Francesco di Giorgio Martini – Drawing as Thinking, Drawing as Tool

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Drawing has become one of the most prominent tools in the arsenal of the architect. Whether a quick sketch, or a measured exercise, drawings have the ability to convey ideas and architectural intentions quickly and clearly. Often void of attached text, the ability to graphically portray concepts has molded and shaped our profession. When did this culture of drawing start and where did it come from? Is it an inherit capacity of those who are "visual" beings to produce visual cues for understanding? Was it something that occurred out of necessity when words alone would not suffice? Over time, the acts, means, and methods of drawing have advanced and changed. Most everyone has heard of many of the "Renaissance masters" such as Michelangelo, Da' Vinci, Bramante and Raphael (to name a few). A surprisingly low number of people have heard of Francesco di Giorgio Martini, who arguably, had a more notable and palpable effect on the relationship of drawing and architecture than anyone.

In order to gain a better understanding of what follows a brief summary of Francesco's life will serve us well. He was born in Siena on September 23rd, 1439. From relatively humble origins, (his father was a poultry dealer) Francesco was able to gain a credible education. Though little is known of his architectural education, the research suggests that he was trained by Lorenzo di Pietro of Siena. Pietro, also known as Vecchietta was already well established when Francesco would have begun his training. Practiced as a painter, sculptor, and architect, Vecchietta would have a large impact on the methodologies and practices from which Francesco would grow. Francesco's early career consisted mostly of painting, sculpting, and engineering. "In painting, he worked up to 1475 with Neroccio, his father in-law and with Vecchietta as mentioned above). " [1] He garnered some early attention from his Cassoni paintings. Typically comprised of representations of celebratory wedding exercises, Francesco chose instead to express visions of urban spaces, idealized and symmetrical rendered in vast perspective. An example of these is the triumph of love seen in figures

[1] Heydenreich

1 and 2. "In 1469 he was employed as a hydraulic engineer by the city of Siena…" [2] It was evident early that Francesco enjoyed this complex work of systems and mechanization. His time as a hydraulic engineer in Siena "produced what could be considered as di Giorgio's first codex, known as the *Codicetto*. The physical appearance of the *Codicetto*, with its small pages literally covered with rapid autograph notes and sketches, underlines the raw interest which di Giorgio had for this part of architecture, called machination by Vitruvius."[3] This rigorous fascination with hydraulics, engineering, and systems methodologies had a large impact on his design capacities (Later seen in his fortification design reputation.) A major point of interest in the *Codicetto* is that it is almost entirely void of text. "Here it is significant that di Giorgio opted for a codex with no text beyond the Latin dedication, and that like Taccola, he developed the theme of machination through designs alone. His designs included ancient and modern war machines, civil machinery indispensable for the construction of the new all'antica architecture, hydraulic machinery, and finally plans for fortresses capable of resisting modern arms such as cannons and light firearms, and also capable of using such weapons in their own defense."[4]

"Di Giorgio came to Urbino around 1476, having ended his Sienese partnership with Neroccio the year before. Probably immediately on arrival (or very shortly thereafter), in order to highlight knowledge of mechanical ingegni, he presented to Duke Federico da Montefeltro a new codex of machines which was a reflection and elaboration of the rapid jottings of the *Codicetto*. This elegant parchment presentation codex was entitled Opusculum de architectura."[5] This began a long and fruitful partnership with the Duke that would prove the architectural backdrop some of Francesco's greatest works (he also worked for Guidobaldo da Montrefeltro after Duke Federico's

[2] Heydenreich
[3] Fiore
[4] Fiore
[5] Fiore

death). These vastly productive years of practice yielded an incredible number of projects and commissions. "Di Giorgio remained in Urbino for more than ten years until 1489, fully occupied in the execution of 136 works, as he himself recorded in the *Trattati*."[6] "But most of these were probably forts, of which Francesco di Giorgio speaks as having one hundred and thirty-six under his charge at once, for this prince."[7] His reputation blossomed as did the number of commissions. Commissions not only were coming in more often, but also from further away. After the completion of so many projects in Urbino, Francesco eventually decided to move back to Siena. His reputation and career works led to an exponential increase in his travels. Extensive in nature, he travelled to locations near and far, acting as a consultant (with Da Vinci) during the building of the Tiburio (crossing) tower in Milan, and for the city of Bologna regarding fortification design. His talents for fortification design caught the interest of Naples, where he travelled at least 3 different times and designed a series of projects. As he aged, his travels decreased substantially. In the years nearing 1500 he rarely traveled at all. Eventually in 1501 he decided to retire to his farm where he died the following autumn at the age of 62. His influence was palpable and vast, even prior to his death. "Not only did he contribute in a fundamental way to the creation of the Renaissance styles of Siena and Urbino, but he also had a considerable influence on the masters of the High Renaissance, Bramante, Raphael, Peruzzi, and Serlio, as well as on the later history of the architectural book."[8]

This brief synopsis of Francesco's life purposefully places him within a context. A context rich in culture, consultation, travel, project diversity, and engagement with some of the greatest minds of the time. "More important for our discussion than any of these however, is that we learn that di Giorgio was an intellect in every sense of the word. Constantly questioning and approaching difficult problems, we know that Francesco had a thirst for knowledge. A knowledge that he

[6] Fiore
[7] Dennistoun
[8] Heydenreich

wanted to share. It is because of this he felt the need to compose a treatise on his architectural ideologies. The Trattato di architettura, ingegneria e arte militare was Francesco's exploration. It was his attempt at a catalogue of ideas and concepts embodied in and by his architectural principles. It is worth noting that Leone Battista Alberti and Filarete both published treatises in prior years (with some stark differences as will be noted. "The Trattati were the concluding synthesis, not the prelude to di Giorgio's activities as an architect."[9] In an effort similar to others during the Renaissance, Francesco offers a treatise searching to forge the connections with antiquity. The work is one of relatively clear composition, broken down in a similar manner to Vitruvius's and in multiple instances his postulated theorems from the book have been compared to his built works. "The ideas of Francesco di Giorgio in his architectural theories present a notable comparison with the austere and conscious simple design of his finished buildings. His treatise on architecture throws a very illuminating light on the transition between the architectural theories of the 15th and 16th centuries."[10] One of the most striking things about the book is best elicited in its comparison to Alberti's text as stated by Fiore here. "The differences between the Trattai and the De re aedifictoria by Alberti are thus striking, not only because, unlike Alberti's writings on architecture, the Trattati were written in Italian and illustrated with an enormous number of designs."[11] A brief overview of Francesco's text is worthwhile for pointing out some important manifestations and characterizations. Each subject in the treatise began with the Ragione (the theories). Essentially translated (often poorly) extracts from Vitruvius, these theories then progress to more thoughtful and inventive propositions. "For example, in the treatise on sacred buildings, highly dubious reconstructions of ancient temples are found alongside new, original designs for churches. In this case illustrations for the reconstructions differ considerably from the accompanying text of

[9] Fiore
[10] Heydenreich
[11] Fiore

Vitruvius, which di Giorgio had translated but not really understood. From this it is clear that the function of the illustrations is to amplify the invention while attempting to remain faithful to the translated text of Vitruvius."[12] In the postulation of his theorems, Francesco lists rules or principles that can be followed. "First, the nature of the site must be considered before anything else, and then the plan should conform to certain laws of design derived from the human body"[13] (where Vitruvius is cited as justification for the anthropomorphic nature).

It is here where we divulge into the heart of the subject matter – how Francesco shaped drawing as an act of thought, as a tool. Most notable of all of the differences between Francesco's treatise and that of Vitruvius' (as well as those of his colleagues mentioned previously) was the incredible amount of diligence and attention given to illustration. "His frequently stated conviction that drawing is an essential accomplishment for anyone who would practice architecture or even understand the subject, would naturally lead him to choose a theory with which the connections to antiquity could be established graphically as well as verbally."[14] Metts here postulates that not only did drawing help to clarify his theorems, the graphic nature of the ideas presented is why Francesco chose such as theory. "It is only a knowledge of his drawings and manuscripts which enables on to see that in fact in his buildings he is seeking to realize what he believed to be the fundamental characteristics of ancient architecture, or at least good ancient architecture."[15] "Di Giorgio's text proclaims that 'it seemed good to me to form the city, fortress, and castle in imitation of the human body'[16] and is accompanied an illustration of a pentangular citadel superimposed upon a human body, with the fortress on the head, the towers on the limbs, the church on the breast, the piazza on the stomach, and the gates between the legs."[17] This is clearly a distorted or misinterpreted view of

[12] Fiore
[13] Metts
[14] Metts
[15] Burns
[16] Di Giorgio
[17] Fiore

the original Vitruvian notion on architectural proportions and their relationship to the body and is not the last time it will occur. It shows up again in his discussions on Temples and/or houses with particular reference to the Orders. "Di Giorgio's design is nevertheless very powerful, both in the way in which it stimulates the reader's comprehension and imagination and in the way it evokes the symbolic values of architecture."[18]

The reverence to illustration is not only vast in this publication, but it is incredibly convincing. Although some of the drawings seem somewhat forced or far-fetched, the clarity that a graphic representation affords in palpable. "In the book on cities we can also examine the role of architectural drawings in Francesco di Giorgio's treatise. First, by offering examples in which the stated architectural principles are employed, the drawings illustrate the text to which they are always closely connected. The connection is usually established by physical proximity in the manuscript, but occasionally drawings are cited by reference symbols. In general no part of the text is without illustrations and no drawing lacks explanation in the text. Second, the drawings enlarge upon the text. For example in his text Francesco di Giorgio does not conclude that Callimachus episode with a statement to the effect that we ought, therefore, to regard the human body as a source for the form and proportions of columns. Instead he makes the point with a drawing which is juxtaposed with images of columns drawn over human forms. His remarks about the nature of words and drawings at the end of Book II show that he had some understanding of what he was doing"[19]

Rather than allude to conclusions drawn by so many others on the illustrative exploits of Francesco, I will analyze a few in the most basic sense. What is the drawing of? What is the drawing about? Is the drawing creating a convincing argument? The following pages serve as an

[18] Fiore
[19] Metts

examination of a range of Francesco's illustrations, and why they carry such a charged intellectualism and architectural significance.

It seems proper to begin with the anthropomorphic representation of a city. Figure 3 shows an illustration from Francesco's Trattato which Francesco states 'it seemed good to me to form the city, fortress, and castle in imitation of the human body'. As previously mentioned by Fiore – this interpretation of the original Vitruvian text is probably not correct. What is enticing however is the convincing innocence that is conveyed in the drawing. A very young male figure serves as centerpiece of both the drawing and the referenced architecture. Holding the fortress similar to a hat, the drawing immediately separates itself from a rigid scientific interpretation. The act of holding the fortress as a hat engages a bending of the arms to produce the crux for two towers that are repeated at the feet. The church is located on the breast opening into the piazza on the stomach. The nature of the drawing is at first glance almost humorous due to its lack of rigidity towards a scientific or measured methodology. Some further analysis or even just a second glance serves one well; as the realization occurs that what is really represented is an entirely playful yet truthful attempt by Francesco at engaging the human anatomy with design at an urban scale. Clearly troublesome at a rigid level, the drawing carries a heavy dose of figurative strength. Almost ingenious yet ridiculous at the same time, the image is one of immense architectural power.

Figure 4 is from the Opusculum de architectura. A windlass worked by a treadmill; and shears. This drawing is an excellent example of di Giorgio's mind of mechanization at work. The human figure here works a treadmill that is in turn lifting a series of items through the use of a pulley system. Also located on the page is a large set of shears – completely disproportionate with the image above. Often regarded as one of the best fortification designers and engineers of his time, di Giorgio's ingenuity was desirable. What sets him apart from other like-minded creative, inventive natured people was his ability to graphically portray his ideas in a clear and quick manner. Trying to

imagine or build this machine without an image seems like a rather Herculean task; but the appropriation of the image makes it not only seem possible, but probable. Part of the strength in the drawings of Francesco was their ability to convey ideas as entirely possible. There is great power in the ability to not only conceive great ideas – but convince others that they are great. Francesco was one of the first to utilize this almost utilitarian method of drawing to convey plausibility. Also intriguing about this drawing is that it is Francesco's at all. If you were to poll 100 people (not in the architectural history field – through some of them I think might struggle) to identify the author of this piece I imagine you will get an overwhelming majority for Leonardo da' Vinci.

In a return to the human body and design, figure 5 shows a figure inscribed within a building façade. Clearly building off of Vitruvian notions, Francesco here continues to build his case that the very essence of good architecture lies within the human anatomy. The superimposition of this figure I find more convincing (at least in terms of proportional accuracy – not necessarily ideological) than the one listed in figure 3. The drawing here; though still slightly strange in terms of proportions is much closer to being scaled and measureable – producing an inherit thirst to test the hypothesis. It is entirely similar to Vitruvius, and taking a more "measured" look than in figure 3, the human proportion here dictates the layout of the façade both acting as informer and informed. The discussion on human anatomy and its architectural implications has long been and continues to spark discussion. "Typically these aims were expressed symbolically in diagrams in which the human figure – which had such significance as the paradigm of the ideal relationship of the parts to the whole in Renaissance art – might be inscribed in a church plan" (reference to di Giorgio – human figure inscribed in church plan."[20]

The analysis of Francesco's drawings in the Trattati alone could span volumes (and one day will I assume). The *Codicetto* (and later the Opusculum de architectura) highlights the beginning of a

[20] Steadman

lifelong fascination with mechanics and systems. This fascination coupled with a background and aptitude in engineering produced a mind and drawings that easily rival those of similar nature by Leonardo. Incredible machines revolutionary at the time for work and for war were clearly imagined and realized as sketches. The ability to simplify the complex is an invaluable asset. An adherence to Vitruvian architectural principles was elicited more clearly in his drawings than in his text. Rather mundane and almost uninterested is the tone in which Francesco writes. Somewhat dull and searching for life. Whether by misinterpretation or his own invention, Francesco clearly carries the Vitruvian ideas about human anatomy and its impact of design much further than Vitruvius suggests. A struggle with the text might explain the need for clarity and inventiveness that his drawings possess. The clarity and abundance of the drawings make the treatise one that could be conceived as the text as subservient.

Though he had an incredibly efficient career, notable for a multitude of built works (including churches, fortifications, temples, and town plans), paintings, and sculptures, Francesco felt the need to compose a treatise to explain his principles. "Thirdly, it is more than a handbook of design, it is a philosophy of architecture based on the nature of man; it explains why to build as well as how ancient culture and the nature of man is the essential characteristic of humanism, and thus Francesco di Giorgio created a truly humanist theory of architecture."[21] When trying to explain these principles he turned to the best means possible. Drawing. Rarely is it so clear that someone uses drawing as a solution, drawing as a tool, drawing as thinking.

[21] Metts

Image Archive

Figure 1 - V&A Collections, May 1st, 2014
http://Collections.vam.ac.uk/item/O109319/the-triumph-of-love-and-cassone-martini-francesco-di/

Figure 2 - V&A Collections, May 1st, 2014
http://Collections.vam.ac.uk/item/O109319/the-triumph-of-love-and-cassone-martini-francesco-di/

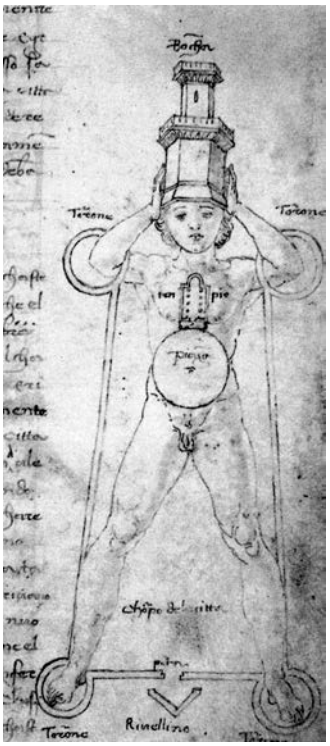

Figure 3 - Illustration from the Trattato di architettura
Biblioteca Nationale, Turin, Italy

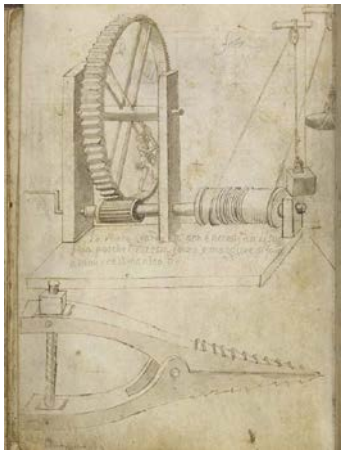

Figure 4 – Opusculum de architectura – British Museum London
Windlass worked by treadmill; shears

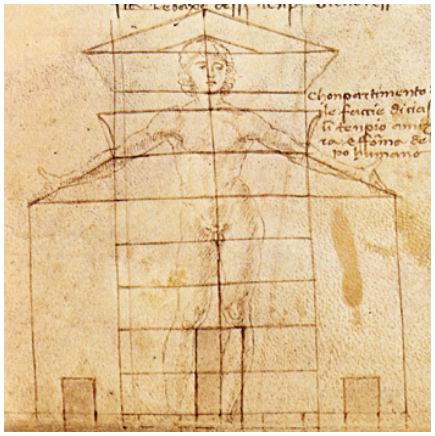

Figure 5 – Figure inscribed in façade – The Trattato di Architecttura – Francesco di Giorgio

Bibliography

1. Burns, Howard. *Classical Influences of European Culture A.D. 500-1500.* Proceedings of an international conference held at Kings College, Cambridge April 1969. Edited R.R. Bolgar. (Cambridge University Press 1971.)

2. Fiore, Paolo Francesco. *Paper Palaces. The Rise of the Renaissance Architectural Treatise.* (cpt. 3) edited by Vaughn Hart with Peter Hicks. (Yale University press)

3. Di Giorgio, Francesco. *The Trattato di architettura, ingegneria e arte militare*

4. Heydenreich, Ludwig H. *Architecture in Italy 1400-1500* (Yale University Press 1996) Revised by Paul Davies.

5. Lotz, Wolfgang. *Architecture in Italy 1500-1600* (Yale University Press 1995) Revised by Deborah Howard.

6. Metts, Richard Johnson. *The Architectural Theories of Francesco di Giorgio. Volume II (illustrations not microfilmed at request of author.)* Princeton University Fine Arts. Copyright by Richard Johnson Betts 1971.

7. Steadman, Philip. *The Evolution of Designs. Biological Analogy in Architecture and the Applied Arts.* (Cambridge University Press 1979.)

8. V&A Collections, May 1st, 2014 http://Collections.vam.ac.uk/item/O109319/the-triumph-of-love-and-cassone-martini-francesco-di/