these two varieties of individualism, the environmental crisis and the digital revolution appear
to form a vicious cycle. This added dimension further supports the situational argument for an expanded notion, and practice, of aesthetic education.

The argument for a cultivation of aesthetic capacities that are thoroughly rooted in sensorial apprehension is that they could buttress local terrestrial knowledge and social connectivity. From this view current aesthetic-expressive theories appear in an interesting light. This view questions the paradigm of aesthetic culture that positions redemption in imagination, art and rhetoric. It does this while at the same time reevaluating the importance of the natural sciences in aesthetic education. A comprehensive aesthetic education can be imagined that involves knowledge practices directed toward immediate, terrestrial, sensorial experience. This leads to an interpretation that suggests the natural sciences could make up a crucial part of aesthetic education during the Anthropocene.
Chapter 2 - **Expressive and Utilitarian Forms of Individualism**

In the last chapter there was a tentative exploration of social and cultural co-determinants of the effects of technology. The focus was on the material conditions of experience in the form of the natural environment and the emerging digital technologies of our day. It is possible to view the material and technological conditions of experience as revealing a double movement. The natural, terrestrial roots of life are entering into unbalanced states (the environmental crisis). At the same time human sentience is in part emerging through digital technologies with less terrestrial gravity and specificity (digital revolution). When viewed in this light, the beings, forces and elements of the earth are becoming less visible and present for us. At the same time we participate in strong feelings of freedom in the horizons of experience that open through our technologies.

While in the last chapter the cultural and socially constituting activities connected to our moment were only characterized in passing, in this chapter I focus on them. This is necessary in order to enter more into the peculiar dynamic unfolding between natural, technological, cultural and social activities. One front line of the implementation of the digital revolution during the Anthropocene is in the United States, which also happens to be my home. The bulk of interpretations and imaginaries presented are pertinent to experiences and notions of subjectivity in the USA.
The interpretation of the self provides an inner orientation to relationships, actions, values and ethics that is qualitative, comparable to the quantitative perception of space. Self-interpretation is at the same time establishment of a moral, qualitative space that provides life orientation. Acting in the qualitative space of interpretation involves the release of creative potentials, values, sources for inspiration and action. Creative in this context need not imply improvisation, but rather the connection to a cultural source that is felt as a living, vital node of experience. Thus even the interpretation of the conduct of others can involve the connecting to a perceived creative motive at work in their action. The quality and character of the source is altered by the quality and character of the interpretation. Besides the explicit and analytically developed variety of interpretation of social theory it is possible to discern a more general and diffused horizon of experience that could more fittingly be called a “social imaginary”. In this territory we move in imaginative, interpretive spaces, in a territory of experience where it is not so much a question of “falsity/genuineness, but of ...style”. Social imaginaries differ from social theories in that they lack the definite contours of theory and are constituted by legends, icons and images that exhibit a certain style. Social imaginaries are the sources of social understanding that animate the common discourse and action of the majority, whereas theory can play an analogous role for the minority. Focusing on imaginaries allows us to discern certain dynamics and values that span multiple theories. In what follows I present research and

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theories from multiple sources with an eye for certain dynamics and values of the more broad, stylistic variety.

**On Expressive and Utilitarian Individualism**

In the early 1980s American individualism was severely critiqued by Robert Bellah, Richard Madsen, William Sullivan, Ann Swindler, and Steven Tipton. It was a research project involving engaged interviews with some 200 individuals in the U.S. This later appeared in book form as “*Habits of the Heart*”. The research team was interested in understanding common notions of private and public life. A significant portion of their research involved the revelation of two varieties of individualism. They referred to these as “utilitarian individualism” and “expressive individualism.” In this chapter I reinterpret these two forms of individualism in the style of social imaginaries that characterize certain dynamics and values that appear in multiple theories, theories that may exclude or contradict one another in more specific senses. Except when I explicitly reference to *Habits of the Heart* they will not represent the nuance and detail they express within the context of that study.

The research from *Habits of the Heart* reveal Utilitarian individualism was common in thinking about public life, conceived to be a matter of occupational and economic activities. Such activities were judged from a standpoint of utility, involving various forms of cost/benefit analysis. Here ultimate worth is judged in terms of individual aspirations for success, some form of mastery, and career goals. Expressive individualism appeared in articulations of private life

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and of relationships of a more personal nature. Bellah and his colleagues noted a “therapeutic” quality in this notion. Personal wellbeing and self-development is not experienced as a banal, utilitarian aspiration, but as a meaningful ideal offering existential fulfillment.

The authors of this study ultimately interpret these individualisms as undermining democracy and political liberty in the USA. This is evidenced by particular developments in capitalism, and by a form of individualism that focuses more on the potential for self-development in relationships than on enduring commitments and the common good. The older notions of civic virtue and the religious community ideals – which have long supported collective life in the U.S. – are undermined. And these ideals, the authors suggest, are essentially connected with what has made democracy, and the good life, possible in the USA. The ultimate suggestion is that important aspects of the older order of life should be retrieved.

A similar pair of subjectivities is evident in Philip Rieff’s *The Triumph of the Therapeutic.* Rieff associates Occidental modernity with the fall of an explicitly Christian society and the rise of art and analytic scientific thought. With the disappearance of the institutions that inspired naïve faith “the compulsive dynamic of culture, channeling obedience to, trust in, and dependence upon authority” a “de-conversion” takes place. What remains is the use of knowledge and techniques to manipulate a sense of well-being, which he calls

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95 Ibid., 46.

“therapeutic”. This leads to the lack of interest concerning those in power so long as social order and an economy of abundance are maintained, a soft tyranny. This orientation toward the unfettered self “a new and dynamic acceptance of disorder, in love with life and destructive of it, has been loosed upon the world.”

*Habits of the Heart* is a term taken from Tocqueville, suggesting certain orientations and interpretations that exist as habits and mores in society. Tocqueville prophesied a possible future of gentle tyranny, where citizens would think themselves free, identifying liberty with personal enjoyment, family and life style, while power consistently fell to a centralized authority. Like Rieff, Bellah suggests that Tocqueville would interpret life in the USA during the time of the study, the 1980s, as an advanced form of soft despotism. While traditional forms of religious and republican life would be a “return to intolerable discrimination”, the question remains if “the older civic and biblical traditions have the capacity to reformulate themselves while simultaneously remaining faithful to their own deepest insights.” These have to do with a revival of the notions of the common good, civic virtue and the place of faith in national life.

Bellah characterizes expressive interpretations of the self as abstract points of volition that cannot express the “fullness of being that is actually theirs”, a fullness of self that is

97 Ibid., 12-13.
98 Ibid., 26.
99 Ibid., 5.
101 Ibid., 211.
102 Ibid., 144.
103 Ibid., 81.
acquired through “other people and institutions”. This implies an inability to form new communities and collective commitments out of the widespread modern demand of immanent meaning, be it in science or spirituality, and a plea for the care of our inheritances and traditions.

The call for traditional, meaningful orientations toward collective life (not just utility) and a chastening of individualism has been complicated since this study was conducted. The transformative dimensions of the digital revolution were not intimated by theorists in the 1980s. In considering the emergent bi-furcation of conditions for sensation described in the last chapter and the highly individualistic horizons of light opened up through digital technologies we can recognize a new dimension of challenge. The digital revolution presents obstacles for the very apprehension of collective experience. Observations and comments on the role of religion in relation to the environmental crisis and the digital revolution are limited in this study. The expanded notion of aesthetic education that is being explored is focused on the education of perception and the sensibilities. One characteristic feature that is important in this regard is the differentiation, richness and specificity we find in directing our perception and feeling toward our environments. In the last chapter a review of technological theory led to an impression that modern technologies introduce a dynamic into our daily acts of perceiving and living that do not add to this richness, local awareness and specificity. A presupposition at the heart of the importance of much aesthetic education since the writing of Schiller’s letters is that voluntary collective actions are intimately connected to the education of perception, feeling

104 Ibid., 84.
and sensibility. The limited comments in this study dealing with the significance of faith and religion should be viewed from this vantage point.

In Robert Wuthnow’s exploration of intersections and tensions between religious life and economic life in the USA at least two forms of individualism can be identified within the religiously oriented and spiritual (every weekend some 75 million Americans participate in religious celebrations of some kind). He has pointed to the ambiguous presence of religion in society that suggests materialism as a “temptation” but does not effectively challenge excessive consumerism and the growing orientation toward religion and spirituality as a “an inner quest, or perhaps as an awakening of some inward potential, generally through introspection and involving an emphasis on emotions and feelings. In the process, materialism comes to be regarded as an externality, or as a more superficial aspect of reality, perhaps even a distraction from the quest of spirituality.” He highlights an understanding of materialism as a willingness to “pay personal costs for material success.” He notes how spirituality and consumerism are difficult to keep separated, and spiritual imagery and symbols are increasingly utilized to sell “automobiles, hiking boots and soft drinks”. The solution Wuthnow offers is more courageous religious leaders, educational curriculum that encourages thought about the connection of the economy with faith, increasingly allowing values to shape economic action, more public debate on economic issues, and fostering charity and a prudent and slow “critical and collective” resistance to “obsessive materialism and excessive secular work”.

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106 Ibid., 161-164.
107 Ibid., 266.
Bellah, the ethical assets offered here do not particularly address the interplay of the increasingly delicate planetary condition, and the aggravating distractions of our expanded digital experience. Even more so, it overlooks the great irony of history indicated by Weber tracing the roots of current capitalism to protestant Christianity and asceticism. In this study, where the cultivation of feeling for our peculiar terrestrial experience through perception and sensibility is the focus, I will pass over the positive suggestions Wuthnow and Bellah offer in regards to religion and faith.

Regarding Bellah’s notions of expressive individualism and utilitarian individualism, we find an illuminating and significant contribution in the work of Charles Taylor. Taylor has pointed out that one overlooks important nuances in utilitarian and expressive individualism when trying to trace them both back to John Locke’s notion of selfhood and psychology, as is done in Habit’s of the Heart. Later, through turning to Charles Taylor’s work, we will weave these elements into the discussion.

While seeking fidelity to the theorists and researchers presented in this chapter, we have our eye on an abundance in which they partake, which is a more widely diffused social imaginary. In both Bellah, Rieff and Wuthnow two tendencies stand out, and a larger dynamic between them. One in which the quality of individual experience and feeling is paramount in the structuring and interpretation of life, the other as utility, mastery and control. These propel one another, with one facet of our social imaginary controlling the other. Utilitarian individualism has long discovered how to appeal to expressive tendencies, to the self-referential and de-contextualized quest for happiness and feeling, exerting a soft tyranny.
Expressive individualism leads into a de-contextualized and expanded freedom, while utilitarian individualism turns the world into simple patterns of manipulation and control.

In what follows, unless I particularly refer to Bella’s study, I will use the terms expressive and utilitarian individualism to characterize more general tendencies. My use will thus exclude the nuances of their original context. The goal is to use them to draw our gaze toward tendencies in broader social imaginaries.

Christopher Lasch’s famous sociological, historical and psychological study suggested strong affinities between narcissism and corporate capitalism. He advocates for a sober local effort to retake the tools and knowledge of production as a remedy, and most of the study is directed toward drawing out the parallel. He states that a therapeutic mode of thought and practice “exempt their object, the patient, from critical judgment and relieve him of moral responsibility.”\(^\text{108}\) This tendency characteristically loses all feeling for history and cultivates a hyper focus on the present. The hippy generation, the disappearance of politics, the rise of wellness culture and the promise of science to fulfill every personal requirement all proffer to this trend. One’s life is considered a work of art involving the crafting of one’s own idiosyncratic personality, while leaving policy in politics and economics to experts and managers.

He describes a hedonistic subjectivity “almost numb to its collective context, and the instrumental manipulation of others through advertising and propaganda”\(^\text{109}\). Capitalism increasingly involves the shaping of wants, and consumption in mass society, through advertising, just as propaganda includes shaping opinion and thought. The trend turns the


\(^{109}\) Ibid., 396.
citizen into a client and the worker into a consumer. The individual works for money, for selfish ends, uninterested in the collective enterprise that supports his or her existence. Lasch presented the happy hooker as a symbol of this type of interdependence, where relationships were increasingly viewed as mere means to a private end. An instrumentalized, impersonal and distant context is thinly present while a narrow subjectivity is intensified, leading individualism to take the place of individuality.

Here we can clearly make out the signature dynamic of a subjectivity that actively seeks happy consciousness beyond the context of history, politics and intrinsically valued solidarities. We also see the use of advertising and propaganda as cultures of soft control and dominance. Each person is isolated in pleasure and thus becomes the dupe of the instrumental intentions of the other. Lasch’s study contributes to awareness of dynamics in our social imaginaries that clearly resonate with what we have seen in Bellah, Rieff and Wuthnow.

An Interplay between Calculation and Dream

The criticisms of a strain of therapeutic expressive individualism finds one of its most interesting presentations in the work of Colin Campbell. He has characterized modern consumerism as an “autonomous, self-illusory hedonism.” It is marked by a “preoccupation with ‘pleasure’, envisaged as a potential quality of all experience”. In his study he traces this way of thinking and living back to the sentimental branches of protestant spirituality and the romantics. Campbell suggests that “the cultural logic of modernity is not merely that of rationality as expressed in the activities of calculation and experiment; it is also that of passion,

111 Ibid.
and the creative dreaming born of longing.” He offers his theory as a complement to Weber’s work. The tension between them is key for the dynamism of the West.\textsuperscript{112}

Campbell characterizes the act of longing as central to consumerism, highlighting its “voluntaristic, self-directed and creative” nature.\textsuperscript{113} He highlights the ironic relationship that exists between the ideals of beauty, truth and goodness “that animate romantic interpretations of subjectivity and life, and the forms of conduct which they serve to promote”.\textsuperscript{114} Just as the brutal superficiality of modern capitalism is starkly different from the rationalistic strains of protestant Christianity, so is hyper-consumerism different from the pietists and the romantics. The irony of history reveals that the focus on pleasure and daydreaming that constituted part of the moral renewal of the romantics, and was understood to be in opposition to the tendencies implicit in utilitarian thought and commercial life, in the end comes to constitute a hyper-consumerism.\textsuperscript{115} In the end modernity is not simply constituted by the rigid form of economic calculation, utilitarianism and profit seeking, but also from dream castles and romance. Weber’s study of the irony of history that sees elements of the ascetic culture of protestant Christianity turn into capitalism is complemented by Campbell’s presentation that sees elements of the nature philosophy and spirituality of the pietists and Romantics turn into hyper-consumerism.

Campbell’s notion of the fundamental dualism driving the dynamism of the West is manifest in the janus face of many corporations. For instance, Amazon is “obsessed with

\begin{footnotes}
\item[112] Ibid., 227.
\item[113] Ibid., 203.
\item[114] Ibid., 207.
\item[115] Ibid., 209.
\end{footnotes}
understanding its customers … the more you understand every aspect of a customer, the more it can satisfy your needs.” Amazon’s “north star is to delight the customer.” The flip side of this romance, and the “consumer trust” it inspires, ignores the “damage the company does to competitors, partners and workers”. This impossible schism is self-evident, wherein “only looking at a consumer side of a business’s power is ludicrous. It slices the human in half, not looking at them as worker, producer or supplier.” One might also add citizen to this list. Today this tension is present in all of us as we play both roles of customer and worker.

Campbell’s description of the dynamic between the rational and the passionate, between calculating and longing, point toward the movements in our social imaginaries already indicated. He traces the historical emergence of the dynamics of expressive individualism to the romantics while deferring to Weber in his genealogy of calculating capitalism and control. The point of this chapter is not to highlight the differing historical origin stories of current imaginaries but to look toward their general dynamics through the work of various theorists and researchers. We can see that in Campbell’s view the inheritance of the romantic movement is a form of consciousness that is easily disconnected from its impact on the earth in its longing for “authenticity” and “bliss”. It becomes a culture vulnerable to manipulation and control, to utilitarian ambitions.

This orientation reveals a culture that seeks fulfillment in consumerism in a dream like state, or self-illusory hedonism. At the same time a utilitarian culture of economic organization encourages this consumption in the interest of profits. These profits are, however, not felt in

their intimate connection to the real economy and the earth. This cultural dynamic is reflected by the materially conditioned dynamic indicated in the last chapter. The real, finite foundations of life are both highly vulnerable to collapse, and increasingly distant for us, in part due to the non-neutral influences of our most powerful inventions. This deflects our attention toward values that are largely disconnected from the constraints of the planet, encouraging a sense of abundance and well-being that is illusory. This brings to mind a prophecy indigenous to North America; *when the last tree is cut down, the last fish eaten, and the last stream poisoned, you will realize that you cannot eat money.*

We have a marked capacity for apprehension of the finite, yet we largely employ this capacity for artistic, social and political activities. The question at the heart of this study is how this capacity could be directed toward terrestrial experience as a discipline of knowledge. How might this change if the apprehension of our terrestrial context, our connection with our place on the planet? What if our “scientific” perspective was aesthetic? What natural scientific culture could facilitate such a gaze?

**The Interplay between Metabolism and Construction**

The tension, and relation between, construction and expression, the utilitarian and the creative, has also received a significant articulation in the work of Hannah Arendt. This is particularly true of her characterizations of animal laborans and homo faber. Animal laborans is a type of activity wherein labor and consumption make up two parts of one whole.\(^{117}\) The essential character of this type of living is simply sustaining life. This is connected to the low

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regard in which it was held in pre-modern times. It was felt that “the daily fight in which the human body is engaged to keep the world clean and prevent its decay bears little resemblance to heroic deeds; the endurance it needs to repair everyday anew the waste of yesterday is not courage, and what makes the effort painful is not danger but its relentless repetition”\(^{118}\) (It was recently pointed out to me in relation to this quote the heroism it requires today to clean the planet!). The products of animal laborans are insubstantial and ephemeral, being taken up into consumption as soon as they are produced. The products are driven by the needs of the metabolic process of the body, and the reality is essentially private, or “worldless”. Arendt differentiates this level of experience from homo faber, where the body does not direct production and consumption, but the body is used freely.\(^{119}\)

A characterization of modern society is that the virtues of homo faber, or the human as fabricator, of permanence stability and durability, “have been sacrificed to the abundance, the ideal of animal laborans”.\(^{120}\) Arendt situates Vita Activa, or expressive activity in public with others citizens, as a mode of being that can escape instrumental rationality. Outside of Vita Activa the only profession that escapes the logic of the “laboring society”, whose greatest ideal is the unrelenting activity of “making a living”, is the artist, the highest manifestation of the human as fabricator. With the rise of automation and the elimination of laboring Arendt described the last stage of the laboring society, where life becomes a “sheer automatic functioning”. Addressing the heart of behavioralist social science she comments that “The

\(^{118}\) Ibid., 101.
\(^{119}\) Ibid., 118.
\(^{120}\) Ibid., 126.
trouble with modern theories of behavioralism is not that they are wrong but that they could become true, that they actually are the best possible conceptualizations of certain obvious trends in modern society. It is quite possible that the modern age—which began with such an unprecedented and promising outburst of human activity—may end with the deadliest, most sterile passivity history has ever known.”

The marked shift wherein “an idea of social order no longer as forms-at-work in reality, of the kind invoked by Plato, but as forms imposed on inert reality by human agency” that accompanies the rise modern scientific culture manifests in a new management of economic society. An element of homo faber that expresses itself in the making and use of ideas as tools and the mastery of experience, is turned back on society to produce the ideal conditions for animal laborans, or a society of consumption and labor.

The cofounder of Apple predicts that in the future AI will adopt humans and take care of them as pets, meeting their every need. Bill McKibben, who reflects on this type of dynamic in his book Falter, notes current trends of spending ten hours engaging with screens, and seventeen minutes exercising, or using our bodies. He points out how important it is to contextualize some of the studies and statistics of the rising generations from this perspective. It is true that teens are physically safer, they are having less sex and drinking less, but consider their going out less and less, and their being extremely isolated. Recently we see that after pressing the frontiers of death back at the late stages of life over the last century it is regaining

121 Ibid., 322.
122 Taylor, A Secular Age, 182.
its footing in early and midlife through suicide and diseases of despair.\textsuperscript{124} The notion of despair resonates with Arendt’s characterization of animal laborans that is not despised for its “danger but its relentless repetition”.

A similar perspective has been explored by Zygmunt Bauman. “‘Consumerism’ arrives when consumption takes over that linchpin role which was played by work in the society of producers”, It is an ordering of society that involves “recycling mundane, permanent and so to speak ‘regime neutral’ human wants, desires and longings into the principal propelling and operating force of society”.\textsuperscript{125} The values implicit in this organization displace the earlier values of long-term circumspection, durability and long-term security.\textsuperscript{126} The society of consumers promises a succession of happy moments, a happy earthly life, identified with an infinite series of “eternal instants” of personal gratification and acts of consumption.\textsuperscript{127}

The internet and the fluid nature of modern digital habitats allow for the eternal creation and re-creation of identities, untethered from history, place and terrestrial experience. Here the promises of the “happy” subject, as a self-understanding that co-constitutes experience and action, presents a state of mind that is an end in itself, that does not experience the interdependence and limits on individualism, be they social or planetary. What is striking, in both Arendt and Bauman, is the amoral and extreme sophistication of homo faber being turned toward a semi-conscious process of consumption.

\textsuperscript{126} Ibid., 31.
\textsuperscript{127} Ibid., 44.
In the work of Arendt and Bauman a type of awareness and motivation is characterized that is dream-like and driven by dull desires and longing. Like a dream, the subjective character of the experience may be powerful, yet it is ultimately without any great significance for waking life. The subjective experience itself is positioned as the good and it is repeated infinitely through acts of consumption and enjoyment. This type of experience is “world-less”. On the other hand the successes of rationality, in the tool builder, are turned toward satisfying, and encouraging, this consumerism. In these two theorists we can make out similar gestures in the social imaginary as Bellah, Wuthnow, Rieff, Lasch and Campbell. An individualism wherein the subject is isolated through its own amplification and an individualism that approaches the earth and others as a resource with which to fashion means and works.

In the work of Bauman the dynamic between these social/cultural dynamics and the internet are treated. We can see how the non-neutral tendencies of technology presented in the last chapter are amplified by the cultural dynamics presented here, and vice versa. I will be returning to Arendt later in this study as she is one of the few theorists to suggest the important need of expanding aesthetic education in the direction of the natural sciences in order to counter this destructive dynamic. In treating the earth, and others, as means reducible to an-aesthetic fixed laws the rich and creative life of terrestrial nature is veiled.

The Domesticated Subject and the Technological

The intimate connection of a homo faber type of thinking with the creation of tools finds an echo in The Technological Society by Jacques Elull. Elull worked to show the limitations of the simple association of technology with the machine. In characterizing the technological society he uses technique, or the “means and the ensemble of means” and states that “Our
civilization is first and foremost a civilization of means; in the reality of modern life, the means, it would seem, are more important than the ends. Any other assessment of the situation is mere idealism.” The means include economic technique, technique of organization and human technique. One dynamic associated with the increasingly utilitarian approach to all areas of experience and initiative is the emergence of an impotent love of nature, art and varieties of social movements. These arise as spontaneous natural impulses and are shaped by the technological society. The crowding out of the deepest impulses in human nature leads to ecstatic and impotent forms of culture and subjectivity. These anti-utilitarian and sensational developments do not represent a serious opposition to modern societal form. “Technique on the most significant level, integrates the anarchic and anti-social impulses of the human being.” Technique is primary, culture becomes a subservient and vacuous luxury.

When the ideal of these technological trends have been reached, “everything will be ordered, and the stains of human passion will be lost amid the chromium gleam. We shall have nothing more to lose and nothing to win. Our deepest instincts and our most secret passions will be analyzed, published and exploited.” In Elull’s notion of the technological society and the domesticated human subject, technique appears as an amoral power in its own right that has a drying out influence on all areas of human experience. In his portrayal creativity and spontaneity are controlled and directed toward impotent sites in society. Here too, the forceful

129 Ibid., 423.
130 Ibid., 427.
presence of a utilitarian interpretive power reigns in the greater world, while a contained and controlled hedonistic subjectivity surrenders itself more and more to integration.

In her study of surveillance capitalism Zuboff has detailed an intensification of the dynamic that involves the exploitation of the consumer’s personality in the pursuit of greater consumption and sales. Like Arendt, Zuboff recognizes in behaviorist theory the characterization of a very “obvious” trend that is increasingly dominating collective organization. The vision of the likes of Skinner was for “computational capabilities that would perfect behavioral prediction and control, enabling perfect knowledge to supplant politics as the means of collective decision making”.  

131 This involves targeting human frailty, a practice justified by the irrational conception of human nature. This view deems human beings incapable of noticing the regularity of their own failures and thus adopts a paternalistic view.  

132 Recent developments and innovation in the digital facet of our habitats involve an educated few working into society through technology in a spirit of “instrumentarianism”. The activity of the users of technology are harvested and packaged to be reused as means to other ends. Human experience and personality are increasingly integrated into technique, in a way that was predicted by pre-digital theorists like Ellul. Digital computation is a new regime of order. It replaces political life of communities as a governing force. It involves the conscious colonization and exploitation of personality.

Zuboff and Ellul point toward an uprooted individualism that has given up control and life to an instrumental spirit that is increasingly dominating it. Two dynamics of our imaginary

132 Ibid., 343.
appear here in new perspectives. All of the theorists and sociologists presented in this chapter offer excursions into social theory and social imaginaries in which we participate mentally, emotionally and through action. I will use the terms expressive and utilitarian individualism in what follows to indicate these broad tendencies. Again, I am using them to grasp more general dynamics of social imaginaries, not in reference to the limited characteristics presented in *Habits of the Heart*. These two tendencies, evident as interpretive horizons of meaning, appear as cultural facets of the non-neutral potentiality present in the digital revolution that was indicated in the last chapter.

**Historical Dimensions**

The immediate sense and contour of our experiences we naively sense as given are of course historically and socially constituted, as well as subjectively. The texture and the hue, the centers of gravity and hierarchies of evaluation, that situate us in existence are not “natural” in a simple sense. As we have seen the two prominent imaginaries of expressive and utilitarian individualism inform and inspire subjectivity as it relates to personal and public life, and in some cases, inner and outer life.

These orientations are present even as they share life with the past. Bringing into focus past iterations of some of the orientations can help illumine their peculiarities. In looking into the past, nuances that otherwise could escape our attention are brought to light. In what follows I will turn toward particular elements from the past to bring out some of the nuances crucial for this study.

In the very articulations of the theorists we have presented thus far we are lifted into historical discourse, such as when Bauman describes an interrelation between the non-neutral
power of internet shopping and modern epistemology, “[commoditites] stick to the role of the Cartesian ‘object’- fully docile, obedient, stuff for the omnipotent subject to handle, give shape to, put to good use. By their sheer docility they elevate the buyer to the noble, flattering and ego boosting rank of the sovereign subject, uncontested and uncompromised.”

Here the Cartesian articulation of a subjectivity, co-terminal with a field of reason, that controls, but is not identical with, the world of extension gives meaning to the contours of internet shopping.

A lack of interest in such a constitution of experience is more testimony to our lack of historical consciousness than its banality. Elull places the technological society as part of the radical “psychological transformation” which involved the dawning feeling that patterns in “phenomena were worthy of study themselves” as revelations of the real. As already indicated this involved the advent of the use of an image of a docile and inert physical world governed by fixed laws. It was this “psychological transformation” that made for the scientific revolution, not the helio-centric model of the solar system.

This inner orientation was accompanied by knowledge practices that created definite, clear and self-contained thought “models” to test against the real. This knowledge culture involves repeated interpretation of thought as artifice, while at the same time situating this artifice as a discovery of closed, characteristically quantitative patterns constituting reality. Thus, a double movement that both humbles abstract thought, as artifice, and elevates it to the image of the real, becomes practice. This practice is the institution, or ritual, involved in

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133 Bauman, Consuming Life, 16.
134 Elull, The Technological Society, 45.
knowledge creation. This also sheds light on a constitution that casts the outer world as an abstract texture while at the same this abstract thought provides the architecture for shaping life. In his insightful, epic study of secularization Charles Taylor characterized the subjectivity that emerged as a “buffered self” in the “great disembedding”.\textsuperscript{136} One strand Taylor explores is the interpretive and cultural. The form of subjectivity that gradually emerges can be plagued by the sense of being too much in the head and disassociated from the material body. This he calls a process of “excarnation”.

One facet of this process is the “disengaged stance of rational analysis and control towards the self”. Descartes articulated the ideal to “distance ourselves from our embodied understanding of things in order to achieve clear and distinct knowledge.”\textsuperscript{137} This leads to right action. In a discussion on the non-neutral facets of modern medicine and ways of engaging images of the human, such as x-rays and graphs, he states that we are in a process “alienated from our anchoring in the world, in real fleshy reality; which we can only recover access to through the lived body, whose testimony is being shaped or even denied by ‘virtual’ reality.” If one traces the feeling of self as users of tools, as separable instruments, out into the feeling we have for ourselves as parts of systems, we move further away from our bodily anchor. This is part of the process he calls excarnation.\textsuperscript{138}

The orientation toward the rational, abstract universal is also connected to the method whose foundation is based in skepticism toward the qualitative and aesthetic dimensions of

\begin{footnotes}
\footnote{136 Taylor, \textit{A Secular Age}, 151-158.}
\footnote{137 Ibid., 614.}
\footnote{138 Ibid., 741.}
\end{footnotes}
experience. The scientific method can be considered one institutional expression of rationalism. While science is often portrayed as a receptive orientation toward perception, the dominant characteristic of modern science is not receptivity, but a practiced skepticism. This leads to a constitution of experience that is an-aesthetic. This can be observed without referring to an ineffable subjective state. Giorgo Agamben contrasts this an-aesthetic approach to pre-modern notions of experience. He articulates how the emergence of this new practice of knowledge can be characterized as effecting a “destruction of experience”, stating that “against repeated claims to the contrary, modern science has its origins in an unprecedented mistrust of experience as it was traditionally understood” and that “The scientific verification of experience which is enacted in the experiment – permitting sensory impressions to be deduced with the exactitude of quantitative determinations and, therefore, the prediction of future impressions – responds to this loss of certainty by displacing experience as far as possible outside the individual: onto instruments and numbers.”

These quantitative functions have only quantitative relations with one another and do not provide other values. A context that is increasingly understood in this way encourages attitudes of utility, functionality and manipulation.

In *The Human Condition* Arendt develops a famous criticism of modern knowledge practices and associates them with the destructive co-dependence of animal laborans and homo faber. She characterizes the modern shift of the reality principle outside of experience as a confirmation of the fact that our own organs of perception are sources of illusion, and that

the new science offers an Archimedean point free of terrestrial perspectivalism that involves handling nature from “a point in the universe outside the earth.”\textsuperscript{140} Moderns have established themselves as universal, not terrestrial beings. The love of the world was first to fall victim to the “modern age’s triumphal world alienation” leading to a loss of experience.\textsuperscript{141}

At this juncture it is relevant to consider one of the first economists to focus on the limits of growth who adopted the terms convergent and divergent in order that, through comparison, two styles of thinking could illumine one another. Convergent problems are, “man’s most useful invention; they do not, as such, exist in reality, but are created by a process of abstraction. When they have been solved, the solution can be written down and passed on to others, who can apply it without needing to reproduce the mental effort necessary to find it. If this were the case with human relations— in family life, economics, politics, education, and so forth— well, I am at a loss how to finish the sentence. There would be no more human relations but only mechanical reactions; life would be a living death.”\textsuperscript{142}

Here Schumacher characterizes the closed whole, the thought that is finished and complete, as akin to processes of death. The convergent problems, with set solutions, among things that are no longer becoming, these correlate with the logic of the corpse. This is the type of thinking that manifests in machines and technology. If we bring to mind again the premodern Florentine who looked above the moon to an area full of celestial life and divine light, while the earth was a place of death and sin, it is fascinating to see how today satellites,

\textsuperscript{140} Arendt, \textit{The Human Condition}, 262.
\textsuperscript{141} Ibid., 264.
crystals of convergent thinking, populate the sky, while the earth has clearly become the stage of a precious life and site of teeming creativity. I have already pointed out that while the Florentine had a theology that directed her to participate in extra-terrestrial worlds of light, the modern has a material technology that enacts a strange variety of the same. While the earth is felt as the home of life, this precious earthly life seems frustratingly beyond our apprehension when it is grasped with extra-terrestrial thinking. In a sense death, instead of being associated with the earthly processes of coming into being and passing away, as it was among the Florentines, can be sensed in the “extra-terrestrial” framing of earthly experience.

We can see in Bellah’s characterization of the results of his interviews a variety of this type of thinking primarily directed toward participation in the economy, professional life and public life. The movements and attitudes are typified by cost benefit analysis and utility. At the most advanced and powerful point of our economy this thinking can be recognized in aspirations of some among the digital elite described by Zuboff. The divide that Zuboff outlines in the new classes of technological aristocracy and technological “users”, who are governed by irrational appetite and narrow mindedness, appears in Arendt’s description of the modern individual. This individual has not gained the world, contrary to common belief, through modern culture but been thrust into “a closed inwardness of introspection, where the highest he could experience were the empty processes of reckoning of the mind, its play with itself. The only contents left were the appetites and desires, the senseless urges of his body which he mistook for passion and which he deemed to be “unreasonable” because he found he could not
“reason”, that is, reckon with them.”\textsuperscript{143} Arendt shows an amplified feeling of agency and sovereignty as only one side of an isolation and rigid personal enclosure; a strong dualism.

I have tried to bring to the fore certain historical perspectives that enrich our sense of utilitarian individualism. Expressive individualism, as it appeared in the interviews presented in \textit{Habits of the Heart}, included a high valuation of the quality of experiences, and the sense that it was imperative to string the necklace of life with moments of personal well-being, authenticity and spontaneous creative acts. This notion reveals and instructs in many ways, but the way it is treated by the theorists presented in this chapter also occludes in important moments. I will be addressing some of the nuances and historical facets of expressivism in following chapters, drawing on some of Charles Taylor’s elucidations.

Historically the culture connected to expressivism clearly appears among the romantics. I will briefly summarize the dynamics of expressivism as they have been presented thus far. Bellah states that expressive interpretations of the self as abstract points of volition cannot express the “fullness of being that is actually theirs”,\textsuperscript{144} a fullness of self that is acquired through “other people and institutions”.\textsuperscript{145} He characterizes this orientation as one of hubris, one resonant with the thought of Emerson and other romantics, especially the credo of self-reliance. While the aspirations and ideals of this variety have viewed utilitarian and commercial culture as a debasement of human nature, leading people away from their innate goodness, in

\textsuperscript{143} Arendt, \textit{The Human Condition}, 320.

\textsuperscript{144} Bellah, Madsen, Sullivan, Swindler, and Tipton, “\textit{Habits of the Heart}”: Individualism and Commitment in American Life, 81.

\textsuperscript{145} Ibid., 84.
the end it has been integrated as a crucial narrative in the current variety of consumer capitalism.

Campbell captures this search for experience as personal well-being as self-reliance, that at the same time does not lead to the utopia it promises, becoming instead self-illusory hedonism. Bauman’s description of the search for fulfillment and eternity in each moment, as singularities that evade terrestrial experiences of place, while leading to the unsustainable destruction of the earth through consumerism, is one example of this irony. Fifteen minutes of commercials wherein the most profound capacities, such as courage, intelligence, love, creativity and leadership are promised through our use of computers, beer, cars and clothes illustrate this dynamic. There we will see, as Wuthnow has pointed out, that spirituality and consumerism are increasingly difficult to keep separated, and spiritual imagery and symbols are increasingly utilized to sell “automobiles, hiking boots and soft drinks”.¹⁴⁶

It can be noted that the process of excarnation, of disembedding and distancing characteristic of articulations of utilitarian individualism, also appears in expressivism. Whereas the utilitarian excarnation involves the substitution of experience with universals and abstractions that gradually, through a process of what Whitehead called “misplaced concreteness”, de-contextualize the subject, the expressive excarnation reveals a submersion in sensation, dreaminess and personal states of feeling. To consider one in a cold temper and second in a hot, brings something of their felt qualities to the fore. The one can also be felt to relate to crystalline clarity, the other sulfuric brilliance.

¹⁴⁶ Wuthnow, God And Mammon In America.
Two aspects of modernity are, more and less, undertreated in these theories that are important for the current inquiry. One is the gradual disintegration of hegemonic religious culture, an especially important question for Bellah, Wuthrow and Rieff. Rieff’s orientation escapes this dilemma as he does not indicate a way to turn back to Christian hegemony, seeming to embrace inevitable decline. Yet he shares with the others a melancholy tone that cannot conceive of a desirable self without strong and definite institutional traditions, traditions that have significantly shifted over the last centuries.

It is in Taylor, in his *Secular Age*, that we find the most articulate consciousness of this dilemma. In undertreating this facet of modern development all suggestions that offer tradition as a solution seem unjustified. We live in a secular age that has accepted, in important ways that do not even rise to consciousness, the orientation of modern culture, science and art. Simple reference to religiosity in the USA obscures the radical shift in modernity that makes a truly traditional Christian culture a place of no return. Even among modern believers secularization is well at home. As Taylor writes, “I am talking about the sense of things. I am not talking about what people believe. Many still hold that the universe is created by God, that in some sense it is governed by his providence. What I am talking about is the way the universe is spontaneously imagined, and therefore experienced. It is no longer usual to sense the universe immediately and unproblematically as purposefully ordered, although reflection, meditation, spiritual development may lead one to see it this way.”  

147 Taylor, *A Secular Age*, 325.
moral source is connected to the modern process wherein access to potentialities are connected to individual activity and articulation, not tradition and common understanding.

This is directly connected to the notion that through subjective articulation and participation one connects to moral and creative sources that can have a renewing effect on life and society is largely ignored. This is especially true of the theorists who accentuate the therapeutic nature of expressivism. Charles Taylor has highlighted the nuances that are lost through tracing the image of the human being that is developed among the romantics to the likes of John Locke. This obscures an important facet of the “Expressive Turn”. This turn is best understood as a rupture with the modern, dualistic epistemology and cosmology of early modernity and a search for that lost unity through individual activity. Of the theorists presented thus far it is Colin Campbell who has explored the ideals and ethics of the romantics with most fidelity on this front, while focusing on the great irony of the commercial integration of this cultural development. In the next chapter I will focus on theorists who face this dilemma and complement the limitations of many interpretations presented thus far.

The second undertreated facet is the most significant, it is the mediating power of the modern aesthetic orientation. After the deterioration of hegemonic spiritual culture, and the advent of individual creativity as the method for connection with moral sources, it remains. This orientation has been explored and developed in political theory and art over the last 200 years in significant ways. A central purpose of this study to explore in how far its development has

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been one-sided and if it contains significant potential for the challenges outlined in the first chapter.

If the “cultural logic of modernity is not merely that of rationality as expressed in the activities of calculation and experiment [but] is also that of passion, and the creative dreaming born of longing” one can wonder how this dynamic might be shaped in new ways. The view that is presented in the following pages situates the dynamic in a mediated form, one of reconciling certain facets of these two tendencies.

Many of the theorists we will turn to in the next chapter open up horizons of experience where the simple dichotomies presented thus far leave certain ambiguities unaccounted for. They move in terrains of creativity and aesthetic experience where the contours of inner and outer, world and subject blend together. They offer significant contributions in this regard by focusing on the significance of individual articulation and aesthetic experience.

The non-neutral facets of digital technology lead, on a basic level, to a bifurcation of the material side of sentience, into a terrestrial and an extraterrestrial. These technologies are co-constituted by social imaginaries that are characteristically excarnating (Taylor) and non-terrestrial/universal (Arendt). Given that “certain moral self-understandings are embedded in certain practices, which can mean both that they are promoted by the spread of these practices, and that they shape the practices and help them get established”149 this parallel might be expected. If, however, the non-neutral effects of the most basic facets of the digital revolution are concerning when viewed in light of the planetary crises that is unfolding, it is

149 Taylor, A Secular Age, 156.
heightened when we bring to consciousness these social imaginaries. To a growing form of materially conditioned sentience characteristically extraterrestrial we add at least two forms of subjectivity that are “excarnating”.

Before turning toward the historical discourse on aesthetic education originating in Schiller, an interlude is dedicated to interpretations of subjectivity that incorporate the two undertreated elements indicated above, preparing the ground for an appreciation of the tradition of aesthetic education. The tradition of aesthetic education that emerges with Schiller is one of broad public, democratic culture. The impulse of democracy requires widespread accessibility. While successes in this direction will always be approximate, the tendency toward public cultivation and dissemination of a pedagogy in the service of democracy is a core facet of the orientation presented in what follows.
Interlude I - Aesthetic Ambiguities

Both expressive individualism and utilitarian individualism find aesthetic experience elusive. They separate reason and perception in opposite ways making modes of experience that unite rationality and feeling mysterious. Engaging expressive and utilitarian individualism on their own terms leads to an occlusion of aesthetic notions of experience. This is connected to a subsuming of aesthetic modes of being under the expressive. I attempt to show that this obstruction arises all too easily. It rests on an affinity between expressive individualism and a one-sided, conventional notion of aesthetic culture. This conventional notion of aesthetic culture posits aesthetic experience as largely pertaining to intersubjective expressive persons. It frequently neglects aesthetic dimensions of the terrestrial. This interlude is dedicated to re-focusing on self-interpretations that are easily associated with expressive individualism, trying to draw out the two undertreated facets indicated at the end of the last chapter. Both are connected to the connection between individual feeling and creativity on the one hand, and collective perception or meaning on the other. The first was the dissolution of the hegemonic culture and the need to connect to unified moral sources through acts of individual articulation as presented by Rieff, Bellah and Wuthnow. The second was aesthetic experience, where thought is connected to perception and feeling with mind through holistic pictorial judgment. This reveals aesthetic experience as a way of being where the head and the heart are not severed, where sense experience and rationality are intertwined. This form of experience appears as a mysterious ambiguity in the dynamics of expressive and utilitarian individualism. In
the foregoing various tendencies that, in concert, can be understood to weaken our apprehension and connection to our particular terrestrial contexts have been presented. Through focusing on the important role of individuality and aesthetic experience in the following theorists we lift an ambiguity into light of possible positive potential.

The theorists I present in this interlude have developed important contributions that reveal varied views on the significance of aesthetic experience and aesthetic thinking and this study should be seen as a contribution to this greater discourse. The contribution that is offered is built on the insight that the primary area of intervention these theorists engage is the imagination and thought, the imagination and the creative subject. The expanded notion of aesthetic education presented in this study suggests that aesthetic experience can offer a significant contribution during the Anthropocene through the fostering of aesthetic natural scientific knowledge practices. My contribution to the discourse is in this direction. Bennet, Taylor and Heidegger all orient themselves toward expressive subjective activities as means for fostering sensibilities conducive to sustainable life on the earth. If our natural sciences are not aesthetic, and our aesthetic education is limited to the humanities and arts, one can ask if these stances might still foster self-illusory hedonism? In this light I suggest that extending aesthetic education beyond the personal expressive subject, the imagination and rhetoric appears as an important challenge today.

**Vitalisms of Articulation and Perception**

In what follows I draw on a group of thinkers who embrace varieties of vitalism and I focus on the aspects of their thought that are easily overlooked when viewed through the rough gaze of expressive and utilitarian individualism. These theorists orient themselves toward
aesthetic experience as means of overcoming alienation, largely through focusing on thought and the imagination. They offer pedagogical approaches of fostering sensibilities hospitable to voluntary ecological collective action through these aesthetic and expressive aspects of subjectivity. The methods in the natural sciences are very lightly touched upon in their theories. They bring to the fore many features of aesthetic experience that are presented as valuable in the current study, their omission of natural scientific practices becomes a core matter for concern.

In the work of Gilles Deleuze and Felix Guattari aesthetic intuition remains primary in their engagements with political, social, ecological and economic crises. The notion of aesthetic intuition, especially in the work of Deleuze, draws heavily on articulations and orientations of Henri Bergson. Bergson situated this capacity in direct opposition to matter and repetition. The act of perception is extensive, a membered whole, full of quality. The act of dividing this in abstract thought and schemata, to aid in our action, is practical but it cannot reconstitute, or restore us to the world in its becoming.¹⁵⁰

The only reality that abstraction can grasp is matter, or the dead and inert. It is unable to grasp the living and becoming. Living and becoming are, however, approachable through direct perception and aesthetic intuition. In *Creative Evolution*, his brilliant study of the evolution of life, Bergson prophecies an “aesthetic intuition” that could be developed out of the qualitative perception of the individual into a faculty of knowledge. “We can conceive of an inquiry conceived in the same direction as art, which would take life in general for its object,

just as physical science, in following to the end the direction pointed out by external perception, prolongs the individual facts into general laws.”¹⁵¹ Artwork and the qualitative apprehension of an individual are highlighted as growing points for a thinking that can accommodate biological understanding and a notion of freedom. This horizon of experience he famously called duration.

Deleuze’s aspired to reformulate aesthetics and empiricism into a transcendental empiricism where aesthetic experience is approached as a field of objective apprehension. It is not felt to be something represented, not the flotsam left as sensation when the represented is removed. This area of experience is a field of metamorphosizing singular life, accessible to the apodictic discipline of the aesthetic. This practice reveals a “strange reason”, where difference “must ‘will’ itself or find itself through all the others.”¹⁵² I will return to this form of judgement in chapter four in the context of the thought of Arthur Zajonc and Goethe and the discipline of cultivating perceptions as theories. This area of discourse includes the likes of William James, who went through an intellectual conversion at the end of his life, instigated by his study of Bergson, leading to the founding of radical empiricism.¹⁵³ We can recognize a striving here to find knowledge in aesthetic judgment and perception, to seek in the embedded subject the unfolding of insight. This striving is toward a knowledge culture distinct from the Cartesian. Thought itself is approached as an intensive process through an aesthetic sensibility.

The metaphysics of Bergson, the transcendental empiricism of Deleuze and the Radical Empiricism of James all point toward an expansion of empirical knowledge practices resting on aesthetic experience. While they point toward knowledge their elucidation is opposed to rationalism. It is difficult to sense what this would look like in the natural sciences when reading their work, yet it is particularly this question that animates the core of the expanded notion of aesthetic education. It is due to the difficulty of interpreting how this would be put to work in a concrete way in the natural sciences that I do not include them in a later chapter on aesthetic knowledge practices in the natural sciences. In chapter four I introduce researchers who have contributed significant bodies of research while pioneering paths of natural scientific aesthetic knowledge practices. Bergson, James and Deleuze all indicate that without this expanded judgement culture we will not be able to apprehend the true life of the planet, but their indications remain largely theoretical.

In this epistemic community we find the political thought of Felix Guatarri. Guatarri characterizes our current predicament as “the relationship between subjectivity and its exteriority – be it social animal, vegetable or Cosmic – that is compromised ... in a sort of general movement of implosion ... [where] otherness tends to lose all its asperity.” If the sciences and technology are to be directed towards more human ends, we evidently require “collective forms of administration and control, rather than a blind faith in the technocrats of the state apparatuses; we cannot expect them to control progress and to avert risks in these domains, which are governed primarily by the principles of profit economy.” He develops an

155 Ibid., 28.
ethico-political and ethico-aesthetic philosophy, ecosophy, and encourages initiative that breaks through systems, sets and structures as a renewing process. “We must re-appropriate universes of value, so that processes of singularization can rediscover their consistency. We need new social and aesthetic practices, new practices of the Self in relation to the other, to the foreign, the strange – a whole programme that seems far removed from current concerns.”

Here “truth” cannot be separated from the subjective, unique articulation. Current knowledge practices are inarticulate. Vocations and technologies are shaped by reified mental pictures that utilize extrinsic coordinates to manipulate life. The self, as sole agent, alienated from terrestrial, embedded experience, engages inert, yet lawfully connected, experience in a spirit of control. “Under such conditions it is no surprise that the human and social sciences have condemned themselves to missing the intrinsically progressive, creative and auto-positioning dimensions of processes of subjectification.” The challenges of social justice and the ecological crises require an “ethico-aesthetic inspiration”. The vital aesthetic orientation “strives to capture existence in the very act of its constitution, definition and deterriorialization”. Participation in aesthetic intuition and expressive articulation allows one to “dare to confront the vertiginous Cosmos so as to make it inhabitable.”

In The Three Ecologies Guattari explicitly connects his understanding of singularization to the conception of art that emerges in Schiller, through his reference to Schlegel. The apprehension of the singular requires a kind of knowing akin to “a fragment like a miniature

156 Ibid., 46-47.
157 Ibid., 24.
158 Ibid., 29.
159 Ibid., 46.
work of art [which] must be totally detached from the surrounding world and closed on itself like a hedgehog." The free play of the imagination, which is often interpreted as a free play of the subjective capacities, is rooted in an immanent field of creativity and life, taking an ontological turn. Participating in this life through aesthetic intuition becomes a normative goal.

The ontological subtleties of aesthetic experience in Deleuze, James, Bergson and Guattari are easily overlooked when we take on the orientations presented in chapter two, of expressive and utilitarian individualism. They develop orientations where creative individual activity connects one with a greater field of life and renewal. In the dynamics of chapter two this subtlety is easily flattened into a simple self-illusory hedonism, a blissful alienation. It is important to focus on this subtlety.

William Connolly has developed a multi-tiered view on self-organizing systems in this direction. He has focused on how the existential orientation is a sensibility that plays a significant role in ethical, political and economic life. He characterizes a dilemma wherein “the planetary fragility of things is increasingly sensed, as many protest against acknowledgment of that very sense to remain loyal to traditions of belonging woven into their bodies, role performances, and institutions.” The catalyzing of orientations, and sensibilities, more “appropriate” to our time appears as the articulation and creation of new concepts and images of time and identity. These new images, in so far as they appear in local, regional, global, and planetary sites, give Connolly hope, but not as a sole strategy. He also suggests aggressive

160 Ibid., 37.
activism and organizing at the same time. Connolly situates himself as a vitalist, drawing on Nietzsche, Whitehead, Bergson and Deleuze, to name a few, all of whose work is animated by aesthetic experience and creativity. Through participating in thought and the infinite force fields of self-organization, such as climate change, glacier flow and species change, he senses the potential of encouraging sensibilities of a “positive sense of attachment to a cosmos that is neither predesigned for us nor that is susceptible to our control.”

In his work as a writer he executes his ideals by articulating and creating these images and concepts, by offering them to be taken up into the discourse on local and global levels, to be co-constitutive in events and participate in the unleashing of potentialities. His hope is to “extend our political and cosmic sensibilities.” In his essay Materialities of Experience he traces how the very structure and contours of the horizons of experience, as object and subject, are not fixed, but shaped by perception and memory, often in unconscious ways. Throwing light on the utilitarianism of modern advertising he discusses the intentionality with which ads are made to influence people precisely when they are not paying attention, on how affective this has been shown to be. The vitalist is aware of the surplus of life over the structure of our identities and seeks to mobilize it, and “to attach to positive political movements that embrace minoritization of the world.”

This ontological view is imbued with commitments to pluralism, equality and ecological sensitivity.

162 Ibid., 148.
163 Ibid., 9.
165 Ibid., 196.
Connolly also senses the positive potential intensive, aesthetic thinking offers today’s challenges. His writing and thinking appear as demonstrations of the new thinking that, accompanied with collective action, he senses can shift our qualitative embeddedness on the planet. The innovation occurs in writing, imagination and rhetoric. Proposals of a natural scientific aesthetic regime are not contained in the theories. The directions indicated by Connolly are buttressed in their promise by not being understood as a sole strategy. Given the dynamics mapped out in the first two chapters, the rhetorical and imaginative horizons of experience may be more susceptible than ever to “ironic treatment”. The expansion of intensive thinking and aesthetic culture to embrace the field where our primary connection to the earth emerges, the natural sciences, appears as a possible support for Connolly’s work.

Jane Bennett offers a kindred approach in Vibrant Matter. Bennett engages the ecological crises, capitalism and politics while drawing heavily on Deleuze, Guattari and the vitalist tradition. A central goal of her book is to “induce in human bodies an aesthetic-affective openness to material vitality.”166 Her conception of culture is not unlike Guattari’s “mental ecology”. She posits that “bodily disciplines through which ethical sensibilities and social relations are formed and reformed are themselves political and constitute a whole … field of ‘micro-politics’ without which any principle or policy risks being just a bunch of words. There will be no greening of the economy, no redistribution of wealth, no enforcement or extension of rights without human dispositions, moods, and cultural ensembles hospitable to these effects.”167 Introducing vital matter into the debate is one of Bennett’s aspirations. Her efforts

167 Ibid., xii.
are to introduce this discourse that defies hegemonic patterns. For instance, she highlights the irregularities of matter, electricity and steel and tries to engage them as alive, vital and creative. By approaching them in the spirit of agencies she intimates the “human dispositions, moods, and cultural ensembles hospitable” to greening the economy, democracy and human rights.

Jane Bennett also draws on Schiller’s notions of the ethical insufficiency of intellectuality as well as his idea that “play” is a central part of the phenomenon whereby one wills to engage the other ethically. In her work The Enchantment of Modern Life she states that cultural narratives “help shape the world in which we live,” and she challenges the dominant view of modernity as intrinsically disenchanted. Her reasoning is that “disenchantment represents and sustains a specific range of aesthetic sensibilities; it enters into the moods, temperaments, habits, perceptual comportments, and somatic predispositions that find expression or resistance in political choices, alliances and policies.” Adopting specific narratives of re-enchantment “pins ethical hopes on plentitude and generosity.” She avoids working with the notion of human beings as ends in themselves and other conventional moral categories and instead tries “promoting healthy and enabling instrumentalizations”.

Guattari, Connolly and Bennett articulate an orientation to current ecological and social challenges that demand an aesthetic-affective and vitalistic response. The strategy is largely imaginative and rhetorical. Through performing new ways of feeling and thinking they hope to

169 Ibid., 9.
170 Ibid., 15-16.
171 Ibid., 12.
counter the interpretations of disenchantment and to reestablish a vital subjectivity, community and place that inspires more sustainable life on the earth.

Views like these share, in differing degrees, a positive estimation of the place of aesthetic thinking. Creative, expressive processes of becoming are at the same time indicated as processes of renewal and hope. Habitual, reified, static ways of thinking are seen as dangerous, especially as they veil the creative dimension of life and experience. The creative act is conceived of as, at the same time, a potential act of connection with the collective and objective. The amplification of the self is conceived at the same time as an amplification of context and an affirmation of the life of the world. Aesthetic thinking is experienced as an overcoming of alienation.

The subtle nuances that situate individual activity as renewal, and aesthetic experience as an overcoming of alienation, are important, and this study poses the question if their positive potential has been exhausted in that we do not have a proper regime of aesthetic knowledge practices in the natural sciences. Their primary field of action is thought and the imagination. The sensorial culture of the sciences, which are the rooted, constitutional areas of our connection to terrestrial experience, can appear under developed if we ask the strategic role they can play in the transformation of existential orientations and sensibilities hospitable to voluntary ecological collective action. A disciplined tending to the sensorial, as practices in the natural sciences, could conceivably become an important site in this regard.

**The Expressive Turn and Secularization**

One of the theorists who has focused most clearly on the significance of acts of subjectification and aesthetic experience is Charles Taylor. Many of the theorists presented
thus far see progressive potential in rhetoric and new dimensions of discourse, along these lines Taylor suggests that poetry and art are fulcrums for this renewal. Like the other theorists presented thus far in this interlude, Taylor engages the subtlety of the modern significance of acts of subjectification and aesthetic experience, and he too focuses primarily on the imagination and literature as fulcrums for positive change. His elucidation of creative and aesthetic experience are significant, and like the others, he does not pursue the question of the role of aesthetic judgement in the natural sciences.

When we compare Taylor’s *Sources of the Self* with Bellah’s *Habits of the Heart* his sense of modernity’s subtleties come to light. Taylor characterizes the anachronistic nature of Bellah’s study that suggests that a Tocquevillian commitment would somehow also resolve our problems of “meaning, expressive unity, of the loss of substance and resonance in our man-made environment, of a disenchanted universe”.  

172 He expands “utilitarian individualism” and adds mastery toward existence, which we recognize clearly as part of a modern attitude articulated by Descartes, where reason was positioned as procedure. This instrumental reason is disengaged and separated from existence. Extended existence is approached “mechanistically and functionally as a domain of means ... a domain of potential instrumental control”.  

173 This philosophical orientation has been honed, in profoundly successful ways, into a hegemonic knowledge practice: that of the “scientific method”.  

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173 Ibid., 149.
Whereas Bellah suggests that the expressivist mentality can be derived from Locke, Taylor shows this to be untrue. With the retreat of the religious, ordered and enchanted cosmos, a new challenge emerged, and the expressivist turn accepted it. The aesthetic of originality emerged as interconnected with individual genius. Pre-modern orientations of genius were of a presence of a spiritual agent that could travel into the sublunary sphere, allowing commerce between the celestial spirits of the heavens and the human mortals who lived in the fallen elements that were subject to growth and decay. The genius made rounds between the earthly surface and the celestial spaces. In modern times as the reality principle shifted into the lawful arrangements of the phenomenal world, an epic psychological shift followed wherein the genius took up residence within individual activity and creativity. The genius was increasingly understood and interpreted as intimately woven into the person of the artist.\(^{175}\)

This version of the modern self, with its capacities to facilitate creative and evolutionary processes, strikes a dissonance with views of creativity and the modern self that emerge through the work of the likes of Bacon, Descartes and Locke, among others. This view of the genius of the individual appears clearly among the romantics. Abrams famously captured this shift in the title of his study *The Mirror and the Lamp*,\(^{176}\) while Barfield offers a similar elucidation in *The Camera and the Harp*.\(^{177}\) From this orientation, in a time of disintegrating hegemonic cultures, it is through individual activity and creative articulation of the self that an

\(^{175}\) Lewis, *The Discarded Image: An Introduction to Medieval and Renaissance Literature*.


original, integrated vision of the cosmos can be developed. This orientation allows us to understand Taylor’s critique of Bellah, and the undertreated facet of many theorists who criticize the expressivist turn as simple hedonism. The disintegration of the traditional Christian/Platonic cosmos that characterizes modernity was well underway in the 19th century. The expressivist orientation appears in a new significance when this is taken more fully into account.

Taylor sees the expressivist turn as a striving to unite the radical autonomy of Kantian philosophy with the immanent unity of existence articulated by Spinoza. Through creative participation the self connects with moral sources. The existential character of interpreting one’s striving as a participation in the *elan* of the world fosters allegiances, “a kind of solidarity which is there in the process of life. To be in tune with life is to acknowledge this solidarity. But this is incompatible with taking a purely instrumental stance towards this ecological context”.

Here the moral and ethical importance of the process whereby content emerges becomes more important than the content itself. This notion, that individualization is necessary as a means to unleash authentic moral, or vital, character, was classically articulated by Wilhelm von Humboldt, and later by John Stuart Mill. Taylor offers this positive interpretation of the expressivist turn, positioning it as a source for “new languages of personal resonance to make crucial human goods alive for us again” in a time when “our public traditions of family, ecology, even polis are undermined or swept away”.

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179 Ibid., 513.
Taylor shares certain attitudes with Guattari, Bennett, and Connolly though their interpretation of the nature of the source differs greatly. As Connolly has demonstrated himself, it is hard to articulate whether the fullness that Taylor aspires to in his interpretive approaches can contain the value of vitality that make up the ends of his own striving.\textsuperscript{180} Taylor suggests the romantics, and especially the great poet Hölderlin, as guides in the current moment of alienated subjectivity and ecological crisis.\textsuperscript{181}

In this way his view is similar to Heidegger’s. Heidegger grasps the question of technology and modern experience as reaching into the human essence, into an interpretive style, as an “enframing” that undercuts truth coming to view within the horizon of personal experience, as revealing, or uncovering. It is this cultural co-constituting that determines the destiny of modern society for him. His characterization of the maturation of this mode of inquiry can be read as an intimation of what Zuboff has described in her study on Surveillance Capitalism. “As soon as what is unconcealed no longer concerns man even as object, but does so, rather, exclusively as standing-reserve, and man in the midst of objectlessness is nothing but the orderer of the standing-reserve, then he comes to the very brink of a precipitous fall; that is, he comes to the point where he himself will have to be taken as standing-reserve. Meanwhile man, precisely as the one so threatened, exalts himself to the posture of lord of the earth.”\textsuperscript{182}

\begin{footnotes}
\item[180] Connolly. The Fragility of Things: Self-Organizing Processes, Neoliberal Fantasies, and Democratic Activism, 144.
\item[182] Heidegger, The Question Concerning Technology, and Other Essays, 27.
\end{footnotes}
Heidegger, who also draws heavily on the poetry of Holderlin, articulates the leading question “could it be that the fine arts are called to poetic revealing? Could it be that revealing lays claim to the arts most primally, so that they for their part may expressly foster the growth of the saving power, may awaken and found anew our look into that which grants and our trust in it?” He tentatively suggests the fine arts as counters to the entrenchment of the frenziedness of technology that may otherwise become hegemonic, transforming the world into a place of means.\textsuperscript{183} Taylor presents the cultivation of aesthetic judgement through art, in the form of the beautiful and the sublime, as “essential ways of acceding to the beauty which we don’t create.”\textsuperscript{184} This inheritance of the romantics he sees as animating perspectives critical of the rational stance that has “closed us off from nature and the current of life within us and without.” The will to control implicit in instrumental reason is felt to numb us to apprehension of belonging and balance, making us deaf to “the ecological balance of our biosphere. The line of protest which I am invoking here has been absolutely crucial to the ecological movement of our time.”\textsuperscript{185}

Heidegger and Taylor’s views on the mediating power of poetry point toward sites of positive potential, and can be addressed with the question if it might be strengthened through its expansion. Is it possible to consider if identifying the aesthetic condition as primarily finding its expression through art, or perceptible imaginative expression of the person, a limited variety of aesthetic judgment is proposed? In the traditional discourse of aesthetic education the fine

\begin{itemize}
  \item \textsuperscript{183} Ibid., 35.
  \item \textsuperscript{184} Taylor, \textit{A Secular Age}, 359.
  \item \textsuperscript{185} Ibid., 317.
\end{itemize}
arts make present an infinite creative horizon of other human subjects. This supports a fundamental sensibility for expressive creative rights of the individual. It also opens into the moral, value laden interpretive habitats of social imaginaries.

If we ask this question in light of Taylor’s suggestion that poetry is the midwife of ecological sensibility we can see that there is potential to strengthen the aesthetic position. The significance of this strengthening receives a particular hue of meaning in the digital age. Might aesthetic culture become increasingly susceptible to deterioration if a terrestrial variety is not developed? The pictorial, affective and imaginative potentials of our nature are easily drawn away from the earth through the digital revolution.

The aesthetic condition brings together appearance and understanding, a fact that has situated it as a source of wonder for many thinkers. The creation of an aesthetic orientation that could support an ecological sensibility would seemingly lean on the sensorial dimension of terrestrial experience, not simply that of meaning and imagination. The aesthetic condition, as it has been widely understood since the 19th century, however, emphasizes the creative, expressive act of the subject as it appears in sensorial experience as art.

This study is presented as a situational and conceptual argument for a robust aesthetic culture that reconciles the aesthetic and the analytic through practices in natural science. The situational argument is informed by the material tendencies presented in chapter one. These tendencies present the possibility that the capacity for aesthetic experience within the horizon of soil, air, water, plants, animals, space and water and fire, may contain significant promise.

To engage interpretations and practices that can become influential in local, regional and global discourse and collective action, allowing this geo-terrestrial process and experience
to become more and more co-constitutive of our lives, would require an expansion of the notion of aesthetic culture in this direction. The notion of aesthetic culture that does not reach this level, instead focusing narrowly on the expressive subject, may be in danger of corruption as self-illusory hedonism. This can lead to a feeling that the fine arts can do all the work to counter the enframing that undercuts the revealing of truth, and revealing as such, which Heidegger suggests. The question I am posing in this study is how the emphasis on the redemptive power of art can be seen as a failing to recognize the true challenge of aesthetic education today, which is related to the natural sciences. This view suggests the doubtful strategy of emphasizing the redemptive aesthetic mission of the arts while passing over the way our natural scientific knowledge cultures are shaping our experience and public discourse.

**Liberations of the Senses through Art, Science and Public Discourse**

We also find the sense of potential for an overcoming of alienation on the earth through aesthetic judgement in thinkers inspired by Marx’s early thought. Herbert Marcuse drew on Marxian thought, psychoanalysis and art to indicate an overcoming of modern alienation. He suggested that in post-industrial society art was the only remaining bastion of true resistance for the ideals of the left. He criticized the notion that economic thought as “science” can escape ethical social issues through facticity and objectivity” and that nature is a “universally controllable … matter in function”. This “technological rationality”\(^\text{186}\) turns collective dimensions into “means in themselves”. The apparent, yet hollow, personal life he calls “the happy consciousness”. It is a decadent, commercialized form of culture.\(^\text{187}\) In Marcuse’s thought

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\(^{187}\) Ibid., 82.
we can recognize two forms of subjectivity that resemble some of those presented in the last chapter. They are a utilitarian and a happy consciousness (ultimately a toy of the former).

Marcuse turns to aesthetic experience and art as a powerful source of reform. He presents art as a “wealth of experience in harmony with the essential constitution of human nature”.\(^\text{188}\) He saw that its “illusory” character allowed it to transcend current temporal and social conditions, opening a space to realize the repressive nature of everyday existence.\(^\text{189}\) Art, a “form of the senses as pervaded by reason”\(^\text{190}\) is presented as a touchstone for a non-alienated future form of society. Marcuse did not see beauty as a final purpose but as one among other goals.\(^\text{191}\)

In the one-dimensional society of happy consciousness and instrumental rationality Marcuse sees the bourgeois conception of art as “guarding the socialist vision”\(^\text{192}\) and the experience of beauty as the immanent sign of a liberated society. Here a triad appears as happy consciousness, instrumental rationality and art. \textit{In Marcuse the liberation of the senses is exemplified in the work of art, as an experience of non-alienation.}

Marx described a cultural turn that would liberate the senses from a science focused on the reduction of aesthetic experience to utility and the science that supported industry, which he termed a “science of asceticism”. “Only through the objectively unfolded wealth of human nature can the wealth of subjective human sensitivity – a musical ear, an eye for beauty of

\(^{189}\) Ibid., 331-2.
\(^{191}\) Ibid., 223.
form, in short, senses capable of human gratification – be either cultivated or created.” The emancipation of the senses is, however, not merely referred to through the sensorial expression of the creative subject, it is also the ability for the dealer in minerals to not only see the commercial value but also the “beauty and peculiar nature of the minerals”.

We see in Marcuse an engagement with the artistic regime of sensorial emancipation and do not find an explicit discussion of the aesthetic potential of science. Marx alludes to it, but does not elaborate. In the next chapter I will be turning to an important origin of this conversation, involving some version of the triad of a happy society, instrumental rationality and art in the thought of Friedrich Schiller. Turning toward Schiller we find the clear emergence of the conventional view of aesthetics that is confined to the arts, a discovery that helps illuminate the aesthetic culture of our day that confines itself almost entirely to the arts and the humanities. Schiller developed this approach to a widely accessible democratic cultural pedagogy in the interest of harmonizing the impulse for democratic action and freedom. As I will try to show, the neglect of questions of interdependence can in large measure be understood as historically determined. The presentation in this study suggests that conventional features of strong demarcation between the arts and sciences is in part connected to this. In passing from the two characteristic dynamics of interpreting subjectivity to the current theorists this demarcation can be interpreted as widely significant.

The philosopher Jürgen Habermas has portrayed Schiller’s conception of the social and political significance of aesthetic experience as one variety of the modern emergence of the

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public sphere. In *The Structural Transformation of the Public Sphere* he traces the emergence of a modern public space, which has no fixed location but exists in a free, inter-subjective discourse positioned in a legitimizing relationship to the state and the exercise of power. He recognizes a version of this communicative reason in the portrayal of the political and social significance of the aesthetic condition in Schiller’s *Letters on the Aesthetic Education of Humankind*.

Habermas points to the way Schiller situates the reconstitution of collective experience implicit in art, which counters a modern economy that separates work from pleasure and a state that views subjects as objects of administration. On the other hand, the aesthetic accommodates individualized, sensorial experience, while freeing it from the consumption and arbitrary will of the personal. It is a resurrection of common sense. As an appearing activity in the common world it is collective and as sensorial it is personal and full of individual life. Aesthetic perception has the potential of a total re-casting of modes of experience. “Since society is reproduced not just in the consciousness of people, but also in their senses, the emancipation of consciousness must be rooted in the emancipation of the senses”. Habermas draws out an interpretation of aesthetic experience in Schiller’s letters wherein the fragmented constitution of the world appears in a reconciled form as art. Art unites all people, incorporating their senses in form and their understanding in spontaneity, thus providing a neutral platform for communicative action. It is perhaps odd to situate Habermas among

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expressivist and vitalist theorists, but his presentation of the public sphere opens a meta-
topical, intersubjective space that is in ways comparable to the sources of elan and ethics
outlined above.

In the next chapter I will return to Schiller’s conception of the aesthetic condition.

Habermas’s interpretation of the significance of Schiller’s thought as a stage of communicative
action that evades the state, making up what Charles Taylor calls a meta-topical plane,
participate in the demarcation presented in the Letters themselves. The aesthetic culture and
condition are interpreted as constitutive of art, excluding the knowledge practices in natural
science. The question I have begun to articulate is whether limiting aesthetic culture in this way
is significant in a time of ecological fragility. As the natural sciences are the primary modes
through which we encounter the terrestrial elements and other forms of life, their aesthetic, or
an-aesthetic, character will significantly alter the role they play in constituting discourse and
collective action. In order to foster sensibilities that are co-constituted by the sensorial
dynamics that make up terrestrial life, and weave them more into our actions and interpretive
activities, the expansion of the conception of aesthetic culture to include aesthetic knowledge
practices in the natural sciences appears as a potentially promising effort. Habermas’s
observation that the positioning of modern aesthetic judgement through art demonstrates a
meta-topical plane that functions as a legitimizing reference for collective action can give us
hope if there is an expanded aesthetic culture that can resurrect the dead image of the beings,
forces and elements that constitute terrestrial life.

A Growing Point of Balance
Vitalist and expressivist orientations suggest aesthetic, expressive and rhetorical renewal through connection to moral or living sources. These are positioned to enliven our experience of the commons and our ethical commitments. The space that these practices open are aesthetic in so far as they engage facets of sensorial and imaginative experience through rhetorical and creative notions of experience. Some varieties focus on art while others incorporate domains of experience usually interpreted as inert and prone to exact predictability, such as glacial processes and electricity, as agential and creative. The two undertreated and ambiguous elements from the last chapter have been lifted into visibility.

In the foregoing I have posed the question if trends that constitute the digital revolution increase the danger of these efforts being coopted by “self-illusory hedonism” and political disengagement. This question takes on its proper weight when we consider the tendency of these theories to pursue a rhetorical and imaginative strategy. The general tendency to develop an aesthetic incorporation of terrestrial forces and experiences is in line with the notion of aesthetic education that forms the center of this study. The proposition that efforts in this direction could be extended to aesthetic knowledge practices in the natural sciences is emerging as the key issue in the study. An education of ecological sensibilities that can increasingly co-constitute collective discourse and action may require a more ambitious aesthetic culture.

The single growing point that contains the potential to deepen utilitarian individualism and to ground expressive individualism can be seen in the context of the last chapters. The question is if through fostering this single growing utilitarian individualism and expressive individualism could be enhanced. The mediation between the two forms of individualism might
allow them to exercise a positive, reciprocal influence on one another. On one side utilitarian
individualism could be infused with awareness of the particularity of the earth, chastening
tendencies of instrumental reason; and on the other an appreciation for the collective might be
awakened in the narcissistic tendencies alluded to in expressive individualism, which could
bring about sobriety and grounding. In the next chapter I will expand on interpretations of
aesthetic education, politics and social critique that find a common denominator in the work of
Friedrich Schiller. This will include a return to some of the theorists we have touched on,
especially Hannah Arendt. This will lead to a presentation of aesthetic research practices
developed by natural scientists in recent decades.
Chapter 3 - Aesthetic Education, Politics and Ecology

In this chapter some of the salient facets and contours of aesthetic judgement as it emerged during the expressivist turn are presented, especially drawing on the work of Schiller. Schiller plays a central role as I try to develop a notion of expanded aesthetic education. Many of the ambiguities that were brought to light in the interlude can be traced back to Schiller. He is an originator of an influential understanding of aesthetic education as a significant public question of democratic collective life. Many of the theorists presented in previous pages can be seen as students of some aspect of his thought. By going directly to Schiller’s thought the core promises, and possible weaknesses, of this influential notion of aesthetic education are most easily brought to the fore. They reveal a notion of aesthetic education that relies almost entirely on the arts, and these are posited as directly opposed to the pursuits of knowledge. The exploration in the following chapter also brings to light the historical limitations of Schiller’s theory that led to an exclusion of questions related to environmental sustainability. This sets the stage to challenge the notion that sciences need be an-aesthetic in practice and content, and that the arts are solely responsible for the education of perception, sensibility and pictorial imagination.

Schiller’s letters on aesthetic education are exemplary of the emerging “expressive” orientation. Schiller’s work involves not only grasping where aesthetic judgement is understood to begin, but also where it is considered to end. Here we have an early expression of a kind of two culture debate, that of the humanities and arts on the one side and the sciences on the other. The two culture orientation is largely taken for granted today. This
delineation is felt to be a natural fact and part of this study includes loosening this judgment. In this light it will become plain why considerable attention is also directed to the theories of Hannah Arendt, for Arendt challenges the boarders of aesthetic education offered by Schiller, and so many others inspired by him. While these historical explorations bring into view is an aesthetic culture I suggest contains positive potential for expansion and growth.

In Charles Taylor’s analysis of dimensions of secularization in Europe and the United States he situates the aesthetic culture that clearly takes root in Schiller as a path distinct from those seeking religious transcendence and those dedicated to rational humanism. Taylor explores qualitative transformations in experience and consciousness, largely moving between medieval Christian Europe and humanism. He focuses on the current secular outlook and how it has emerged from a radically different traditional experiences of the cosmos. This is a tension that makes for a large part of the dynamic of his study. In the Aesthetically oriented romantic tradition a third striving appears, one based on “fusion and beauty”, where virtue and desire are conceived of as allies, where reality is immanent, but it is not disenchanted. Taylor points out that this orientation was open to profound, spiritual experiences through art and the senses, but this did not entail being a person of faith. It was a kind of “undefined spirituality”, 196 immanent, with no fixed creed. As mentioned earlier through reference to Bellah, Wuthnow and Rieff, the presentation of the significance of this movement comes to light when we see the receding unity of large collective spiritual worldviews that are strong enough to structure experience. These are gone and it is in the interpretive feat of creative action that deeper

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196 Taylor, A Secular Age, 360.
horizons, enchanted horizons, can again appear. The earlier discussed notion of the individual
genius, so opposed to the older teaching of the genius as a spiritual emissary that could travel
from the celestial spaces to the sublunary sphere, comes into focus. It is within this third
discourse that our study both takes root, and takes departure. In this chapter the task is to
bring to articulation the peculiar origins of the aesthetic discourse that became so important for
political and social thought.

**Schiller’s Aesthetic- Human Development, Social Critique, and Political Relevance**

Schiller’s work plays a central role in the interpretation of aesthetic experience that
emerged distinctly in the later eighteenth century. His obscurity notwithstanding, those who
know his *Letters on the Aesthetic Education of Humankind* recognize his widespread influence.
Nathan Ross recently wrote of the “misreadings that obscure the scope of [Schiller’s]
originality.” Hölderlin, Hegel, the Jena romantics, Marx, Benjamin, Adorno, Marcuse and
Gadamer all make use of conceptions in a way that originated with him, even at times
misrepresenting his own thought. The orientation toward play and semblance as modes of
truth, significant in the work of Gadamer, Adorno, Marcuse and Benjamin, emerged distinctly in
Schiller. Ross has pointed out how misleading Gadamer’s cursory critique of Schiller is in *Truth
and Method*, suggesting that Schiller’s conception of semblance is the foundation of the truth
claims of modern philosophical hermeneutics. The notion that the individual is a historical
subject and that the aesthetic capacity is not a stable mode but one that could disappear, are

also apparent in his work. He envisioned the possibility that “a culture could develop in which aesthetic experiences would have no meaning, no substantial role in shaping the culture.” He also lifted up art’s critical capacity, an orientation that has influenced Marcuse, and more recently Ranciere. It is Schiller, more than “Kant or Hegel, who formulates the overall problem of aesthetic experience with a clear view to its relation to the overall problem of human development, social critique, and political relevance.”

Below I will trace how this orientation toward aesthetics has informed various theorists, highlighting characteristics of immanent sensibility, judgment appropriate to singularity, subjective expressivity, receptivity to difference and non-rivalry, before turning to Hannah Arendt. Characteristics of aesthetic experience are developed by Schiller, and these other theorists, that are pertinent to the expanded notion of aesthetic education presented in this study. Schiller often uses the very contrast between art and science in order to highlight the aesthetic condition implicit in artistic experience and part of this study involves accepting many of these contributions while questioning if the strong demarcation between the arts and sciences presents an obstacle during this part of the Anthropocene. This will become evident as we turn toward Arendt, and finally, the last chapter.

Schiller, deeply influenced by both Rousseau and Kant, wrote his Letters on The Aesthetic Education of Humankind after the terror in France. In these letters he introduces three instincts. These are an instinct for reason, a sensuous instinct and a play instinct. In this triad the aesthetic, or play instinct, occupies a reconciliatory position. The tendency of the

200 Ibid., 31.
logical instinct is toward necessity and exact construction. The tendency of the sensuous
instinct is receptivity, life and fluctuating feeling. In the artwork the poles are inverted. The
unfolding of meaning is a matter of receptivity and caprice while the treatment of perception is
a matter of construction and form. As an object the work of art escapes the net of logical
systems and the fate of other sense objects, consumption and utility. In the work of art one
escapes the oppression of logic and of sensuality. These are experiences of reconciliation. This
is Schiller’s freedom in display, or appearance. Thinking, feeling and perception are lifted out of
contingency from all sides as non-alienated subjectivity.

Schiller articulates the modern notion of the aesthetic as a “critical mode of experience
that entails an altered relationship between object and subject. To frame the matter in another
way: aesthetic experience is not merely a different way of experiencing the world, but an
experience that leads to a different relationship with the world.”²⁰¹ An aesthetic orientation is
caracteristically receptive yet active, it is a state of activity that awaits the self-presentation of
the other. Ross describes this approach to the experience of an artwork where we engage “a
product of infinite, inexhaustible subjective reflection, rather than relating it as an object to
other objects in terms of pleasure [or utility] that it gives.”²⁰²

This peculiar orientation toward the artwork, that focuses in on originality, was part of
the process of the metamorphosis of genius, and the fading of the religious ontologies in their
ability to structure experience. It is possible to enter a ritual space as a modern and be deeply
moved by the music or images, that one encounters there and yet it might not enter one’s mind

²⁰² Ibid., 17.
that it is connected to an “ontic”, not an aesthetic, event. Schiller presented the work of art as a challenge of creating perfect form. Form consisted in the shaping of the sensible facet of the art work. This left the meaning, or the spiritual content, to be capricious, fanciful and playful. This was an inversion of the normal dynamics of sensing and thinking. Usually sensing is capricious and thinking is structured. A powerful contrast to this modern notion of art as “a product of infinite, inexhaustible subjective reflection, rather than relating it as an object to other objects in terms of pleasure [or utility] that it gives” can be found in the work of Pavel Florenskij, who is perhaps the most brilliant recent defender of medieval culture. In Die Ikonostase the peculiarity of the modern notion of art just described comes to appearance through stark contrast.

Florenskij describes the traditions of iconographic production that included no artist being involved in all the steps in creating an image, so that the image was experienced as a communal product. The iconographer was a member of the clergy that came with its own vows and rules of conduct, for to create divine images was a transubstantiation just as the transformation of the bread and wine in the Christian sacraments. An icon was executed after strict instructions, and upon completion an elder had to view it who was in a position of power, presumably for high spiritual vision, to confirm the image led to the appropriate ontic spiritual power (Michael, Gabriel, et) The Iconostasis, the wall of paintings that separated the act of transubstantiation from the community, was experienced as so many openings onto the ontic plane that revealed the transubstantiation, not as a barrier. It was not blocking the holy of

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203 Taylor, A Secular Age, 354.
holies, but revealing it. Thus, to destroy icons was to close windows into an ontic dimension of primordial significance that opened through cultural participation. In the modern notion of art, the specificity and solidity of ontological Christian experience articulated by Florenskij has disappeared. Indeed, the liberation possible through art is not theological or moral, but aesthetic.

Schiller’s letters contain different and conflicting conclusions. One is the aesthetic condition as true freedom. The individual escapes the subjugation of reason and sensual need through art. This variety of freedom is “first and foremost, from the determinations, and the very determinability, of our own capacities” and aesthetic education is the unfolding of a “capacity to liberate ourselves continuously from the very faculties that, paradoxically, constitute us.” This is the form of liberation understood by Marcuse. Schiller understood this indeterminate state to be the precondition for voluntary and authentic moral action. Through eliminating the necessity of both sensual and logical instinct it was possible for moral imperatives to also appear as personal intuitions.

The second interpretation of the aesthetic condition is thus a preparation for freedom as the exercise of reason. Despite these two freedoms, which easily appear at odds with one another, the practical imperative is not confused. Schiller suggested that through a widespread cultivation of approaching objects as sensibly composed with singular meanings, a sensibility would exist that would have profound political and social ramifications. Composing the sense related to perfect form, while the singular meaning related to the capricious spirit. If this sense

for beauty and art is striven for in all levels of education as a leading motif it will allow democracy to take place with reduced violence, with each citizen showing increased receptivity toward difference and the other, and it will provide safety from the tyrannies of both reason and desire.

While Schiller’s practical demand was never achieved, the orientation has had powerful effects. In recent history it has played a part in the revolutionary shift in the interpretation of rights in the USA. Many recognized the striving to seek this unity of sensuality and spirituality in the counter-cultural movements and the “flower generation” of the 1960s. In Barack Obama’s seventh year as president of the USA he arranged a dialogue with the author Marilynne Robinson as a civic event, discussing the nature of citizenship and politics, where perspectives on individuality, politics and the attitudes that support civic respect that are clear variations of this orientation emerge. It is the awe for the “grandeur of the human being” that supports equality and the defense of individual rights and freedoms. This view of democracy and politics is dependent on widespread admiration and reverence for human individuality, not unlike that found in the orientations toward many modern artworks. The other is approached


as “a product of infinite, inexhaustible subjective reflection, rather than relating it as an object to other objects in terms of pleasure [or utility] that it gives.”

**Art versus Science in Schiller’s Letters**

Throughout the letters Schiller uses the difference between natural philosophy, or science, and art, to illumine the peculiarity of the aesthetic condition. Indeed, a central achievement of Schiller’s Letters involves the articulation of a stark contrast between artistic experience and scientific inquiry. This contrast, despite its grandeur and power, represents a classic version of the one-sided conception of aesthetic culture and education we have encountered already. As was presented in the interlude, aesthetic judgment is presented as exercising an ennobling, enlivening or chastening influence on instrumental reason or rationality through the imagination, rhetoric and poetry. The notion of aesthetic research disciplines in the natural sciences are not developed. The strong separation between art and knowledge clearly emerges in Schiller’s Letters.

In the first letter he connects the enlightenment of human understanding, and the possession of truth free of superstition and illusion, with the procedure of a chemist who lays bare the workings of nature through applying the “torment” of his techniques to the living whole. The holistic aesthetic horizon of common sense must be sacrificed in the service of a sober and unbiased understanding.210 In the second letter he characterizes the rising spirit of utility and trade that cannot value the “insubstantial merits of art”. He goes on to point out how the “frontiers of art contract the more the boundaries of science expand.”211 The more

211 Ibid., 7.
science and utility, the less art. The abstract, analytic orientation is connected to moral motivations that co-constitute action. He characterizes the danger of a cultural orientation that identifies with the abstract conceptual moral imperative with such zest that the actual individuals that constitute society recede in reality. In the state it is possible for this attitude to seek the good without regard for individual human beings. He maintains that for the sake of moral dignity human existence itself can never be jeopardized. With an eye toward France he characterizes the danger of a culture that aspires to organizational values without a sensibility for the value of the peculiar and existing individual. Care must be taken to extend individual character into the intangible space of the abstract/universal and the ethical without “depopulating the sensible realm of experience.”

This polarization of human capacities, represented in the sensible/imaginative and the intellectual, is characterized as intensifying through the emergence of the division of labor. Whereas in earlier ages - Schiller focuses on the ancient Greeks - there was a more holistic development present in the human individual, with the emergence of specialization and highly interdependent economic production, wholeness can only be found by taking all individuals in together. Whereas in the past an individual might contain a harmony of capacities, in modern society it is only through taking in the whole of society that one can sense the harmony of human activities.

He focuses on two classes that emerged in this process, a commercial and an aristocratic, with one standing too high to discern the particular and the other too low to survey

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212 Ibid., 13.
213 Ibid., 19.
The modern intellectual turn evident in science and commerce had its effect on feeling and imagination. “The sensibility of the psyche depends for its intensity upon the liveliness, for its scope upon the richness, of the imagination, the preponderance of the analytical faculty must, however, of necessity, deprive the imagination of its energy and warmth.”

Schiller is not suggesting this development as unfortunate. This fragmentation is grasped as a dialectical evolutionary development. The ability of the intellect to disassociate from appearances, and show bold contradictions between the necessity of thought and that of experience, prepares the way to search for a deeper interconnection within appearances. This dynamic deepens experience and matures humanity as a whole. Yet for Schiller, at the time he penned his letters, this fragmentation had reached a level where a new unity was necessary.

The separation between science, analytic thought and art reappear in the separation of thought from personal drive. As Taylor has pointed out, there was a deep suspicion of the modern, buffered subject, that in closing ourselves off from “the enchanted world, we have been cut off from a great source of life and meaning.” One of the core riddles Schiller struggles with is the impotence of scientific and intellectual truth when it comes to inspiring action. He expresses puzzlement that in a time of enlightenment social harmony would not exist. Why do people not act on reason? Why do their feelings, will impulses and motivations deviate from what is reasonably good? “Reason has purged herself of both the illusions of the

214 Ibid., 39.
215 Ibid.
216 Taylor, A Secular Age, 315.
senses and the delusions of sophistry, and philosophy itself, which first seduced us from our allegiance to Nature, is now in loud and urgent tones calling us back to her bosom. How is it, then, that we still remain barbarians?"\(^{217}\)

Schiller points out that the impulse for reformation cannot be found in reason, but must be found in personal drives, in the sensible and the natural. Science and the intellect, on their own, cannot ennoble human life, society and individual action. Schiller holds firm to the feeling that the good and the moral are situated in the activities of pure reason all the while pointing towards reasons impotence in becoming existentially the beloved and desired meaning and motive of human beings. While praising the enlightenment he sees that it does not provide a drive, it does not provide a force through which it can become active in human life. “If Truth is to be victorious in her conflict with forces, she must herself first become a force and appoint some drive to be her champion in the realm of phenomena; for drives are the only motive forces of the sensible world.”\(^{218}\)

In the ninth letter Schiller reveals that it is fine art, as an existing and appearing activity, that can transform character to become receptive to reasonable and ethical action\(^{219}\). While Schiller situates both beauty and truth as existing in timelessness, it is evident that truth is not aesthetic. It excludes the singular, the unique and the temporal. It is in the tenth letter that the potential gulf between truth and experience finds its strongest expression. Here Schiller admits to seeking a concept of beauty beyond experience, with which to judge what is typically called

\(^{218}\) Ibid., 49.
\(^{219}\) Ibid., 55.
beauty in experience.\textsuperscript{220} The notion of beauty is to emerge from a rational process of deduction. This will reveal its necessary conditions. In the seventeenth letter he returns to this stark contrast where ideas are reached with no concern for contingencies, and where observation involves descending from a region of ideas to a “determinate state”.\textsuperscript{221} The descent is characterized as value laden, with the truth power of the horizon shifting as one approaches the singular, the existent and the phenomenal. Moving between the ideal and the phenomenal is shifting from one bluff to another, separated by a chasm. The gulf is, in Schiller’s conception, infinite.

When “it is asserted of the beautiful that it provides man with a transition from feeling to thinking, this must in no sense be taken to mean that beauty could ever bridge the gulf separating feeling from thinking, passivity from activity. This gulf is infinite, and without the intervention of some new and independent faculty we shall never in all eternity find a particular becoming a universal, or the merely contingent turning into the necessary. Thought is the spontaneous act of this absolute faculty. The senses, it is true, have to provide the occasion for it to manifest itself; but in its actual manifestation it is so little dependent upon the senses that, on the contrary, it makes itself felt only when it is at odds with them. The autonomy with which it operates excludes all outside influence; and it is not by providing an aid to thought (which would imply a manifest contradiction), but merely by furnishing the thinking faculty with the freedom to express its own laws, that beauty can become a means of leading man from matter

\textsuperscript{220} Ibid., 69.
\textsuperscript{221} Ibid., 117.
to form, from feeling to law, from a limited to an absolute existence.” In the “aesthetic state”, which is the collective society that shares an aesthetic culture, it is aesthetic culture which leads the esoteric, highly rational science out of its confines into the broad day light of common sense.  

As Schiller develops this orientation the appearances of the aesthetic condition, or semblance, are to be totally disassociated from all truth content as art. They are to be pure illusion. Here the clear exclusion of science as a mode of aesthetic education, instead being a site of rational construction, is evident. An important nuance related to Schiller’s conception of aesthetic experience, that sheds light on the separation between reality and appearance, is in the twenty sixth letter. Here Schiller admits that it is possible to observe nature as appearance, in an aesthetic mode, but in so far as one is aware of its “reality”, it is not aesthetic. Reflecting on the difference in his experience observing a painting of a beautiful woman and a real beautiful woman he remarks that in so far as the latter is more pleasing to observe than the former, the judgement is not aesthetic.

There are moments in the letters when the aesthetic is characterized outside of art. Schiller indicates that in the very make-up of the senses and the act of perception, one can find characteristics of aesthetic experience. At the end of the twenty-sixth letter he remarks that the practice of cultivating aesthetic judgement of what is really alive is incomparably more difficult than unfolding aesthetic judgement in culture and art, which are sites of illusion. Here

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222 Ibid., 131.
223 Ibid., 217.
224 Ibid., 193.
225 Ibid., 199.
he not only points toward the possibility of cultivating aesthetic judgement within the real, but toward the fact that it is much more difficult than cultivating it in relation to art. This is a remark that prepares the ground for the appreciation of the aesthetic research practices in the natural sciences we will turn toward in the next chapter. However, this will require an alteration of the bifurcated image of beauty/truth that Schiller presents.

Frederick Beiser has offered this summary of Schiller’s thought on education, wherein only art can fulfill the two necessary conditions for societal reform: “The first requirement ... is that it must be free from the corruption of the age. The second ... is that it must have the power to affect our sensibility, i. e. our desires, feelings and imagination. This is because the main source of human action comes from sensibility rather than from reason. Having laid down these requirements Schiller then argues that only an aesthetic education satisfies both. The first requirement is fulfilled by either scientific education, which addresses the intellect, or an aesthetic education, which appeals to sensibility. Either form is free from the corruption of the age ... The second requirement, however is satisfied by aesthetic education alone.”226 Here Beiser stresses that science in Schiller’s estimation lacks the ability to effect the sensibilities, even though it is free from dependence on the mores of the age. Art, however, is both free of the mores of the age, while also able to affect the sensibilities. Here science is ruled out as a source for aesthetic education by Schiller.

The most generous interpretation of Schiller’s work suggests that through a societal wide pedagogy dedicated to the incorporation of the aesthetic condition in learning a sensibility

would be established that would render a population receptive to difference. This generous view sees that Schiller was not suggesting the freedom of indeterminateness as an end in itself, though it is for the artist, but as a sensibility that would then affect practices of collective self-rule. In so far as this sensibility is cultivated, and begins to co-constitute the life of a people, it allows for new social and political dynamics. Habits of sensorial perception of objects as sites of infinite significance, whose existence is not for consumption, use, or logical integration, the stage is set for an underlying attitude that could allow for voluntary mutual adjustment and co-constitution between individuals seeking political freedom. This reading allows for the interplay of aesthetic freedom and political freedom. This was, in the end, a central concern of Schiller’s, who saw the revolution France, inspired by a logic of collective rule through reason, devolve into a rule of violence and force.

The environmental challenges we are facing today are incomparable to anything in Schiller’s time. His Letters responded to specific and limited political problems and these excluded the challenges presented in chapter one. Dwelling on both the environmental crisis and the interconnected digital revolution reveal Schiller’s thought in a historical perspective. Schiller was fundamentally interested in the challenge a regime of collective rule can pose to individuality and tolerance. He arrived at the conclusion that by educating sensibilities through art and beauty a citizenry is possible that will be less disposed to sacrifice the individual in the name of abstract reason or the general will.

A danger that has often been described in Schiller’s valorization of the aesthetic condition, as a state of freedom, is that it is clearly a worthy end in itself that can lead to aesthetic isolationism and the surrender of politics. If we connect this with the fact that it is
characteristic of this orientation that it is also free of moral determinations, areas for critique appear. Of course Schiller saw in this state of aesthetic indetermination a gesture that did have an ethical tone, namely that of reconciliation. Critics have pointed out that a population that cultivates the aesthetic condition in the manner Schiller describes seems prone to lose orientation in the collective ethical and political areas of experience. Such a citizenry becomes vulnerable to aesthetic propaganda and manipulation. If the self-sufficiency of the artwork is felt as a worthy end, disassociated from the utility of sensorial and logical context, we can see a population vulnerable to the most outlandish narratives. If the beautiful is not of necessity connected to the good, and yet is positioned as the ultimate good, how could one expect otherwise?

From this orientation it is easy to understand critics of Schiller’s Letters who see them not as political but decisively de-politicizing. Woodmansee sees “a project that, for all its idealism, has the transformation of this world as its goal— and a rather narrow aesthetic project that takes what was at first presented as the instrument of peaceful political change – aesthetic education – and turns this into a goal sufficient unto itself. This second project, which gradually overwhelms the political project to prevail at the end of the Letters, is also asserted to have freedom as its goal, but it is strictly psychic – the freedom we experience in a world of semblance, or make-believe, where unrealized and unrealizable desires are fulfilled, if only momentarily and imaginatively.”^227 This resonates with the vulnerabilities romanticism has to market and political manipulation, which we have touched on. This dilemma brings to mind the

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individual lives of highly cultured peoples like Martin Heidegger and Albert Speer, whose ethical and political ambiguity did not hinder their support for, and participation in, the national socialist movement.

For Schiller freedom clearly stands out as the leading ideal in the two senses described, as the end goal of his Letters. We see one of the most vulnerable features of Schiller’s stance is in its tendency toward a dissociation between artistic experience and collective and ethical realities of life. This vulnerability could be seen to lead to the incorporation of a people into the dynamic presented by Zuboff of an instrumentarian society or into an aggressive nationalism. In both cases the indeterminateness of aesthetic experience does not mature into political freedom, but devolves into narcissistic individualisms.

While the gulf between aesthetic judgment and the truth is written with deep lines in Schiller’s thought, it is also evident that he sensed constant and ennobling flow between the state of society and the aesthetic state. This gives a strong impression of society gradually taking on a synthetic harmony. For some this movement is the reason that the German conception of politics is not “wholly alien to the disastrous derailments of twentieth-century German political history”. For a theorist like F. R. Ankersmit it is through fostering a sensibility for the brokenness of political domain that the threat implicit in the aestheticization of politics can be avoided. Such thinkers point out that it is not Schiller who understood the political significance of aesthetics, but Machiavelli. This involves the practical fostering of an insurmountable barrier between representation, the aesthetic body of the work of politicians

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and political philosophers, and the represented, the people. This interpretation of aesthetic politics involves aesthetic practice of representations of the state that are never conceived as able to unite with the electorate, that which is represented. 229

Here we return to Schiller’s positioning of the search for truth in the intellect. While acknowledging that the threat of alienation from the ecological and social foundations of experience could not have been evident in Schiller’s time, we can see it is implicit in the “gulf” between truth and appearance from our vantage point. The privileging of aesthetic experience in the realm of imagination, subjective expression and linguistic articulation weight Schiller’s project toward the personality and the humanities. It is this imbalance is being called into question in this study.

Today the pressing question of collective action is not only related to liberty, it is of sustainability and interdependence as well. Can we voluntarily work toward a society that not only values freedom but also ecological sustainability? This is related to the facet of Schiller’s political theory that is being questioned. It would necessitate an expansion from the apprehension of the difference of the other as a co-constitutive movement in collective governance to the apprehension of the terrestrial foundations of life. Just as Schiller sought the appearance of the other to become more co-constitutive of the process of self-government, a new paradigm of aesthetic education must seek the appearances of the elemental, terrestrial and natural foundations of life in order for them to voluntarily come to expression in collective life. I suggest the expansion of the conception of aesthetic education does not undermine the

229 Ibid.
virtues Schiller aspired to, rather they buttress them against the types of decadence and deterioration already described.

Schiller articulated a notion of public education through arts and beauty. This was driven by an interest in fostering deep receptivity to the existing, individual human being so that they would not easily be discarded or destroyed by the dictates of reason, or the common will. This public education toward receptivity of the individual rested on the capacity of aesthetic judgement and pictorial apprehension. It also rested on developing a sense for the structure of the sensible that was not capricious. This encouraged a sensibility that sought out harmony and interconnection in the apprehension of the other, while at the same time, approaching them as a singularity. I am not proposing this ethos need be negated. I am presenting an aesthetic public education that includes a reformation of natural scientific knowledge practices and pedagogy. Schiller’s program was positioned as a process of rendering citizens amicable toward the sensorial apprehension of others as sites of surprise and difference, and of anticipated harmony. This orientation situates the other as a world possessing its own integrity without inspiring fear.

If our collective political life threatened the finite, unique, natural person in Schiller’s time, our collective terrestrial life now threatens the finite, unique planet. Can the virtues of an aesthetic orientation and sensibility have a similar influence on our terrestrial life? Are there ways of creating natural scientific knowledge where the whole is not apprehended as separate from the parts? Wherein theory is not felt to stand over and against practice? Can the whole be insistently be sought through the particular while still retaining a character of knowledge,
explanation and insight? Could this support voluntary collective action toward the ecological good sustained by a widespread sensibility and orientation?

In the twentieth century the notion of the significance of aesthetic education and aesthetic judgment found a new articulation in the work of Hannah Arendt. In her work we find a theorist who struggled with the environmental, ethical and political ramifications of the strong divide between truth and beauty found in the work of Schiller. In focusing on this facet of Arendt’s work the peculiar contour and limits of Schiller’s thought come further into focus. This leads us into perspectives that contribute to a justification of the expansion of our conceptions of aesthetic education. Hannah Arendt outlined and encouraged an aesthetic education that, in no uncertain terms, required concrete and sensorial research disciplines and methods in the natural sciences. It will be important to characterize some of the general facets of her thought, with an eye trained on the role of aesthetic judgment, before turning more directly toward her particular articulations on the pedagogical role of the natural sciences.

**Hannah Arendt on the political significance of aesthetic judgement**

The political theory of Hannah Arendt has a unique place in this dilemma. Like Schiller, she positions aesthetic judgment at the center of political life. And like Schiller she draws heavily on Kant while developing a notion of aesthetic judgment that relates to older notions of common sense. Unlike Schiller she emphasizes the ecological and political significance of aesthetic education and mobilizes science as an ally of art in aesthetic education. She also has a markedly different understanding of politics, and estimation of the importance of individuality. She makes a strong claim for a distinctively aesthetic variety of knowledge in the natural sciences, particularly referencing the biologist Adolf Portmann, to whom I will return in the next
chapter. The aesthetic education indicated by Arendt culminates in the moment when we “decide whether we love the world enough to assume responsibility for it and by the same token save it from that ruin which, except for renewal, except for the coming of the new and young, would be inevitable.”

For Arendt the activity of speaking together in open and public spaces and the emergence of principles that guide collective action was characteristically political. The political appears through actually being in the presence of others, perceiving them express themselves, speaking oneself, and resolving to act together. The very audibility of words, and the visibility of actions, possess a “revelatory character” that open into an intangible web of political and social life. In political and social interaction meaningfulness appears, the “who” of a speaker, and this “who” is embedded in a biography and a wide web of human relations. “[F]or all its intangibility, this in-between is no less real than the world of things we visibly have in common. We call this reality the ‘web’ of human relationships, indicating by the metaphor its somewhat intangible quality.” Arendt saw this activity as the source of mutual respect between individuals in society and the source of principles for action toward the common good.

Keeping this in mind we can understand that for Arendt regular participation in public spaces was at the same time the exercise of aesthetic and practical judgement. An atrophied capacity to dwell in experience and appearances was necessarily connected to the withering of a political dimension of life, and the web of the “in-between” alluded to above. Arendt

231 Arendt, The Human Condition, 246 and 324.
232 Ibid., 183.
connected the withering of this particularly human dimension to alienation, and it contained two dangerous prospects.

1- It reduced human life to a characteristically metabolic or biological process (animal laborans), which she connected to modern mass consumer society and the resulting ecological crisis, referred to earlier.

2- The sense for reality was weakened, which provided ideal conditions for the appearance of totalitarianism.

Two strategies to work against these developments stand out in Arendt’s political theory. She advocated for more public, common places of exchange on matters of opinion and the common good to counter the disappearance of the political, but she also advocated for a cultural shift in knowledge practices.233 I am concerned primarily with questions relating to the latter facet of her thought.

Hannah Arendt on the Atrophying of Aesthetic Judgement in Modern Science

I have touched on the institutional practice of theory driven science and its preoccupation with method. These are important areas of exploration in Arendt’s work. Arendt points out how certain suppositions are accepted when one begins a conventional pursuit of understanding, and draws out how these are re-enforced with practice. Modern science is popularly contrasted with medieval knowledge as a decisive turn toward observation. While this is certainly justified, we can find avid defenders of modern sciences who emphasize the

non-natural character of scientific inquiry, contrasting it with “common sense” or naïve sense of the “given”. This certainly aligns with Arendt’s observations. Modern science is “theory driven”, it is a method of creating models, often mathematical, and testing them against the full, unified field of personal experience. While mature philosophic thought is always aware that theories are radically underdetermined by the facts, the popular modern world-view tends towards scientism, wherein this distinction is practically irrelevant. The majority of people, and many scientists, picture the world as a “mathematical manifold”, while the minority realize how subjective, and reductive, this picture is.

The account of modern science we find in Arendt’s work emphasizes it being more rational than empirical. Along these lines Henri Bortoft has observed that “This [rationalist methodism] has been extraordinarily successful, but it does have the effect of shifting attention away from the phenomena, with the result that the phenomena itself begins to take second place in favor of theory. Paradoxically science becomes theory centered instead of phenomena centered”. While this attitude will be extremely familiar to anyone conversant with contemporary teachings on method in political science, they may feel less sure about it being described as a partial inheritance of Platonism, one of Arendt’s claims. Without confounding modern science and Platonism Hannah Arendt is particularly interested in their likeness. While modern science seeks the “real” behind experience, as Platonism sought the ideal forms, this

234 Lewis Wolpert, The Unnatural Nature of Science (Cambridge, MA: Harvard University Press, 1994). It is useful to compare this with an account of the method given by the phenomenologist in Jan Patocka: Philosophy and Selected Writings, 286
modern version of practice differs in that the “truths” are felt as man-made and artificial. The forms, previously sought in ontic openings of experience, are now closed constructions experienced as artificial. Hannah Arendt characterizes this attitude as typical of homo faber. Thus the Greek “contemplative glance of the beholder who was concerned with, and received, the reality opening up before him” while the modern is concerned with the success of a hypothesis they have made.\(^{237}\) Arendt sketches this shift in sentiment when “the philosopher no longer turns from the world of deceptive perishability to another world of eternal truth, but turns away from both and withdraws into himself.”\(^{238}\)

Besides this shift in the qualitative significance of the rational we can note the ontological division between subjective and objective qualities or, what later becomes primary and secondary. Arendt also highlights the radical mistrust of experience already noted by Agamben. The world of space and time, which can be measured, is granted objective status while such phenomena as color and smell are equated with the hallucinatory and unreal. “Only an irresistible distrust in the capacity of human senses for an adequate experience of the world-and this distrust is the origin of all specifically modern philosophy- can explain the strange and even absurd choice that uses phenomena which, like pain or tickling, obviously prevent our sense’s functioning normally, as examples of all sense experience, and can derive from them the subjectivity of “secondary” and even “primary” qualities. If we had no other sense


\(^{238}\) Arendt, The Human Condition, 293.
perceptions than these in which the body senses itself, the reality of the outer world would not only be open to doubt, we would not even possess any notion of a world at all.”

These “secondary” elements of experience, when stripped of ontological weight, suffer a loss of revelatory power. They become epiphenomenal. This is not a matter of definition but of felt reality. It is clear that gesture, speech, vision, a sense for life and stories, are the aesthetic qualities that open out into the “web” of political and social life of meaningfulness, biography, principled motives for collective action and mutual respect. Given their ontological demotion, and the practice of purging them from our constructions of knowledge, these recede in power and presence.

It is difficult to appreciate how radical this alienation of non-extended interiority from the cosmos was as today this division is widely accepted. Not only the “interiority” of non-extended sense perceptions (color, sound and smell), but “the imagination, which is now expunged from knowledge as ‘unreal’,“ was for many thinkers of antiquity “the supreme medium of knowledge”.

For Arendt, the “loss of human experience involved in this [ancient to modern] development is extraordinarily striking”.

The successes modern scientific culture and method have achieved are astounding in their own right. As Arendt notes, this understandably inspires in many not the feeling of alienation, but feelings of pre-established harmony, particularly in physics, between the

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239 Ibid., 115.
240 Agamben, Infancy and History: The Destruction of Experience.
extended cosmos and mathematics of the micro-cosmos.\textsuperscript{242} For Hannah Arendt it is evident that the investigation of a particularly human dimension of experience, Vita Activa, appears on condition of the presence of aesthetic, qualitative inquiry.

Thus one of the characteristic outcomes of modern science plays out as a muting of aesthetic apprehension of terrestrial and social horizons of experience and dynamics. There are definite parallels between Arendt’s observations and the buffered self, presented by Taylor, and the tendencies found in utilitarian individualism. Arendt’s passing in 1975 was in a decade that would see the emergence of the first signs of what was to come in the digital revolution. Today we can see that the muting of terrestrial aesthetic experience she characterized as implicit in modern knowledge practices and culture have become active in our technological life worlds. The bifurcation of the sources of sentience characterized in chapter one are part of the material conditions of experience. This development appears to adds pertinence to Arendt’s contributions to the meaning of aesthetic education as a counter to thought and action that are animated by extra-terrestrial tendencies.

Before we turn toward her estimation of the role the natural sciences have to play in aesthetic education it is important to dwell for a moment on her understanding of how the undermining of aesthetic judgment creates the conditions for totalitarianism. Critics have pointed out how Schiller’s valuation of the aesthetic, artistic condition as an end in itself is concerning given its de-contextualizing characteristics. This criticism points toward the potential gulf between art and the true. If a citizenry is thoroughly educated to approach life as

\textsuperscript{242} Ibid., 286. The theoretical physicist and nobel laureate Frank Wilczek has described his method of developing mathematical theories with an eye for their beauty and aesthetic qualities, and then looking for their descriptive power.
art, is it not in danger of losing connections to the basic contours of the basic foundations and realities of existence? Is a one-sided education directed toward the artistic sensibilities not a liability making a people more susceptible to propaganda and nationalism? Or, as we have seen, is it not a point of vulnerability where manipulative actors can exercise influence encouraging self-oriented consumerism? Both cases threaten an alienation from the basic natural and political conditions of experience.

**Hannah Arendt and the Consequences of the “Loss of Experience”**

Hannah Arendt is perhaps most known for her struggle to describe how totalitarianism could arise through a destruction of a sense for the “real”. The loss of the encounter with the real, was connected to a loss of political power to resist totalitarianism.\(^{243}\) It is not difficult to recognize how the “destruction of experience” indicated above could relate to a de-valuation of aesthetic and sense appearance thus it is not difficult to wonder if modern science as practice, and its non-neutral effects, correlate with an atrophying of practical judgment based on sensorial experience. For Arendt this is the same as a loss of a sense for the real. When people no longer have a “sense of the real”\(^ {244}\) they are helpless against convention, ideology and lies. When aesthetic judgment and the sense for the real recedes so do ethical dimensions of social and political life. Engaging others in their “self-display” is connected to being able to establish ethical relationships together and “our capacity to sense the real depends upon a mutual provocation between and among the appearing beings and this provocation is aesthetic, both


\(^{244}\)ibid., 9.
sensuous and affective." The loss of regular public practices of exchange, through speaking, listening and acting, and the atrophying of aesthetic judgement brought about by rationalist methodism, work in the same direction.

In her essay *Kultur und Politik* Arendt elaborates on how aesthetic judgement is tied to art and politics. For Arendt modern mass society is fundamentally based on consumption and entertainment. Entertainment, for Arendt, is simply culture that has been lowered to a level of an intensification of perishability or consumption. This is primarily achieved through the process of trying to make culture marketable and to turn it into a commodity. A developed culture escapes the perishability of other products of humankind. Its significance is not in being used once, but of enduring as a common world. Culture, when lowered to entertainment, becomes a common commodity. This places the satisfaction people seek through culture in the cyclical realm of production and consumption. Because culture has become commercialized it does not last and must quickly be replaced. Arendt clearly articulates the devastating implications of this process given the finitude of the earth and the biosphere.

The perishability of modern culture and discourse make it inadequate in establishing a home for multiple generations, which undermines the possibility of an enduring state. The higher potential of art and culture are not activities of self-expression and personal leisure, but a common activities, being rightfully placed in the public and shared world. Focusing creative activity on objects in common and public spaces that are raised above the circulatory process of

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245 Ibid., 6.
“biological time”\textsuperscript{247} lifts from the never-ending biological processes of production and consumption a \textit{common, sustainable, enduring world}.

The aesthetic faculty associated with art is related to Arendt’s notion of politics. Arendt’s conviction is that a sensually rooted, aesthetic experience of one another “makes [it] possible for people to orient themselves in the public, common and political space”\textsuperscript{248}. This political faculty for Arendt is connected to the capacity of experiencing beauty in artwork. For her the significance of artwork is, like political life, characterized by existing in \textit{shared space}, not a private space. In this we see the strong connection between aesthetic judgment and the establishment of a terrestrial life that is sustained by people who are able to rise out of the debased culture of entertainment and consumerism. This is dependent on aesthetic judgment being practiced in regular political, social and scientific activity. The argument of this study, that aesthetic education must be expanded to incorporate the natural sciences, is explicitly addressed by Arendt. Having provided a general overview of Arendt’s estimation of aesthetic judgment’s significance it is important to turn particularly toward her understanding of the role the pedagogy of the natural sciences had to play in aesthetic education and culture.

Arendt refers to Plato’s allying of philosophy with the good, instead of the beautiful, as significant for the development of western science and society\textsuperscript{249}. This is a highly elusive suggestion, but her thought takes on specificity when, in the first sections of \textit{The Life of the Mind}, Arendt refers to the work of Adolf Portmann. For Arendt his work was exemplary as a

\textsuperscript{247} Ibid., 278.
\textsuperscript{248} Ibid., 298.
scientific practice rooting itself in appearances. Portmann was one of the most famous biologists of the last century, whose work was dedicated to morphological studies in the life sciences. What is significant for Arendt is the value, or weight, he attributes to appearance. He does not simply explain appearances in relation to life processes, but instead sees in them their own substantiality, and as Arendt explains, sees biological function as a precondition for the existence of appearance, without “explaining” the latter through the former.

The resonance between Portmann’s studies of animal morphology and Arendt’s valuation of culture and politics stands out when considering the functional biological dynamic. The appearances - morphology of life forms for Portmann and the political for Arendt - cannot be reduced to this dynamic. Further, only by turning to the “revelatory” character of appearances can one develop a meaningful (and implicitly ethical) relationship with the great variety of living beings on earth (Portmann) and the meaningfulness of political/social life (Arendt). Arendt was convinced that the faculty for beholding the life of the other was through sensible apprehension of their self-display in word, gesture and public action. Portmann explored the horizons of experience that open up when biological organisms are approached as self-displays, which enable a kind of identification with the animal in the researcher. When referring to Portmann’s method, and reversal of the typical Platonic hierarchy, she writes that it has “far-reaching consequences, which he himself, however, perhaps for very good reasons, does not elaborate.”

250 In the next chapter we will return to Portmann’s research methods as we fill out the picture of promising dimensions of an aesthetic culture in the Anthropocene.

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250 Arendt, The Life of the Mind, 30.
Arendt indicates that the most important part of Kant’s political theory was his treatment of the form of judgment that occurs through perception of the other\textsuperscript{251} and, as already noted, she saw this as akin to the judgments of quality in culture, of the apprehension of the beautiful. Schiller’s attempt to show that there are non-rational social ties that are required to support a democratic republic are similar. The two theorists diverge in how they suggest this capacity is to be cultivated: for Arendt it is through public discourse and an aesthetic turn in science, and for Schiller through the fine arts.

As I have already indicated, the theory of aesthetic education I develop does not negate the inner dimensions of modernity or the positive goal of collective solidarity. Arendt positioned the speaking and acting individual, or Vita Activa, as the mode of human life that was able to escape instrumental rationality. Her proposed path toward a desirable future is different from the one proposed in this study. Arendt suggested the modern view of the individual and non-political associations typical of modern society were undesirable. Social associations, privacy and intimacy must be complemented by a shift toward collective virtue. Her suggested path of action included a revival and spread of public debate, discourse and politics. She suggested that these needed to be understood in a new light, as the fulcrum for developing a desirable future. Arendt suggests ancient examples of collective democratic politics can aid us in remedying many of the ills already alluded to. Virtue is defined as collectively inspired action toward a common good arising spontaneously out of public discourse.\textsuperscript{252}

\textsuperscript{251} Arendt, ‘Kultur Und Politik’, 298.
The expanded notion of aesthetic education described here does not involve these same judgments. It does not require the relinquishing of individualism in order to cultivate and accept this expansion. Unlike Arendt, I do not suggest that non-political associations, private life, individual virtue or art need be radically reinterpreted in light of ancient democratic practices. I do not propose that this expanded notion of aesthetic education would align with Arendt’s political theory, though there is significant overlap in pedagogical orientation.

Part of Arendt’s strategy is to shift the aesthetic-affective and ethical qualities into collective dimensions of sensorial experience, which involves crucial observations about non-rivalry. She posits the work of art, which fulfills Schiller’s characterizations, as the highest form of homo faber culture. Here the personal, infinitely returning cycle of production, consumption and reproduction is broken. The economic and private is at the threshold of the collective as a sense object that escapes the normal cycle of utility and consumption. Thus, Arendt tries to awaken the aesthetic in the circumference in the hopes of its supporting collective solidarity and chastening expressive consumerism.

The capacity for aesthetic judgment facilitates the ability to be satisfied with appearances. It is a distinctive feature of art. It should not be surprising that this should be brought to light by a theorist deeply inspired by the ancients of Greece and Rome, where immortality was conceived of as immanent enduring existence, such as we see in the planets. Art is apprehended, and consumed, at a distance. It is not diminished in the process. One of the founders of ecology, Aldo Leopold, described the importance of this sensibility in relation to nature, noting that “The outstanding characteristic of perception is that it entails no consumption and no dilution of any resource”, and highlights it as one of the chief goals of
ecological education of the public.\textsuperscript{253} Economic determinism and the rationalization of agriculture he judged as responsible for “millions of farmers who year-by-year grow richer at the bank, poorer in soil, and bankrupt in spiritual relationship to things of the land. The divorcement of things practical from things beautiful, and the relegation of either to specialized groups or institutions, has always been lethal to social progress, and now it threatens the land-base on which the social structures rest.”\textsuperscript{254}

Hannah Arendt clearly advocates an aesthetic education based on more concrete and sensorial research disciplines and methods in the natural sciences. In the notion of aesthetic education I develop, I suggest that an increased participation in the aesthetic dimensions of experience could chasten the cycles of instrumental rationality and economic determinism. Far from being ascetic in nature, the non-rivalry of perception that involves, to recall Aldo Leopold’s formulation, “no consumption and no dilution of any resource” is at the same time a heightened form of pleasure and solidarity with terrestrial life. It escapes the long-dreaded Sisyphean cycles of existence in biological time, opening onto the rich, mobile fields of metatopical spaces. It carries a potential that counters an orientation “bankrupt in spiritual relationship to things of the land”.

A salient feature of aesthetic experience besides non-rivalry is its critical function. This is especially pertinent to this study for the critical function emerges in art’s ability to present sensible sites of order and insight that are not “real”. The illusory power of art can create

\textsuperscript{253} Aldo Leopold, \textit{Aldo Leopold: A Sand County Almanac & Other Writings on Conservation and Ecology} (New York: Library of America, 2013), 149.

\textsuperscript{254} Ibid.
experiences that transcend reality, offering horizons of experience where future possibilities can be imagined. This function is drawn out in the work of Schiller and in many theorists who have written since. One of the central intentions of this study is to challenge the gulf between truth and beauty, the sciences and the humanities to show how the natural sciences have a role to play in an aesthetic education appropriate to the Anthropocene. This does not mean a subtle shift of our attention to the already present aesthetic dimensions of our current scientific culture. It implies a significant shift in method and orientation in natural scientific research, and a widespread reformation of scientific education at all levels of schooling. An expanded aesthetic education requires this scale of imagination, one comparable to the scale of the challenges it proposes to address. My attempt is to present the problem not as one of theoretical import, but practical. It is not a question of theory of philosophy, but education and practice. Thus the study is presented in the lineage of a discourse that values aesthetic education and the humanities for their political significance. This is one way it differs from many studies that present similar questions from a perspective of philosophic inquiry or a limited hermeneutical analysis of science.

In the next section some of the features of the critical function of aesthetic judgment will be presented and indications of what pertinence these have for aesthetic knowledge practices in the natural sciences. This will lay the ground work for the next chapter when we will explore in detail the role of the natural sciences in aesthetic education.

**Critical Dimensions of Aesthetic Experience**

Aesthetic experience has been situated by many theorists as an orientation that allows escape from totalizing tendencies in human nature and society. This was already introduced
earlier in our discussion of both Schiller and those influenced by his work. There aesthetic experience was part of a mode of apprehension that positions itself across from the other without regard to utility or fixed meaning. In lifting an object out of logical contingency and simple pleasure source it creates a time out of time. It is this mode of apprehension, typical of many modern attitudes toward art, that also serves as the basis of the apprehension of the human being as singularity and individuality. The elevation of the value of difference and singularity were pointed out in the interlude in relation to the work of Gilles Deleuze and Bergson, but another variety is found in the work of Morton Schoolman, who draws on Adorno and Horkheimer in developing a notion of aesthetic Individuality that emphasizes its critical function.

In Schoolman’s work aesthetic rationality is interpreted as sensuous experience that protects the thick and rich field of perception. It is irreducible to rational categories, always transcending them with qualitative differences. Its fundamental characteristics are receptive and mimetic. It is “receptive to the diversity of differences of which the world is composed” and “acknowledges the fathomlessness of the world and affirms that its meaning and value are mysterious and that all it contains exceeds the boundaries of thought and is essentially different from reason’s representations.”255 This variation of aesthetic judgment involves the amplification of the critical component of aesthetic experience and a reduction of agency. It is connected to an interpretation of existence that draws on imaginations from Nietzsche’s study of attic tragedy. The ground of existence is eternally evasive and opaque. What are accessible

are only images, and images of images. Following Horkheimer, and especially Adorno, Schoolman argues that reason proceeds as a process of reduction in order to find what is common to these images, while negating their differences, in an inherently violent act. For Schoolman reason’s violence is constitutive of societal life and it culminates in political terror. He suggests that the form of aesthetic individuality that can avoid this terror has been theorized in American (Walt Whitman) and German (Theodor Adorno) thought and should be cultivated further. It consists in the effects of the ideals of equality of condition and the connected tendency for people to become more alike through copying one another in small differences.

An example of this tendency can be found in Whitman’s distinctive writing which is characterized by listing the attributes of others, and the perpetual depiction of images, not thoughts. Cultivating the sublime, unfathomable sentiment of ungrounded existence chastens the drive to mastery implicit in reason.\(^{256}\) Cultivating regular democratic politics chastens the reification of the seat of power.\(^{257}\) The mimetic habits of the heart that are inspired through the ideals of equality of condition create a constant circulation of differences in the construction of subjectivity. The receptive, sensorial sites of experience are emphasized, as well as their qualitative irreducibility. Instead of vigorous imaginative activity that participates in an immanent ground of being, which we find in the new ontologies, this view suggests a dualism, indicating a realm of “things in themselves” that are ultimately unapproachable. Schoolman thus takes the sensorial, receptive dimension of experience and connects it to the critical

\(^{256}\) Ibid. 85.
\(^{257}\) Ibid. 306.
function ascribed to art. The decisive expressivist turn that senses in the individual articulation the connection to source is replaced with the mimetic ideal of art. Schoolman interprets instrumentally oriented reason as violence. It is fundamentally an instinct to construct difference as otherness. A playful mimetically inspired art, of constitutional democracy and equality of condition is what is most needed today.

In earlier chapters I have gathered orientations under utilitarian individualism that involve a muting of the commons, resulting in both its de-personalization and instrumentalization. I have indicated how the re-enlivening of difference in collective and objective areas of experience is connected with attitudes of immanence and monism. The dualistic orientation characterized by Schoolman can presented a chastening effect on the domineering attitude of the subject but it can also raise the question about the infusion of collective sites of experience with gravity and life. In this light one may ask transforming subjective and objective life into ephemera robs them of the actuality that inspires care and stewardship. If so, such a framework would not counter the decreasing friction that is being catalyzed by technologically mediated experience.

Schoolman’s pursuit of a sense of reverence for the ungrounded nature of life and his interest in preserving difference from the effects of an overdeveloped instrumental rationality are pertinent to an expanded version of aesthetic education. This makes it possible to maintain the critical dimension of aesthetic experience without sacrificing immanence and monism.

In tracing the modern notion of art and aesthetic experience to historical articulations in Schiller and the romantics I have focused on the clear demarcation that emerges between knowledge cultures and art. This is not what Schoolman focuses on. His interest is in how the
ideal of reconciliation takes shape in Schiller’s thought and is carried forward in Whitman’s and Adorno’s aesthetic theories. In focusing on his work the virtues of the critical function have been drawn out, in the work of a theorists who situates art and science in opposition to one another.

**Challenging the Two Culture Divide**

In what I have presented in this and the last two chapters the contours of conventional understandings of aesthetic sensibility have been brought to light by focusing on particular social and political theorists. The orientations I have presented, and traced back to Schiller and the romantics demarcate and separate knowledge cultures and art. This provides the back drop for most theorizing related to aesthetic experience. There is a general understanding of two cultures, one based in the qualitative, participatory methods of the humanities and arts, the other in the natural sciences. There is a “strong trend in our culture” of a continuing battle “in the humanities and the human sciences” to fight against the perverse spillover of disengagement from the natural sciences. The work of Taylor, and Gadamer, point toward the need of a philosophical anthropology that does not engage a “bleached and neutralized language” of human sciences, but develops a “method and stance” adapted to the nature of the reality concerned. Here, as in almost all of the theories presented in the last two chapters, qualitative, aesthetic judgement is positioned as appropriate for the human sciences, the humanities and the arts.

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260 Ibid., 286.
I tried to show this division of knowledge practices, and the pursuit of truth from appearances, is already forcefully developed by Schiller. It is this portrayal of our modalities and methods for researching the beings, elements and forces of non-human nature as belonging to an-aesthetic methods of natural science that I suggest be questioned. When Taylor suggests that “method and stance” be adapted to the nature of the reality concerned it implies that the current an-aesthetic methods we employ in gaining knowledge in the natural sciences has been settled as appropriate for the realities they are concerned with.

The question presented here is whether the allocation of a space for aesthetic culture that does not reach beyond the humanities is more an outcome of conventions and habits explicable through the sociology of knowledge practices than insightful conclusion. The sensorial culture of the sciences, which are the rooted, constitutional areas of our connection to terrestrial experience, are undervalued in the role they can play in the transformation of existential orientations and sensibilities hospitable to voluntary ecological collective action. Moreover, this is not simply a matter of suggesting a new genre of knowledge practice due to its political, economic or social uses. It is also based on the abstract connection, or knowledge, modern sciences offer us to the qualitatively rich world of terrestrial reality. Their knowledge capacities are limited through their nature. Moreover, it has been suggested that they carry values along with them that are often uncritically adopted as motivations. The theory of aesthetic education presented here questions the demarcation of the aesthetic evident in Schiller, Taylor and many others.

Arendt stands out in this discussion as a theorist who explored the ecological and political significance of a new scientific culture. Her view that the non-terrestrial, universal
orientation of modernity alienates from the depths of embedded social, political and ecological experience challenge the conventional demarcation of the significance of aesthetic judgment. She seems to propose that the radical growth of interiority that accompanied modernity is a devolution, as is the high esteem placed on individuality. I do not see a compelling reason to jettison the form of individual apprehension that grows from the modern attitude toward art, and the high valuation of expressive individualism, in order to escape self-illusory hedonism. Just as aesthetic knowledge practices in the natural sciences bring us toward a more intimate connection with these, opening the pathways for them to play an ever greater role in public discourse and the constitution of our experience, they also contain the potential to contribute to a chastening of the hubris of modern individualism that degenerates into self-illusory hedonism and romantic consumerism.

As Taylor has elaborated, the peculiar turn of expressivism is that through creative subjectivity moral and trans-subjective sources are activated and integrated into experience. This is the attitude that also supports the new materialisms that interpret aesthetic experience ontologically. As I will suggest in the next chapter, particularly in the aesthetic thinking of Georg Maier, a similar dynamic has been pioneered in empirical and practical physics. Expressivism can lead not only into qualitative spaces of value and ethics but into a more articulately appearing world. Where Taylor demonstrates the very activation and manifestation of the ethical space of values through expressive culture, Maier demonstrates the very activation and manifestation of the world as appearance in the expressive research practices of empiricism.

In so far as art evades the accepted categories of the period and posits a sensible order that is non-identical with convention, it is a “critical mode of experience that entails an altered
relationship between object and subject. To frame the matter in another way: aesthetic experience is not merely a different way of experiencing the world, but an experience that leads to a different relationship with the world." Thus, the rhetorical narratives of Bennett and the art experiences of Marcuse situate the imagination as a liberating force that is at the same time immanent. It is the presence of a new relationship whose very existence places dominant and hegemonic forms of life into perspective and challenges them. As I will suggest in what follows, this experience of an “open whole” that is immanent but not closed, makes up a part of the practices of Portmann’s research into the “expressive display” of organisms and the “portrayals” in Craig Holdrege’s research.

Besides this critical function the non-rivalry of aesthetic participation offers a desirable shift in the performance of subjectivity. In aesthetic experience, as Arendt has pointed out, the sensuous plays a crucial role escaping the act of consumption. Self-illusory hedonism enacts itself through actual consumption of increasingly finite resources, and today subjectivity in the United States is largely associated with consumption. The approach to aesthetic education indicated in this study offers a potential to curb this kind of subjectivity without simply reverting to asceticism or moralism. It does not involve a suppression of the sense experience but its intensification. Beside the expressive and critical dimensions, we have an enriching non-rivalry.

One of the most central characteristics of the modern work of art is that it is approached as a whole consisting of a part. It is approached as a singularity, in whose presence the world arranges itself, as around a new center. It is an object that is determining. It is complete and requires no additions. Thus, we have the placement of the work of art within the
horizon of sensorial perception, as a perception that also contradicts normal perception in so far as they only make sense when connected to one another through thinking. Schiller conceived of this as a presence of eternity within positively existing experience, as opposed to the non-representable conception of infinity. In this way art evades integration and constitutes a world that is founded in appearing. The “artwork is essentially phenomenal; it is an appearance that is not to be taken as an appearance of something, but instead purely as appearance.”261 It is pointed out by Schiller that when we pursue truth or understanding sensorial facts cannot attain this character, with the focus shifting toward the notional interconnections that co-constitute experience and can be experienced conceptually as theories. This object nature of art in aesthetic experience has its cousin in the discipline of aesthetic research practices wherein facts appear as theories. These disciplines, while they do attain a certain form of generalizability, are also constituted as images and appearances, and are not accessible as purely logical form.

I will argue that a new interpretation of aesthetic education may require a more thorough engagement with the non-human sensuous and empirical, as opposed to the imaginative and rhetorical. The transcendental empiricism of Deleuze and Guattari engages thought as an intensive process instead of as a series of functions, and thus situates the role of aesthetic thinking in the area of interpretation, imagination and philosophy. I will provide examples of aesthetic empiricism that tend to the specific sense experience without sacrificing the intensive. I suggest this fulfills the effort to ground and chasten individualism while

enlivening a natural periphery that is usually interpreted as a site of mechanistic, inert forces and relationships that cannot significantly accommodate aesthetic judgment.
Interlude II - Scientific Ambiguities

In the first interlude of this study I turned from the extremes of expressive individualism and utilitarian individualism to ambiguous articulations that opened up an appreciation for aesthetic experience. In this second interlude I turn from articulations that reveal science and art as opposing, stark contrasts to more ambiguous points of view. This establishes the context within current discourses on science for a presentation of aesthetic knowledge practices. I turn toward these practices in the next chapter.

In this interlude I focus on ambiguities in presentations related to the image of modern science and I contribute perspectives toward understanding the relationship of aesthetic experience and knowledge. I try to show how recent developments in the philosophy of science can be seen to accommodate the expanded notion of aesthetic culture presented in this study, in the next chapter I present aesthetic research practices from the fields of physics, biology and zoology.

The Current Context of the Philosophy of Science

Thomas Kuhn’s The Structure of Scientific Revolutions, will provide an entry point to our exploration of recent ambiguities in the philosophy of science. Published in 1962, it greatly influenced the direction of the study and philosophy of science. In order to present a view of the significance of this study it can help to understand the intellectual context in which it appeared. Understandings and discussions of science in the mid-twentieth century USA were heavily influenced by European scientific developments of a few decades prior, when a strong
differentiation was presented between philosophy and science, and one of the major tasks of the philosophy of science was conceived as revealing the impotence of philosophy while showing the certainly of its own method. Members of the Vienna Circle articulated the significance of scientific creation of meaning as not only one possible way to gain understanding, but the only valid way. Science had reached a level of maturity that could provide absolute certainty and guide the structing of life and society. The circle was animated not just by logical riddles, but by a desire to transform all of society, primarily by situating philosophy in the service of the modern method.\textsuperscript{262} Their position suggested that if linguistic expressions did not contain scientifically verifiable truths, or logical tautologies, they were meaningless. The nature of scientific work involved creating logically coherent hypotheses and deducing conclusions from them. The work of experimentation was expressed in the same style. Experiments were presented as confirmations of deductions.\textsuperscript{263}

While the Vienna Circle disbanded in the 1930s its influence continued, especially in the United States. The analysis of the absolute clarity and certainty of a linguistic expression became a theme of theorizing. Focusing on this theme revealed not only definitions of specific terms, but their reference to experiences in the world that were not identical with these terms, and relationships of syntax and grammar, were problematic. While the “thematization of language as it belongs indissolubly in the human life world”\textsuperscript{264} involved the riddles mentioned above, the overall viewpoint was focused on logic, certainty and confirmation. The work was


\textsuperscript{263} Robert P. Crease. \textit{The Play of Nature: Experimentation as Performance}, 27.

largely informed by an interpretation of science that viewed its primary significance to be in theory building and its secondary activity to be in praxis, or confirmation by experiment. This interpretation presents science as an activity of decoding nature, and nature as containing strict logical meaning. Experiments are interpreted as decisively plain and certain as the hypothesis themselves. This interpretation directs attention away from experience and perception and “allows us to rise above our merely human concerns and perspectives- our history and culture- to become spectators to the ‘fundamental furniture’ of the universe”.265 One way to understand the widespread view of science as infallible is through this lens. It presents an imagination of an activity largely untouched by contingencies of time, locality and history while presenting history as an incremental path of progress from superstition toward the truth.

In this context Kuhn presented a view on scientific activity that problematized the notion of progress, the commensurability of scientific theories and the simple connection between hypothesis and experiment. Kuhn presented scientific activities as research communities working together within one matrix of meaning that they all voluntarily adopt. This matrix, which orders and assigns values to perception and the constitution of experience, he called a paradigm. The inability of a paradigm to capture and explain the totality of experience leads to the accumulation of contradictions and inconsistencies, and ultimately to doubt in the paradigm itself. This presented a view of modern science as a particular science among others and it problematized the connection between theory and fact. “Scientific fact and theory are not categorically separable, except perhaps within a single tradition of normal-

scientific practice. That is why the unexpected discovery is not simply factual in its import and why the scientist’s world is qualitatively transformed as well as quantitatively enriched by fundamental novelties of either fact or theory.”

Mary Hesse sketched five dimensions emerging from this discussion:

1- Theories are underdetermined by facts

2- Theories are vulnerable to revolutionary change, and the theory laden ‘facts’ associated with them

3- There are rational postulates connected to dominant theories such as causality, probability, etc.

4- These are often connected to value judgements in the emergent phase of a knowledge culture

5- As these value judgements are “filtered out” they are universally adopted, such as the values of prediction, control of the environment in modern natural science.

The views opened up by the studies in the history and sociology of knowledge make it more difficult to see history as a progressive movement toward greater truth for it leads to insights that the spread of certain theories can be seen as connected to groups in power, political and social developments and all other manner of non-scientific factors. Some developed Kuhn’s thought in the direction of suggesting that science has no right to a claim of superiority in relation to any other cultural practice, and should be viewed and critiqued as such. In the most extreme cases this involved suggesting that nature, or the phenomena of the

267 Mary B. Hesse. Revolutions and Reconstructions in the Philosophy of Science (Hempstead, UK: Harvester Press, 1980), 188.
world, do not exercise any constraining influence on cultural representations.\textsuperscript{268} There are a variety of understandings between the position that sees an ever greater identity between scientific hypothesis and nature, and one that presents a scientific representations of nature as radically relative and socially and historically determined.

These developments in the philosophy and history of science do not necessarily change the daily lives of practicing scientists. And even while it is remarkable how little it has changed research practices in much of the academy,\textsuperscript{269} the last fifty years have seen a profound shift in discussions of modern science and knowledge.

One effect has been the new light in which hermeneutics has appeared. Mary Hesse presents the way of working with the historical study of knowledge as hermeneutics which “depends neither on uncritical analysis of our language as if it were language as such, nor on the incommensurable relativity of languages and forms of life, but on the assumption that cross-cultural understanding and self-reflexive critique are both possible and illuminating.”\textsuperscript{270} Gadamer, one of the most significant contributors to hermeneutics in the last century, suggested that through developments of phenomenology and the Anglo-Saxon tradition, that made the problems of the practical use of language a growing point for the philosophy of science, “a new basis for the old metaphysical question about the whole seems to be

\textsuperscript{268} Larry Laudan. \textit{Science and Relativism: Some Key Controversies in the Philosophy of Science} (Chicago, IL: University of Chicago Press, 2012)


\textsuperscript{270} Mary B. Hesse. \textit{Revolutions and Reconstructions in the Philosophy of Science}, 58.
available.”

It will be important for us to turn toward both hermeneutics and phenomenology to develop a context for aesthetic knowledge practices.

What is today understood as hermeneutics, or interpretation, arose largely through an effort to develop a discipline for understanding the human sciences. Prominent contributors in this field include Gadamer and Taylor. Hermeneutical study, a pursuit of understanding through acts of interpretation, is understood to unfold through a self-defining social creature. To approach the meaning of social-cultural phenomena practices of attentive participation and study of context and history, are required. Hermeneutics is not predictive or verifiable and its pursuits involves allowing one’s capacity for meaning and openness to be given full reign. The sciences of the human being differ from the images of phenomena encouraged in a logical positivist view, that rely on fixed method and closed logical systems susceptible to prediction and control. This orientation leads to a critique of the language of the modern social scientist, as something often bland and sterile and that tends to lead us out of the circles of meaning of social/cultural life. The disengaged and removed stance is thus presented as a hinderance to understanding in the human sciences. This presentation leads to the view that much social scientific literature presents the subjective conditioning of the researcher, an expression not of the subject they are researching, but of the values of their conventional method. This informs Gadamer’s main quest of how hermeneutics can be freed from the

ontological obstructions of the scientific concept of objectivity to approach the historicality of understanding.274

Part of the disquiet in the 1960s leading to logical positivism falling out of favor, was its great distance from the actual life and experience of scientists. In trying to overcome metaphysics it appeared to have become a transcendental discourse itself, hardly interfacing with the rich first-person experience of human existence and embodied meaning. Gadamer described science as having liberated itself from language, for it developed its own system of signs and symbols that are not susceptible to being translated into everyday consciousness.275

The style that it demands fealty to is a normative image of unity, simplicity rationality and elegance. This tends to exclude the rich world of praxis and experiment.276

The studies of Robert Crease and Martin Ege have contributed to hermeneutic understandings of natural science as practice. Crease has shown how conventional and mythic interpretations of science have contributed to a neglect of the practical, day to day of scientific life, particularly the experiment. In his presentation of the experiment he employs the analogy of the performance, countering the language of removal from everyday life indicated by Gadamer. He presents his work as a contribution to the neglected theorization of the experiment and scientific practice. Drawing on Gadamer in Hermeneutics as an Approach to Science, Martin Ege also presents scientific activity, learning and experiment in the light of participation and creativity, viewing the practice of science as akin to artistic skill and

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276 Mary B. Hesse. Revolutions and Reconstructions in the Philosophy of Science (Hempstead, UK: Harvester Press, 1980), 188.
understanding. This reveals the practical, tacit and learned layers of scientific practice and participation. The student of science is not a spectator when they are learning, they are already creatively learning styles and manners of interpretation. Through later contributing to the field of their training, through writing or experiment, it is not as if they had been removed from it until then. The fluency and tacit understanding they have developed Ege presents as akin to artistic skill.  

The focus on theory, as opposed to practice, is indicative of an an-aesthetic orientation in scientific culture. Aesthetic judgement can be characterized as facilitating receptivity to unique, finite and embedded varieties of knowledge. While there is a traditional discourse that has explored aesthetic judgement as a potential source of deepening respect for individual life, while encouraging collective governance, this has largely neglected the potential it possesses for connection to the finite, terrestrial ecosystem we share. It is possible to see the neglect of aesthetic knowledge practice in natural science as connected to the neglect of theories of experimentation, the tacit and learned dimension of natural perception and science as praxis.

Patrick A. Heelan has made many contributions bringing together the philosophy of science and hermeneutics. In *The Scope of Hermeneutics in Natural Science* he develops a presentation of the natural sciences through a hermeneutic approach and points toward a list of future research areas. He presents the difference between the modern natural sciences and the hermeneutic tradition, the former being a practice dedicated to explanation, prediction and control, while the latter is more concerned with cultural meaning and its transmission. Heelan

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points out that an unfortunate development in the social sciences has adopted the explanatory method, observing that while the natural sciences have largely required other sites of culture, such as philosophy and religion, to give them actual meaning, this cannot be hoped for if the social sciences themselves adopt this method. This opens a window to technoscientific hegemony. He notes that while the new directions introduced by Kuhn have led to ongoing attempts at reorientation, the basic sense is that a way will be found to continue to privilege natural sciences epistemological and ontological status. This opens the door for the hermeneutic approach to reveal the historical character of the natural sciences through changes in thinking in the life world and the fulfillment of this meaning in praxis, technology and instrumentation. For Heelan “The continual historical dialectic between these two transcends all monism, and all older dualisms.”

The notion of a life world includes a grasping of the historical and locational contingency we find ourselves inhabiting. This includes a language, community and set of values and concerns. This contributes to the very constitution of the individual, even though these elements are not of the individuals making. This is not a stand in for everyday unreflective experience, rather, it is a way of directing attention to the pre-theoretical processes that condition experience. In this humans participate in communities of meaning. Meaning is not private or individual, but arises between people through conversation and interaction in shared


languages and practices. This does not imply the identity of meaning between individuals, but this “meaning is the instrument through which truthfulness makes its appearance in the lifeworld.”

Meaning is not identical with its expression. This is what makes interpretation necessary and also reveals how meaning is not solely constituted by practices and actions. This is true of natural science as much as it is true of politics and religion. The hermeneutic method offers for the history of science an insight into “how quantitative methods give meaning to empirical contents, how theory-laden data depend on the public self-presentation of the measured entity as a public cultural entity and, in particular, how measurement equipment plays a double role creating and refining both theoretical and cultural meanings.”

Heelan makes an intriguing differentiation between the “praxis laden” presentation of an object as measurable, which belongs to the public cultural life, and the design of a laboratory event, which is more specifically “theory-laden”. Here he turns his gaze toward the tacit dimension of life and apprehension alluded to in the work of Ege and Crease. Observing the character of natural scientific language Heelan refers to the gulf indicated earlier by Gadamer. The solid view of objectivity and objects in modern science is placed next to a view of perceptual objects as “substantive individually localized cultural objects in the lifeworld, presented to local human perceivers in sensory experience, and understood by the character, multiplicity, and systematicity of their sensory presentation or profiles.” He shows how the

280 Ibid., 278.
281 Ibid., 281.
282 Ibid., 290.
meeting of theory-laden technologies and the traditional life world leads to revolutionary changes in apprehension and value, considering, for instance, the use of a term. One can consider how different a term like foetus is from the folk term, baby, or the term research subject from elder. The way of thinking of, valuing and understanding each points toward the culturally constituted dimensions of the phenomena. Heelan echoes Crease by suggesting “The big mistake of modernity was to commit itself to a classical static conformity notion of truth that could only be retained by supposing that scientific theory could be separated logically or ontologically from temporality and culture.” According to Heelan the hermeneutic treatment of the natural sciences is “small, and needs development” and observation that has been pointed out by others as well. It is evident that the perspectives these studies are illuminating and instructive for both knowledge and ethics.

Phenomenological science also appears in a new light when viewed in the context of the recent developments of the philosophy of science in the United States. Phenomenology is often associated with the work of Edmund Husserl, Martin Heidegger and Maurice Merleau-Ponty. Husserl’s characterizations a century ago captured the significant shifts in cognitive style and practice that constitute the foundations of modern science and include nature being represented as a self-enclosed “mathematical manifold” and the emergence of a strong...
dualism. The conception of the “real” (extended) world as a closed, mathematically determined whole excludes consciousness, values and qualia of experience. The latter, because of the way it is related to nature, “does not achieve the status of a real world.”\textsuperscript{287} The process of calculation, of solution, imbues this type of knowledge with a technical spirit. The “art of achieving” emerges as an attitudinal value intrinsic to the practice. This view reveals a transformation of experience of the world, and the place of subjectivity in the world, through the spread of modern science. The turn toward experience and phenomena in Husserl’s work opens the possibility of a renewed natural science that avoids certain negative influences from Galilean science, but he left no positive identification of what this would look like.\textsuperscript{288}

The practices in the next chapter are easily understood as phenomenological, but not as a philosophical doctrine, more a style of thinking. Before it was identified as a “philosophy” it existed as a movement, and so famous of articulations of it cannot be identified as origins.\textsuperscript{289} Martin Ege has characterized the broad understanding of phenomenology to be “that approach to science and philosophy which tries to stay as close to the phenomena by avoiding as much as possible all abstraction and imposition of constructs, and by relating always the object of study to the experiences of the subject who does the studying.”\textsuperscript{290} The research practices and orientations are often easier to trace to the likes of Johan Wolfgang von Goethe or Alexander Baumgarten than the figures listed above. Given that they focus on natural scientific aesthetic

\begin{footnotes}
\textsuperscript{287} Ibid., 60.
\textsuperscript{288} Robert P. Crease \textit{The Play of Nature: Experimentation as Performance}, 57.
\textsuperscript{290} Eger, Martin Eger. “Hermeneutics as an Approach to Science: Part II, 303.
\end{footnotes}
knowledge practices their relative obscurity may be more due to the generally prevalent prejudice toward theory noted by Crease.

Inherent in the argument presented in this study is a situational notion of the good life. The justification for the expansion of aesthetic education is not simply a utilitarian way to preserve bare life, but to pursue the good life. Daniel Bradley has pointed out how environmentalists work can arise out of “a response to experiences of great meaning and beauty”, as was the case with Aldo Leopold, who experienced a turning point in his life while hunting. He points toward an interweaving of ontology and ethics he suggests is related to an “anthropology of joy in response to the goodness of being and the question of time.” The education of the sensibilities explored here are presented as possibilities that may allow for the development of predispositions of openness toward the terrestrial elements and beings. This view connects the cognitive and the ethical, inquiring how our cognitive practices shape our relationships with the earth and society.

The aesthetic knowledge practices portrayed in the following pages are also directed toward new research questions largely excluded from the practice and philosophy of science. This means they also offer new horizons for scientific discovery. Some recent theoretical work can be seen as premonitions of their importance. Trish Glazebrook has characterized the exclusion of certain mysteries from modern scientific discourse as a case of an ideology of control and manipulation that has lost sight of an ancient differentiation between artifact and natural object. Glazebrook introduces this mentality by introducing Aristotle’s differentiation of

three types of knowledge; theoria, praxis and techne. To live into these it is important to think of them as being defined by their ends, the perfection they tend toward in time. So the end of theory is the event of knowledge, or the knowing person. The end of praxis is politics and ethics. That which technological knowledge tends toward, its end, is the built object. Thus technological knowledge is consistently oriented toward producing, toward building.

Glazebrook aligns this interpretation with that introduced earlier by Heidegger, technology is not just “technological equipment, but rather the ideology that permeates the production and use of such equipment.”

In this light Glazebrook compares an artifact, a built object, and a natural object. The fulcrum of her observation is directed toward the derivative nature of the artifact. An acorn, for instance, intrinsically contains its final cause whereas a chair does not. The substance from which a tree is built proceeds through the unfolding in time of the tree. This she calls “self-directed material development”. The substance from which a chair is built must be harvested from nature, and ultimately will be reclaimed by it. Artifacts have the form imposed on substance by the artist. Thus, technological activities reveal a finite interruption in natural process. Characterizing the products, and the manner of thinking, she writes “technology is derivative way of being, and control of natural processes is at best partial and temporary. Yet modern technology is an ideology of control and manipulation that has lost sight of this Aristotelian truism.” The praxis of this variety of knowledge involves homogenizing natural entities through researching constituent bodies whose properties are conceived of as

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interchangeable in all bodies. Manipulating these constituent particles, consisting of measurable expressions of extension, hardness, impenetrability and gravitational qualities, suggests one is in a position of ultimate authorship. She presents this through the work of Newton, who no longer made use of the conception of intrinsic causes, as Aristotle did. Newton focuses on how causes external to an object govern movement and rest. She characterizes this as a hypothetic-deductive worldview. Her conclusion is that such a world view, that can make no place for natural teleology, renders nature as nothing more than a manipulable resource. Theoria and praxis recede in the background of techno-science in this presentation. In this passage Glazebrook notes that Goethe’s lifelong polemic against Newton was ultimately against this reductionism.

The following research practices involve striving to apprehend emergent wholes in perception. These are not interpreted as subject to reductive explanation. These are not presented as speculations or metaphysics, but empirical possibilities. The scientists present their understandings as varieties of empiricism. They suggest the limitation of any empirical encounter with the perceptions they describe is connected to limitations intrinsic to theoretical “technoscience”.

The significance of the tacit and skilled way of perceiving, that scientific activity involves, is regularly underestimated according to many of the perspectives presented in the foregoing. The general tendency in the philosophy of science, and the self-understanding of many scientists, also involves a privileging of theory over practice, and the viewing of practice as a method of confirmation. The argument in this study suggests the importance of a widespread transformation of science instruction and practice. It involves viewing them as much more
connected than we often assume. The foregoing largely focused on the contemporary context of the philosophy of science, is offered as a prelude to the praxis, the tacit cultivation, of new varieties of empiricism. This is uniquely framed within the discourse of aesthetic education as a public, democratic enterprise that requires the fostering of particular varieties of the apprehension of the individual in order to encourage non-violent, voluntary, collective governance. It is a particular cultural orientation, situationally justified by the conditions of our time, and animated by challenges belonging to democratic culture.

Another recent, notable reflection on our scientific moment can be found in Thomas Nagel’s *Mind and Cosmos: Why the Materialist Neo Darwinian Conception of Nature is almost certainly False*. In this book, Nagel presents many theoretical problems along the lines of those indicated by Trish Glazebrook. His attempt was to “extend the boundaries of what is not regarded as unthinkable, in light of how little we really understand about the world.” He goes on to admit that he is certain his efforts to explore alternatives are far to unimaginative, “An understanding of the universe as basically prone to generate life and mind will probably require a much more radical departure from the familiar forms of naturalistic explanation than I am at present able to conceive.”

In this theoretical clearing the following practices and orientations will be presented. While they are supported by theories their ultimate significance, in the light of this study, is as practice. As Charles Taylor has pointed out, theories are the possession of the minority. The

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294 Ibid., 127.
notion that a movement for an expansion of aesthetic education would positively influence the developments outlined in previous chapters presupposes a widespread pedagogical and scientific movement that would eventually reach into our sensibilities and styles of representation. Taylor’s suggests modern secularization is not a matter of belief. “What I am talking about is the way the universe is spontaneously imagined, and therefore experienced.” This suggests that a terrestrially rich renewal of science and education of our sensibilities is not simply a matter of theoretical culture and acceptance, but an aesthetic education of our very felt situatedness on the planet. The situational justification of a theoretical expansion of our understanding of aesthetic education includes the imagination of a widespread practice in schools and research communities, and ultimately a shift in the way that the “universe is spontaneously imagined”. The expanded notion of aesthetic education is animated by an interest in voluntary collective actions that are informed by an enlivened and enriched connection to the natural foundations of life. They imply general accessibility. This is intrinsic to their democratic nature. This is not just a matter of a subtle shifting of attention toward the aesthetic dimensions already present in natural scientific practice. It implies a significant shift in natural scientific culture on a professional level, and on all tiers of educational life. The implied accessibility, and broad implementation, is as formidable challenge. The various possibilities emerging from the dynamics of our moment cannot be said to tend toward this form of democratic, collective response to our common challenges.

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295 Taylor, A Secular Age, 325.
While this proposal of a shift in conventional knowledge cultures presents a significant challenge, it also promises limited results. This presentation of aesthetic education may provide the groundwork for more sustainable economic organization and more democratic institutions. These remain challenges in their own right. I have tried to show that the promise of aesthetic education is significant, if limited, its implementation presents a challenge, and its practice is currently very limited.
Chapter 4 - The Contribution of Science to Aesthetic Education

In what follows I will introduce distinct aesthetic knowledge practices from the fields of optics, botany and zoology, drawing on the work of various researchers. The point of the presentation is to focus on the variety of judgment, and the process of its unfolding, not so much on the contents of the research. In places I share from my own experience in courses with some of these natural scientists. It is not so much to present scientific findings but to help communicate the experience of engaging these types of investigations. Because of this limited purpose they necessarily have an anecdotal and incomplete character as communications of scientific results.

The interpretive orientation developed turns toward the apprehension of the unique, finite and particular and distinguishes it from the general and universal. It is rooted in the sensible and embedded horizons of experience. The greater discourse of aesthetic education, that sought to put this variety of experience to work for collective governance that can unfold in relative peace, with minimal violence, is here turned toward interdependence and sustainability. Traditionally aesthetic education has been proposed as a way to facilitate social cooperation without relying on coercion or violence. This has largely been viewed as relevant for human rights. An expanded aesthetic education suggests that a widespread, public aesthetic culture in the natural sciences might offer similar trajectories for voluntary collective action in the context of our finite, terrestrial home. Aesthetic education might not only work to protect the real, unique individual from the dictates of universal, general reason, it might also protect the real, unique planet. Schiller suggested that striving for democratic ideals without aesthetic culture could lead toward versions of the great terror. An expanded notion of aesthetic
education suggests striving for sustainability without aesthetic natural scientific practice will also tend to destroy the actual, finite foundations that in theory it promises to protect. An expanded theory of aesthetic education orients itself toward the pictorial, finite capacities of knowledge, toward practice and sensorial experience, and it draws on the orientation that emerges from a concrete historical aesthetic discourse. This discourse is oriented toward public pedagogical concerns and occupies a unique position hermeneutically.

In the below discussion it is possible to make out four different natural scientific aesthetic research practices. The first emerges through reference to my participation in a course on color theory in collaboration with Craig and Henrike Holdrege at the Nature Institute. This serves as a context to introduce Goethe, who is a major influence for all of the researchers in this chapter, and his notion of the ‘primal phenomena’ in color theory. The second is also drawn from the field of practical optics and involves practice that can be seen to belong to what Taylor has called the “expressive turn”. It is an expressivism of the natural sciences. It is presented through the work of Georg Maier and the founder of modern aesthetics, Alexander Baumgarten. The third variety of practice is taken from Craig Holdrege’s practice of “portrayal”, on hand of one of his botanical studies. The last variety of practice appears through the research of Adolf Portmann in his research of the “expressive display”.

In 2008 I moved to the Hudson Valley in New York from North Carolina where I had been active as an artist and teacher. I was looking for work in the area which eventually led to my encounter with with Jan Kees Saltet at the Hartsbrook Waldorf School. Jan Kees was a long time art teacher at Hartsrbook and, to my surprise, we soon found ourselves discussing Schiller’s aesthetic letters. This marked the beginning of a meaningful friendship. It was not
long before Jan Kees pressed me to reach out to Craig and Henrike Holdrege who had founded The Nature Institute, near where I was living, dedicated to phenomenology in the lineage of Goethe’s practices. After meeting them both I was invited to collaborate by offering art instruction during various public courses. In the years that followed I also invited researchers from the institute to teach in an annual course I co-directed that integrated arts, the natural sciences and social theory. Through these collaborations my knowledge and appreciation for Goethean phenomenology grew.

In 2012 I was invited as an instructor in a weeklong course called “The World of Color and Light”. The course was dedicated to observations and activities related to color largely inspired by Goethe and Joseph Albers. A brief report that appeared in the Nature Institute’s newsletter from a participant reads, “Experiencing the unfolding color phenomena was exciting and fascinating. To begin our experiencing of color and light, the first thing we did was go into an absolutely dark room. We sat together in the dark, in silence for five or ten minutes. Can you imagine? Here we are in a color course and the first thing we do is go sit together in the dark in silence. Since we don’t experience color and light (in the usual sense) in darkness, perhaps you can get an idea of what we were experiencing - our own eyes and our own thinking. From this very first exercise and throughout the course, we experienced how to develop our capacity for sensing and thinking, and indeed, for entering into the phenomena with ourselves. Our capacity for sensing was made a wholesome and necessary part of understanding the world. That is in itself quite phenomenal! We had several more experiences in the dark room, seeing how light enters that space and begins to shape and reveal form and color. We were given a fascinating experience of inside/outside - it was, you could say, just like being inside the eye itself. We
progressed through experiences of color in a large number of categories in a way that allowed them to feel well-ordered. Every afternoon we did painting of color wheels. Though I have done color wheels in the additive world with my computer graphics, I had never done it with the subtractive colors (paint). It was enlightening to do this very structured color blending and see the magical but ordered and lawful appearance of the colors.”

The majority of our work that week consisted in turning toward perception, trying to articulate what we observed and sharing together. In light of the foregoing they can be called experiments, or a “planning, skillfully performing and witnessing acts”. The orientation developed in the courses approached experiments as “a process for which data and theories are not foundations but outcomes.” In these ways they move away from the myth of modern science that privileges theorizing over doing, thinking over praxis.

The observations referred to in the beginning involved the gradual allowance of light into an otherwise darkened space. Upon entering the dark room one still sees light. This is the light of your eyes as after images. These both recede and become more noticeable at the same time. A luminous area is gradually introduced, one that grows very slowly, illuminating the room. On the floor below us we begin to notice color areas. It is difficult to make out Their shape and their colors in the dimness. As the luminous area grows the colors change. It is difficult to say how, but one that is grey turns into a warm color as the light grows. Eventually

298 Ibid., 29.
we are aware of ourselves sitting in a room with a large variety of colored poster board on the
floor. And it turns out that the first poster board to appear had been yellowish, even though it
had not appeared as yellow. It was possible to understand that a surface is not simply colored.
The context of light and darkness can be said to color a surface. This became clear during
sessions where we observed colored surfaces organized in different contexts with one another,
following Joseph Albers. Here a surface was a different color depending on its background.
Again, the context co-colored the surface.²⁹⁹

The phenomena we noticed when we first entered the darkened room also offered a
rich field of perceptual exploration. After focusing your gaze on a colored surface for a duration,
and then turning toward a white surface or wall, you will discover an ephemeral, yet distinct,
floating cloud of luminous color. If you move your eyes in different directions you will notice
that this gives a slight colored hue in every direction that you look. After focusing on red you
will see a green. After focusing on yellow, you will see a purple. Each color calls out colors
widely referred to as their complements as a “physiological” image. The most delicate blue can
appear after focusing for a duration on a strongly colored orange surface, yet looking around
you will find no outer source for this blue. You may find that blinking your eyes vigorously leads
to an invigoration of these luminous colors, but they eventually recede and disappear. It is not
unusual to notice these colors when you wake up and stare out your window from bed, then
direct you gaze toward your ceiling. One can begin to observe that the composition of one’s

field of vision includes a subtle complementary field that is more or less intense depending how long one maintains a static gaze.

![Image](image_url)

*Figure 1 Free Columbia Color Theory Course. Photo Laura Summer. Used with permission.*

There are other observations of distinct colors that are difficult to relate to an outer colored surface or light source. Placing a tall thin object (such as a vase) with two candles in a dark room leads to two shadows appearing on the side of the vase farthest from the candles. If one places a color folio in front of one of the candles the shadow that is cast by the colored folio has
a hue of its compliment. A yellow folio will reveal a shadow of a purple hue. A red folio a
greenish shadow. These appear immediately upon introducing the folio in front of the candle
and do not require the duration of staring that conditions the appearance of physiological
colors. Two candles, one with a folio in front of it, creates a second color that leans in the
direction of the compliment of the color of the folio. Yet there is no colored surface or colored
light source that can be found of this complimentary color.

Figure 2 Nature Institute Course. Photo Craig Holdrege. Used with permission.
During this week we also created interactions with colors using watercolor paints and projected light. Mixing color lights and mixing pigments lead to different outcomes. Mixing all pigments tends toward a dark surface while mixing all lights tends toward colorless light. One method is additive, tending toward darkness, the other subtractive. We spent time outdoors cultivating receptivity to color by searching out a variety of naturally colored objects and organizing them into a color wheel.

*Figure 3 Nature Institute Course. Photo Craig Holdrege. Used with permission.*
We also pursued the appearance of color through observations including turbidity, such as paper, turbid glass and smoke, and light and darkness. A variety of observations reveal blue and purple colors will appear in a turbid medium that is viewed in front of a dark background with light in the circumference. For instance, if you place an incense stick in front of a black background, in a well-lighted room, the smoke will take on bluish nuances. If this same smoke is observed against a light source it will take on a yellow/red hue. There is another series of experiments that involve prisms. Looking through a prism is what first led Goethe to suspect the limits of Newton’s theory of color. The simple experiments he developed involving the prism and colored sheets of paper led him to consider Newton’s spectrum as a composite and complex phenomena.

*Figure 4 Nature Institute Course. Photo Craig Holdrege. Used with permission.*
With watercolor we created wheels of color organized following a patterning that had begun to reveal itself through our first experiments. Goethe’s abundant experiments lead him to situate the appearance of color as necessarily occurring between light and darkness. Light and darkness, which are characterized not as particles, rays or waves, but how they appear to unaided observation, make up the field of inquiry. He does not seek a more primary phenomena in order to explain these. The two colors that are closest to darkness and light are, respectively, blue and yellow. This is supported by various experiments, such as yellow being the first color to become visible in a field of darkness with the least amount of light, while blue is the last. He develops interpretations of polarity and complementarity out of these observations and presents them in a wheel of color. It is telling that Goethe understands the culmination of his theory of colors as one that will be most useful for the fine and practical artist. And it is art, not control, that Goethe’s science tends towards. This does not imply that he viewed his color theory as simply a path to a color psychology useful to artists. He viewed his theory as way of organizing and understanding the great diversity of color perception. It possessed definite explanatory character for Goethe. The fact that the use of knowledge tends toward sensorial apprehension and beholding, instead of use and control, does not negate the character of explanatory discovery in his presentation. It rather suggests that a physics founded on the disciplined apprehension of the sensorial, without recourse to reductive constructions, might contain a movement away from the impulse toward use and control, indicated above by Glazebrook.
The expressive power of color also appears while observing them. It is possible to fill your field of vision with one color (we used an overhead projector in a dark room with a tray of water and food color) and to attempt to identify with it entirely, while paying attention to the emergence of sensibilities and feeling. Goethe describes this requiring surrounding oneself entirely in a color and identifying oneself with the color which “tunes the eye and spirit into a unity”\textsuperscript{300} Thus attention is not turned to the visible context so much, nor the physiological

\textsuperscript{300}Johann Wolfgang von Goethe. Goethes Naturwissenschaftliche Schriften, V III. Edited by Rudolf Steiner (Dornach, Switzerland. vols. V Rudolf Steiner Verlag, 1975), 290. translation NW.
colors, which emerge powerfully under these conditions, but the intangible qualities of feeling and sentience.

Through these, and a multitude of other experiments, Goethe comes to articulate the primal phenomena of color. These are perceptual constellations and dynamics that are irreducible. They can be seen in small experiments as in large phenomena, such as the sky and the sunset. Goethe interprets the blue sky as a case of turbidity seen against the darkness of space with light from the circumference. The sun that proceeds from a yellowish disk, through orange toward red, an example of turbidity seen against light with darkness in the circumference. He presents these as simple, or primal, perceptual constellations that can lead to an illumination of all compounded color phenomena.

I have provided these descriptions in order to present a sense of the aesthetic activity of this variety of natural scientific inquiry. This has also brought the limits of the current study into the foreground. The medium of writing is limited through the very nature of aesthetic research practices in the natural sciences. While it is true that through language we differentiate various facets of phenomena, such as specific colors, it is also true that language cannot contain or express what is contained in these. We can direct our intentionality to these non-linguistic experiences more or less in exploring them. They have their own peculiarity and constraining powers that are only accessible through direct apprehension and engagement. Through the orientation indicated above the phenomena and appearances themselves form the body of the theory. Their constraints become at the same time revelation of instruction. Goethe demonstrates an awareness of the limits of linguistic presentation of perceptual research in
writing that “whoever has a phenomena before them begins to think and make connections, whoever only hears of one, does not think at all”. For Goethe the actual engagement with the perceptual constitutes a significant part of its apprehension and its convincing power.

Goethe’s orientation proceeds through a plethora of experimentation. This culminates in a grasping of the interrelations of phenomena in the context of a body of perceptual experience. He reflects that “no phenomena can be presented as an explanation standing on its own, only an overview of many that have been brought into order reveal something that could be referred to as theory.” This presents something of a dialectic of perception. In arriving at the blue sky and the orange sun as primal phenomena, a broad and varied practice of observation is presupposed. It is in these activities that the theory acquires worth. The only value of a theory is that it can “lead us to believe in connections between appearances.”

The primal phenomena emerges as a theoretical perception. In it the real and the ideal are critically understood as mutually present. The gravity of this phenomena, that is to be grasped as simple and irreducible, “awakens a kind of fear and a consciousness of our own inadequacy; it is only through eternal interplay and complexity in phenomena that they please us.”

301 Ibid., Vol. V, 356, translation NW.
302 Ibid., 375, translation NW.
303 Ibid., 357, translation NW.
304 Ibid., 370, translation NW.
An intriguing portrayal of his method has been set out by Arthur Zajonc, whose research includes studies in electron-atom physics, parity violation in atoms, quantum optics, and the experimental foundations of quantum physics. Here a presentation of Goethe’s significance is made by a scientist sensitive to the contemporary complexities of theory and an understanding of the history of science.

Goethe suggested the search for causes was a distraction from mature scientific inquiry. Mature inquiry always sensed that the cause and the effect were expressions of a phenomenal horizon ultimately to be approached as a unity. The more orthodox scientists of his time looked down on his research as concerning only the “beautiful display” and not reaching deep enough to discover the “levers, the cords, and the pulleys which work behind the scenes”.\textsuperscript{305} The blunt quality of this critique is apparent through the historical orientation Zajonc develops.

Goethe oriented himself to the truth as a particular and theory building was a heuristic activity that aided the cultivation of hierarchies in perception. The ultimate goal was not universal theories, but archetypal phenomena. Goethe set to work within the horizon of appearances so that “through the process of investigation itself, certain otherwise ordinary phenomena become representatives or symbols of very general relationships or principles which manifest themselves within a finite phenomenal realm.”\textsuperscript{306} The notion that this infuses the phenomenal act of seeing with prejudice is a truth that cuts both ways.

Prejudice reveals as it conceals, or as Gadamer has said, prejudices are “the biases of

\textsuperscript{305} Zajonc, “Fact as Theory”, 220.
\textsuperscript{306} Ibid., 233.
our openness to the world”. This molding of the human constitution can travel the path of conscious informed action, to memory of actions about which we have explicit knowledge, to the “given” perception of pattern and compositions of value. It is this recognition that “scientific discovery proceeds by cognitive acts essentially similar to perception [that] opens up a new route for the understanding of Goethe’s archetypal phenomena.” The presentation and interpretation offered by Zajonc help to illumine the meaning of such enigmatic sayings as, “The ultimate goal would be: to grasp that everything in the realm of fact is already theory. The blue of the sky shows us the basic law of chromatics. Let us not seek for something behind the phenomena – they themselves are the theory.” This must be felt to be totally naïve and at odds with the whole presentation from the preceding interlude. Indeed, one of Goethe’s characteristic features was that he was largely philosophically disinterested, with his enthusiasm and attention largely rooted in perception and experience. What I want to lift to awareness is that the center of gravity of theory is felt to be accessible through the particular, and the goal of science is to find particular’s that reveal theory. The above quote does not imply that a fact is independent of a theory, rather it describes a style of apprehending that remains connected to the sensorial in a particular way in the experience of explanation. Clearly, through Goethe’s theorizing and experimentation the relevance of certain perceptions, as opposed to others, emerges. Here the intentional fostering of perception toward meaning and pattern are at work. The practice seeks to organize perception to discover constant patterns or

307 Ibid., 239.
308 Ibid., 241.
interconnections without recourse to reductionism. This leads to a sensibility that imbues the perceived with gravity, structure and authority and to a revelation of constellations of percepts as irreducible. The odd nature of this variety of judgment is that it leads to “facts”, or certain constellations of perception, as being understood in a theory like way. This does not imply that these facts are not theory-laden. It is impossible to truly understand the primal phenomena, or fact as theory, without the path of experimentation, and all of the intelligent intentionality it includes.

The practice of seeking fact as theory demonstrates certain affinities with aesthetic apprehension of the modern artwork. This should not be understood in a simple way. The emphasis is on the constellation of the perceived and the apprehension of the particular. This constellation is felt to be a unique composition of sensorial experience. One does not reach it through individual expression, but through empirical research. Still, in an odd way, the whole is present in the part. Through observation and experiment different hierarchies are fostered in perception, leading certain constellations of experience to this theory like character. The essence of the theory is felt to be inseparable from its emergence through empirical activity, and its apprehension remains embedded and sensorial. These particular constellations of perceptions take on a unique character. The directions for research presented by Zajonc are not an adoption of the aesthetic gaze from the artistic and humanistic disciplines. The new practices have their own unique demands and features. This suggests that scientific research practices might tend more toward the aesthetic while our understanding of the aesthetic as art needs to be complicated and expanded.

In the foregoing I have presented reports from experiences involved in basic color
experiments, introduced Goethe’s notion of the primal phenomena and a recent interpretation of its significance through Arthur Zajonc. In what follows I will turn to another approach that is also focused on the field of optics. Due to the scope of this study I have not introduced particular examples from his study of practical optics. I focus instead on his presentation of aesthetic research practices and how they can be seen to relate to what Charles Taylor has called the “expressive turn”.

**Georg Maier, The Optics of Visual Experience and Expressivism**

This variety of research in the physics of vision has also received a significant contribution from Georg Maier. Maier developed his research orientation after Goethe and Alexander Baumgarten. It is the latter I will focus on in this study as it is a relatively unique contribution. He explicitly develops his research orientation in optics in connection to the field of aesthetics as it emerged in Europe in the eighteenth century. While his work is clearly aligned with the phenomenological approach, he situates his research within the discourse of the aesthetic, as a mode of apprehending the particular and pictorial.

Alexander Baumgarten is one of the founders of what is today known as the field of aesthetics. He originally developed the theory of aesthetic judgment as an orientation distinct from reason. Aesthetics was conceived as including all fields of knowledge practicing first-hand experience of sensorial perception, images and mental pictures. This was contrasted with rational, logical techniques of knowledge. These two capacities are presented as faculties, neither of which can contain the other. Baumgarten’s intention is to reveal the peculiar and particular method of aesthetic judgment. He suggests that the perfection of “aestheticologishe” judgement is in the individual, directly contrary to the highest logical judgement which grasps
the most general. Through a dynamic of perceiving and representing, a form of knowledge was to be cultivated that was unachievable through the logical, analytic approach. Hans Rudolf Schweitzer has presented the original meaning of the term aesthetics, as Baumgarten presented it, as “understanding based on perception”.

This cognitive orientation involved working with both the activity of perceiving and that of representing. Baumgarten never intended it to be only a theory of art, and certainly not only a theory of pleasing objects. When Baumgarten founded the discipline of aesthetics, “logic was seen as the true path to objective knowledge. It still is. And, to be sure, this path is positively 'an-aesthetic' – devoid of sense experience. It is taken as a matter of course in the guild. It leads to knowledge in the terms of principles that in turn must be compatible with the basic beliefs of the time.” Aesthetic thinking involves articulation, not just reception. The very act of perceiving is guided by intentionality. There is a discipline in being able to “direct appropriate intention to the world so as to bring this world to awareness.” In this way aesthetic cognition involves the unity of expressive and impressive elements. The expressive element involves fostering an appearance-oriented intentionality, leading to appearances which are able to enter awareness in unity with expression.

Maier started his career as a nuclear physicist in Switzerland as an employee of the Swiss Federal Institute for Reactor Research. From his youth he was an especially gifted logician

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311 Georg Maier, Stephen Edelglass, and Ronald Brady, Being on Earth: Practice in Tending the Appearances (Berlin: Logos-Verlag, 2008), 94. See also Hans Rudolf Schweizer. Vom Ursprünglichen Sinn Der Ästhetik (Muttenz, Switzerland: Verlag Rolf Kugler, 1976)
312 Georg Maier, Stephen Edelglass, and Ronald Brady, Being on Earth: Practice in Tending the Appearances, 95.
313 Ibid., 102.
and thinker and he was encouraged to pursue a career in physics, which relied mostly on logic and did not require as much qualitative analysis as chemistry. After years involved in nuclear research he came into contact with Schweitzer’s interpretation of aesthetics. He went on to pursue research and teaching inspired by this knowledge culture.

Maier characterized three recurring activities in aesthetic thinking: orientation, meeting the expressive whole and accompanying. The first level involves engaging a phenomenon under many varied conditions, describing it and trying to notice nuanced, new observations and interconnections. The second step involves the attempt to orient oneself toward this great variety of perceptions as an expressive whole. Instead of parsimony, here there is an attempt to become aware of abundance. Thus, for instance, the observation of natural landscapes and habitats passes from the first step of multiple and varied observations to an attempt to make present a mental picture of the whole and to pay attention to remaining open to its expressive, abundant quality. Maier has demonstrated this in reference to ecological habitats. If one visits a site throughout the seasons, these expressive wholes reveal their existence in time. This leads to the third and culminating level of inquiry: accompanying. A person who has interacted with a landscape, plant or animal in this way arrives at the point of “assuming responsibility for sustaining a relationship that has come alive.”

Here an openness to the difference that a phenomenon may present in time becomes central. Aesthetic thinking consciously fosters a form of judgment that develops in time and evades reification.

In *An Optics of Visual Experience* Maier developed a study of visual experience out of

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314 Ibid. 110.
these aesthetic practices. His goal was to “liberate the way we experience simple optical phenomena from the strictures of accustomed explanations.” And to “show how visual experience can awaken an interest in the thought content of physical optics. This content is not, as is commonly assumed, bound to the thought constructs of hypothetical models”. In the context of this study I will not introduce the specific phenomenological exploration of lenses, halos, or first person exploration of the anatomy of the eye and some of the basic optical processes at work in the eye through the construction project involving a round bottomed flask. His work presents fidelity and dedication to the specificity of visual experiences and phenomena and suggests a high level of empirical dedication and care, especially in Maier’s consistent attempt to develop phenomena with intentionality, and to avoid presenting models outside of experiment and observational series. The following is intended to situate Maier’s presentation of aesthetics within the hermeneutic and expressive traditions of the social sciences. This suggests that there is a second leg to expressivism directed toward sensorial research.

In Maier’s research we find an impressive contribution to aesthetic research in practical optics, as opposed to analytic and logical practices. Building on Baumgarten and Goethe, he develops a practice of aesthetic thinking where intentionality is fostered during perception in order to allow appearances to become conscious. Here the one-sided development of the expressivist turn becomes clear. In the expressivist, only through articulation was one able to orient oneself in relation to a moral source in an authentic way. Now consider that through

aesthetic knowledge practices, sense-appearances enter consciousness through variations of articulation. In the first we have a general and basic understanding of the arts and humanities, in the second, the natural sciences. One orients oneself to the immense variety and differences of the appearing world through intentional (i.e., “expressive” in Baumgarten and Maier’s work) engagement. The style of expressive activity, which methodologically accommodates abundance, evades the closed whole of many metaphysical orientations of popular scientism. Aesthetic thinking, as opposed to logical thinking, tries to accommodate appearances with varying intentional expressions, allowing these appearances to mature in the awareness of the researcher. This means that appearances are not sought that fit a hypothesis, or thought, but that thought is regularly formed to allow the peculiar appearances to rise into awareness. This does not, however, simply result in various descriptions of singularity. In his optical studies Maier presents definite regularities and interconnections, but they arise within the experience of appearances and images and are not disembedded from abundance.

If we follow Taylor and imagine an expressivist culture that develops a “method and stance” adapted to the nature of the reality concerned this need not mean that the natural sciences of themselves demand an-aesthetic treatment. The expressivist, interpretive orientation in the human sciences reveals how the act of articulation constitutes an intangible, value laden space. Again, the depths of this space are ethical, moral and social. The act of articulation constitutes moral space, and unleashes potentialities of experience. The aesthetic knowledge practice put to work in the research of Georg Maier, displays certain similarities and important differences from this variety of expressivism. The similarity exists in expressive intentionality bringing a world into constitution that is a space of orientation. The difference is
that this space is markedly sensorial. The horizon that this form of expressivity opens for experience is that of the world of sensorial appearances and perceptions. It does so without abandoning the intrinsic character of knowledge, which is to grasp patterns and interconnections.

The aesthetic knowledge practices presented thus far have been directed toward the field of visual experience and optics. In what follows I will introduce aesthetic research practices that have been developed in botany and zoology.

**Craig Holdrege and the Practice of Portrayal**

During the Summer of 2013 I was again invited to collaborate with Henrike and Craig Holdrege at the Nature Institute. The main focus for the week was morphology and evolution. Given the timing of the course Craig suggested we tend to the herbaceous plant as it was easy to discover around the Institute and seasonally it was at a point in its development that demonstrated a variety of life phases.

*Figure 6 Nature Institute Course. Photo Craig Holdrege. Used with permission.*
Many sessions were spent working in small groups with this plant, directing our attention to the form and structures, the colors, smells and the resonances between all of these. Our intention was to try to develop notions and language that stayed close to what was directly accessible to our experience, to what could be shared and explored together. Just as with the explorations of optics we pursued the year before, in this case we did not speak of models that related to our unaided perception, and we cultivated ways of looking and thinking that did not lead to speculation based on theories of natural selection. Besides observing the herbaceous plant we dedicated sessions to the observation of animal bones, especially the spinal series. These, again, were observed morphologically and compared.
We also dedicated sessions to working with clay, exploring the varieties of concavity and complexity. This occurred through individual assignments, but we also worked on larger sculpture series where one form that emphasized convexity transformed, from one stage to another, into a final form that emphasized concavity. These were created in the round so that they presented a morphological cycle turning from one extreme of form to the other with intermediate variations. This sensitized us to being able to perceive the peculiarities of form and transformations between form, that make up a significant part of Holdrege’s work. Craig Holdrege also referred to the many “portrayals” he has developed during the week. He has approached many organisms, plants and animals, through this method and orientation.316

![Image of people working with clay](image)

*Figure 8 Nature Institute Course. Photo Craig Holdrege. Used with permission.*

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Portrayals are single organism studies that require prolonged and dedicated observational work, disciplined work with memory images and orienting oneself toward all the parts with a receptivity to the whole. Through approaching the organism in its context, in time and differentiation, his orientation is open to receiving insights into the peculiarity and signature of an organism. His attempt, informed by Goethe, is to approach phenomena in the most varied conditions in order to understand them through the above referenced dialectic of perception. While the research practice is focused on a particular organism, the significance of the organism is situated in the context of a comprehensive sense of existence. “Surely attempts to reshape life on Earth require us to seek the broadest possible context of understanding. And unless that context is large enough to include the human being, not only as knower but also as doer and creator, we can only blindly follow our technical capabilities wherever they chance to lead.”\(^{317}\)

It is interesting that Holdrege’s orientation, while it is rooted in contextual thinking, has largely been turned toward the study of individual organisms. After detailing the generally recognized types of parts that one will find in a species his work leads to the peculiarity that comes to expression, gradually, after turning with care and fidelity, from the appearances themselves. These are not two truly divided activities. In the detailing the parts he is fostering an orientation toward wholeness. Thoreau once reflected in his journal that his quarrel with most botanists’ description of different species led to difference without distinction. He lamented that no stress was laid on the peculiarity of the species and that it requires a “very

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careful examination and comparison to detect any difference in the descriptions.” Holdrege’s orientation presents a contrasting impression to methods that lose the peculiar species while exploring them.

Holdrege presented many of his orientations to scientific research and education in his book *Thinking Like a Plant*, the title being a reference to Aldo Leopold. Besides Leopold, Holdrege draws heavily on Goethe in his thinking and orientation. The study of visible form and transformation makes up the heart of his work. His research unfolds within the tradition Goethe started with his *Metamorphosis of Plants*. Portmann, who we will turn toward later, pointed out how Goethe “remained particularly keen observer of all that is ‘destined to become manifest.’ Thus, in his studies of plants, he neglected the hidden roots in favor of the stem which alone rises up toward the light. The root is an indirect phenomena; it appeals to no seeing eye, as the blossom does so impressively. Goethe’s attention was focused on visible processes – he stated it clearly enough himself. Now, this kind of selection of special topics is not a turning away from natural science; it is one of many possible paths that lead across a wide field.”

While Holdrege does not restrict himself in the same way as Goethe, his work is decidedly situated on Goethe’s path through the “wide field”. Holdrege presents studies of plants as processual beings that reveal themselves in transformative cycles of growth and decay. At any moment in a plant’s development you can observe it unfolding in one way, which will give way to another while itself wilting. These phases accommodate themselves to being

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viewed as alternations of expansion and contraction. He refers to his studies of plants writing
“All these phenomena show the inner connection between the different parts of the plant, or I
could also say, they show unity in the diversity of structures. This is a dynamic unity. It is the
same life of the plant that expresses itself as cotyledon, foliage leaf, sepal, petal stamen, and
carpel.”\(^{320}\)

One of the orientations Holdrege works within as a botanist views these stages of
creative life in an organism’s development with an eye for rhythms of expansion and
contraction. Goethe’s botanical work interpreted each stage of development as one possibility
proceeding from the same creative point. This he called leaf. When he said everything is leaf, he
was focusing on the processual multiplicity, not what is commonly called leaf. It is related to the
growing point of the plant. In the interest of space I will indicate the pattern that Goethe
presented as a back drop for turning toward Holdrege’s portrayal of the skunk cabbage.

A common process of expansion and contraction shows the emergence of the
cotyledons (first leaves that emerge from seed), and the gradual process of expansive leaf
growth along the stem. It is not uncommon to be able to easily discern leaves emerging toward
the top of a plant, in a spiral form. This series has become a rich field of study for many
botanists. One can see a tendency of expansion, toward the periphery of the organism,
followed by a contraction, where the leaves grow smaller. The series of leaves presented below
were taken from whole plants. It is important to note that they are all fully developed! They
would not grow in significant ways if they had not been pressed. The smaller leaves are not

\(^{320}\) Craig Holdrege. Thinking Like a Plant: A Living Science for Life (Great Barrington, MA: Steiner Books, 2013), 94.
leaves that have simply not unfolded.

Figure 9 Leaf series. Photo credit Craig Holdrege. Used with permission.
The manifestation of the following activity of contraction Goethe suggests in the bud. In many plants one can observe the spiral tendency up the stem begin to become more of a coil, to tighten, and the series proceeds from stem leaf to sepal. In many plants a sepal is a bud leaf that encloses the petals. Within this contracted bud a new variety of leaf is often tightly folded and wrapped. The transition from the sepal, in the consistency of the leaf, the color and the shape, can make a sudden break in the more incremental metamorphic process that appears in the series of many stem leaves. It can be hard to recognize a morphological relationship between the stem leaves, the sepals and the blossom petals. Yet some plants reveal the movement from sepal to a rarified and delicate flower leaf more easily. One of the most well-known plants that shows this transition is the peony.

Following the contraction of the bud, the flowering process is again a creative moment of expansion. The petals often unfold toward the periphery. There is also a remarkable kinship with the colors of the sky of a rising or setting sun and the plant world’s blossoms. The stamen are presented as a contracted leaf. And expansion follows impressively as the plant actually moves into the periphery as pollen and scent. The swelling of the ovary, as fruiting, is an expansion, while often simultaneously the contracted seed is being created within. And the cycle begins again.

For Goethe this type of dedication to plant forms led to an apprehension of a primal plant, the correlate in botany of the primal phenomena discussed above in the sphere of color theory. This presentation will suffice as enough background orientation in order to sense how
it informs Holdrege’s practice of portrayal.  

These typical “stages” of plant unfolding take on a particular significance in Holdrege’s characterizations and his portrayals. While various plants reveal the most differentiated developmental cycles, these stages, and their characteristics, are widely shared. For instance, the tendency of incremental and slow metamorphosis, expressed in the stem leaves, is markedly different as a tendency from the great leap that often appears between sepals and flower petals. This incremental character, that is drawn out in time, is also contrasted with the simultaneity of the flower. The flowers present flower leaves (petals) that all develop in close proximity to each other. Instead of needing to approach them one after the other in time, they all present themselves at once as an image. For instance, one can come to see that some plants reveal a budding tendency in all their stages of growth, while others might tend toward the leafy, incremental metamorphosis.

Parallel with the careful and regular observation of an organism in different contexts, throughout its life cycle, Holdrege cultivates “exact sensorial imagination”. This involves inwardly re-picturing perceptions as memory. Memory pictures are cultivated with practice and discipline toward sense experiences, bringing the senses into subjectivity. This is achieved through activities such as regular inner picturing and drawing from memory.

By asking the question of the end of the study we can reveal something about its nature. Holdrege writes, “It is not just a matter of developing new instruments or refining the intellect,

but developing new ways of knowing that can illuminate the phenomena in ways that science has largely neglected (or even deemed unscientific).” For Holdrege the end result of these research practices can be seen to offer specific examples of knowledge largely neglected by modern science, perhaps like those Glazebrook indicates as theoria and praxis. Holdrege writes that the awareness that culminates in this research is “a gentle sensibility that does not violate the phenomena in the process of getting to know them.”

During one of the courses at the Institute we visited a nearby wetland where, among other things, Holdrege pointed us toward the skunk cabbage, a plant he studied in detail. In March, if you visit a wetland south of Albany New York, you will likely find the ground frozen and littered with the dead leaves of the previous season. The sight is not green, it is cool and shadowy. You may well find patches of ice surrounded by islands of trees and bushes, and at this time of the year you will likely make out tiny hood-like green leaves peeking out of the ground, revealing pale yellow and burgundy as well.

Remarkably, particularly around these hooded spears, you may see that the ice is melting. Placing your finger inside this hood you will find the flower of the skunk cabbage, and at this stage of its life, if you touch it, may warm your finger. For a duration of time in the early spring, the skunk cabbage releases warmth comparable to that released by mammals of similar size.

323 Ibid.
The hooded leaves appear in bunches, and they have a twisting, spiral shape. Holdrege noted that as one runs one’s eyes over the emerging plants they are “brought into a spiraling movement” when one tries to rest one’s gaze on a single specimen. The opening of the twisted hood is often slight, and inside you can see the flower head, or spadex. The roundish flower head, or spathe, is spongy and consists in many tightly packed individual flowers without petals. It forms itself largely as fleshy, pale yellow sepals. The process of blooming in the skunk cabbage occurs through the stamens emerging between the sepals, and releasing fine yellow pollen. This is followed by the emergence of a style from the middle of each flower, that is pollinated by insects. This all happens within the spathe. In these very first flowers of spring, the protective enclosure never falls away.

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324 Ibid., 215.
Figure 11 Skunk cabbage drawing by Craig Holdrege. Photo Craig Holdrege. Used with permission.

Figure 12 Skunk cabbage drawing by Craig Holdrege. Photo Craig Holdrege. Used with permission.
Around these plants a pungent odor, somewhat like a skunk, can be detected. In and out, and all around the plants one can see the first stirrings of insect life. Beetles, spiders and a variety of flying insects. The insects, that are moving through the air, are encountering a peculiar circulating pattern of air, that is moving through the spathe. The temperature difference, and this air flow, move along the sculpted and carved surface of the spathe.

Often, next to the spathe, is a large bud. When the spathe begins to wilt this bud begins to expand and grow, toward the outer warmth and light. This is also around the time that the production of warmth ceases in the plant. As this bud rises and begins to unfold, bright green leaves unfurl, one after another in the most “archetypal process of unfolding you can imagine.” The largest leaves can be three or four feet in length. There is a long stem like part of the leaf but there is no woody tissue. By mid-June, when the tree canopy begins to be filled out with leaves, this stage of the skunk cabbage begins to decay. Its manner of decaying is very unique. It does not dry up and fall to the ground, instead it begins to dissolve. Small holes form in the plant and the leaves begin to droop and turn black and slimy. By August they have largely disappeared. Skunk cabbage stays in a watery phase of development and its substances do not condense and dry out. They unfold rapidly and disappear rapidly.

During his study of the skunk cabbage Holdrege begins to sense certain “unified tendencies” this is accompanied by a sense that he is actually meeting and seeing the plant. He is “seeing through all the details to its unity and coherence.” He points out that the skunk cabbage reveals many bud like qualities in its activity. The Spathe is budlike, and the flower

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325 Ibid., 217.
326 Ibid., 219.
never leaves this mantle. Further, the flowers never reach the light of day, like a bud that never blossoms. The flower, which often tends toward unfurling and opening, in the skunk cabbage is more like a bud, highly reduced and “tightly packed into a sphere”. This signature can also be seen in the unfolding of the leaves. The actual stem is located in the ground, and it is the leaf stem and leaf that is furled, one around the other, in the vertical emergence of the bud. These tend to hold this shape as they grow. When they unfold in a horizontal rosette they have actually already started to decay. Meanwhile the skunk cabbage never stops producing new buds. Some for the coming season, and for years still ahead.

Holdrege further sees this as an expression of the watery nature of its context. It is itself a way to identify the beginning of the wetlands. In its life cycle one can make out tendencies of fluidity, movement, continuity and the tendency to form surfaces. The appearance of the skunk cabbage in the larger context of the seasons is itself the beginning of life and movement in the wetland. The spiraling surface, and some of the complex warming processes involving transforming starch into sugar sap, depend on water. These movements move the whole landscape. When you see the leaves unfolding you “can almost see the water moving out of the wet soil through the roots into the leaves, swelling and unfolding them.”

The very shape of the undulating surfaces of the leaves also carry this impression of their water conduit quality, and the fact that their leaf structure encourages water movement and transpiration. Their very activity adds humidity to the air in the lower areas of the wetlands.

In the above paragraphs I have offered an impression of one of Holdrege’s portrayals.

327 Ibid., 221.
They involve an open orientation, while moving from one characteristic to the other, for impressions of emergent unity. While this requires hard work, it cannot be forced. It is often at this stage of research that the virtue of patience has to be developed, and the moment of seeing is felt as a “grace”.

In the context of earlier chapters, one can situate this way of seeing an apprehension of organisms as wholes as an aesthetic research practice. One does not seek the idea as such, but to catch experiences of the whole through fostering particular experiences of parts. The apprehension of wholeness is positioned as dependent on a disciplined tending to particulars. The sense of the whole that emerges through portrayals is a kind of sensorial dialectic that never abandons praxis or observation for theory. The latter emerges through the fostering of the former. As with the artwork, the particular is consistently approached as the expression of unity and the notion of approaching the unity directly, as for instance a reified idea, is insistently avoided. This apprehension takes on the character of an encounter between beings. Reflecting on Leopold who suggested that when enough people can see the “drama in every bush” there will be no need to fear for “the welfare of bushes, or birds, or soil, or trees. We shall then have no need of a word ‘conservation’” Holdrege reflects on the practice of rising from observation to portrayal. “Becoming aware of such a story and participating in it cannot leave us cold- we have met a unique quality in the world and the world would be poorer without it. Holistic knowledge creates a basis of a moral relation to the world.”328 This can be compared to the logic of achieving and calculation characterized by so many in previous

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328 Craig Holdrege. *Thinking Like a Plant: A Living Science for Life*, 167.
chapters. These dramas are not siloed in single studies, but they mutually illumine one another. They lead into creative orientations of the widest contexts, of evolution and natural history. In his many studies of plants the co-constitution of plants and insects emerges in the portrayals and this type of “seeing” becomes a view into the truly ecological way of life.

Adolf Portmann’s Zoology and the Expressive Display

The work of Adolf Portmann presents another particular orientation that can be understood as an aesthetic research practice. Portmann was one of the most famous biologists and public intellectuals of the 20th century. A prolific researcher, writer and creative thinker he served as professor of morphology at the University of Basel in Switzerland from 1931-1967. Portmann recognized and defended the values of rationalism, the scientific method and the practical advances connected to them. His research expanded the functional approach of most modern biologists through research of the “self-presentation” or “expressive display” of organisms. Portmann appreciated the orientation that approached life as function within the paradigm of Darwinian natural selection but he dedicated much effort to developing research and thoughts that could complement this view. He suggested that it was often naively connected to an attitude of “control of nature’s processes” which became “for many scientists ... the most important goal of their work.” His writing often reveals an awareness of the value laden nature of the modern scientific method. He saw that research goals and aims can exercise an an-aesthetic effect on the “living reality of the organism as a totality.” If an appearance


cannot be tied to a function of survival and reproduction, it is considered useless and unworthy of study.

The tendency he saw gaining in prominence led to the aesthetically apprehended “form structure” receding from view. It led to animal bodies being studied and analyzed as wholes consisting of parts on a scale of “practical significance”. Portman does not present his morphology as a negation of research into functional life processes, instead indicating it as an orientation where an “expressive display of the picture belonging to a species permits us to transgress a significant frontier”. He conceived of the method opening a field of inquiry that would otherwise remain closed within a paradigm of necessity and utility. He suggested that “every organic form-structure transcends elementary necessities.”

Earlier in this study there was a reference to the connection between Arendt’s conception of the importance of aesthetic judgment and Portmann’s differentiation of internal organs and external organs. Much of Portmann’s work developed into an exploration of the threshold between functional biological states that do not exist in the open, and facets of organisms that existed in the open, the perceptible circumference of their bodies. Portmann works for an orientation that can move in the dynamics of communication and inwardness as it is apprehended through sensorial experience in animals just as transmitters work with chemical processes inside the organism. The realm of perception, sensibility and consciousness is a dynamic field of scientific inquiry just as the hidden study of function and chemical processes. These he characterized as conscious and unconscious, direct and indirect, inward and outward.

331 Ibid., 140.
His work was focused on the direct, conscious and outward processes, and how they related, also philosophically, to the unconscious, indirect and inward of typical research. He suggests one can enter into processes and dynamics that are tied up with the peculiar nature of the organism as it is revealed to perception, and exterior life, through aesthetic judgment and openness to expressive display.

Portmann’s work is far reaching and very diverse. In what follows I draw most examples from morphological zoology and animal psychology. This choice was made to compliment the earlier presentations of methods in physics and botany. Portmann provides many examples that reveal how this is related to physiological foundations of conscious life as they develop and grow in complexity. In a relatively simple organism, the stickleback fish, one can detect presentation as form in rare moments. Male stickleback fish may situate their bodies in a vertical position, altering their form for one another during mating periods, and thus come into relation with one another. The form of the female stickleback, at certain times in its egg cycle, effects the visible shape of its abdomen. This visible shape has an effect on the male stickleback. These movements, and changes in the presentation of form, appear at the most excitable time in an animal’s life, the period of reproduction. In many simple organisms their movements and self-presentation rarely tend to reveal inner life.

In more complex constitutions an increasing differentiation of their lives unfold in the field of sensorial presentation and apprehension. The expressive plasticity of muscles and members of the body grows tremendously while their role expands beyond the simple

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maintenance of life. If you look at an animal’s posture as expressive form, it nearly always reveals the inner mood of the animal. The raising or lowering of the head, or movements of the tail, may express fear, threat, readiness to attack. One can compare, for instance, the expressive tail of a higher animal, such as a wolf, with the tail of a rat, that has little to no expression. Or one can consider the differences in expressive capacity of heads, say of a fish and a lion. Comparing the formation of muscles in more simple organisms and more complex reveal that the sense organs of the face in the former largely have roles of preserving function and life, not expression. In the latter these grow in flexibility and expressive power that is not only linked to the preservation of life in a simple functional sense. As the central nervous system develops the whole organism reveals its ability to accommodate the expression, and to be sensitive to the reception, of inner life and moods, and inner states such as power, nobility and fear. The antlers of a buck can reveal the interrelation of the functional and expressive modes of understanding. In mating battles, many pairs perish with entangled antlers. We can consider how the functional value of antler as weapon is overlaid with an emerging sense of “domination” present in the representational form. Neither need negate the other, but one cannot grasp the representational-expressive dimension with a functional approach. One has to move into a reading of the “expressive display”.

Thus, morphological study accommodates different levels of meaning and experience. Portmann sees the expressiveness of the outer display to be characteristic of new, and higher,

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333 Ibid., 189.
variations of life, especially spontaneity, play and inwardness. Here form takes on a new
dimension, it becomes the expression of inner life, not just a riddle for survival and efficiency.

To refer to aesthetic differentiation, as Gadamer did, we can observe a sensorial
experience being lifted out of its literal form, becoming a conduit or sign. Indeed, Gadamer
explicitly refers to Portmann in *Truth and Method* during his discussion of aesthetic
differentiation. Here expression and the expressed are differentiated. There is more than
what is there, or as Taylor has pointed out, the expression is not identical with the subject of
inquiry. What is there is more than what appears. This form of interiority, this mystery of
consciousness, social relations and mood in animal and plant life, Portmann brings into view
through his readings of “expressive display”. At the same time he tries to integrate these into
the comprehensive vistas opened up through other research practices, including the functional,
genealogical and psychoanalytic approaches. His orientation opens areas of perception in
scientific research that the analytic, functional method cannot directly approach. It is aesthetic
judgement, as a particular activity of taking form as content, which opens these domains of
experience to us, granting our access to a level of zoological inquiry.

Biological research informed by functional thinking has led to tremendous insights, but
it stops short if it does not persist into an appreciation of the value of the expressive display of
self-presentation where “a world of experience has been translated into reality, that in front of
us are inner realities experiencing their worlds, realities which have created individual worlds of
the most varied intensity and fulfillment.”

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question of expanding insight, but of ethical response. This dimension strengthens our sense of responsibility in a time when “the continued existence of splendid natural forms, whose every survival is nowadays generally threatened – indeed, even their existence in the wilderness is threatened.”

Another way Portmann reveals his consideration of the meanings and end of natural science appears in his reflections on the significance of mystery. He relates that if we reach the vista of the inexpressible in our encounter with living form, science will have fulfilled one of its tasks. Portmann explicitly contrasts this with the orientation toward prediction and control.

“Research has various aims, not only that of controlling the forces of nature, the one most intensively sought after and promoted at the present time. But as soon as the powers of production are no longer organized and increased so overwhelmingly with a view to destruction, as soon as there is a real opportunity for the many to have free, true leisure, then the unquenchable urge for work will turn also towards those spheres where there are only ‘useless’ values to be gained; where it is not only that feeling of power which comes from domination that will determine what shall be sought out but it will be rather the awe that surrounds the mysterious.”

He opens an orientation that suggests through comprehensive research methods we will be humbled by what we encounter. For him, besides the aim of control, the comprehensive aim of science will be a growth in our ability to apprehend the profound and mysterious. “The inner experience to the gates of which scientific research into animal form should ultimately

336 Ibid., 155.
337 Adolf Portmann. Animal Forms and Patterns, 216.
lead us is therefore not that delight experienced by an active person as he solves problems, a feeling which accompanies any scientific work. But, rather, we are also regarding the animal with a strong emotion, in which there is something of the astonishment of a child at work; we regard plants and animals with amazement or horror, with joy but also with awe. We are not confronted with the creatures whose essential nature we shall understand fully the day after tomorrow, nor yet after several years or indeed scores of years. All around us are forms of life, small or large, in which have been realized other possibilities of existence than those found in our own lives.”

In an essay on education titled “Biologisches Zur Ästhetischen Erziehung” Portmann expressed his urgent concern for the atrophying of aesthetic capacities. He describes the Occidental scientific culture that employs rational thinking as the foundation of scientific analysis, often through an emphasized use of mathematics, that quickly leads beyond the immediately given world of sense perception. This he contrasts with the aesthetic function that leaves the immediately given impressions of the senses intact, retaining the singular qualities as they present themselves. The culture, practice and technology of the Occident have led to an impoverished life of the senses and an atrophying of sensibilities and feeling. He was particularly concerned about how such a subject would cope with the unavoidable intensification of technological life that required a “counter-movement,” which he identified in the intense cultivation of the aesthetic function. This was all written before the advent of the

338 Ibid., 220.
digital revolution. The aesthetic function he connected to an enlivening of experience that would intensify contact with the sense appearances of the natural world.

Portmann’s research practices require the repeated exercise of “the aesthetic function.” They include the apprehension of form as a whole that expresses an inner life. Through sensitive tending to the forms and appearances, the life world escapes reduction to interrelated parts and functions. The dimensions of meaning and value are not formally transparent but are experienced as consciousness and sentience of organisms and their “incomprehensible way of being which is grounded in the mystery of reality.”340 The pictorial aesthetic judgment complements the functional, saving dimensions of difference in the acts of understanding. This points toward elementary forms of identification with animal forms of experience. It reveals different values than scales of function as immanent. It is living matter, only accessible through sensuous, aesthetic form. Morphological practice of this nature performs a critical role in relation to functional and instrumental reductionism. While it can be allied with theorists like Marcuse, who sense in the notion of art a variety of non-alienated experience, and is accessed through the appearance of self-display, it does not become “illusion”. Meaning and pleasure are mediated through the senses and rooted in terrestrial contexts. As with art, these sense experiences are not relations of utility and consumption but perception and apprehension. This can be seen in connection with Arendt’s suggestion that the worldly dimension of appearance, the singularity of life, awakens an ecological responsibility for life forms of aesthetic expression.

340 Portmann, Essays in Philosophical Zoology, 155.
that no artist can create. It can also be seen to encourage sensibilities receptive to aesthetic perception in the place of acquisition, appreciation in place of utility.

In preceding interlude I have presented how contemporary developments in the theory of science can be seen to accommodate an aesthetic turn in the natural sciences. This view suggests that aesthetic research practices in the natural sciences do not pose a theoretical problem, they challenge our habits and our practical capacities. In presenting multiple scientists in an effort to articulate what aesthetic research discipline looks like in practice I have tried to do justice to their field without commanding expertise. I have also tried to frame this discussion as a focus on practices, not theory or philosophy. This is intended as a contribution toward bringing the tacit and skilled level of scientific activity into view. In that it is framed within the discourse of public education as a collective problem it is further informed as a question of action and innovation. To work toward a widespread public education that is animated by this expanded aesthetic culture, significant work must be done in practice. The implementation of this regime would demand widespread re-orientation of natural scientific culture, practice and instruction. It builds on the practical ethos of the liberal arts tradition, long understood to promote civic culture through a diverse and broad education, while giving it a new direction in light of our current challenges.

When Gadamer points to a need to work toward a “complete self-donation to what is outside in which the seeker never the less finds himself”, contrasting it with the inner, Christian tendency toward self-knowledge, he turns toward the “rigorous exertion of the concept”\textsuperscript{341}

\textsuperscript{341}Hans-Georg Gadamer, \textit{Reason in the Age of Science}, 19.
while warning against whitewashing the rich peculiarity of existence. One can inquire if a rigorous exertion of the percept and an emphasis on practice instead of theory offers promise in this direction. The situational presentation of this study, the emphasis on praxis and perception, are framed as a contribution to such an understanding.

My main focus has been the unique form aesthetic judgment can take on when it unfolds in natural scientific settings, as opposed to the settings of the arts and humanities. In the next chapter I will characterize the connection between these and the variations of aesthetic experience long fostered in the arts. This, along with some observations on broader economic questions, will bring us to a conclusion of this study.
Chapter 5 – Expanding Aesthetic Education for the Anthropocene

The theory of expanded aesthetic education I have indicated takes its whole significance from the material and cultural conditions of experience indicated in the first part of this study. I suggest that a core dilemma today is our one-sided notion of the significance of aesthetic judgment, and our excluding it from a central role in the natural sciences. I have tried to show orientations that reveal aesthetic education not only as a cultivating of aesthetic judgment in the humanities, and interpersonal and political relations. This leads toward the suggestion of a more comprehensive and complete aesthetic education. This involves the recognition of the significance of aesthetic judgement in the natural sciences. This is not simply a reorientation to natural science so that we appreciate its already existing aesthetic properties. It involves the cultivation of practices and orientations that currently only exist on the margins of our knowledge community, and ultimately, their spread.

As we have seen, aesthetic knowledge practices in the natural sciences are characterized as bringing the sensible, natural world of beings, forces and elements to interrelated appearance. As is clear in the work of Baumgarten and Maier, they form a neglected variation of the expressive turn. The expressive-aesthetic orientation suggests that expressivism is particular to the humanities and the arts. Expressivism in the natural sciences is essential for the coming to appearance of the terrestrial world.

The expressive-aesthetic orientation situates art as the dimension of experience wherein perception is itself an end, as art. This end negates consumption, or the “sensuous instinct”, as well as logical extrapolation, or the “logical instinct”. Expanded aesthetic education
shows how knowledge practices rooted in aesthetic judgment can foster an art of perceiving instead of an art of achieving.

The expressive-aesthetic orientation situates art as the mode whereby a particular elides the subjugation of the universal, and it’s very peculiarity is at the same time constitutive of its essence. Expanded aesthetic education shows how knowledge practices rooted in aesthetic judgment lead to the apprehension of “facts as theories” without alienating particularity and perceptibility. This involves a decided shifting of our epistemological center of gravity toward the constraining, while open, phenomena.

The expressive-aesthetic orientation situates art as the sole mode of experience wherein possibility and enigma can escape the totalizing tendencies of instrumental reason. Expanded aesthetic education shows how knowledge practices rooted in aesthetic judgment are oriented toward abundance in perception without abandoning insight and knowledge.

The current crisis on the planet is entangled in cultural dynamics whose significance is underestimated. Many theorists suggest that it is the government, institutions and corporations that are failing us today in regards to the environmental crisis and climate change. While this contains significant truth, I have presented a view that we are failing ourselves other cultural levels. An expanded aesthetic education could contribute toward thickening the connection to the natural foundations of the planet and educating sensibilities that provide the groundwork for collective action appropriate for the Anthropocene.

Looking Forward

Social theory exists on the margins of our dynamic experience of life. Most of our life unfolds in habit, instinct, convention, imagination and a variety of impulses. One important
question for any theory is what is its significance for this larger field of life, and can it influence practices in positive ways. The foregoing theory aims at a public, democratic culture more rooted in terrestrial consciousness. Its significance is tied to the fact that it points towards a potential good. If this good were widely understood and appreciated it would already belong to the public and be widely accessible. Its beginning will require experimentation and the forging of modes of expression and language that can exist beyond the pages of a study like this. The faith in the infallibility of science, alluded to by Crease and defended by Pinker, problematizes the notion that our scientific culture could be improved to serve us better. Aesthetic knowledge practices in the natural sciences are understandably faced with a legitimacy gap. While “legitimate” scientific culture currently commands respect and access to investment and capital, the variety of aesthetic knowledge practices alluded to here are largely cultivated on the margins of our institutions of learning and culture. It is predictable that progress toward this expanded notion of aesthetic culture will continue to be cultivated as an epistemic community on the margins, while at the same time the implied challenge involves a public, democratic pedagogical reformation. This does not detract from its core meaning, which is to develop an aesthetic education that fosters sober and rich connection with terrestrial life and enables an alignment between voluntary individual action and environmental limitations.

What would a college experience look like that strives to foster this comprehensive understanding of aesthetic education? For the past year I have been developing a course that will begin In the Fall of 2020. The course will take place in Columbia County, New York. It is named after the poet and potter Mary Caroline Richards. This program grows directly out of the research presented in this study, as the titles of some of the courses listed below suggest.
The purpose of this initiative is not only to allow for a limited number of individuals to foster this new type of education but to position it as an example of the directions indicated in this study. The program is independent, and does not offer accredited courses, allowing instructors a full range of flexibility in pursuing new paths. As a private initiative it depends on donations, grants and the excess wealth of the community, yet it has been structured in a spirit of accessibility. There are no minimum tuitions for attending. The organization is modelled on public radio, making the program dependent on the voluntary support of the community, and conceiving of itself as a community resource. Thus all programs, activities and findings are situated as public goods, while independence is maintained.
“Our knowledge, if we allow it to be transformed within us, turns into capacity for life serving human deeds.”
— Mary Caroline Richards

Main Blocks — Five mornings per week

<table>
<thead>
<tr>
<th>Trimester One: Grounding</th>
<th>Trimester Two: Breathing</th>
<th>Trimester Three: Individuality and Wholeness</th>
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<tbody>
<tr>
<td>Aug. 24 - Sept. 18</td>
<td>Nov. 9 – Nov. 25</td>
<td>Mar. 8 – Mar. 31</td>
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<tr>
<td>Explorations of Place and History through Visual Art and Excursions. — Nathaniel Williams</td>
<td>Discovering Meaning in Nature: Animals, Humans, and Evolution. — Craig Heldrege and Nathaniel Williams</td>
<td>Model-free Physics and the forces of Technology. — Gopi Krishna Vijaya</td>
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<td>Sept. 21 – Oct. 2</td>
<td>Nov. 30 – Dec. 18</td>
<td>Apr. 5 – Apr. 30</td>
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<td>Attending to Experience through Nature Observation. — Catherine Read</td>
<td>Taking Appearances Seriously - Visual Experience and the World of Light, Darkness, and Color. — Henrike Heldrege and Nathaniel Williams</td>
<td>How can poetry and creative writing foster aesthetic education, particularly our relationship to the natural world? — Luke Fischer</td>
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<td>Oct. 5 – Oct. 30</td>
<td>Jan. 11 – Jan. 29</td>
<td>May 3 – May 21</td>
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<tr>
<td>Anthropology as Relationship: Self-knowledge through learning about people, culture and place. — Lucas Dreier</td>
<td>Plexus Listening Lab: Re-arranging bodies and identities toward a new vocal togetherness. — Faye Shapiro</td>
<td>Metamorphosis, Plasticity, and Context-sensitivity – Learning from Plants. — Craig Heldrege and Nathaniel Williams</td>
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<td>Feb. 1 – Feb. 26</td>
<td>May 24 – May 28</td>
</tr>
<tr>
<td>All Three Trimesters</td>
<td>Transformation, Polarity, and Expanding the Boundaries of Thought through Projective Geometry. — Henrike Heldrege</td>
<td>Conclusion</td>
</tr>
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<td>Two afternoons per week students choose work in smaller group focus-areas such as: Social Theory and Action, Ceramics, Visual and Studio Arts, Equine Arts</td>
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Areas of activity and learning:
• study of texts and literature
• experiential learning through biology, mathematics and physics
• work assignments and service learning
• studio work in the visual, practical and performing arts
• explorations of social theory and practice, anthropology and the human sciences
• individual projects

To learn more, and apply, visit: freecolumbia.org
Free Columbia is located in Columbia County, N.Y.

If you have questions you can send them to: Nathaniel Williams, director of the M.C. Richards Program, at: info@freecolumbia.org or 518-653-6160

Figure 13 Poster for upcoming M.C. Richards Course with Curriculum. Image credit Nathaniel Williams.
Policies, political and economic practices are not explicitly addressed in this study. Here, in conclusion, some fruitful directions for further research and explorations open up. What significance does this expanded notion of aesthetic culture have for economic justice and sustainable economic development? An increased integration, and participation in, the sensorial appearances of terrestrial experiences will most definitely lead to their increased significance in the co-constitution of the future. This culture is at the same time an education, a fostering of a sensibility that would play a part in our ongoing collective discourse and collective action. What could this mean for economic activity?

One of the first economists to focus on questions of economic development and sustainability was E.F. Schumacher. Schumacher’s work *Small is Beautiful: Economics as if People Mattered* contains a critique of current economic culture and thought that can easily be seen to relate to this theory of expanded aesthetic education. In this book he critiques the notion of infinite economic growth from multiple perspectives, advocating for a conception of balance instead. One of the central tasks in working toward balance today, given the idolatry of the giant, is a focused and insistent drive toward the virtues of the small. If there was an idolatry of the small, he admits, he would have written a very different book.342 His characterization of the current destructive nature of current economic thought is in its inability to come to terms with the singular, the finite, the contained nature of economic, and material, life. The inability to grasp the finitude and contours of planetary life, intrinsic to dominant economic culture people overlook the fact that “infinitude can be achieved only in the spiritual

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realm, never in the material”. Schumacher points out that, despite popular belief, “problem of production” has not been solved, even given the wonders of industrial society. This is due to the fact that these wonders are only possible by using a capital resource as if it was income. Since it is a capital source it is not sustainable. Thus, there is an “inability to recognize that the modern industrial system, with all its intellectual sophistication, consumes the very basis on which it has been erected. To use the language of the economist, it lives on irreplaceable capital which it cheerfully treats as income.” Schumacher characterizes three categories of capital 1) fossil fuels, 2) the tolerance margins of nature and 3) the human substance. His conclusion is that “the idea of unlimited economic growth, more and more until everyone is saturated with wealth, needs to be seriously questioned on at least two counts: the availability of basic resources and, alternatively or additionally, the capacity of the environment to cope with the degree of interference implied.” This is a critique that undermines core Marxian and capitalist assumptions.

Schumacher points out that “From an economic point of view, the central concept of wisdom is permanence. We must study the economics of permanence. Nothing makes economic sense unless its continuance for a long time can be projected without running into absurdities. There can be “growth” towards a limited objective, but there cannot be unlimited, generalized growth.” Schumacher proposes “new methods of production and new patterns

343 Ibid., 38.
344 Ibid., 20.
345 Ibid., 30.
346 G. A Cohen. If You’re an Egalitarian, How Come You’re So Rich?
of consumption: a lifestyle designed for permanence.”\(^{348}\) Part of this means developing a
technology on a human scale, that is cheap enough to be accessible for virtually every person,
suitable for small-scale application and compatible with the human need for creativity.\(^{349}\)

Schumacher shows countless cases of our current economic thinking being unable to
grasp the qualitative dimensions and significance of its subject. This leads to a particular version
of metaphysics where “money costs and money incomes are the ultimate criteria and
determinants of human action, and the living world has no significance beyond that of a quarry
for exploitation.”\(^{350}\) The elimination of meaningful work becomes an ideal. The danger of this
variety of metaphysics is that it does not think it is metaphysical! Schumacher suggests that a
cultural shift is required that recognizes land as the foundation of the economy (instead of the
machine) oriented toward the three goals of health, beauty and permanence with production
as a side effect of these three.

Schumacher points to the colonization of economic thought by mathematics, and that
of industry by quantitative physical sciences, and writes that, “They are concerned with
convergent problems, and each new generation can begin just where their forbears left off.
The price, however, is a heavy one. Dealing exclusively with convergent problems does not
lead into life but away from it.”\(^{351}\) Here Schumacher articulates that these inventions of
completion, these closed wholes, while useful, are very dangerous when applied to social life. If
these “solutions” can be discovered and then applied by future generations without any mental

\(^{348}\) Ibid., 21.
\(^{349}\) Ibid., 34.
\(^{350}\) Ibid., 112.
\(^{351}\) Ibid., 98.
effort were applied to human relations, economics, politics and education, he admits “well I am at a loss how to finish the sentence. There would be no more human relations but only mechanical reactions: life would be a living death.”\(^{352}\)

In thinking of agriculture as the foundation of the economy (instead of the machine) oriented toward the three goals of health, beauty and permanence he is also promoting a culture of life, instead of death, more suitable for humane economies. As opposed to the classic factory, agriculture keeps us in touch with nature of which we are a highly vulnerable part, it ennobles the wider human habitat, it provides the food and sustenance for growth and life.\(^{353}\)

Schumacher writes that there is a great deal of “philosophical, if not religious, change” needed to achieve this of course.\(^{354}\) The theory of aesthetic education indicated in this study clearly aligns with many of the directions indicated in Schumacher’s work. The expansion of aesthetic judgment toward the planetary, the earthly, the terrestrial, and not just the humanities, achieves both a qualitative appreciation for the limits of the planet and a chastening of the illusory dreams of excessive consumerism.

The theory of associative economics, first articulated by Rudolf Steiner\(^ {355}\) and developed by the likes of Folkert Wilken and Joseph Beuys, also could be catalyzed through the practical expansion of aesthetic culture. Steiner suggested that the ability to make economic judgments of value that were in harmony with objective conditions of production, distribution and

\(^{352}\) Ibid., 97.
\(^{353}\) Ibid., 113.
\(^{354}\) Ibid., 117.
\(^{355}\) Rudolf Steiner. Nationalökonomischer Kurs (Dornach, Switzerland: Rudolf Steiner Verlag, 1979).
consumption were rooted in “bildhaftes vorstellen” (pictorial representations). Speaking of a fundamental shift connected to the break between the money economy and the real economy he speaks of how we conceive of peas being exchanged as money, and peas being exchanged for food. He considers it one of the most complicated economic challenges to preserve and cultivate the pictorial valuation of goods. He suggests this is possible through creating associations of producers, consumers and distributors who regularly interact and share, in plain, non-abstract, pictorial fashion, their economic experiences. Out of this pictorial horizon of experience one can retain a concrete connection to the conditions of nature and the economy. This leads to people sensing why they must consume less, and pay more, or produce more, or leave off producing.

If “we want to act rightly in the economic sense, we have to get used to engaging, in a pictorial and rich way, processes of production, trade and consumption. We have to cultivate this willingness to surrender ourselves to the real economic processes; only then will we arrive at approximate conceptions —, yes, they will only be approximate, it is true — but they will be of real use to us if we are taking part in economic life. These pictorial judgements and valuations will be especially useful when we have no experience in a particular area, but the experiences and judgements through association, complement ours. There is no way around it, economic judgments cannot be built on theory; they must be built on lively association, where judgments alive with sensibility are effective; out of this associative activity, out of the

356 Ibid., 150. Translation NW.
immediate experiences of those concerned, it will be possible to determine what the value of any given thing can be.”

The emphasis here is on pictorial thinking and sensibilities that one might find in a farmer “who does not know a thing” about economic theory, but who knows pretty well how much a horse is worth when they see it, or a plow. This type of judging, this experience laden, pictorial sensibility is a resource for Steiner, that must fructify the modern global economy in order to keep it in touch with the finitude of the planet, and to keep the real economy connected to the money economy.

Pictorial thinking and associations are not enough, in Steiner’s view. It is also necessary to recognize that the characteristic life of the economy, since the division of labor, is not based on competition, but collaboration and interdependence. And associations need to be explicitly set up in the spirit, to serve real needs through cooperation.

“The individual who immediately uses what they buy can really only satisfy their own egoistic needs. Of course, the situation would be very bad if they did not satisfy this egoistic sensibility ... But the moment the life of Associations enters into economic processes, the question of personal interest recedes. It is replaced by an overview of the greater economic process, and the interest of the other person will be contained in this greater economic judgment. There is really no other way for an economic thought to arise. Thus, we are impelled to rise through the economic processes to mutuality, the give and take between person and

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357 Ibid., Translation NW.
person, and furthermore to that which will arise from this, namely the *objective community-spirit working in the Associations.*”

Steiner suggests that orienting ourselves toward the collaborative nature of economic life, and working in associations that deal in qualitative pictures of the conditions of production, distribution and consumption, the natural egotism of our single economic life is complimented by a fraternal impulse oriented toward a global economic life (Steiner was convinced already in the 1920s that in the future there would be very limited national economic theory). This view of economics suggests that while egotism makes up a central and fundamental force in economic life, a natural counter force can be encouraged through the creation of economic associations that regularly share the concrete and vivid conditions of production, distribution and consumption in determining needs, prices and production goals. A central notion in this orientation is that association can unleash a spontaneous and voluntary social impulse of fraternity.

I am highlighting the pictorial, participatory and aesthetic nature of these judgement formations. This is where the theory of aesthetic education presented in this study reaches over into economic theory. While it is a crucial facet of Steiner’s economic thought, it is a limited one. Steiner suggested that capital would need to become interpreted as a social asset that would be distributed for projects of the common good through mission driven foundations in civil society, and that labor and land could not be dealt with as commodities. A central sociological contribution to modern economic thought is that healthy economic judgements

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358 Ibid., 152. Translation N.Williams
can only be formed through regular, collaborative, pictorial associative activity in groups. Today in Egypt these ideas have led to profound success in the Sekem Association, in the USA RSF Social Finance has worked to establish interest rates on loans in an associative process, and in Germany the GLS Gemeinschafts Bank has been very successful in creating consumer banking practices from Steiner’s orientations.

These ideas were also one of the main sources of the community supported agricultural movement. This arose out of a challenge to “rethink a sustainable economic system that centers in place, has no externalized costs, and where price actually meets the basic needs of all the parties to the transactions.”359 John Bloom relates his experience helping found the first CSA west of the Mississippi, where “The farmers and some of the interested eaters gather to consider the annual budget for the farm. The Farmer lays out all the costs for twelve months including seed, apprentices, housing, health insurance, transportation, maintenance, retirement funds etc … This total annual cost is divided by the number of shareholders to arrive at the cost per share”.360 Reflecting on his years of experience with this form of financing he writes that the price comes to reflect “a market free system warmed by care for the land and the vocation of farming.”361

There is a parallel between these orientations and the fair trade, and cooperative movements. These put up front, on the packaging, images and info related to the conditions of production, distribution and consumption, and they are often more expensive than products

360 Ibid., 125.
361 Ibid., 126.
whose biography of production is hidden under glossy logos, packages and scandalously cheap prices. In recent decades the fair-trade portion of the global market has been one of the fastest growing.

In the benefit corporation movement one can find another example of economic directions that are aligned with both Schumacher and Steiner’s ideas. These corporations write into their corporate structure the requirement of creating three forms of wealth, or triple bottom line accounting. One form of wealth is fiscal, the other is ecological and the last is social. Through pursuing ecological and social audits of their corporate activity each year they try to put money into the qualitative context of the real economy and human relations, which Schumacher and Steiner pointed out, money constantly threatens to escape.

Steiner is more famous for his pedagogical and agricultural legacy than his economic thought. He pioneered a contemplative philosophy called anthroposophy that inspired these, and many other, initiatives. He worked with a circle of teachers in 1919 to start the first Waldorf school which served the children of the workers of the Waldorf Astoria Cigarette Factory. Years later he helped start the first bio-dynamic farms, which marked the beginning of the organic food movement. The recent study Eco-Alchemy: Anthroposophy and the History and Future of Environmentalism by Harvard’s Dan McKanan traces the profound influence anthroposophy has had on the ecological movement in the USA.

In the economic work of Schumacher and Steiner there are many other important facets that contribute to their theories. I have focused on the importance of pictorial, qualitative

thinking that both recognized played an important role a type of economic judgment that could correctly value the significance of production and consumption on a finite planet. The expansion of aesthetic culture developed in this study, and the sensibilities connected with it, certainly contain political, social and economic ramifications that would support initiative in associative economics. The significance of aesthetic judgement for economic life in the Anthropocene is an intriguing issue that deserves further study, and it grows directly out of the presentation I have developed. The cultural practices, meanings and sensibilities that support our aloofness to the beautiful, limited globe in whose life we participate require our reform. This reform toward a more durable and holistic aesthetic culture, pedagogy and education also contains promise of supporting positive directions in economic thought, practice and sustainability.
References:


https://www.kurzweilai.net/foreword-to-virtual-humans.


https://www.nybooks.com/articles/2015/11/05/president-obama-marilynne-robinson-conversation/.


———. “Further Reflections on Work, Alienation, and Freedom in Marcuse and Marx.”


