

Design thinking as artereality: a manifesto for the arts and humanities in the academy

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This began as a chapter called “Artereality: rethinking craft in a knowledge economy” in *Art School: Propositions for the 21st Century*, edited by Steven Henry Madoff, MIT 2009. It was a kind of manifesto for the interdisciplinary projects, research and pedagogy we were supporting in Stanford Humanities Lab.

Since Jeffrey (Schnapp) and I wrote the piece in 2007-8, I have worked with Stanford’s d.school (Hasso Plattner Institute of Design) and realize that what we were talking about, and what we named “artereality”, is what also gets called design thinking. Typically explored in relation to business process and the pursuit of creative innovation, design thinking as artereality also offers a model for revitalized practice-based arts and humanities in the contemporary academy that sees fit to challenge isolated disciplinary silos.

MS October 2014

The following is both a report on an ongoing experiment and a speculative application of that very experiment to the future of advanced-level arts education. It seeks to rethink some of the most productive institutions and moments from the modern past—the Arts and Crafts workshop, the Bauhaus, the laboratory of Constructivism, among them—in terms of the altered cultural and economic circumstances of the late industrial era. It assumes that art’s autonomy, one of the decisive conquests of the modern(ist) era, has led not only to an extraordinary proliferation of artistic forms and freedoms, but also to the current impasse which places arts education in the service of up-market commodity culture and at arm’s length from other forms of knowledge production and, in particular, from the very technology and media transformations that are reshaping the cultural norms of the present era.

We have coined the neologism Artereality to designate some guiding principles that could contribute to repositioning arts education closer to the center of the contemporary knowledge economy. As we envisage it, Artereality places the design and production of art objects and goods in a more discipline-dynamic context, shifting the focus away from “pure” creation toward the

management of networks, links, flows, translations, and mediations—in short, arteries and nodes. It implies a number of things: teamwork-based education as a complement to the traditional individualized studio, a turn towards process as essential complement to product, the embrace of project-based and performance-based learning, and a conception of arts practice coterminous with research and pedagogy. We draw upon our experience in the Stanford Humanities Lab to outline the features of Arteriality as a kind of manifesto for a new model of arts education within the Academy: a model embodied by the Ph.D. in Arts Practice. The M.F.A. was an institutional expression of the modern(ist) era in university-level arts education. The Ph.D. in Arts Practice is the expression of the distinctive complexities, demands, and opportunities provided by the present era. Its time is now.

Intramural art

Stanford is not atypical of universities of its kind in publicly espousing the arts' centrality to the life of the mind while promoting a de facto segregation. Distinctive to Stanford, architecture is absent from the mix (aside from a fledgling program run out of the School of Engineering) and the overall arts imprint remains relatively small. Less distinctive is the marginality of domains tainted by any whiff of manuality or vocationalism: graphic design, animation, textiles, fashion, and the like. (Among the exceptions, there is a small product design major sustained over several decades by a handful of faculty.) Separate departments distinguish the fine arts from music and the performing arts; with internal partitions shielding discourse, critique, and history from studio practice, and vice versa. Almost without exception, members of the faculty teach on one side or the other, rarely on both. Studio majors cross the boundary in order to fulfill requirements; non-studio majors do so only as a function of individual quirks. A small handful of interdisciplinary programs provide formal bridges between various disciplinary silos without, however, compromising or contesting their separation.

Within this overall setting, student arts associations pursue their own independent course, sustained by individual enthusiasms and supported through the Student Union and student fees. Theater, music, and dance performances on campus are managed by a programming agency aimed at providing quality entertainment, and are offered as a "professionals-only" parallel track with respect to student performances and productions (with advertising for the former broadcast community wide and for the latter constrained within the intramural realm). A freestanding Arts Center, formerly the university museum, remains focused upon collections management and its own autonomous curatorial programming, serving a wide community membership with permanent and temporary exhibitions, and administering the campus' collection of outdoor sculptural works, but with only ad hoc links to the teaching and research mission of the university. A newly created center within the School of Humanities and Sciences aims to promote campus-wide "creativity" in the arts by means of sponsored events, residencies, and research support (with creativity as the defining attribute of art).

Whether looked at from the standpoint of teaching and training, or from that of intramural or extramural programming, what is striking about this landscape—a landscape shared with many (if not most) leading contemporary research universities—is at once the richness of the options that are made available and what is best described as a collateral “cost”: a tendency for arts practice, education, and training to find themselves atomized and distanced with respect to the university’s core knowledge-production and reproduction functions. Within this model, humanities scholarship that involves critical reading, reflection, and writing on the history of literature and the arts is cast in a role that is, at best, complementary, at worst, ornamental, but never integral to arts education. The social sciences are relegated to an even more accessory role, perhaps with the lone exception of domains involving issues of cognition and perception. Even further removed are the very technology and science disciplines within which the transformative techné of our era have developed, from gene splicing to robotics to global positioning satellites to 3D visualization.

Space often speaks far more eloquently than declarations of intent from Deans and Provosts and, at Stanford, the location of the M.F.A. studios out in a remote corner of the campus may be viewed as the allegory of the configuration that Artreality seeks to overturn. The location in question is where Eadweard Muybridge once carried out his experiments with instantaneous motion capture and animal locomotion, but now returned to its Arcadian function for over a century. The stables are once again mere stables. Golf and recreational equestrianism have taken the place of the scientific study of movement. There is freedom from distraction and constraint, freedom even from the roving eyes of all but a few M.F.A. students and studio faculty. But the climax of an art student’s graduate career is marked by exile from the university’s topographical core.

Every institutional arrangement brings both benefits and costs. The bifurcation between art practice and the historically grounded humanities disciplines is no exception. Coterminal with modernism, it freed the Humanities from certain “decorative” and divulgative burdens associated with the belles lettres tradition, the Arts from subjection to the system of styles. In the process, other dyads came away reinforced in the name either of science or autonomy: the familiar splits between pure and applied, thinking and doing, writing and making, between knowledge and the world of things, between edification and entertainment. Whereas in pre-modernist art and architectural education the study and imitation of the past were of such central importance that the study of cultural history overflowed all too seamlessly into studio practice and vice versa, in the modernist and late modern eras, the gap has become a gulf. And into the curricular void have stepped ever more fractured or attenuated versions of survey courses, designed as “background” (when not replaced outright by electives). More recently, surveys have found themselves in the company of smatterings of coursework devoted to “theory”— meta-discourses usually stripped of reference to their genesis within distinct disciplinary genealogies, be these within the fields of history, linguistics, anthropology, or philosophy—as if art practice might find

itself deprived of authority and legitimacy if it were unable to establish ties, however rigorous or tenuous, to the contemporary equivalent to the medieval system of *auctores*.

The anxieties that drive such acts of theoretical self-identification are well founded. The Western belief system regarding the nature of artistic creation, informed by the modern(ist) legacies of Romantic ideals and sustained by market forces, pays lip service to distributed or demystified models of production but continues to rely upon and to enforce anachronistic understandings of the artist as a solitary figure operating outside of, and commenting upon, society at large. The artist qua cultural shaman is construed as delivering messages from the heart of the human condition. It matters little whether the tools of delivery are new (an LCD screen) or ancient (a wall) or whether the shamanism in question is sustainable, intellectually fertile, or even plausible. Entire careers, institutions, and funding programs feed a cultural market that relies on individualism as the flip side of an ever-renewable system of brand names and that makes a fetish of particular artistic techniques, processes, and formats. That artists and their works are socioculturally located and historically constructed is considered beside the point. The normative framework is one that pushes art towards the emotive/qualitative side of the divide, over and against both quantitative domains and the demands of analytical and critical reason. Even while immersed in the global stock and derivatives market for luxury goods known as the “art scene,” the successful artist and artistic product are necessarily positioned as detached, unique, and pure: as one-offs or limited edition multiples mysteriously emanating from an era pervaded by mechanical and digital reproducibility.

Arts education today remains committed to or, depending upon your point of view, mired in the autonomist scenario evoked above (even as the latter has come under increasing pressure). It approaches notions of core skill sets, “research,” and evaluation criteria with caution (sometimes rightly so to the degree that such labels can sometimes conceal efforts to restore outmoded practices and norms). Training is individualized and the core art school experiences—the “studio,” the “thesis,” etc.—are interpreted as events in which “research” is ultimately conceptualized as a solitary quest. Collaboration and teamwork are the exception. Humanities, social science, and science education are relegated to secondary roles, as is the study of history. They are preliminaries to be quickly moved beyond. High-level technical/technological skills or areas of exploration with manual or vocational connotations—animation, game design, web design, textiles, ceramics, metalwork—tend to get handed over to more narrowly vocational, for-profit, art academies or polytechnics, as if contaminated domains. The terminal degree is set as the *Magister Artium*, the M.F.A., as if post-Masters level expectations were inherently in tension with the nature of art as a mode of inquiry or form of knowledge. That art practice might be built upon research questions that could potentially converge and overlap with those of other disciplines is deemed unthinkable (or, at least, so exceptional that it is unworthy of a commensurate degree program).

For all its symptomatic character, theory's advent on the advanced arts education scene is to be embraced to the degree that the discourses that circulate under its umbrella share a commitment to viewing culture and knowledge within the social and political setting of their reproduction. Rather than being imagined as a disengaged mind, the scientist, the scholar, the artist comes to be seen as "located" and "accountable" in a multiplicity of senses (disciplinary, cultural, spatio-temporal, conceptual, sociopolitical, material). Subjective "opinion" and objective "data" are shown to adhere tightly to one another. The contributions of the Sciences, Humanities, and Arts to the making and unmaking of ideologies move to center stage. In the wrong hands the result can be an overemphasis upon ideology, but one constructive consequence is that knowledge and innovation come to be envisaged less as the creations of singular minds, working in isolation, than as social and cultural achievements in which a multiplicity of agents participate according to complex choreographies: from institutions to individuals, experts to non-experts, producers to end users and consumers.

The most adventurous niches within higher education have started to register the complexity to which we have just alluded. They have begun to expand their models of training, research, and output in keeping with the distributive nature of innovation, creation, and authorship within the knowledge economy. Among the many accompanying shifts, there is an increasing attenuation of the boundary line once separating the roles of scholar, artist, and technologist, excavators of the past from producers of present artifacts and tools: an attenuation accelerated on the scholarship side by the decline of the traditional print-based distribution system for humanistic knowledge and the return of public forms of intellectuality under altered media conditions and institutional circumstances. We welcome this attenuation and see in it the basis for a critical practice of bridging the gap between thinking and doing, excavation of the past and creation of the present, based upon what Aristotle referred to as *phronesis*: knowledge integrated with practical reasoning, an intertwining of reflection upon practice and the practice of reflection in the service of the social good.

Artreality represents a rethinking of arts education as a *phronetic* practice within the framework of an overall, digitally inflected *phronetic* rethinking of humanistic practice. On the humanities side of the divide, the rise of post-print and hybrid print/post-print models of scholarship is already beginning to mark a breach with the past that is at once generational and epistemological. On the arts side, the breach is instead the more longstanding one between art practices oriented towards the production of artifacts for the art market and various socially grounded or process-oriented practices that, for instance, mimic the functioning of dominant institutions (the museum, the government bureau, the mainstream media) for critical or investigative ends.

Nowhere is the battle being fought with greater seriousness and intensity than in the cultural spaces being opened up by digital technologies, so it is to these that we now turn.

Digital poetics

We note some features of digital culture:

the interchangeability and easy juxtaposition of what were once separate material media and domains of media practice;

the multiplication of possible outputs and decline of predetermined ones;

the emergence of new social settings for innovation and creation;

the emergence of new de-localized arenas of association, exchange, and interaction;

the restructuring of traditional relationships and pipelines within the media industries;

increasing encroachment upon "hierarchical" management and organization structures by flat or "geodesic" ones — single linear and dendritic patterns and relationships replaced by networks;

the proliferation of modes of "authorship";

the proliferation of modes of "publishing";

the proliferation of modes of "reading";

increasing redundancy, multipurposing, mixing, and hybridity of outputs.

At the heart of digital mediation is fungibility. Digitization allows the gathering of moving image, still image, music, text, 3d design, database, geological survey, graphic detail, architectural plan, virtual walk-through etc, into a single environment. These may be infinitely manipulated and re-mobilized without loss in that space. The eventual output as video, photograph, CD ROM, DVD, paper based printed text, web page, broadcast, archival database, live event, exhibition, site specific installation, 3D model, building etc, is only weakly constrained by limiting factors inherent to the "originals" being reworked.

Numerous attributes of digital practice—cutting, pasting, undoing, reformatting, layering, mixing, and so on—belong to an arena in which design decisions have become ubiquitous and even the simplest of tasks can take on a speculative, investigative, critical, and/or creative character. And this character, in turn, is inflected by the new associative and collaborative opportunities, the novel ways of moving ideas, communications, and culture around, provided by digital networks.

Potentially this raises issues about differences of power and influence between center and periphery, between the urban and the rural, traditionally privileged and newly empowered classes. There is enhanced potential for small-scale and locally-based artisanal and pre-, post- or non-industrial modes of operation. Digitally mediated culture may imply a re-negotiation of the relationship between the global and the local, the physical and the virtual. The "virtual", as an ever expanding experiential, cognitive, and socio-cultural domain, moves alongside or into competition

with the physical environment and, as is already the case in certain youth subcultures, mixed reality experiences become not the exception but the rule.

To this volatile and still somewhat inchoate mix must be added what is perhaps best described as the digitally enabled de-territorialization of data. Vast amounts of cultural, social, and other information, valuable or not, organized or random, information that was once mined exclusively either by restricted circles of specialists or by eccentric "data dumpster" divers, has become widely available thanks to efforts extending from Brewster Kahle's Internet Archive to Project Gutenberg to the digital repositories of the world's great libraries to an archipelago of private undertakings. The ongoing efforts of a variety of interests to treat such information as private property and to restrict its circulation find themselves regularly thwarted by the sheer ubiquity of means to promote their uncontrolled circulation and proliferation. Wikipedia, the collaborative encyclopedia-for-all and news blogging similarly challenge proprietorial attitudes towards information. The battle intensifies the closer one gets to contemporary cultural production, but it encompasses the entire cultural field, from prehistoric relics in the possession of the world's most venerable museums to yesterday's detergent advertisement. Whatever its outcome, there can be little doubt that this process of de-territorialization will continue.

We suggest that these distinctive features of contemporary digital culture create what will be referred to here as an expanded and intensified "poetic" space. Anyone with a PC may author, appropriate, share, rework, and publish works in this new political economy of media. The facility offered by digital technologies to exchange, locally rework and remix is the basis for the conflicts over intellectual and cultural property, over matters of creativity, authenticity and ownership of both the means of cultural production as well as its goods.

The poetic is a key concept in Artereaity. By "poetic" we are not referring to an idiosyncratic mode of writing associated with interiority or to explorations of the formal properties of human language or of the expressivity of voice. In ancient Greek poesis referred to making also and most especially in the concrete, material, and manual sense. So by "poetic" we mean to denote a comprehensive category that evokes the ubiquity of design qua everyday practice within the present knowledge economy: the artistic, scholarly, scientific, commercial, and/or personal making and remaking of materials drawn from varied sources and informational strata, moved around in ways that engender meanings both through the combination of elements of which they are composed and the contexts within which they are moved.

Artereaity deals in these productive fields and singles out "art" as a distinctive domain of self-reflexivity, invention, and critique with respect to everyday design processes. One hundred years ago, typesetting was a practice restricted to printing shops and professionally trained typesetters; now hundreds of millions of untrained individuals set type on a daily basis on desktop computers. This doesn't imply that the latter do so well, interestingly, or inventively. It simply means that the

task of ("artistic") typesetting, type design, inventive typography, has been profound altered. This is that new poetic space of the political economy of new media.

Modes of engagement (media)

The passage of previously diverse materials into the digital realm inevitably attenuates the structural properties of what have been commonly referred to as "media."

The term "medium" has usually referred to an agency of communication that has become an institutionalized mediator, such as Television, or to the materials and methods used in the production of an artwork (oil on canvas, video, body art). But the fluid and rapid manner in which visual materials, for example, can now be transmuted back and forth from and into animations, photographic prints, paintings, digital video grabs, video footage, photographic transparencies, and so on, points to a diminution in the "stickiness" that once cemented a medium to a given material substrate, guaranteed its particularity, and limited its modes of reception and use.

Instead, the defining feature of contemporary reception and use models is less what a given medium itself dictates than how it is engaged with, framed, and formatted by reader/viewers. Hence we propose the notion of modes of engagement is a more useful way to analyze the creation, placement, and circulation of cultural work in the public or private arena, and to understand the poetics of ubiquitous design, reworking, and redistribution.

Crucially, these new formal and informal socio-cultural practices are being driven less by subject matter or discipline—traditional concerns of the academy—and by questions of material or form—traditional concerns of the studio arts—than by processes of hybridization among distributing institutions, individuals, families and social or professional groupings addressing matters of common concern. The result is a more fluid media ecology structured, we would suggest, according to context rather than content and permitting radical address to the political economy of the Arts, in the focus upon socio-cultural location and processes of mediation and engagement.

Here are some typical examples of contemporary modes of engagement:

media experienced "privately" such as websites, interactive CD-ROMs or single-player games, headset-based music and video players, and most printed materials;

media experienced "in the company of family and friends" such as television, radio, film, multiplayer games, speaker-broadcast music, and vocalized forms of reading;

media experienced "in the company of colleagues at school or in the workplace" such as lectures, demonstrations, multimedia presentations;

media experienced "in the public arena" such as the billboard, the exhibition, the public performance, the cinematic viewing of films or live theater performances.

That the word "experienced" here refers not to consumption (in the passive sense) but to a potentially multidirectional process must be taken for granted.

Charging cultural fields

Artereality establishes a short circuit between the academy and advanced arts practice and education with the aim of charging up the strongest features of both: rigor and discipline, imagination and technical skill, expanding knowledge and exploring the boundaries of communication, representation, and recreation. It seeks to address the splits and tensions evoked earlier: between pure and applied, thinking and doing, writing and making, knowledge and things, work and play.

To achieve this bridging action and the resulting spark, Artereality draws upon its literal definition as the possible combinations of pedestrian, vehicular, and public transport movement along routes, and the allowable and necessary connections between the different types of route, in terms of access constraint and allowable junction type. More broadly, we define Artereality as the management of distributions, the devising of junctions, making flows, impeding others, promoting and demoting links or conduit in socio-cultural networks across and through currently separate and diverse social and institutional spaces. Artereality re-engages the act of cultural production (as opposed to detached "research" or "art") with social, economic, and political processes, as well as technological innovation.

Artereality seeks to articulate a complementary (rather than contradictory) vision to the strict autonomist model: one that resituates art within larger knowledge-making processes and expands art's potential impact and reach. It envisages a universe in which arts practices dialogue intensively with research questions from other disciplines, and individualized models of training coexist with collaborative counterparts in which students learn through disciplined, constrained, and directed doing, much as in a science laboratory or a digital Humanities research center like the Stanford Humanities Lab.

Artereality, therefore, imagines a new quality of commitment to research and to crossdisciplinary depth that is integral to the future of advanced art education. To this end, it proposes to enhance the current terminal MA with PhD programs in Art Practice based upon high-level pairings between art practice and advanced inquiry in other fields of study. The aim is not a comprehensiveness inspired by neo-humanist urges or by nostalgia for simpler eras when art and science may have walked hand in hand. Rather, our manifesto sets out to make the case for the compelling and enduring character of craft and design in the knowledge economy: of making as a distinct and dignified realm of knowledge production in its own right, particularly when such making is stimulated and constrained by close contact with other contemporary domains of expert knowledge.

Workings

How might this be achieved? What form might it assume? We list below the main features and principles of Artereaity that pertain to an integrated Arts curriculum and, more particularly, to a doctoral program in Arts Practice. These are suggestions extrapolated from eight years of experience within the Stanford Humanities Lab, a lab embedded within the larger setting of Stanford University, but that we consider broadly applicable to a reform of advanced arts education.

SHL is a diverse, collaborative ecology of experimental research and pedagogy. The Lab operates as a kind of incubator for work that links the Arts and Humanities to Science and Technology not in abstract terms, but by means of large-scale, hands-on projects with concrete deliverables as outputs. Much as in a natural science lab, SHL projects are based upon teamwork. They explore matters of common human concern with a risk-taking ethos that involves a triangulation of arts practice, scholarly research rooted in commentary, critique, and interpretation, and outreach beyond the academy in the form of partnerships with museums, public performance spaces, industry, and foundations. Staffed by students working under the supervision of a faculty principal investigator, they wed knowledge acquisition to knowledge production, the development of high-level specialized knowledge to communication with non-specialist audiences. Students learn by making, whether the making in question involves producing a piece of original scholarship, writing a piece of code, developing a visualization, storyboarding an animation, or building a physical structure. Each serves as a tessera within a large transdisciplinary mosaic. Projects have been devoted to the reconstruction of lost Renaissance optical instruments and the material culture of their production; the role of physical and virtual crowds as the protagonists of public life in the modern era; the cultural impact of interactive simulation and video games; experiences of presence in contemporary performance art; body language in twentieth century Russian and Soviet society; the cultural-historical stratigraphy of Berlin, Shanghai, and Paris. (See <http://shl.stanford.edu> for a full list).

SHL projects have resulted in scholarly publications, software tools, interactive timelines, web sites, games, databases, exhibitions, analytic and analog models, hardware devices, works of installation art, reconstructions of lost or imaginary structures, and, most characteristically of all, in combinations of these outputs merged into experimental hybrids. Media hybridities are at the core of the SHL experiment in the belief that the hybrid of today is the likely standard genre of tomorrow.

The lab's academic programs are usually grouped under the rubrics of Digital Humanities, Digital Culture, and New Media, though most of its pedagogical effort comes through an elision of research, productive practice, publication and project-based learning with the recruitment to particular projects of undergraduates and graduates from all of Stanford's schools. SHL has physical lab space at Stanford, but is better envisaged as a multinodal and fluid network, a diverse

ecology of activity and interest that since 2000 has linked 75 faculty and staff, 45 collaborating institutions and several hundred students across nearly 20 projects, each of which has typically lasted three years. Originally located within the School of Humanities and Sciences, as of 2008, SHL has become an independent unit within Stanford University.

An expanded Humanistic base

Artereality implies a shift in scale from the small to the big (driven by collaboration and teamwork) and a shift in focus from the gated communities of disciplinary orthodoxy to matters of shared human concern (driven by a desire to build bridges between high-level research and expanded audiences by means of new communicative tools). Characteristically, these are complex, multilayered, inherently transdisciplinary matters, such as the role of human multitudes and mass communications in the era of popular sovereignty, the phenomenology of presence and absence in contemporary culture, or the criss-crossings of biography, history, culture, politics, and economics within an urban landscape (to allude to several ongoing SHL projects) that find no “natural” home in an orthodox disciplinary landscape and prove resistant to print as the sole vehicle for analysis and documentation. As such Artereality positions the “liberal arts” component of art/architecture education not as an appendix to a studio-based practice but as an integral feature of the training of artists and architects, providing insight into the historical and cultural genealogy of problems, a vast repository of practices, questions, and solutions, integrating history and context.

In contrast to a conventional interdisciplinary agenda premised upon long-standing disciplinary borders, Artereality assumes a priori the complementarity of the arts, humanities, social and behavioral sciences, and natural sciences precisely because of its focus on the big picture. For some decades now, deans, presidents, and other academic opinion leaders have gone about waving the banners of interdisciplinarity and innovation while defending institutional practices that remain backward looking and tradition-bound. Deep interdisciplinarity (or, as we prefer to call it, transdisciplinarity) begins where and when one summons high level expert practitioners to alter their disciplinary practice: to adopt new media and modes of communication, to speak new hybrid languages of expertise, to do otherwise. Artereality issues such a summons.

From custody to design

The expanded humanistic scope just outlined implies an active engagement with the Archive. The Archive here is understood both in the figurative sense, as the cultural storehouse of knowledge of human achievement commonly associated with the Arts and Humanities, and in the literal sense, as the physical institutions entrusted with the organization and preservation of human memory, be they museums, libraries, depositories or historical archives. As much as a heritage to be curated, preserved, and studied, works of art and culture handed down to the present from the past are resources for contemporary work and reworking, all the more so when, under digital conditions, they become readily accessible and manipulable, even within the comfort of one’s own home. The

resulting loss of distance between the living present and what remains of the past, has already started to knock modern institutions of memory off of their conventional moorings.

The once dominant conception of the museum as a place of collection building, preservation, and controlled display thus finds itself increasingly in tension with a turn towards ever renewable programming, public outreach to elicit visitor involvement, the hosting of gala events, commerce and merchandising. Irrespective of whether one deems the latter a good or bad thing, the museum qua institution has multiplied and expanded its scope to encompass forms of material culture and social expression that extend far outside the boundaries of the arts endorsed by antiquity's Muses. The archive too has exploded. It now contains not just manuscripts and letters, but vast seas of ephemera, locks of hair, a century of recorded sounds and gestures, legions of celluloid ribbons, terabyte upon terabyte of memories. The library is at once a world of paper and pictures, and digital repository a million times more extensive than the Library of Alexandria, readable from the office, a coffee house or one's own living room. In the premodern era, information was scarce and the Muses were put in place for purposes of preservation; in a mnemonically superabundant world, data preservation and retrieval have become decentralized and democratized activities, expressions not only of an institutional will to promote the conservation of collective memory but also of individuality, personality, and selfhood.

Artreality champions the notion of the animated archive in order to emphasize the need for active, affective, and effective engagement with the cultural past. It implies an intensified concern with the interface between the lived present and the material remains of human achievement. The "interface" in question refers not just to the usual domains of ergonomics, communicational efficiency, and cognitive clarity, but to the challenge of establishing ever fresh and renewable choreographies of interaction between the past and present.

Embedded context / located work

Artreality thus stresses the constitutive role played context in all forms of human expression, communication, and knowledge production, and implies a critique of the notion that "background" can be separated from the "foreground" occupied by a given set of aesthetic practices, research protocols or historical events. The corollary is a distributive and situated approach to research and pedagogy. In SHL's Presence Project, for example, a new work by performance artist Paul Sermon in Taipei involved the documentation of the making of the work in a weblog dialogue with a cultural critic and theater historian, and occurred alongside the critical unpacking of the work of other performance artists as well as a seminar on the politics of presence. A broader tradition of experimental art, from Hans Haacke's critical engagements with the art industry to Thomas Hirschorn's public memorials made out of assembled detritus, enforce a similar sense of locatedness.

Arts practice as research / research as arts practice

Artereality recognizes the basis of much arts practice in reflexive and rigorous empirical research. This, of course, is a commonplace in architectural practice, but training in other art domains must also necessarily be based upon the mastery of materials, techniques, historical data, and multiple fields of knowledge. The integration of research, arts practice, and location can be given fruitful inflection through McLuhan's notion of the cultural probe. A new work by mixed reality arts company Blast Theory, collaborators in another SHL project involving a multiuser gaming experience of interaction in a simulated urban environment, is as much a probe into people's reception of new media in the context of urban anomie as it is a work of pervasive game design. Artereality invites the articulation here of new media design and communications research, the integration of arts practice, critique, commentary, documentation, analysis, interpretation. In another project, a team of researchers and designers has studied the history and cognitive functions performed by Buddhist mandalas, reinventing them in a new media vernacular for purposes of an interactive museum exhibition with a web-supported apparatus of commentary.

Force can be given to such articulations of research and practice both by rigorous historicization and contextualization, and by an insistence upon theorization understood as a critical and reflexive practice. Long a mainstay of the academy, theory as critique is an essential component of Artereality and offers a way of assessing certain values of arts practice — for example, the degree to which the making of a new kind of mandala offers insight into the genealogy and aesthetics of new media and vice versa.

Process as product

Another way of envisaging the connection between practice and research is to acknowledge the intimacy of making and learning, of learning through making. Artereality here draws upon age-old paradigms of apprentice-based training as well as the traditional value placed by the academy upon the tight articulation of research and pedagogy. We emphasize the importance of process in both project-based research as well as pedagogy: not to the detriment of product, but rather as a complementary dimension, long pushed to the side, but now reinvigorated thanks to the Digital.

Project-based learning implies an emphasis upon both process and output. The first involves focus upon the ways different forms of work (leading to the creation of objects, textual artifacts, soundscapes, constructions) are carried out, and assumes the form of iterative trials. Make, monitor process, test reaction, adapt and repeat is the standard pattern. The second sets the bar high but within the confines of a structure akin to that provided by the apprentice system. Instead of deferring the moment of “truth” when what students do and make is placed in public circulation and evaluated as the product of an expert practitioner until the end of the period of training, it demands professional outcomes right from the start. But within the limited sphere appropriate to each student's capabilities.

Modeling

Artereality favors modeling and simulation as modes of implementing practice as research and learning as doing. Rather than simply reflect upon presence effects in performance, for example, we have found it better to model them, work them out in practice, track the design of a performance, build virtual worlds, operate avatars, monitor and document, analyze and interpret. In order to better understand the temporal topography of Berlin an SHL project built various "deep maps" and visualizations of the city, working out conceptual and design issues in a hands-on fashion.

Risk-taking

Iterative processes and modeling, as well as a transdisciplinary reach that moves one out of established disciplinary domains into ill-defined though compelling new fields of inquiry, work best with an experimental attitude, precisely of making trials, of learning from experience by prompting problems and failures, of criss-crossing media and language boundaries. This contrasts with standard academic practices in the Humanities of sharing early or intermediate iterations of a given research project only with close and unthreatening colleagues so that final publication will be as invulnerable to "failure" as possible.

Cocreation

A transdisciplinary approach to themes of overarching common concern means that projects in Artereality exceed the boundaries of any individual specialist's expert field of knowledge even as they are deeply dependent upon the latter. They are, accordingly, collaborative almost by definition, involving as they do many fields of substantive and expert knowledge.

Artereality is not about the vulgarization or watering down of expert knowledge for purposes of outreach or in the service of some sort of throwback to a happily comprehensive Humanism. On the contrary, it is about building ever more ambitious, higher impact, larger-scale mosaics out of the dense tesserae provided by located and specialized forms of knowledge. Individual thinking qua making serves as the foundation, but is carried out within a setting within which, in the place of the hierarchical traditional classroom, collaboration and teamwork are the norm.

We hasten to such collective cocreation implies a model of collegiality unlike that of traditional Humanities or Art research center, not to mention the hierarchies of management, design, and implementation characteristic of companies, organizations, and studios. Within the academy, collegiality has traditionally been associated with congenial listening and commentary: exposing one's ideas to colleagues that they might react, comment and prompt improvement. So-called interdisciplinary projects in the Humanities and Arts have rarely moved far beyond parallel approaches to a common theme, as exemplified by the themed conference or the standard edited multi-author book. The norm remains centered upon the individual researcher or author endowed

with acknowledged expertise, however complementary their work may be to those of colleagues, and however much their expertise may be rooted in the work of their own students and research assistants. The author is single, almost by antonomasia.

Our experience in SHL prompts us to emphasize instead genuine team-based learning as a core component to Arteready, which is to say, as a basis for rethinking advanced training in the arts. We single out the following features of collaborative practice:

devolution of project management from top-down design to team decision-making—a flat project management structure incorporating various levels of expertise from apprentice to expert, from undergraduate to senior tenured faculty;

devolution of management from top-down direction of tasks to project housekeeping—the crucial management task is "housekeeping", maintaining clarity and order in order to enable team decision making;

small enough teams to enable the personal relationships that facilitate this flattening—community and affiliation are essential to collaboration;

clear translation of interests and reciprocity—each team member needs to value what they stand to gain from contributing to the project;

iterative and organic research and learning—agile adaptation of the project to what is learned as work proceeds;

extensible tasks and contributions—projects need to be able to adapt to such change by facilitating many different scales of contribution.

Community

Collaborative cocreation requires focus upon personal, team, and community dynamics. Arteready puts people at the heart of projects, in their roles as creators, researchers, learners, audience, or simply as those who pose the questions considered worthy of address. As a corollary, Arteready implies that projects maintain a pragmatic and opportunistic aspect that looks out beyond the traditional confines of the academy and its disciplines and schools in order to establish links wherever they might enhance the project's address to a particular matter of common concern.

Digital technologies as (situated) means

Many new digital media are either designed to or have the effect of enhancing these features of Arteready. We have found social software like wikis and blogs and open-architecture participatory media such as Web 2.0 authoring and content management systems to be extremely useful for enabling the features we have just listed of collaborative cocreation, agile and iterative project management rooted in teams of complementary researchers and learners.

But rather than a driving force behind, for example, the establishment of a new field such as "Digital Humanities", we locate digital technologies within an evolving political economy of creativity, as means and not ends. They are best understood as mere tools, not as the stable foundation for a new field of knowledge. The focus upon process, movement, flow, complementarity and mediation in Arteready means that, with respect to "media", we see communication and representation as dependent upon material modes of articulation, distribution and engagement— connective fields in a political economy of media.

Rather than ends in themselves or transparent vehicles for representation, media are thus project specific. They are situated in projects. To say this is to recognize the materiality of media as articulating modes of engagement, as described above. Rather than envisage a single predetermined, normative output for each project—a published monograph or scholarly paper coming at the end of research, a gallery exhibition coming at the end of a period of artistic production, a performance after a long series of rehearsals—Arteready embraces instead the designed-in multiplicities and even redundancies of the digital age. It promotes the multipurposing of scholarship and all forms of cultural practice as expressive and experimental domains in their own right.

SHL projects regularly strive to combine multiple outputs and multiple media: scholarly papers and books, web sites, public exhibitions, art works, catalogues, radio programs, lectures and classes. Media are chosen as integral parts of a project for their cognitive and communicative value, at once to enhance the production of knowledge and to cement the bond between theme, researcher, student, and audience.

To innovate is to remix

Rather than treating creativity as original invention or discovery *ex nihilo*, Arteready's model of situated and distributed research and pedagogy reveals innovation and creativity as practices that articulate components in new ways and for different constituencies of makers and users. All creation is recreation; every revolution marks a new return.

Craft in the laboratory

Like Aristotelian *phronesis*, Arteready falls within the genealogy of craftwork. We embrace the notion of craft as located work, embeddedness in the materiality of a medium, thoughtful practice, flexible bricolage, but also as a skill in the sense of playful mischief — media wit, subversive intent, digital tricksterism, Odyssean *metis* deployed in the physical or virtual domain.

Kraft is power in a reconfiguration of practice as unifying design through the articulation of hand, heart, and mind. We wish to recover for craft the sense of power through intelligent physical making that shuttles between free and constrained domains of practice, to reclaim this legacy of the concept of craft, and reject the thinness of any conceptualization that would place "art" in an

antithetical relation to craft. This is because we consider craft the deeper, abiding meaning of the word art. Craft bears witness to the complementarity of know-how and propositional knowledge, ethical and political responsibility and productive capacity.

Both project-based learning and practice as research and craftwork find their home in laboratoria. Labs are places where knowledge and power are conjoined; where learning is not limited to the discourse but, rather, based on a richer experiential sensorium; where labor (toil) is carried out. They are usually associated with the Sciences where teamwork and multi-authored papers are often the norm. In the Humanities and Arts we are regularly asked of team projects “just what or how much did so-and-so actually contribute”? “Who was its real author?” The standard practice is to assign credit only to individuals and to relegate acknowledgements of debts to footnotes. The single artist's work, the monograph, the individually authored paper are all granted automatic primacy of collaborative works. The distributed nature of our creations is either treated as inconsequential or it is buried like a dirty secret.

That this is an obstacle to collaborative lab and craft-work may be taken for granted. The problem is complex, intertwining an array of non-trivial cultural, anthropological, and economic factors. It is not reducible to appointments and promotions committees and examinations boards refusing to grant tenure and qualifications on the basis of jointly authored work. At stake are also far broader issues of trust involving the politics of individualism and (political) representation: how do you know that a particular person within a particular community is not a freeloader/fellow traveler? How to recognize and reward individual performance when it can be viewed only within a collectively produced artifact?

Artereaity, with its focus on flows through distributed networks, suggests that a way to address this legitimate concern is to rethink the future of advanced Arts and Humanities training in terms of laboratoria in the contemporary sense we have been describing. Artereaity identifies collaboration with continuity and community, which is to say with the framework within which reputations are established. This, of course, requires various forms of peer review and appraisal of individual progress and contributions. An established Lab has a history independent of its members. A track record will establish a reputation that facilitates trust in the lab's “collaborative” — that people there genuinely work together. So when a new joint publication or work is produced, it will be far easier to associate individual effort and talent with that of the group — individual scholarship gaining credit from its location within a discipline that is precisely identified with its peer practitioners and community.

At the core of Artereaity thus lies a new conception of collegiality and of a teaching-learning community: the craft workshop for the digital age.

Notes

On the subject of the Ph.D. in art practice, see James Elkins, "Theoretical Remarks on Combined Creative and Scholarly PhD Degrees in the Visual Arts," *Journal of Aesthetic Education*, Vol. 38, No. 4, Winter 2004, pp. 22-31.

So far as we are aware, there exists only one North American implementation of something akin to the vision articulated in this essay: the DX Arts program at the University of Washington, Seattle. Its mission statement reads: "The goal of doctoral education in Digital Arts and Experimental Media is to create opportunities for artists to discover and document new knowledge and expertise at the most advanced levels higher education can offer. While creating new art is at the center of all activities in the program, the DXARTS PhD is a research-oriented degree requiring a substantial commitment to graduate-level study and reflection. The Ph.D. degree prepares artists to pursue original creative and technical research in Digital Arts and Experimental Media and pioneer lasting innovations on which future artists and scholars can build" (cited from http://www.washington.edu/dxarts/academics_phd.php).