

Katryna Marija Čiurlionis

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to my mother and father -
for your unwavering support
throughout all my states of transition

An Unsteady Portal : In Search of Baseline

A “Scopic” Analysis of the Spaces Occupied and Created by Contemporary Pharmaceuticals

As a spatial designer and researcher, I am fascinated by our surroundings and why they function and operate the way they do. What are the cultural and historical mechanisms that reinforce certain behaviors and ultimately dictate the nature of our built environment? This research was inspired by a preoccupation with the social practice of manipulating the human body in order for it to function in a desired manner. Today, pharmaceutical technology has developed to a point that this type of change and control is possible at the molecular level. I am interested in the power of pharmaceuticals and their ability to permeate daily life in a way that not only reshapes the body and mind, but also dictates a global bio-economy and structures specific built environments. What are the spaces created by drugs and for drugs? I believe it is safe to assume that most of our spatial understanding of drugs is limited to their containers i.e. the pill box, the medicine cabinet, the pharmacy, and our knowledge of their efficacy is based upon what they are meant to “fix” i.e. headaches, panic attacks, pregnancy etc. Through this research, I take a “scopic” approach and analyze pharmaceuticals not as individual objects, but as series of spaces that incrementally enter the body. The drug is not just a pill, it is a long chain of mutations each inevitably shaping the next. By specifically focusing on the popular anti-anxiety drug, Xanax, this research became a highly personal journey in understanding not only its biological effects on the brain at the molecular level, but also identifying and analyzing the spaces it occupies as form, a substance, or an idea (placebo) and the subsequent social, cultural, and economic mechanisms that give it its power.

“Seven Gates of Osiris” - Scopic Apertures

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Stages of Efficacy for Xanax (Alprazolam)

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Introduction

A case of crystal reflection lives at home with us. It has always been there - just out of reach of my pink fingertips. The warm giants talk to the portal and it listens - giving them what they need. What will it give me? With my toes, and knees, and fingers I climb the hard, cold, white mountains that guard the magic doorway. Crouching inside the mountain bowl, I slowly pull the reflection and gaze inside. I smile when I see a sparkling mosaic of small colorful bottles and boxes - it's time to play!

Pharmaceuticals are not merely inanimate substance, but significant actants within the fabric of our daily life. With a life and affect of their own, these medicines not only shape a global bio-economy, but also have the capacity to change our bodies on a molecular level. “The efficacy of a pharmaceutical is not only limited to the medical domain; its power extends far beyond physical and mental well-being. The effects of medication are also social, cultural, psychological, spatial, and even metaphysical (van der Geest p. 167, 1996).” Historically, medical spaces have been designed to both reflect and shape our social relationship with pharmaceuticals. From the pharmacy to the household medicine cabinet they communicate efficacy - a quick fix - the potential for relief from a state of discomfort, or the continued maintenance of an idealized state. Yet the current design of these spaces demonstrate a limited, superficial knowledge of the subsequent chemical alteration of the body. This is apparent in their purely transactional function. By learning from scientific methodologies of molecular visualization, is it possible to re-conceptualize the understanding of pharmaceutical space (in a way that better illustrates the multifaceted relationship with drugs)? By exploring this possibility, I hope to create a discursive awareness of the limited knowledge present in our highly medicated culture, to illuminate the “breathing” and dynamic nature of the human relationship with pharmaceuticals and challenge the architectural complacency of the spaces designed to hold them.

Through this text, I will attempt to unravel the historically and culturally constructed paradigms that ultimately propagate our current spatial relationship with prescription drugs. How do contemporary household pharmaceuticals occupy space both externally as well as internally? How did they come to inhabit the domestic interior? What

is the nature of their lifecycle, and how does this relate to the cultural understanding of their efficacy? A specific focus will be on the chemical space of Xanax (Alprazolam), one of the most highly prescribed anti-anxiety drugs in the United States. In order to gain a more holistic understanding, I will take a scopic approach to how this drug operates: from the social power of its prescription, to the various cultural spheres it shapes through the experience of its efficacy, and finally how it operates on a molecular level. The term “scopic” refers to the methodology of examining the “spaces within spaces” and following this trajectory in order to gain a better understanding of their relationship as part of a greater system. Spatializing the molecular effects of a drug not only demonstrates our cellular elasticity and the ability to return to a baseline state, but also highlights the associated fear and anxiety of this natural state. The household medicine cabinet, a mutation of the self-curated cabinet of curiosities, will be the entry point to this exploration - from the prescription slip, to the pill box, and ultimately to the interior of the cell and the molecular biochemical interactions within. The text is organized into seven vignettes. The number seven has been widely used as a symbol representing the transition from the known to the unknown - the inward journey.

Aperture 1

The Medicine Cabinet - Icon & Decoy

The medicine cabinet is a mundane household artifact, commonly located in the bathroom, and functions as the self-curated pharmacy. Behind a wall-mounted mirror are a few small shelves that contain a collection of various grooming tools as well as biochemical substances intended to treat ailments and discomforts - to temporarily alter the physical or mental state of the user. Both the medicine cabinet as well as the substances it contains represent the culturally reinforced routines of both monitoring and altering the body. It is an iconic element of the domestic interior, as well as a type of micro-architecture with a set of historically delineated design standards that were predominantly founded during the Modernist period. According to Beatriz Colomina, the “visual hygiene” of modernist architecture was not the symbol of an eradication of history, but rather simply that of germs and paranoia. Even the generic home needed to become a sanatorium (2008, p 32).

The medicine cabinet as we know it became ensconced within the domestic fabric near the beginning of the 20th century not just in tandem with public health policy initiatives but also, importantly, with the developing consumer market for the goods and tools of personal care.

“Its signature aesthetic — mirrored glass, and gleaming metal—would seem to have as much in common with the presentational seductions of the department store display case as with the sanitary spaces of the physician’s exam room (Day, Kaster 2016).” The medicine cabinet was designed with the specific purpose of communicating the clinical and scientific management the body within the realm of the home. Even though the contents of the cabinet itself have changed, I argue that this “trope” has become complacent - stuck referring to an antiquated view of “germ paranoia”. Here I refer to complacency as uncritical self-satisfaction. As an object, it is suspended in a state of idyllic representation that has become a sort of decoy for a more complex and unsteady reality. The medicine cabinet itself acts as a placebo. Whatever form it takes, its presence as a collection of substances implies the potential for relief and security.

Looking further back in history, you could argue that the Cabinet of Curiosities, also known as the Wunderkammer (Room of Wonders) or Kunstkammer, is the predecessor of the modern medicine cabinet. There are several interesting parallels between the evolution of these spaces. Both can be understood as a microcosm of an

outside world ultimately consolidated from whole rooms to smaller contained cabinets. For example, home remedies, normally stored in the kitchen, were later replaced by more “efficacious” regulated drugs that were then separately stored in the bathroom medicine cabinet (Day 2016). “The *Kunstkammer* conveyed symbolically the patron’s control of the world through its indoor, microscopic reproduction (Fiorani 1998, p 268), just as a well-stocked and carefully curated medicine cabinet projected care and successful home management (Day 2016). Beginning primarily during the early 17th century, the *Wunderkammern* were collections of eclectic and exotic objects and artworks often curated by affluent aristocrats and royals. Not only were these arrays seen as a form of propaganda (Thomas, 1977), they eventually became the basis for a more scientific and dynamic worldview (Bredekamp 1995). During this time, the first versions of the microscope were being invented.

As a collection of decontextualized objects, the *Wunderkammer* became a method by which visitors could experience a world outside their own. The medicine cabinet represents a space of vicarious intimacy - it offers a glance not only to a person’s grooming ritual, but also to

how they modify and manipulate their bodies on a molecular level. It is an open portal into a private realm, that a houseguest could be tempted to examine (Day). I believe this comes from a culturally fetishized curiosity - we want to know - what do you do that makes you who you are? The short story, “Nine Needles” by James Glover Thurber, describes the unfortunate encounter of a guest who opens their host’s medicine cabinet out of necessity and as a result becomes engulfed by all the paraphernalia that come tumbling out to a point that he can no longer hide the evidence of his indiscretion and invasion of this space. Now, these spaces are often highly edited, and act as a decoy for the peeping eye, or overly curious child, with more taboo, private drugs, or potentially dangerous objects stored elsewhere.



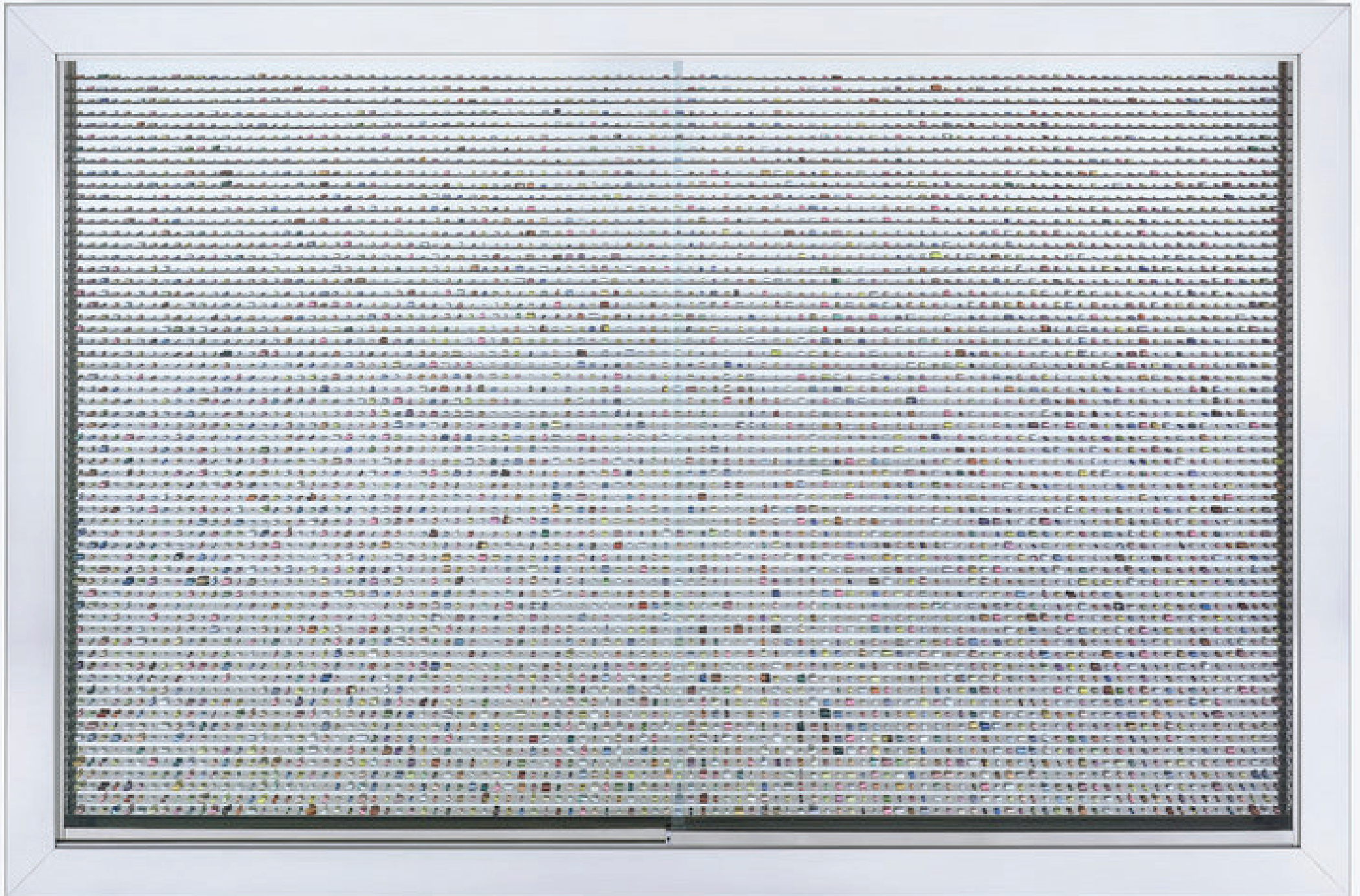
David Gamble, Andy Warhol's Medicine Cabinet, 1987. Gamble, who took the photograph shortly after Warhol's death, imagined it as a portrait of the artist.



Domenico Remps, *A Cabinet of Curiosities*, 1689, oil painting, Museo dell'Opificio delle Pietre Dure, Florence



Ferrante Imperato, earliest known engraving of a natural history cabinet from *Dell'Historia Naturale* (Naples 1599), University Library of Erlangen-Nuremberg (UB)



Damien Hirst, *The More You Know, the More You Need to Know*, 2002, large stainless steel cabinet filled with pills constructed as part of larger "Pill Cabinet" collection

Aperture 2

The Gaze: Clinical & "Scopic"

Clinical: The Rise of Patient Labor

The medicine cabinet is an architectural translation of the clinical gaze into the domestic household, and serves as a metonym for the expanded home pharmacy. "This fixture begins to increasingly resemble the kind of institutionalized world of medical practice into which the American patient-consumer is being embedded (Day 2016)." The discovery and subsequent paranoia surrounding "the germ", especially within the household, triggered the shift from a soft, luxurious, and highly decorative bathroom design, to a sparse space sheathed in enamel tile and chrome fixtures rendering it a quasi-medical space - the clinical anti-chamber of the medicine cabinet. Colomina has argued that the white of this modern architecture is that of the hospital. I would counter, with the position of Deanna Day, that within the realm of the domestic, this sterilized environment lies somewhere between the allure of gleaming department store display cases and the assurance portrayed by a physician's exam room. A good example of this is a contest advertised in the pages of Popular Science magazine in 1941. It asked readers to propose designs for the ideal medicine cabinet. Deanna Day states that this could be described as an early example of patient labor. Contestants are drawing on their own experiences, i.e. "data" to communicate how to improve upon the existing standards. This one object illustrates the convergence of a variety of social forces contributing to the popular imagination surrounding the idea of public health during the 20th century.

It is important to point out that alongside over-the-counter and prescription medicines, one of the most common items found in the medicine cabinet have been medical measurement tools such as the thermometer. This small device used to measure the internal temperature of our bodies represented the rising cultural obsession with measuring and maintaining a normalized stasis of both our bodily and environmental metrics. The advent of the home thermometer initially sent a ripple of dissent through the medical community as it was perceived as a threat to a physician's expertise. This was soon averted when the collection of temperature as well as symptom data became delegated as part patient labor, while the interpretation of this data was reserved exclusively for the medical professional - thus maintaining the established hierarchy (Day). Harnessing patient labor through the use of these medical tools could be seen as a sort of passive clinical gaze, but it quickly became clear that controlling patient compliance with prescription drugs required a more involved approach. "Before this time, beyond being a carrier of pathology, the patient's subjectivity is all but irrelevant to the clinical gaze (Race 2010 p.75)."

Scopic: Cell Lines and Scientific Imagery

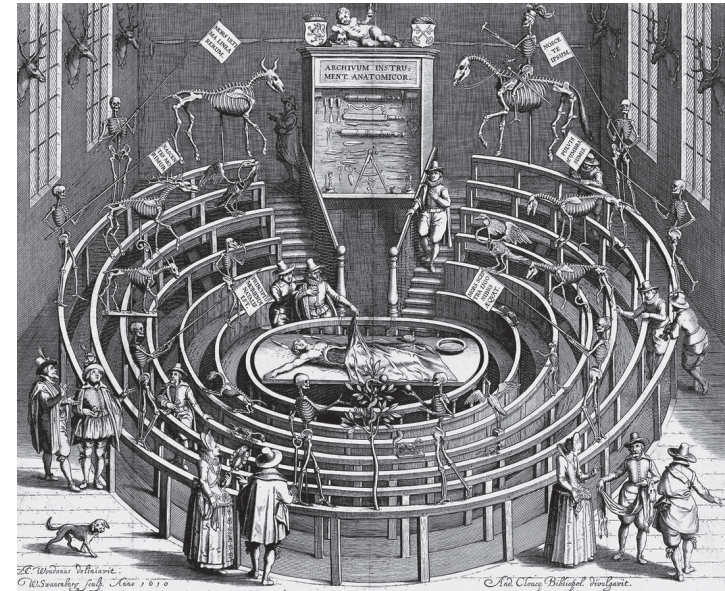
- >from the domestic household
 - > into the bathroom
 - > into the medicine cabinet
 - > into the pill
 - > into the body
 - > into the blood
 - > into the molecular

At this point we take a bit of a speculative leap of faith from the realm of the built environment and into a realm no less physical, but infinitely less tangible. From the outside space to the inside space.

Since the advent of the microscope and the study of molecular biology, there has been a literal scopic examination of the human body and how it functions - descending to the most indiscernible levels. “It is now at the molecular level that human life is understood, at the molecular level that its processes can be anatomized, and at the molecular level that life can now be engineered. At this level it seems, there is nothing mystical or incomprehensible about our vitality — anything and everything appears, in principle, to be intelligible. (Rose 2009).” It is important to note that one facet of this scopic obsession is the ultimate separation of the body from ownership of the person. An example of this is the case of *Moore v. Regents of the University of California*. “In 1976, John Moore was treated for hairy cell leukemia by physician David Golde, a cancer researcher at the UCLA Medical Center. Moore’s cancer cells were later developed into a cell line that was commercialized by Golde and UCLA. The California Supreme Court ruled that a patient’s discarded blood and tissue samples are not his/her personal property and that individuals do not have rights to a share in the profits earned from commercial products or research derived from their cells (Blakeslee 1990).” This case demonstrates the societal understanding that once a part of our body is removed from the whole it becomes the property of another party. “By reason of its commitment to fragmentation, there is literally no conception of the person as a whole underlying these particular technological practices (Rabinow 1996 p 149-50).” Waldby and Mitchell argue that this separation of body from self does not so much “violate the religious idea of the body as a sacred vessel” as it defies the modern, liberal notion of individual bodily ownership.

Although the case of the “Mo” Cell Line poses difficult questions related to the ethics of ownership and at what point our own bodily material ceases to be our individual property, the immortalized cells were invaluable to the research and development of helpful pharmaceuticals.

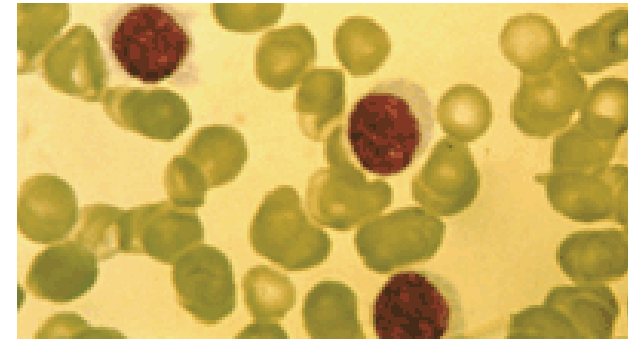
Another facet of this scopic study of the body within the field of pharmaceutical R&D is the capture and creation of molecular images. Latour states that the nature of scientific imagery is that it is essentially all created from a direct reference to a previous image, acting as a sort of transformed reflection, resulting in “long cascades of successive traces (347).” Then, like an extremely tightly packed accordion, the “gap” or difference between one image and its reference is opened to reveal a multitude of transformations. “Only once the mimetic and scopic obsession for an image as a copy has been put aside will it be possible to study scientific imagery (Latour, 2014 p. 249).” I believe that in this, Latour is calling for a less literal approach to the creation (or in my case conceptual translation) of scientific image as a form of further understanding how molecular space looks and behaves.



Willem Swanenburgh, Anatomical Theatre of Leiden University, engraving, early 17th century.



The first-prize design in Popular Science's 1941 medicine cabinet contest. The improvements submitted by readers—drug lockboxes, him-and-her drawers, inner and outer mirrors—give some idea of the complex private-public boundaries that governed the use of medicine cabinets (Day 2016).



Hairy cell leukemia. Dr. Golde patented a cell line established from Mr. Moore's discarded spleen tissue. (Photo: U.S. National Cancer Institute)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 4,438,032
 DATED : March 20, 1984
 INVENTOR(S) : David W. Golde et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the title page of the patent add as a second paragraph to the ABSTRACT:

--The Mo line has been deposited at the A.T.C.C. on June 3, 1981, with the Accession No. CRL 8066.--

Signed and Sealed this

Nineteenth Day of March 1985

[SEAL]

Attest:

DONALD J. QUIGG

Attesting Officer

Acting Commissioner of Patents and Trademarks

Patent acquired by Dr. David W. Golde for the ownership and use of cell lines obtained from patient John Moore. Qnan, D. W. (1984). Patent No. 4,438,032. California Berkeley Calif.

Aperture 3

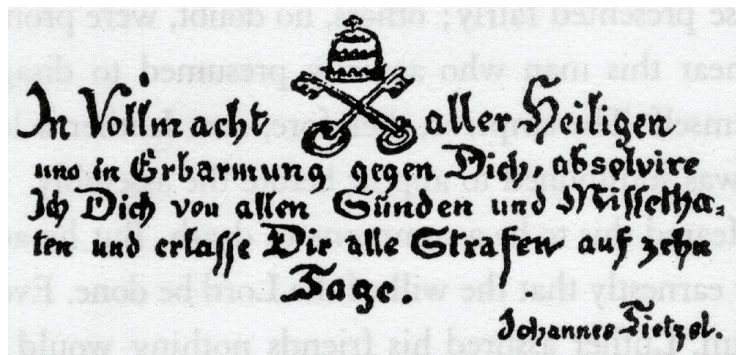
The Prescription: Regulation and Recommendation

"It's easier to satisfy a patient with drugs than with words" (Melville 1982).

The specific power held by the medical prescription today was not installed overnight, but instead is the result of a "piecemeal set of independent initiatives that coalesced around particular problems, and contributed to a situation in which everyday life came to be governed through society" (Rose). The rapid industrialization of the 19th century allowed for many new products including food and illicit medicines to be marketed without quality control or regulation, and the use of drugs was predominantly a personal choice and rarely depended upon the advice of a physician (Race). The negative effects of both these products and practices were deemed "social problems", and eventually gave birth to a new authority created from the collaboration of liberal government and "expertise" (Race). Today, in the United States, this body is known as the FDA (Food and Drug Administration). First, state-granted licensing afforded exclusive distribution rights to certain doctors and pharmacies that were deemed to be qualified, and also granted occupational and socio-economic security in a time of volatile change (Rose). Second, the practice of standardized labeling of medicines provided another ripple effect of control. Initially, legislators required proper labels so consumers could be better informed about a product's constitution, but as compounds and ingredients grew more complex, the U.S. Food Drug and Cosmetic Act (1938) stated that some drugs could only be prescribed by licensed doctors. Within this law, it stated "...that prescription drugs were to be labelled in such medical terms as are not likely to be understood by the ordinary individual" (Temin). Those labeled with "Caution: To be used only by or on the prescription of a physician..." were exempt from the demands of this Act. These distinctions were determined solely by the drug companies, with little or no regard for the risks involved in their use (Temin). Not only did this drastically change the way drugs were sold, it also created a separation of knowledge. Consumers were intentionally denied "intelligible label information", effectively controlling the flow of both drugs and information through the node of the doctor's office. Eventually, with the genesis of new and powerful drugs, the doctor's office (and later WebMD) and the prescription became the "commanding arbiter of social norms around health" (Race). One of the main elements that gives the prescription its power is the physician himself/herself. Michael Blains describes a doctor to be "the most

potent drug" (1988), and the Rx is his/her metonymic representation (van der Geest p.158, 1996). First and foremost, prescribing is a social act. It is a tool to relieve the mutual anxieties of both doctor and patient. Even if doing nothing would be preferable on "biomedical grounds", it could be considered unsatisfactory or unacceptable by the patient (Pellegrino 155). I cannot deny that when I visit a doctor's office with a specific complaint, I expect to walk away with a specific solution in the form of a slip of paper, or an email sent to a pharmacy. Pellegrino (155) called this the doctor's "benediction". It could even be seen as similar to the Medieval Roman Catholic practice of issuing Indulgences, which were documents purchased from the clergy that ensured redemption of sins and access to Heaven after death (aka - salvation with a price tag). This act of receiving a prescription not only grants legitimacy to my concerns, it is also the preverbal "golden ticket" to the secret back room of the pharmacy. In some cases, you could say that the Rx is the first incarnation of the medicine, and its concreteness could itself be enough to heal a condition. To quote the 19th century English novelist, Samuel Butler, "I read once of a man who was cured of a dangerous illness by eating his doctor's prescription." There is also a comparable therapy in Islamic medicine, where the patient is given the sacred words of the Koran to drink after the ink has been dissolved in water (El-Tom AO, 1985). These behaviors prove that a Rx has strong psychological effects. It is not only a means of reassurance, it demonstrates power, supports a bio-economy, and has symbolic importance (van der Geest p.158, 1996).

Today, household medicines can be easily purchased over-the-counter at local grocery stores and pharmacies. Those procured through the receipt of a doctor's prescription cultivate a special relationship with the user since they have been branded with the stamp of potent efficacy. That said, no matter how a drug was obtained, it could be argued that almost every medication is a form of self-medication (van der Geest). Today, pharmaceutical drugs and various other remedies are carefully chosen with the intent of "assembling a particular life-style" and "seek to maximize that quality of life". This results in the contemporary practice of the consuming self (Rose). In this case the household medicine cabinet becomes the self-curated pharmacy, and as New York Times writer Akiko Busch suggests, "an anthology of our vulnerabilities". It is where the prescription gains domestic legitimacy and becomes enshrined as a relic in the form of a packaged pharmaceutical.



A copy of the Roman Catholic Indulgence notes sold by Friar Johann Tetzel during the Late 15th Century, that granted the absolution of sin for a price.

PRESCRIPTION.

R.....Superscription.
 (Basis).....Pot. Acet. ℥v.....
 (Adjuvant) ..Tinct. Digitalis ℥j.....
 (Corrective)..Syr. Aurantii ℥j.....
 (Vehicle)....Dec. Scopar. ad ℥vij .. } Inscription.
 Misce, fiat mist.....Subscription.
 Cpt. Cochl. mag. ii. 4ta. q.q. hora ex
 paul. aquæ.....Signature.

WITHOUT ABBREVIATIONS OR CONTRACTIONS.

Recipe.

Potassii Acetatis drachmas quinque.
 Tincturæ Digitalis drachmam unam.
 Syrupi Aurantii unciam unam.
 Decoctum Scoparii ad uncias octo.
 Misce, fiat mistura.
 Capiat cochlearia duo magna quartâ quâque horâ
 ex paululo aquæ.

ENGLISH TRANSLATION.

Take thou (the dispenser).
 Five drachms of acetate of potassium.
 One drachm of the tincture of digitalis.
 One ounce of syrup of orange-peel.
 Decoction of broom up to eight ounces.
 Mix, let a mixture be made.
 Let him (the patient) take two large spoonfuls at
 each fourth hour, out of (in) a little water.

An example of an early medical prescription, published 1907 in Chambers's Twentieth Century Dictionary of the English Language, W & R Chambers Ltd