The primary purpose of drawing/imaging has been to facilitate the mental experience of a three-dimensional world. Consumers of design services have traditionally assumed that an idea preceded its representation. Accordingly, in order to responsibly contribute to design decisions, consumers rely upon the designer's ability to represent their ideas. The implicit contract of this service dictates that the reading of those drawings/images be within the bounds of what is familiar and accessible. The presentation of designs to clients has evolved from hand-made drawing to the technology available in computer graphics and video. At its best, this evolution represents hand-drawing as an effective way of exploring design ideas. At its worst, it has led to a quasi-art form, encouraged by paper architecture shows, sales, and promotional renderings. The concern expressed here is over the metamorphosis of architectural drawing from a tool which embraces the designer in the process of knowing to an art historian's art form encumbered with the problems of a finished product. This essay considers three aspects of the metamorphosis of the craft phenomenon in drawing and rendering: the failure of the art-service concept; the mystique of being able to render well; and the new craft-service role of architectural drawings as a measure of aesthetic thought in our society.

Failure of the art-service concept
Edward R. Tufte in Envisioning Information reminds us that even though we exist in a perceptual world of three spatial dimensions the world we portray and communicate to others takes place on a two-dimensional surface, i.e., paper and video screen. We have perfected the conventional drawings skills necessary for the representation of physical objects. And, for the overwhelming quantity of data resulting from information not residing in a three-dimensional world, inventive strategies of charts, maps, diagrams, etc. have given visual structure to an array of complexities. In addition, while the written word enables us to compile information, "our language, like our paper, often lacks immediate capacity to communicate a sense of dimensional complexity"1. Only through the extension of a dimensional and informational service encouraged by a pictorial method of communication can we effectively document and envision our multivariate world.

In any craft-related endeavor there is the notion that art and service answer to completely different agendas. Peter Dormer in his essay The Ideal World of Vermeer’s Little Lacemaker explains the difference this way: "The official contemporary crafts world of museums, galleries and magazines is not concerned with sheet metal workers or artisans in concrete, since they represent ‘trade’. Their exclusion is understandable given that the interests of the museum/gallery world are aesthetic and, moreover, concerned not with teams of people who work and make together but with individuals who either set the design and prescribe its manufacture or design and make the product entirely by themselves"2. Historically, craft involved the making of things for use and service. The success of the potter, the weaver, and the lacemaker was measured and valued in how well customers were satisfied with the quality of the product. The hand-crafted working drawing, likewise, served a need. Not only did it inform us of the normative standard of construction but it also gave us some insight as to
the nature and character of the architecture. The service need for detailed 'craft' drawings hinged on several factors, among them: the introduction of a new style-Palladianism to Gothic trained masons; a new approach to architecture; Philip Webb was so concerned with well crafted work, he wrote lengthy instructions on already comprehensively detailed drawings for the carver or stuccoist; the employment of new methods of construction, as with Fowler's advanced use of cast-iron and laminated tiles for Hungerford Market; the use of new building materials on an extensive scale, such as the terracotta chosen by Waterhouse for the Natural History Museum. Changes within the building industry also contributed to the multiplicity of working drawings. With larger and more complex building systems, estimators and surveyors became a necessary component in the building process in the 1850s and '60s. Full working drawings and specifications were required, the design team became larger, and efficient methods of copying drawings, involving commercially-manufactured tracing paper, tracing cloth, and anastatic and 'blue' printing processes, were developed. Getting the work built, recording work after construction, documentation commissioned as a 'portrait' of an owners' house, and measured drawings of an existing building all represent detailed and well-crafted drawing carried out as a service to either building or recording the work. Drawing, through sheet content, composition, and lettering style were judged as critical factors when a contractor bidding the work looked for completeness or complexity of the project. In other words, a crafted set of drawings, or a well-rendered and communicated building, represented a well-thought out design.

Not all architectural designs and drawing, however, served a strictly utilitarian need for building. Competitions and unbuilt designs are a legitimate part of an architect's work, as well as a necessary resultant of the art of architecture. The 'paper architecture' of Boullée, Sant' Elia and other visionary architects have been enormously influential. Summerson wrote that 'architects is a chained and fettered art... but when once we remove architecture from the arena of the solid and material... we are free at last to depict those things which architecture might do in certain circumstances—circumstances bounded only by the remotest confines of possibility. Here is the sphere of the maker of architectural fantasies'4. G.B. Piranesi's views of Roman ruins and reconstructions of ancient Rome are intensely dramatic engravings or etchings. They reached a wide audience captivated by their visionary and artistic qualities. The romantic archaeological reconstructions of William Walcot, possibly, the most successful fantasist of the early twentieth century, demonstrated a continuing fascination with the Antique world. Like Piranesi, he built little and earned his living from drawings and etchings. More recently, the radical questioning of Deconstructivist architecture locates the frontiers, the limits of architecture within old objects. Radical projects such as these are possible precisely because they remain outside of the sanctuaries (and rules) of drawing, theory, and sculpture. Investigations such as these, however unfamiliar, are buildable simply because their investigation links the perfection of form with the fantasies of imperfection and possibility—the very foundation and crafted art of the visionary architect.

It is only very recently that practising architects have turned to making drawings for sale as objects of art and where "it is the process rather than the product, that is being enshrined"5. While architectural drawings are often thought of as the means to an end, i.e., part of the process that goes into making a building, they are also an end in themselves. The 1970s marked the beginning of a new appreciation of architectural drawings as an art form in its own right. RIBA's Heinz Gallery opened an exhibition of historical drawings in 1972. The Museum of Modern Art in New York did a comparable study of Beaux Arts drawings in 1975. The Viollet Le Duc exhibition in Paris in 1979 and the Lutyens exhibition in London in 1981 presented many different types of architectural drawings as exhibitable items. The exhibition in Paris, Images et
Imaginaires d’Architecture at the Centre Pompidou, has shown that architectural drawings can have enormous popular appeal. Commercial galleries, likewise, have capitalized on architectural drawing as marketable collectors’ items. Perhaps a significant contributor to this phenomenon is technology. The service aspects of architecture (getting the work built) can be met very nicely with the economy and efficiency of the computer. The craft in drawing by hand can “move over” to the utility of technology. The metamorphosis can be seen in this analogy: like the notion that crafts no longer serve a strictly utilitarian function in modern life and work, but still appeal to our fancy (by giving us touchstones to the past, or an appreciation of a time when humanity was more self-reliant) the hand-made drawing has become a tool that caters not to our need to build the work, but rather appeals to our fancy that work is essentially of and about the human being. Just as post-war craft aesthetics encouraged a hand-made lumpiness which set it apart from the machine, there seems a need for drawings that allow the viewer to share in the evolution of the process undertaken by the designer. Initial “idea” or material studies give the hand-made drawing a new and genuine craft. The shift is in an act of service, traditionally “getting the work built”, now drawing is that creative insight into the bridge between knowing and doing.

The mystique of rendering
The mystique of being able to render well communicated much more about the work than what was required to get it [the work] built. At least since 1400, Western thought regarded drawing as the founding discipline of creative activities. Vasari tells us that Baccio Bandinelli’s father, a Florentine goldsmith, held drawing classes for his apprentices for a man was not then considered a good goldsmith unless he could draw well. Thomas Sheraton wrote a drawing book for cabinet makers and upholsterers, in which the frontispiece depicted the artist busy designing surrounded by allegorical figures of Geometry, Perspective, the Genius of Drawing and Architecture, and on the back ground is the Temple of Fame, to which “a knowledge of these arts directly leads”. Marc Brunel, a distinguished engineer, encouraged his son, Isambard, to sketch his surroundings, considering this habit to be as important to the engineer as a knowledge of the alphabet. In France, Ingres claimed “drawing is three quarters of painting. . . If I were to hang out my sign I should write on it Ecole de Dessin, and I know that I should educate painting”. Academic or formal training, with its emphasis on drawing, is considered good grounding in learning how to design. At the Bauhaus, Kandinsky held analytical drawing classes as part of the preliminary course which all students attended. Referring to them, he wrote: “Drawing instruction is a training towards perception, exact observation and exact presentation not of the outward appearances of an object, but of its constructive elements.” Paul Klee's belief in the value of drawing is revealed in his Pedagogical Sketchbook where he examined seeing and being through a line in action, encouraging his students towards “a free creation of abstract forms which supersede didactic principles with a new naturalness, the naturalness of the work”.

It is widely acknowledged that drawings allow us ‘closer’ to an artist than does the public face of painting or sculpture. The modern appreciation of drawings, however slight or unsophisticated they might be, is founded on this as much as anything else. The sketchbooks of several artists offer glimpses of personal traits -- manifestations of humor, caricature, eroticism, fantasy -- that are not evident in the apparently humble submission to nature of painting. Baudelaire’s drawings suggest a far more complex artist than do his surviving paintings. As a means of getting into the mind of the artist we see many things that are not revealed in finished work: in Monet’s drawings we see motifs he did not paint; in Van Gogh’s work we see hints of a substantial revival of interest in the figure that went unrealized in his late paintings. Even the word ‘impression’ carries two shades of meaning: first, the simple imprint that one material leaves on another and, second, an individual and original response to external stimulus. Drawing, because of its
immediacy, reveals more directly than painting or sculpting a duality of objective and subjective impulses. Paul Valéry wrote about it in the context of Degas. "I know of no other art that involves more intelligence than that of drawing. Whether it is a question of extracting from the totality of what is seen the one inspired line that is right, of summarizing an ensemble, of not losing control over one's hand, or recognizing a form and rehearsing it to oneself before depicting it; or whether it is that one's imagination governs the moment and one's idea forces obedience, becoming enhanced and clearer as it is realized on the paper before one's eyes; all of one's mental resources are engaged in this task, which reveals no less powerfully whatever personality the artist may have."

**New craft-service role of drawing**

Perhaps we can also say, that the artist reveals through drawing the attitudes and aspirations of aesthetic thought in a contemporary society. Tadao Ando's preliminary concept sketches reveal an approach to the problem as well as elements of the final design. Simple, diagrammatic lines and forms provide clues to circulation, enclosure, and context. The hand-colored finished plan or detailed drawing acquiesce to the norms of scaled and construction drawings. Only the conceptual drawings clue us into the relationships and the language intended by the materials and forms. Carlo Scarpa's drawings reveal the originating and inventive moment of his "imaginings conscience". His inquiry is founded on "the relationship between the part and the whole, the fragment and the complete, the detail and the indivisible unity of a deed, of an object, of a thought." His preliminary sketches for the main entrance to Palazzo Steri, for example, show a hard-edged detail superimposed over the flowing lines of a woman's body. Perhaps it is precisely this narrative that is removed in the final drawing -- a work that now moves into the rigors of universal language. The narrative in the "imaginings conscience" measures aesthetic thought. The preliminary sketch diagnoses certain structural problems within apparently stable structures and challenges the values of harmony, unity, and stability against larger cultural and social questions. The work of the Russian avant-garde gained its force by challenging the classical rules of composition and the hierarchical relationships of the unified whole. Yet, when we study the canonic work of Constructivist architecture, for example, the Vesnin's Palace of Labor, which was hailed as inaugurating a new age in architecture, we see a disturbing shift from the preliminary sketch of the work and the final scheme. In the final drawing the volumes have been tamed, smoothed, the tension of the earlier study resolved by the elegant aesthetic of functionalism employed by the modern movement. Deconstruction, and the representation of the ideas through drawing, exhibits the relationship between the instability of the early Russian avant-garde and the stability of high modernism. Daniel Libeskind's City Edge office and residential development project for the Tiergarten district of Berlin exploit the wall, the "violent slicing up of territory..." it becomes a device for breaking down divisions rather than establishing them."

The new reading of the drawings, like the work, reveals the disorder within the city itself. The drawings reveal an aesthetic thought that encourages an engagement with the many aspects of the dialogue with the city while remaining independent or "estranged" from it. Still another project that exhibits through its drawings an approach, not only to the architectural end but also to an aesthetic derivation of thought, is Zaha M. Hadid's *The Peak*, first-prize winner in a competition for a club for the wealthy in the hills above Hong Kong harbor. The natural topography is transformed into artificial cliffs of excavated rock that are polished to reconfigure the site into a sequence of immense, abstract, polished granite geometric forms. Commenting further on the decentering of modernist norms "the basic elements of the club occupy both the void and the underground world of the artificial topography extending back into the hillsides. The club is stretched between the emptiness of the void and the density of the underground solids, domains normally excluded from modern architecture but found within it by pushing
modernism to its limits, forcing it apart. In this way, the pleasure palace, the hedonist
resort, is located in the twisted center of modernist purity. 15.

It is here where the new craft-service role of architectural drawings returns. They
challenge the notion of the self-sufficient entity. While each part leads to another, every
construction is constituted by another construction. Architecture is constituted of the
traces of an event. Likewise, drawing composition favors the idea of dissociation rather
than synthesis. "It is precisely the realm of ideas -- not of forms or of styles -- that
presents the most promising legacy of 20th-century architecture. The 20th century
propels architecture into a world where meanings cannot be completely supplied by
historical languages. Modern life brings with it the problem of the meaning of the larger
whole...strategies have developed to return architecture to a level of thought.
Organisation of overall form depends on a central concept around which other elements
remain subordinate. A concept unites whereas application of an historic style fragments.
When a clear idea is the heart of architectural expression, it can be individually related
to the circumstance while remaining distinct from a general theory or style. 16.

The architectural drawing continues to facilitate the mental experience of a three-
dimensional world without strictly being an explorative work of art in itself. When
Bernard Tschumi paraphrases Orson Welles: "I don't like architecture, I like making
architecture", he is reflecting on the interest of aesthetic thought today and the drawing
activity reflecting this thought as an interest in work at the limits. Work at the
limits is the analysis of concepts in the most rigorous manner, questioning and
dismanteling the great works of history in order to arrive at a work expressive of our
own time -- its art and service.

Notes
2. Dormer, Peter. "The Ideal World of Vermeer's Little Lacemaker." Design After
3. Lever, Jill and Richardson, Margaret. The Art of the Architect: Treasures
5. Ibid
6. Lambert, Susan. Drawing Technique & Purpose: An Introduction to
8. Ibid, p. 75.
10. Wadley, Nicholas. Impressionist and Post-Impressionist Drawing. New
12. Albertini, Bianca and Bagnoli, Sandro. Carlo Scarpa: Architecture in
13. Ibid
14. Johnson, Philip and Wigley, Mark. Deconstructivist Architecture. New York,
1988, p. 34.
15. Ibid, p. 68.
16. Papadakis, Andreas C. Architectural Design: Deconstruction III. London,
1990, p. 50.