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An Updated Census of the Edition of 1555 of Andreas Vesalius' De Humani Corporis Fabrica in the **United States of America**

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Abstract

The purpose of this study was to update the locations in the United States of America (USA) of the second edition (1555) of the De Humani Corporis Fabrica written by Vesalius.

Contacts were made with institutions of higher learning, museum libraries, and libraries of national collections, libraries of research institutions, antique book dealers, internet searches, book auctions and private collectors.

A total of 58 copies of the 1555 Fabrica were found in 49 University and Institutional Libraries in USA. The earlier census underreported 29% of the locations of these volumes.

The majority of the original locations published by Cushing seventy years ago have remained in current collections.

Location in private collections was more difficult to determine and accounts for 15% of the second edition books in the census.

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Introduction

Andreas Vesalius's treatise, De humani corporis fabrica, is considered the greatest work on anatomy ever produced. First published in Basel in 1543, when he was only twenty-nine years old, Vesalius's text revolutionized not only the science of anatomy but also the manner in which it was taught and standardized anatomical representation for the next two hundred years. He critically reexamined Galen's twelvehundred-year-old anatomical text, which had been derived largely from nonhuman sources, and established the body on the dissecting table as the reference point for anatomy. Vesalius based anatomy on firsthand observation. But more important, he gave the act of dis-

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section a new prestige by insisting on conducting demonstrations himself rather than relying on an assistant, as had been the custom in the past.

It is also widely believed that Calcar, a pupil of Titian (1488-1578), was responsible for some of the illustrations in the treatise – the three skeletons and the magnificent muscle-man sequence in particular.

Presented in an elegant, emblematic style replete with classical references, Vesalius's illustrations exploited the possibilities inherent in the wood-block technique. The result was a detailed and easily recognizable schematic representation of the body stripped down to its frame of bones and muscles. Employing folio sheets laid out in the sequence followed in actual dissections, he shows a series of animated skeletons posing in pastoral landscapes, often juxtaposed with commonly recognized memento such as tomb shrouds or classical ruins.

Due to its financial and academic success for the publisher, Johannes Oporinus of Basel and the Belgium author Vesalius, a second edition was produced in 1555.

In Cushing's Bio-bibliography of Andreas Vesalius, published in 1943, records knowing of 25 second editions of 'de Fabrica' in the USA and lists of these only 22 ownerships in the Index of Recorded Copies in the same book [1]. The later census published in 2009 by Joffe, listed 45 copies in the USA with additional in private ownership [2]. Other authors including Elly Cocks-Indestage published pre-1800 editions of Vesalius' work in Belgian collections including five copies of the 1555 edition [3].

This report presents an updated list of second edition (1555) copies of De Humani Corporis written by Vesalius and their University and Institutional locations in the USA approximately 450 years since publication but now celebrating the 500th anniversary of his birth.

Material and Methods

The development of the internet has helped greatly in the searching several hundred institutions in a matter of several weeks. Internet connections such as WorldCat.org, Health Sciences Library, American Library Associations, Universal Short Title Catalogue (USTC) and Caduceus were helpful. Many libraries are online, letters of enquiry, consultation with dealers and collectors, telephone calls, faxes and checking Book Auction Records, original catalogues and books have been vital to the collection and collation of the information.

The method of researching copies held in institutions and libraries was relatively straight forward. Once ascertained which institutions owned the 1555 edition, requests were sent to the relevant librarians for any additional bibliographical details which did not appear in the online catalogues.

The completion of the catalogues was due to the help the librarians provided both through their own investigations, comments and cross-referencing of the information. In addition, all of the previously listed locations in USA by Cushing in 1943 and Joffe in 2009 were contacted to confirm the presence of the book. Discovering copies held in private collections was more involved. Auction houses were discreet regarding client's identity.

Results

Results are presented as a geographical listing of those volumes held in the USA compared to original Cushing and Joffe lists and now updated.

Cushing states that he found 25 copies of the second edition in USA. From the Index of Recorded Copies however, the list includes only 22 copies in 19 locations. (**Table 1**).

In this updated census, seventy years later, 20 of the 22 volumes were confirmed as still being in their original locations as described by Cushing. (Table 1).

The current census also found 16 locations of the original 18 (90%) sites recorded by Cushing still had

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one or two copies of the second edition with Harvard University now having six copies in different libraries up from two volumes. (**Table 1**).

The current updated census found 58 books in 49 institutions and Universities in USA. (**Table 2**).

The first column labelled "2009" are the original 45 books found in 34 locations. In this updated census, an additional 29% of the books at a further 11 additional Institutions and Libraries.

To help further researchers, Table 3 includes the call number or shelf location and donor, if recorded. (Table 3).

In addition we have found six private collectors possessing nine copies, and three dealers offering copies in the USA as of December 12, 2014.

Canada has increased from one copy to four copies including the annotated Vesalius second edition on loan to the University of Toronto from a private owner living in Vancouver [4].

The following information details more specific information as it relates to certain locations and volumes.

The Virginia Historical Society in Richmond, Virginia is able to document more than 350 years of ownership. (Figure 1).

Harvard University has three books at the Houghton Library on the Cambridge campus and three are at the Countway. Of these, one copy is from the Warren library and belongs to Harvard, and the other two belong to Boston Medical Library. The initial Houghton book collection was donated by an English merchant Thomas Hollis FRS (1659-1731). This edition belonged to the Harvard College Library before the 1764 fire, but survived as it had not yet been unpacked and shelved. The book is imperfect, trimmed and mounted with several leaves water damaged and re-margined. Bound in half calf and black buckram this maybe the oldest second edition in the USA.

Vanderbilt University Medical Center in Nashville has two copies of 1555 edition. The first in vellum binding was donated by Cobb Pilcher, MD (1904-

1949) in December 1942 with Ex Libris bookplate of John Farquar Fulton, MD (1899-1960). The second is bound in pigskin with clasps and was donated by Dr. Crawford Adams in December 1983.

The Lane Library at Stanford University, California, is bound in contemporary quarter blind-stamped pigskin over oak boards, with remains of catches preserved. It is an exceptionally fine, large copy with the inscription at the foot of the title page: Joachimo Joach[imi] Fil[io] Camerario, that is, "[The book of] Joachim Camerarius, son of Joachim [Camerarius]." Thus it appears that this copy once belonged to Joachim Camerarius, 1534-1598, physician and botanist, who had studied philosophy under Melanchthon, medicine under Crato von Kraftheim, and eventually received his degree of doctor of medicine at Bologna in 1562. After his return to his native Nuremberg and some years of medical practice he persuaded the city fathers to establish a school of medicine in 1592, of which he was the dean until his death six years later. This book was probably obtained directly from the printer or a bookseller shortly after publication.

The Health Science Library in Denver, Colorado has both 1st and 2nd Edition. The 1555 is in better condition, blind-tooled alum-tawed pigskin over wooden boards with brass clasps. Purchased from Herbert McLean Evans in 1936 by James J. Waring, a professor at University of Colorado School of Medicine and presented to Denver Medical Society. The latter dissolved and sent its books to the rare book collection in Denver, Colorado.

Princeton University in New Jersey has only recently purchased both a first and second edition on the 20th of August 2011 with Special Funds. The 1555 edition is bound in 17th century Dutchpaneled vellum with the armorial bookplate of Sir William Sterling-Maxwell (1818-1878) on front post down with his "Arts of Design" bookplate.

Swann Galleries sold a 1555 copy from the Library of Medical and Chirurgical Faculty in Maryland for \$48,300, bound in 18th century sheepskin with

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signatures of Bavarian obstetrician Johan Nepomuk Feiler (1768-1822) and F. von Plaoederl who received the book from Feiler and signatures of Abraham Jacobi [7].

The University of Kansas Medical School (Clendening Library) sold an additional copy of its second edition in the 1980's, rebounded in the 1800's, to a private collector. Many of the signatures are illegible and could read Lujgio, Guiseppe and Figliati.

The Dibner Institute for the History of Science and Technology (1992-2006) was a research institute established at MIT in Boston, Massachusetts which housed both a 1543 and a 1555 copy of Vesalius. On termination of the affiliation in 2006,

the collection of rare books were transferred to The Huntington Library in San Marino, California.

Copies of the first edition were on a table being examined by Osler and Cushing in 1909. The text states that "A third (now in the Medical Library of the University of Missouri) was sent to W. J. Calvert, a recent graduate who had been appointed Professor of Pathology at Columbia, Missouri." [1] This Osler copy rebound in 17th or 18th Century and stamped with 1543 on the spine is actually a second edition from 1555. This confirmed by the front piece number of lines per page and edits. It is unlikely that Osler did not know the difference. It is possible he grabbed and sent the wrong book by mistake.

Table 1: Copies of Second Edition held in Institutions and Universities in USA

	Location	City	State	Cushing (1943)	Joffe (2014)
1	University of California	Los Angeles	CA	1	1
2	University of California	San Francisco	CA	1	1
3	Yale University	New Haven	CT	2	1
4	University of Chicago	Chicago	IL	2	1
5	Northwestern University Med School	Chicago	IL	1	1
6	University of Kansas	Kansas City	KS	1	1
7	Harvard University	Cambridge	MA	2	6
8	Library of Medical and Chirurgical	Baltimore	MD	1	0
9	National Library of Medicine	Bethesda	MD	1	0
10	University of Michigan	Ann Arbor	MI	1	1
11	Duke University Medical Center	Durham	NC	1	1
12	Columbia University	New York	NY	2	2
13	New York Academy of Medicine	New York	NY	1	1
14	Brooklyn Medical	Brooklyn	NY	1	1
15	Case Western Reserve University	Cleveland	ОН	1	1
16	College of Physicians of Philadelphia	Philadelphia	PA	1	1
17	Thomas Jefferson University	Philadelphia	PA	1	1
18	Virginia Historical Society	Richmond	VA	1	1
		Total		22	22

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Table 2: Copies of Second Edition held in University and Institutional Libraries in USA.

	City	State	Name of Institution	2009	2014
1	Birmingham	AL	University of Alabama		1
2	Los Angeles	CA	University of California	2	1
3	Palo Alto	CA	University of Stanford		1
4	San Francisco	CA	University of California		1
5	San Marino	CA	Huntington Library		2
6	Denver	CO	University of Colorado	1	1
7	New Haven	CT	Yale University	1	1
8	Iowa City	IA	University of Iowa	1	1
9	Champaign	IL	University of Illinois at Urbana/Champaign		1
10	Chicago	IL	Northwestern University	1	1
11	Chicago	IL	University of Illinois	1	1
12	Chicago	IL	University of Chicago		1
13	Bloomington	IN	University of Indiana		1
14	Kansas City	KS	University of Kansas Medical Center	1	1
15	Boston	MA	Boston University	1	1
16	Boston	MA	Boston Public Library	1	1
17	Cambridge	MA	Harvard University	4	6
18	Cambridge	MA	MIT (Dibner Institute)	1	0
19	Baltimore	MD	John Hopkins	2	1
20	Bethesda	MD	National Library of Medicine	1	0
21	Ann Arbor	MI	University of Michigan	2	2
22	Minneapolis	MN	University of Minnesota	1	1
23	Columbia	MO	University of Missouri		1
24	St. Louis	MO	Washington University		1
25	Durham	NC	Duke University		1
26	Omaha	NE	University of Nebraska	1	1
27	Hanover	NH	Dartmouth University	1	2
28	Princeton	NJ	Princeton University	1	1
29	Albany	NY	New York State Library	1	1
30	Ithaca	NY	Cornell University		1
31	New York	NY	New York Academy of Medicine	1	1
32	New York	NY	Columbia University		2
33	Rochester	NY	University of Rochester	1	1
34	Cleveland	ОН	Case Western Reserve	1	1
35	Columbus	ОН	Ohio State University	1	1
36	Norman	OK	University of Oklahoma	1	1
37	Portland	OR	Oregon Health Sciences	1	1
38	Philadelphia	PA	Thomas Jefferson	1	1
39	Philadelphia	PA	University of Pennsylvania	2	1
40	Philadelphia	PA	College of Physicians	3	1
41	Pittsburgh	PA	University of Pittsburgh	1	1
42	Nashville	TN	Vanderbilt University	2	2
43	Austin	TX	University of Texas	1	1
44	Dallas	TX	University of Southwestern Medical Center	1	1
45	Galveston	TX	University of Texas Medical Branch		1
46	Salt Lake City	UT	University of Utah	1	1
47	Charlottesville	VA	University of Virginia	2	2
48	Richmond	VA	Virginia Historical Society		1
49	Madison	WI	University of Wisconsin		1
			Total	45	58

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Table 3: Current Location with Call Numbers (Shelf Mark) and Previous Owners of Second Edition in USA.

State	City	Name of Institution	Call Number	Owner
AL	Birmingham	University of Alabama	Rare Book Collection	(Reynolds)
CA	Los Angeles	University of California	WZ 240 V631dh 1555	(Belt)
CA	Palo Alto	Stanford School of Medicine	E21H.V57F1 1555	(Seidel)(Barchas)
CA	San Francisco	University of California - San Francisco	Rare Book Collection	
CA	San Marino	Huntington Library	334851	(Bodman)
CA	San Marino	Huntington Library	762204	(Burbank) (Dibner)
CO	Denvir	University of Colorado –Denver	Flat QS 4 V575d 1555	(Waring) (DenMed)
CT	New Haven	Yale University	IV.A-3	(Cushing)
IA	Iowa City	University of Iowa	QM21.V4 1555	
IL	Champaign	University of Illinois at Urbana/Champaign	Q611 V63d 1555	(Zeitlin)
IL	Chicago	Northwestern University	611 V63d 1555	(Haber)
IL	Chicago	University of Chicago	alc QM21.V59	(Frank)
IL	Chicago	University of Illinois at Chicago	WZ 240 V575d 1555	
IN	Bloomington	Indiana University	QM25.V5 1555	(Lilly)
KS	Kansas City	University of Kansas Medical Center	WZ 240 V575h 1555	(Clendening)
MA	Boston	Boston Public Library		
MA	Boston	Boston University	QM25.V4 1555	(Horlick) (Gottlieb)
MA	Cambridge	Harvard University	565.55.868 (A)	(Houghton)
MA	Cambridge	Harvard University	FC 5.V6305.543dc	(Houghton)
MA	Cambridge	Harvard University	565.55.868 (B)	(Houghton)
MA	Cambridge	Harvard University	1.Mv.1	(Countway)
MA	Cambridge	Harvard University	QM21.V63 1555	(Longacre)
MA	Cambridge	Harvard University	1.Mw.1555 V	(Countway)
MD	Baltimore	Johns Hopkins	Welch Library	(Cogan)
MI	Ann Arbor	University of Michigan	QM 21.V52 1555	(Crummer)
MI	Ann Arbor	University of Michigan	QM 21.V562 1555	(Pilcher)
MN	Minneapolis	University of Minnesota	Folio 611 V 63 1555	(Wangensteen)
MO	Columbia	University of Missouri	QM21.V418 1555	(Calvert)(Osler)
MO	St. Louis	Washington University School of Medicine	QS 17 V575d 1555	(Tyler)
NC	Durham	Duke University	Rare Book Collection	(Trent)
NE	Omaha	University of Nebraska	WZ 240 V575d 1555	(Potts)
NH	Hanover	Dartmouth	QM21.V467	
NH	Hanover	Dartmouth	QM21.V467 c2	(Cogan)
NJ	Princeton	Princeton University	QM 21.V418 1555P	(Maxwell)
NY	Albany	New York State Library	611 fV57a	
NY	Ithaca	Cornell University	QM21.V57 1555	(Adelmann)(Kroch)
NY	New York	Columbia University	QM21.V47 1555 c1	(Freitag)
NY	New York	Columbia University	QM21.V47 1555 c2	
NY	New York	The New York Academy of Medicine	Vault	
NY	Rochester	University of Rochester	V575 1555	
ОН	Cleveland	Case Western	V575d 1555	(Kelly)
ОН	Columbus	Ohio State University	QM 21.V4 1555	
OK	Norman	University of Oklahoma	History of Science Collection Vault	
OR	Portland	Oregon Health and Science University	Rare Book Collection	
PA	Philadelphia	The College of Physicians of Philadelphia	ZAd 25a C1	(Ashhurst)
PA	Philadelphia	Thomas Jefferson University	611 V575 1555 Folio	
PA	Philadelphia	University of Pennsylvania	611 V63.2	
PA	Pittsburgh	University of Pittsburgh	Falk Library - Rodman Room	

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TN	Nashville	Vanderbilt University	Rare Book c2	(Adams)
TX	Austin	The University of Texas at Austin	-q- QM 21 V418 1555	
TX	Dallas	University of Southwestern Medical Center	WZ 240 V575D 1555	
TX	Galveston	University of Texas Medical Branch	Rare Book Collection	
UT	Salt Lake City	The University of Utah	QM25.V4 1555	
VA	Charlottesville	University of Virginia Library	QM21.V4 1555	(Watts)
VA	Charlottesville	University of Virginia Library	QM21.V418 1555 C1	(Bean)
VA	Richmond	Virginia Historical Society	QM21.V44 1555	
WI	Madison	University of Wisconsin	WZ 240 V576D 1555	

Figure 1: Bookplates indicating ownership of S econd Edition (1555) of Vesalius at Virginia Historical Society, Richmond, Virginia.



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Discussion

The 1555 edition was more sumptuous than the 1543 first edition. It was printed on thicker paper, set in larger type and had more widely spaced lines. Vesalius made both stylistic and factual changes, and in some cases this required the design and production of a new initial letter woodblock. The new illustrations, with the exception of the title page, are generally considered to be even finer than those in the 1543 edition.

It is now the 500th year since Vesalius' birth and many academic facilities and non-profit organizations are having symposia highlighting the importance of Vesalius to anatomy and modern day science.

This second edition also had several textual alterations, including a revised chapter on embryology, a description of the venous valves, and two new chapters. No documentary evidence remains for the decision behind the production of a second edition except possibly to answer specific criticisms of the content leveled at the first edition and for Vesalius to answer his detractors in the new edition.

In addition, the market for the Fabrica remained strong as evidence by the production in Lyons of an unauthorized cheaper pocket edition in 1552, as soon as the protective privilege granted to Vesalius by the French king had expired. This suggests that during the early 1550s, about the time that Vesalius and Oporinus began planning their second edition, demand for an expensive illustrated second version of the Fabrica remained high enough to make the effort and financial outlay of its production worthwhile.

Cushing and Cockx-Indestege's record took over 20 years to complete Horowitz and Collins 1984 publication probably took a similar period to accumulate [5] and Gingerich's census of Copernicus took over 30 years [6].

The internet has been a great development for the 21st century researcher. Over 200 University and Institutional libraries are searchable online. These innovations have shortened the time for researchers to find and confirm the relevant information.

The first edition published in 1543, is probably the most admired and least read book than any publication of equal significance in the history of science. Due to its financial and academic success, a second edition was published shortly thereafter in 1555. At publication the market for the Fabrica remained strong despite the financial outlay and effort required for its production.

An ideal starting point for a census would be to determine how many copies of the Edition were originally printed. In the situation of the 1555 Fabrica, the question cannot be conclusively answered as there are no surviving records of the print-run. Then, as now, the number of copies of a book to be printed depended on the potential market. Some editions were printed to order.

Originally we reported that the 1555 print of the Fabrica, with its complexity and numerous illustrations, would have been produced in the order of 800-1000 copies [2]. We now believe this number is too high as the Fabrica was a rarely used book and the majority of books printed would have survived. Loss of this type of book could be due to theft, fires, and bombings during wars, earthquakes, extensive water damage, stolen or simply misplaced.

Thefts of precious and rare books from libraries and private collections do occur. Individuals have been known to remove and not return a book. During moving of collections rare books may be misplaced or placed in secure storage including safes, vaults or shelving and then forgotten about.

Confiscation during wars such as by the Nazis in Second World War and destruction by bombings during both first and second world wars damaged many libraries. Fires either spontaneous or during bombings have destroyed several copies of various editions of Vesalius [8]. Extreme water damage occurs rarely although a ship sunk in the Atlantic Ocean that was carrying a later edition.

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Most books we believe are misplaced during moving for security reasons, placed in safety deposit boxes or on shelves and forgotten or taken as a temporary loan and never returned. These books occasionally reappear in dealers or auction catalogues. If well documented in terms of binding, bookplates, annotation the book can be returned to prior owner(s).

In the Database of the International League of Antiquarian booksellers (ILAB), no antiquarian Vesalius books have been reported stolen or missing amongst the 1500 books listed on 168 pages since 15th June 2010. (ILAB Dec 2014 "stolen or missing books").

It would seem that the printing, with is extraordinary complex and its numerous illustrations would have been produced in the 300 – 500 volume range.

The Virginia Historical Society received their 1555 Fabrica from the Richmond Academy of Medicine in 1988. The ownership is unique in that signatures and bookplates can account for nearly 450 years of various owners' from 1570 (Figure 1). The first owner was George Baker ("ex Libris Georgio Baker 1570) who served as Queen Elizabeth 1st surgeon. Another owner, Thomas Wharton (1614-1673), was one of the few doctors to stay and treat patients during the 1665 London plague. The last private owner was Joseph Lyon Miller (1875-1957), a Virginia physician and rare book collector. Dr. Miller placed his rare book collection in the Richmond Academy of Medicine in the 1930's.

In reviewing the various owners and locations it would appear that the earliest second edition was in Boston at Harvard College before 1764. Subsequent editions were located in Maryland and Virginia. Various physicians became collectors of rare books and following their deaths, editions were donated or loaned to various Universities and Institutions where they have remained in the majority of situations.

Our initial census was incomplete and is now updated to include an additional 13 volumes in the newly discovered 15 locations in the USA. The number of books available for purchase by private individuals has reduced considerably adding to their rarity and increase in valuation.

Conclusion

This article presents an updated list of the copies of Andreas Vesalius' 1555 second edition of 'De Humani Corporis Fabrica' held in the USA.

A total of 58 copies have been found in 49 Universities, Libraries, and Institutions in USA. The previous census unreported many of these locations.

It is estimated that over the last 450 years nearly half of the 1555 edition of the de Humani Corporis have survived, and of these, the majority are in University and Public Institutional Libraries with very few now remaining in private collections.

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Competing Interest

The authors declare that they have no competing interests.

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