MEG BROWN

Flip, Flap, and Crack: The Conservation and Exhibition of 400+ Years of Flap Anatomies

THE ORIGINS OF FLAP ANATOMIES

Books with movable parts exist as far back as the 13th century with the invention of volvelles, sliding circular charts used for mathematical calculations in early astronomy and geometry volumes.[1] The popularity of this genre gained major strength in the 16th century with works of astronomy, mathematics, and anatomy. There was another increase in the use of movable parts in books in the 18th century, in children's literature such as the *Harlequinade* "lift the flap" books. Other examples of this genre include 18th- and 19th-century landscape books; 19th- and 20th-century science, technology, and veterinary medicine books; and 19th-century moral "toilet books."[2] Today, pop-up books for children remain in constant publication.

Flap anatomies are a specific genre of printed materials that contain movable parts. For the purpose of this publication, a "flap anatomy" is defined as any paper-based printed image containing more than one layer, illustrating any part of human anatomy. There is no standardized vocabulary for flap anatomies; over the years they have been referred to as "movable books," "fugitive sheets," "pop-up books," "cut-out overlays," "anatomy-atlases," and "images with superimposed parts."

During the past 400 years, there have been variations on the design and construction of printed flap anatomies; this paper will review some of these structures and highlight issues that have determined whether these items survived or perished. When the Duke University Libraries displayed anatomical flap prints and books in 2011, the exhibition raised many conservation concerns. This paper will summarize some of the completed treatments and exhibit display solutions.

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THE HISTORY OF FLAP ANATOMIES

The earliest flap anatomies are called "fugitive sheets," a term coined by 19th-century German physician and medical historian Ludwig Choulant.[3] This genre of flap anatomy has been studied by many Western scholars of Renaissance printing and remains a popular subject of research today. There is much conjecture about where and how these sheets were made; the earliest were printed primarily in Germany but also in France, England, Flanders, Italy, Sweden, and Bohemia.[4] They were created during a time when dissection was neither commonplace nor legal in many places. It is believed by many scholars that these were created for barbers and surgeons to place on their walls like informational broadsides.[5] Even Andreas Vesalius included this idea in his 1543 *Epitome*, inviting medical students to cut and paste together their own flap anatomies from his illustrations.[6]

Not many of these fugitive sheets have survived, and most scholars believe Heinrich Vogtherr's Strasbourg edition of 1538 was the first to be published (fig. 1). His sheets all contain a single paper layer, often called a "base sheet," bearing a printed outline of the body with the torso, head, arms, and legs. The internal organs were printed on a separate sheet, cut out, and adhered to the base sheet at the top of each organ. These additional pieces were usually covered by a larger piece of paper printed with the outer, skin layer of the figure.

One reason these sheets survive is because of the size of the top layer: this skin layer is much larger than the smaller pieces underneath, and therefore protects them all. The sheets' other strength lies in how much of the top skin layer was adhered: the pieces below have a small surface area and a small amount of adhesive, but the top skin layer is adhered over a larger area and overlaps the smaller pieces by a few millimeters on each side, effectively protecting them. The quality of the paper is also excellent and the adhesives have not deteriorated over time; after 400 years the paper is still flexible and the adhesive is still intact.

Fig. 1. Not a first edition, but produced in 1539, soon after the first printing. Heinrich Vogtherr, *[Anothomia, oder abconterfettung eines Weybs leyb / wie er innwendig gestaltet ist.]* (Strasbourg: 1539). Rubenstein Library, Duke University

Fig. 2. The "surface layer" has been cut so that the printing of the layer below can be seen. Johann Remmelin, *Catoptrum microcosmicum, suis aere incisis visionibus splendens, cum historia, & pinace, de novo prodit ...* (Augustae Vindelicorum [Augsburg]: Typis Davidis Francki, 1619). Rubenstein Library, Duke University

INNOVATION

The first real innovation in the production of these sheets is seen in the works of Johann Remmelin, a German physician who produced detailed, anatomically correct prints of male and female figures, first published in 1613.[7] His anatomies are composed of several layers of engraved, letterpress printed, and etched papers. Adaptations of his images were reprinted, republished, and stolen for more than 200 years. The anatomies are very technical in nature, and scholars believe they were produced primarily for students and professionals; in 1618 they were listed as part of the collection of the anatomy theater at Leiden.[8]

In his 1991 bibliography of Remmelin's works, Kenneth Russell calls the top print a "surface layer," which is cut to form flaps and adhered to the blank sections of the printed base layer. The portion with the flap does not have adhesive under it; it is cut before the sheets are adhered together, allowing the printing below to remain visible (fig. 2). Multiple "body parts" can be placed inside these flaps, held in place by tabs adhered between the two layers. In some cases, they are not adhered at all, so that the viewer can pull them out and inspect them. Russell notes finding 17th-century instructions to the printers regarding this construction. He also discusses how two extra plates were required to print the flaps, since they were applied so carefully and exactly to the base print.

Using a full surface sheet means that the top flap has no adhesive and the bottom image layer need not flex at all. This gives great strength to the flap layers inside, as they are sandwiched together with a fair amount of adhesive between the surface and base layers. Many of these Remmelin publications are still in very good condition.

19TH-CENTURY FLAP REVOLUTION

Few major flap anatomy works are found after Remmelin and his forgers until the great work *Myology* by Edward Tuson in 1828 (fig. 3). Tuson was a surgeon who taught lectures in anatomy, and his publication is very technical in nature and rich in detail. A review of this work from 1829 states: "In the

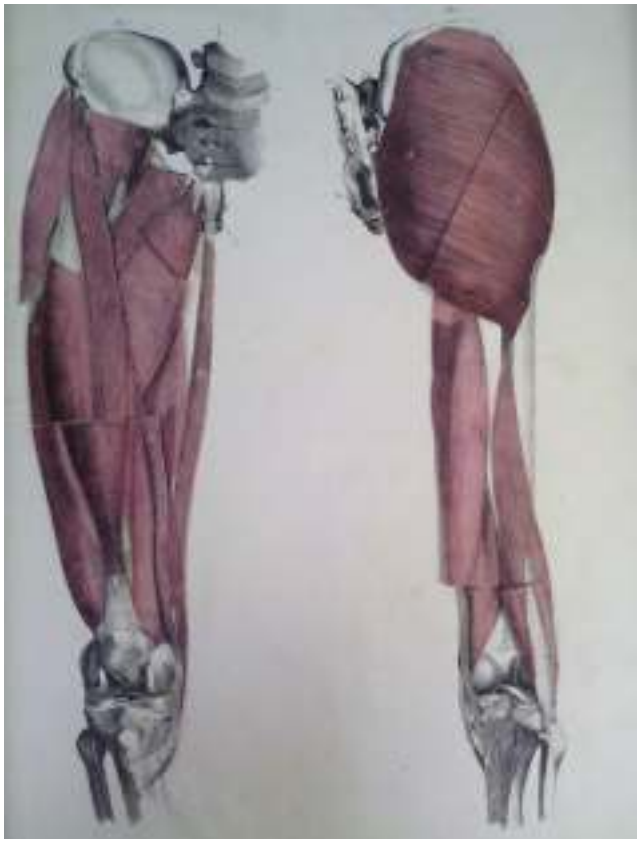

Fig. 3. This image shows the many layers of muscle in the Tuson flaps. Edward Tuson, *Myology, Illustrated by Plates*, 2nd edition (London: Callow and Wilson, 1828). Rubenstein Library, Duke University

study of these dissected plates, the sense of touch is exercised as well as that of sight; hence their vast superiority over every other description of graphic illustration."[9]

The lithograph images are hand colored and, like the Remmelin works, *Myology* includes a surface layer. However, it also includes multiple pieces that represent veins and muscles, and does so with small tabs that are visible under the top layer. In the other works discussed here, all of the flaps are attached in one place, at the top. Tuson's work has each of the tabs facing in a different direction; this allows the flaps to interlock, and they actually feel as though they are intertwined, as in the pull of human muscle.

In 1847, not long after Tuson, a surgeon and printer named George Spratt produced a flap book for educating midwives, who at that time had little formal training available to them (fig. 4). This book of hand-colored lithographs is an instruction manual for delivering babies, with very graphic details. Images show how to use obstetrics tools such as forceps, how to pull a baby out by hand, and how to perform a C-section.

This work is another variation on Remmelin's surface layer construction; there are two pages adhered together, but the bottom paper is a blank sheet that is used only to hold

Fig. 4. George Spratt, *Obstetric Tables: Comprising Graphic Illustrations, with Descriptions and Practical Remarks: Exhibiting on Dissected Plates Many Important Subjects in Midwifery* (Philadelphia: Wagner & M'Guigan, 1847)

the flaps, which are placed in slits cut in the top illustration sheet. There might be as many as five flaps per sheet to show either sequences of steps or different variations in the birthing process. The registration on these is quite perfect, as it is often impossible to see any layers until the flaps are lifted. This method is extremely sturdy, due in part to the rectangular shape of the flaps and in part to the large size of the tabs adhered between the layers.

A MOVE TO THE MASS MARKET

It is important to mention the flap anatomies associated with Frederick Hollick, a physician who published works considered "home health manuals." Although these anatomies are similar in structure to others mentioned here, they mark a change in flap anatomies from those made for professionals to those mass marketed for the general public. It is interesting to note that these mass-marketed anatomies often include an additional top layer that shows the figure fully clothed, although the naked flesh is still visible beneath.

Another physician, Gustav Witkowski, began making flap anatomies to educate the general public and created an entire "atlas" of the human body in flaps. This was part of a general movement popularizing science and medicine. These books were a great opportunity to use contemporary technologies such as double-sided color printing and die-cuts, which allowed for cutting and folding a page so that many of the flaps were from one sheet, with minimal adhesive needed. Like Spratt's anatomies for midwives, some of Witkowski's images employ the method of slotting within layers. Also, many have complicated, interlocking structures that allow layers to look more dimensional. For example, the torso anatomy has overlapping horizontal flaps that begin with the skin and muscles, then proceed through the bones and organs and back to muscles and skin. Within each

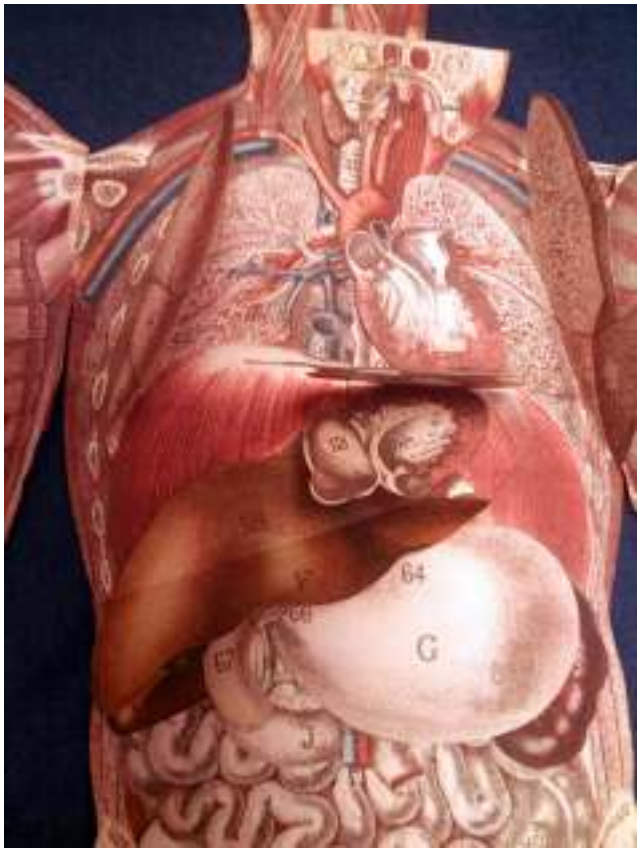

Fig. 5. Here, the rib cage opens left and right, and below is an esophagus that moves upward to reveal a kidney with multiple flaps; below that are more internal organs, each of which can be opened to reveal more layers of flaps. Gustave-Joseph Witkowski, *Human Anatomy and Physiology* (London : Baillière, Tindall & Cox, [1880–1889])

of these layers are more vertical flaps that can be lifted up to reveal detailed pieces of the anatomy, such as the interior of the kidney or the cavity inside the intestines (fig. 5). The structure is quite sound, with one major flaw: the paper is becoming brittle. Even in the areas that only employ folds for the flaps, there is cracking; viewing these requires a very delicate hand.

There are many flap anatomies in popular medical publications from the late 19th century through the early 20th century. For example, *The Physicians' Anatomical Aid* of the 1880s was a volume containing no text, only flap anatomies. Single flap anatomies can also be found inside home medical encyclopedias or popular books on preparing for marriage or taking care of a family. Many of these are simple forms of flaps, not unlike the early fugitive sheets, but they employ new materials, such as paper lined with cloth, to add strength and flexibility. Many of these works are made cheaply or with inferior materials, and many are in worse shape than those from the Renaissance.

TREATMENT, HOUSING, AND EXHIBITION OF FLAP ANATOMIES

In the spring of 2011, the Duke University Libraries displayed more than 30 anatomical flap prints and books in two different exhibition galleries on campus. Many of the materials were from the History of Medicine Collections, now a part of the Rubenstein Library, and some were loaned by the curators of the exhibition, who were faculty members from Duke University and from the University of Padua. The exhibition of these items raised many conservation concerns, and the library used this exhibition as an opportunity to review the housing and condition of this collection. Some items were treated as "emergencies" (items too damaged to display), but those that needed more extensive work were treated after the exhibition to have the proper amount of time needed.

FUGITIVE SHEETS

Eight fugitive sheets were treated and rehoused as a part of this project, which including mending, cleaning, tape removal, and flattening. Each fugitive sheet was hinged onto mat board with a cut frame and secondary cover sheet, and the set of matted sheets was housed together in a box. The fugitive sheets are used often in classes and for show-and-tell; this matted configuration will make the objects safe to use in many settings. Each cover sheet has a label with an image of the fugitive sheet inside; since the titles of these objects are not very descriptive, the new label allows for less handling of each object. A label inside the box also instructs users to be careful and to use a microspatula (available at the reading desk) to view the flaps.

One Vogtherr sheet came to the library many years ago with an extra body part in a small paper envelope. The conservator had lengthy discussions with the curators about this item: Should the part be hinged back onto the body? Although researching copies of this fugitive sheet in other institutions proved that the organ could have come from this illustration, the body part was not colored like the rest of the body, and there was no proof that it was from this printing. The decision was made to retain the organ, but to put it in the housing in a polyester sleeve (fig. 6).

BARTISCH

An early flap anatomy of the eye by George Bartisch had been repaired previously with a bit of wax on the top, and inside with some strips of Western paper (fig. 7). The wax repair was not damaging the item, and curators agreed it should be left alone, but the interior paper repairs were problematic. These were removed and mended with Japanese tissue and wheat starch paste to make the flaps easier to manipulate.

Fig. 6. Fugitive sheet hinged on mat board with extra piece in polyester sleeve. Heinrich Vogtherr, *[Anothomia, oder abconterfettung eines Weybs leyb / wie er innwendig gestaltet ist*.] (Strasbourg: 1539). Rubenstein Library, Duke University

THURNHEISSER

The flap anatomies found within books rarely remain intact; often the layers are too close to the gutter and become damaged. A vellum binding of Thurnheisser contained flap anatomies that folded onto themselves at the shoulder. These had many tears and needed flattening. This item was treated with humidification and flattening as well as mending tears. A special cradle was made to support the sheet of paper and to hold the book open at the best angle for both viewing and the protection of the binding (fig. 8).

TUSON

The Tuson *Myology* volume was a new purchase for the collection at the time of the exhibition, and a piece of anatomy was found loose in the enclosure it arrived in. A loaned copy of the book was consulted to try to find where the loose piece belonged, but the two volumes had different placements of the various muscles and ligaments. Eventually, the two sides of the break in the paper were matched to find the flap's proper placement; it was re-adhered with Japanese tissue and paste. It is interesting to note that there was also a difference in the

Fig. 7. Flaps of the eye with damaging previous repairs, before treatment. Courtesy of Erin Hammeke. George Bartisch, *Ophthalmodouleia, das ist Augendienst...* ([Dreszden: Matthes Stöckel], 1583)

Fig. 8. Leonhard zum Thurn Thurnheisser, *Bebaiō sis agō nismou* (Berlin: Im Grauwen Closter, 1576)

Fig. 9. Gustave Joseph Witkowski, "Male genital organs and perinæum," in *Human Anatomy and Physiology* (London: Baillière, Tindall & Cox, [1880–1889])

hand-coloring of the two volumes, and that only our copy had hand-written labeling on the individual parts.[10]

WITKOWSKI

The flap anatomies in Witkowski's multi-volume atlas, *Human Anatomy and Physiology*, had many structural problems. An anatomy of the male reproductive organs was brittle, with loose parts and many flaps to reconfigure (fig. 9). Adding Japanese tissue hinges would have made the fragile flaps functional, but it would also have essentially changed the way the flaps looked and worked. After conversations with the collection curators, it was decided to make only minor repairs, replacing loose parts as they were and retaining the item in its original form to the extent possible. This treatment was done with the knowledge that future use might cause more damage; retaining the original format was considered more important in this case.

The atlas also presented multiple housing problems. The original anatomies were housed in acidic portfolios and held in place with pieces of string (fig. 10). Almost all of these anatomies had visible damage from the string cutting into the paper; in many cases, the string was very tight against the object. A new housing design was created in which each flap anatomy is supported on a sling of 10-point board, which fits within an envelope attached to a binder. The outside of the binder has a label with a photograph of what is inside. Both the binder and the original portfolio, now housed in a four-flap enclosure, are stored in a new box of corrugated board, which also has the image label on the outside (fig. 11).

Witkowski's *La generation humaine* is a text volume that contained two flap anatomies in the back. These were held in place with tight ribbons, which were damaging the slightly brittle paper. An anatomy of a pregnant woman had broken at the fold along the buttocks, and one of the inner flaps had also come off (fig. 12). Minor mending was done to repair these flaps. The paper was already starting to delaminate, so it was split further to allow the Japanese tissue to be placed between the layers. Since this object can be viewed from both sides, the repair was less visually distracting than attaching the tissue to only one side. It also proved to distribute the stress of the hinge evenly when the item was used.

An important part of this treatment was rehousing the flap anatomies. Each was placed on a piece of 20-point board that slides into a polyester sleeve. These sleeves are now housed in the front of the box with the volume, which has notes in the back to explain where the illustrations have moved (fig. 13).

PHYSICIANS' AID

The *Physicians' Aid* volume contained multiple flap anatomies on cloth-hinged leaves with metal turn-buttons that held the flaps together when turning a page (fig. 14). The metal was digging into the paper and damaging the surface of the flaps. The curators did not want the metal buttons removed or

Fig. 10. This figure shows the string digging into the paper at the edge. Gustave Joseph Witkowski, "Tooth," in *Human Anatomy and Physiology* (London: Baillière, Tindall & Cox, [1880–1889])

Fig. 11. Multiple volumes in their new housings with labels to avoid the need to open each one to find proper contents. Gustave-Joseph Witkowski, *Human Anatomy and Physiology* (London: Baillière, Tindall & Cox, [1880–1889])

Fig. 12. Flap anatomy of a pregnant woman in pieces, before treatment. Gustave-Joseph Witkowski, *La generation humaine* (Paris: H. Lauwereyns, 1880)

Fig. 13. Sleeve housings for two flaps previously attached to leaves inside the volume. Gustave-Joseph Witkowski, *La generation humaine* (Paris: H. Lauwereyns, 1880)

Fig. 14. Damaging metal buttons are now covered in polyester. *Physicians' Anatomical Aid: Patented* (Chicago: Western Pub. House, [ca. 1880–1890])

Fig. 15: This image shows the very thin esophagus, which is not strong enough to hold the weight of the organs attached to it when the flap is open completely and hanging off the book edge. M. Platen, *Supplement zu Platen, Die neue Heilmethode: Lehrbuch der naturgemässen Lebensweise, der Gesundheitspflege und derarzneilosen Heilweise* (Berlin: Bong, [1900])

replaced, so it was decided to fit each clasp with a folded piece of polyester. A small slit allowed for the polyester to fit tightly over the button, but the loose top layer keeps the metal from cutting into the flap pieces.

PLATEN

A German flap book by M. Platen had a very complicated flap anatomy in the back that was not selected for display because of the extent of damage to the female figure (fig. 15). Many of the internal organs were torn off and found loose in the back of the book. Treatment included mending and re-hinging many parts with Japanese tissue and wheat starch paste, but the esophagus piece was too fragile to withstand opening and closing. Although the esophagus was reattached to the larger organs, due to the poor-quality paper and flawed design, the thin piece could not support their weight when opened completely. After many attempts to repair the piece and multiple discussions with curators, the loose organs were placed inside a polyester sleeve kept in the front of the book.

EXHIBITION

There were many concerns about how to display these items, but a visit to the National Museum of American History for the Smithsonian Libraries exhibit *Paper Engineering: Fold, Pull, Pop and Turn* solved many of these problems instantly.[11] The Smithsonian staff had used rolled-up polyethylene book-strapping tape to hold the flaps open. This is a common product used in book exhibits, and it was used to make hundreds of differently shaped triangles, rectangles, and circles to create support where needed during installation (fig. 16).

Fig. 16: This image was taken inside an exhibit case. The arrows show where the polyester rolls are placed to help open parts of the interlocking flaps in one of the volumes of Witkowski's *Atlas*.

This material allows for the flap itself to decide how open it wants to be. The plastic stretches with weight or resistance and therefore, unless it is made too large (which doesn't look good), it cannot force the object to do anything it does not want to do.

In some cases, when the flap was just too big, heavy, or oddly shaped to use a flexible roll, sturdy PETG stands were made in conjunction with some smaller supports. The most difficult items to display were fold-outs from books, which required support for both the book and the anatomy, especially when the flaps were bigger than the books. We made special supports out of PETG to support flaps hanging off the edges of books, and tried to make the shape of the plastic mimic the shape of the flap.

OTHER IDEAS

Duke created an in-house video so that people can see how the flap anatomies work and understand how the parts go together. This video has been very popular and has more than 75,000 hits on YouTube. The video can also be used in future classes that include these materials.[12] Duke is not the only institution that owns or has exhibited flap anatomies:

- A pop-up exhibit at the Smithsonian had many interesting ways to display items, including an interactive turning machine that flipped open the flap on a children's book. (Multiple copies of the book were purchased so that this would not have preservation implications.)
- An exhibition in 2011 at the Art Institute of Chicago used mat-board triangles to hold up flaps of a Remmelin print.[13]
- A Vogtherr fugitive sheet was enhanced by a physical facsimile as well as an iPad application for the Harvard Fogg Museum exhibit *Prints and the Pursuit of Knowledge in Early Modern Europe*.[14] For display, a small ethafoam roll and a piece of 10-point board were used to support the organs of the original fugitive sheet.
- The Huntington Library made a paper facsimile of a Vesalius flap anatomy that is so popular it has to be re-made regularly due to heavy use.[15]

FUTURE ENDEAVORS

A website was created for the *Animated Anatomies* exhibition at Duke University with a bibliography for flap anatomies as well as secondary materials about flaps.[16] This website continues to be updated, and welcomes any titles or support materials that colleagues are willing to share. In 2014 Duke University Libraries will begin a project to investigate best practices for digitizing flap anatomies and hopes to have many of these materials available digitally in the years to come.

ACKNOWLEDGMENTS

This project included many members of the conservation lab of Duke University Libraries, including Jennifer Blomberg (exhibit preparation and installation, as well as housings for the Witkowski *Atlas*), Grace White (conservation of the fugitive sheets and exhibit installation support), Beth Doyle (exhibit preparation and installation support), and Erin Hammeke (conservation of Witkowski's *Male Atlas*, Thurnhaisser's *Bebaiō sis agō nismou*, exhibit preparation and installation). We are grateful to the curator of the History of Medicine Collection, Rachel Ingold, and two other members of the Rubenstein Library, Will Hansen and Andy Armacost, who worked very closely with the conservation department to assure proper treatment, housing, and exhibition of these materials. The exhibition never would have occurred without the generous spirit of the curators, Valeria Finucci and Maurizio Rippa-Bonati. There are many other people to thank for a variety of reasons, including Vanessa Haight Smith, Theresa Smith, Suzanne Karr Schmidt, Aaron Welborn, Mark Zupan, and Heidi Madden.

NOTES

1. An article about volvelles written by Michelle Gravelle, Anah Mustapha, and Coralee Leroux can be found at the ArchBook website, http://archbook.ischool.utoronto.ca/archbook/volvelles.php (accessed 6/30/13).

2. One of the most comprehensive articles about early movable parts publications can be found in an online exhibit from the University of North Texas Archives and Rare Book Library: www.library.unt.edu/rarebooks/exhibits/popup2/introduction.htm (accessed 6/30/13).

3. The first detailed account of fugitive anatomy sheets was written by Ludwig Choulant in 1852; it was translated into English in 1962. His chapter on fugitive sheets was quoted by almost all scholarly

publications that included information about fugitive sheets until the publication of Andrea Carlino's *Paper Bodies* in 1999. Ludwig Choulant, *History and Bibliography of Anatomic Illustration*, trans. Mortimer Frank (New York: Schuman's, 1962), 156–167.

4. In 1999 Andrea Carlino completed a bibliography that surveyed all of the known fugitive sheets at that time. Many fugitive sheets have been discovered since 1999, but this work has a great deal of thoughtful bibliographic research about the items included. Andrea Carlino, *Paper Bodies: A Catalogue of Anatomical Fugitive Sheets, 1538–1687* (London: Wellcome Institute for the History of Medicine, 1999).

5. In this exhibit catalog, Julie Hansen and Suzanne Porter share generic information about fugitive sheets and also give item-level information about specific sheets held by Duke University. Julie V. Hansen and Suzanne Porter, *The Physician's Art: Representations of Art and Medicine* (Durham, North Carolina: Duke University Medical Center Library and Duke University Museum of Art, 1999).

6. Vesalius published *Epitome* after the first fugitive sheets were produced, and he included pages of anatomy parts that could be cut up and turned into a flap anatomy. Roberts and Tomlinson discuss both the *Epitome* and fugitive sheets in this work: K. B. Roberts and J. D. W. Tomlinson, *The Fabric of the Body: European Traditions of Anatomical Illustration* (Oxford: Clarendon Press, 1992).

7. Remmelin was one of the most prevalent creators of flap anatomies and there are many articles and books that concentrate solely on his publications, including this self-published item: Kenneth F. Russell, *A Bibliography of Johann Remmelin the Anatomist* (Australia: J. F. Russell, 1991).

8. In finding evidence that these works were in an educational library collection, Suzanne Schmidt makes the connection that they were probably used in the classrooms there: Suzanne Karr Schmidt, *Art—A User's Guide: Interactive and Sculptural Printmaking in the Renaissance* (2006), www.interactive-prints.org/index.html (accessed 6/30/13).

9. This review, "A Supplement to *Myology*," was found in *The Lancet* 11 (10 January 1829): 468.

10. Perhaps we can infer from this that these volumes were put together and even colored by different artisans, and possibly by different shops altogether.

11. Thanks to Vanessa Haight Smith from the Smithsonian Libraries for giving us a tour and showing us this simple but perfect support system for flaps!

12. The videos of the functioning flap anatomies can be found at Duke University Libraries, "Videos of Flap Books," *Animated Anatomies* (2011), http://exhibits.library.duke.edu/exhibits/show/anatomy/video (accessed 6/30/13).

13. Thank you to Suzanne Karr Schmidt for sharing this information. A catalog of the Art Institute exhibition is available: Suzanne Karr Schmidt, *Altered and Adorned: Using Renaissance Prints in Daily Life, with Kimberly Nichols* (Chicago: The Art Institute of Chicago, 2011).

14. Theresa Smith, conservator for Harvard University Libraries, did extensive conservation treatment on Vogtherr fugitive sheets. A video about this treatment can be seen at http://vimeo.com/31790483 (accessed 6/30/2013). See also Theresa Smith, "Moveable Anatomies and Print Shop Practice in Sixteenth-Century Strasbourg," in *The Renaissance Workshop: Materials and Techniques of Renaissance Art* (forthcoming).

15. More information about the facsimiles made by Marieka Kaye at the Huntington can be found in the summary of the Archives Discussion Group in this volume of the *Book and Paper Group Annual*.

16. The *Animated Anatomies* online exhibit can be found at Duke University Libraries, Animated Anatomies (2011), http://exhibits.library.duke.edu/exhibits/show/anatomy (accessed 6/30/13).

FURTHER READING

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