Frederik Ruysch
Professor of Anatomy

Foreword to the Sixth Anatomical Cabinet,[1]

In which it is demonstrated that it is by no means the Illustrious Master Vieussens,[2] but I who first made the discoveries in the Human body, that the Illustrious Vieussens credits to himself in his treatise, published just recently, under the name *A New System of Blood Vessels in the Human Body.*[3]

It has been some fourteen years since I devised[4] a method of preparing, dissecting, & displaying cadavers that excelled common practice, & by means of which the parts of the human body, down to even the most minute particles, may be brought into view, & without which I believe that all those discoveries would have been impossible to demonstrate.

In the year 1696, I undertook the publication of certain Letters on Anatomical Questions, sent to me by various Learned Gentlemen, along with my Illustrated responses.

In those letters, many new discoveries are to be found, since I had by that time devised a method by which human bodies after death might appear to the eye just as though summoned back to life; such is the testimony of all who day after day come to my house to view them. Among these visitors was the Reverend Master G. Papin, of the Society of Jesus, having returned from the East Indies, who graced the cadavers I had prepared with the following verse:

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[1] I have translated most of this very long foreword because it is revealing of Ruysch's personality and professional concerns and because it also gives a vivid account of the arena in which science was contested in his era. With that in mind, I cut many medical details, which doubtless from Ruysch's point of view constituted the heart of his argument, but which might try the patience a nonexpert audience.

[2] Raymond Vieussens (d. 1715), a French anatomist who did pioneering work on the circulatory system.

[3] "Novi systemmatis Vasorum sanguineorum in corpore humano." The book, published in 1705, is usually known as *Novum vasorum corporis humani systema* (A new system of human vessels).

[4] Here, and throughout this passage, Ruysch uses forms of *invenio*, which originally meant "I find." Only in the Renaissance did the word start to acquire the meaning "invent," in the modern sense of creating something entirely new. This shift in meaning reflected an ongoing intellectual and theological debate over whether it was possible, through art or technology, for humankind to originate anything or whether, to the contrary, artists and scientists were simply finding, or at most recombining, elements that had existed all along. How we choose to understand *invenio* therefore implies an assessment of Ruysch's self-perception: When he formulated his preservation technique, did he view himself as a diligent *discoverer* of the secrets of nature or a genius *inventor* who had created something utterly without precedent? I think that "devise" captures this ambiguity.

The dead, by your art, Ruysch, now live and teach,
And infants, without language, yet have speech
To tell of secrets long to us denied.
And death itself now dreads that it might die.[5]

Moreover, it was not the practice at that time for Professors of Anatomy, engaging in Anatomical demonstrations, to bring with them preparations suspended in liquid, & to display them at the appropriate moment, until I began to do so; for I considered Anatomical demonstrations conducted on recently deceased bodies to be less useful, if not combined with such preparations, suspended in liquid; in this manner, I made public dissections, a number of times, on the bodies of youths deceased for many years, which is clear from published programs, such as the one that follows:

PROGRAM

Dear Reader

Inasmuch as I have been accustomed each year to perform one or two public Anatomical demonstrations; and it has now been an entire year, since I have been able to obtain a single fresh human subject; I therefore have decided to hold a public Anatomical demonstration at the Anatomical Theater *on the first Tuesday of August, 1703; and this will be on the cadavers of those three Boys, who traded their lives for death almost ten years ago, in July, 1695, & whom I displayed to the public in October, 1696.*

Through my art, though, these cadavers regained a natural and lifelike appearance, &, what is more, they have become even more handsome over the succeeding years, which will be clear at the appointed time.

The first of them appears as a Boy asleep, with comely face; ruddy cheeks & lips; smooth skin, free of wrinkles; & with no cosmetics or dye—just as was the case in 1696, when, in response to the request of a certain Most Noble Gentleman, I, in the presence of all the spectators, who were gracing those demonstrations with their presence, scrubbed its face with salt, sandy water, soap, & a linen cloth, 'til I had nearly flayed it.

The Brain, Stomach, Guts, Liver, Spleen, Kidneys, Heart, Lungs, and other Viscera, have been so nicely preserved right up until now, that they look better than those parts in many of the living.

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[5] *"Mortuus, Arte Tua, Ruyschi, vivit, docet, infans, / Elinguis loquitur, mors timet ipsa sibi."*

I have a mind to present this cadaver dressed in clothing, as has been my custom, without any incisions or lacerations, & I have decided to preserve it thus, untouched.

The second Cadaver, on the other hand, has been dissected by me in public over the aforementioned years, and its Muscles are separated.

The third Cadaver I have dissected in such a way that I may reveal each part individually, & display them to those who are not standing nearby.

Concerning these said cadavers, it should be understood, that everything in them will be displayed—and therefore seen—with much more clarity & detail than is possible in a recently deceased body; it is a well-known truth, that everything in the outward aspect of a living human body that brings joy to the eye is stolen by death, & its essence passes away. Similarly, it is no less true, that the internal parts, after death, retreat considerably from their natural state, and, in fact, the smallest particles flee entirely from our gaze.[6]

However, by this art of ours, that which is lost in dying may be restored in death—namely the natural complexion, which these cadavers have regained, so beautifully anew that they seem to live again and to sleep: all the limbs, which were so stiff in death, prove in these to be as flexible as in a living person.

Moreover, deceased bodies soon emit an unpleasant odor, yet these are pleasing of scent.

In this Anatomical treatment, it is not my intention to proceed systematically, as is my usual practice; for this should be considered something like a sampling of previous demonstrations, in which I will show different things, overlooked by others, as well as some new discoveries….

I have decided to hold twice-weekly demonstrations, on Tuesdays & Thursdays, at three in the afternoon, starting on the first Tuesday in August, 1703, at the public Anatomical Theater, with a lecture in Dutch, or Latin, as necessary. All enthusiasts of Anatomy are invited to watch.

F. RUYSCH,
Professor, &
President of the College of Surgeons.

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[6] Specifically, Ruysch means that the capillaries empty after death and become nearly impossible to see.

[…] Among everything that I have discovered over the past 40 years, one thing truly stands out: namely, that the Cortical substance of the Brain is not glandular—as Anatomists had mistakenly reported, depicted, and indeed held as certain—but completely vascular.[7]

When, in 1698, I discovered this new method of preparation, the Most Illustrious Michael Ernst Etmüller, a Man no less learned than zealous in the study of Anatomy, would often visit to look at my Anatomical curiosities, among which there was none he found more astonishing than the "vascular-eiderdown" Cortex of the Brain (so it may justly be called, because the cortex of the brain is nothing but vessels, as delicate as down feathers); indeed, even as he gazed upon the Brain Cortex, thunderstruck, he urged me to publish so important a discovery; accordingly, he wrote me a letter inquiring into this Anatomical matter in 1699, which letter, moreover, is on offer for sale by the Book Seller, Johannes Wolters, of Amsterdam, along with my response, with appended figures, drawn from life.

After the said Most Illustrious Etmüller reviewed in that letter everything the experts had written on the glandular theory of the Cortex of the Brain, & showed that everyone, including the Most Illustrious Master Vieussens, agreed on this, he admonished me with these words: *Thus, Illustrious Sir, I ask, nay I insist, that you will not disdain to lay bare the true texture of the Cerebral Cortex, reveal its appearance, and define its function.* That the Most Illustrious Vieussens had not read my writings (so he said), or that no one informed him of what I had published at the time does not much surprise me; what does, however, very greatly surprise is that only after I disclosed my findings did the Illustrious gentleman reject what he had written before, and now follow in my footsteps. . . .

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[7] Rusych is engaging in a debate that is obscure today but was raging in his time: What is the mechanism that the individual parts of the body use to obtain appropriate nutrition from the blood? This was a holdover of humorism, the ancient theory that bodily health was regulated by certain vital fluids (such as phlegm, bile, and spleen). Many anatomists argued that it was a variety of tiny filters ("glands") at the end of the blood vessels that extracted ("secreted") the constituent vital essences.

Rusych vehemently rejected this idea. Using his wax-injection technique, Rusych was able to reveal the tiny vessels of the brain in unprecedented detail. He observed (correctly) that there were no such glands at the tip of the capillaries; and he hypothesized (incorrectly) that it was the shape and structure of the capillaries themselves that were responsible for secretion.