

# On Readymades by/of Marcel Duchamp

It is with great interest that I have been reading Rhonda Shearer's investigative work on Duchamp's readymades. Her analysis seems thorough and her approach scientific. But the "revelation" that some of the readymades may not have actually been ready-made, that is, ordinary commercial objects simply selected by the artist, does not seem like such a revelation to me. My background is not in science, rather I am a working artist who has always found Duchamp's work to be full of humor, conceptual and visual (retinal – I know, I'm sorry Marcel) interest, and intellectual depth. Finding Duchamp's work to resonate sympathetically within me, and with a small amount of biographical knowledge (I'm getting my chronology from Tomkins biography, with the grain of salt one must take with everything concerning Duchamp), I feel like I might offer some productive speculations on process that might shed some light for the more scientifically-minded in tout-fait's audience.

Duchamp never showed much desire to repeat himself. After *Nude* he painted no more cubist paintings, after the large glass he made no more mechanosexual delays. He had ideas, executed some of them to his satisfaction, and moved on. When, later in life, he did not have ideas (or so he claimed) he spent his time at chess and breathing. If he clarified his thoughts on the idea Readymade around 1915, it stands to reason (mine at least) that he would execute his idea reasonably quickly and then move on. 1915 was the year of *In Advance of the Broken Arm*. Even before this was the bottle rack, which he never even signed and was not in his possession in New York. (As far as the "forgery" of the shovel goes, with its square handle, which Shearer uses to call it into doubt, I cannot say much – we are in a black swan predicament as far as proving anything goes.) But between these two early readymades (ignoring the

earlier *Stoppages* and the bicycle wheel, which are commonly called readymades but clearly different in conception), and others we have heard of (*Pulled at Four Pins*) and can speculate he may have played with, Duchamp may have executed the "pure" (unmodified commercial object) readymade to his satisfaction. After all, once you have the idea, what's interesting about repeating the simple (boring) act of buying an object and signing it? He had made a readymade (in the bottle rack) perhaps even before the idea was entirely clear to him. Why do any more? Even giving a snow shovel a humorous/poetical title shows a conceptual evolution beyond the simple core concept.

It seems to me that he moved on immediately to the more interesting (to the tinkerer's mind, and Duchamp was certainly a tinkerer) project of modified readymades, such as *With Hidden Noise* of the following year. *With Hidden Noise* included the readymade aspect (buying or finding the components), assemblage, collaboration (he had Walter Arensberg put the mystery noisemaker inside), interactivity (you have to shake the thing to understand the title). Given that he had moved within months from the shovel (fall or winter 1915) to *Noise* (easter 1916), does it not make sense that by 1917-18 he had moved on to other ideas, which may or may not have included forgery, confusing modifications, and obfuscation of the idea that was initially (in the bottle rack) so simple and straightforward? The essential confusion, I think, is that Duchamp and, taking his lead, all his critics, lumped a bunch of disparate but related concepts under the umbrella term "readymade," (compare the early readymades to 1921's *Why Not Sneeze Rose Selavy*) and while the shared classification did not bother Duchamp himself, it seems to put the taxonomists among us all in a tizzy.

As far as modification of the hatrack, bicycle wheel, trebuchet, etc. goes, all I can say is if they sat in my studio for years I'd have trouble refraining from playing with them. Duchamp had no qualms about modifying objects or

documentation of objects, nor about commissioning others to physically create works for him, nor about giving misleading or false information in interviews, etc. If it gives you joy to sleuth out his “secrets,” good on you. The layers of confusion are one of the gifts he gave us.

Sincerely,

Evan Bender

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## Response to “Femalic Molds”

Chers Messieurs:

I wish to express my astonishment at reading the article you posted: “Femalic Molds” by Jean Clair (translation by Taylor M. Stapleton). Originally published in 2000, which translation you published in 2003.

Of course, I am aware of the interest in the fourth dimension of the Modernists, particularly with reference to Salvador Dali’s *Christus Hypercubus*, etc. and I have studied Duchamp’s *Green Box* since 1977.

I certainly recognize the influence of ideas on the fourth dimension in Cubism and of the cinema on *Nude Descending a Staircase*, but I had no idea of Duchamp’s ideas regarding the male and female figure and the fourth dimension.

I find, therefore, that I have created more of an homage to Duchamp than I had originally intended in my work, “Botty Shelly” (1999-2005). Here you see appropriated art and found mathematics. In 1999, when I conceived of this work, I consciously placed it as though it was the *Female Fig Leaf* set atop Botticelli’s seashell. However, the Etruscan Venus is, itself a form of the Klein

bottle. This aspect became increasingly important to me. I remembered a story I read in *National Lampoon* (of all places) in 1978 which described an IUD (Intra-Uterine Device) of the form of a Klein bottle.

It functioned by sending the male emission through the fourth dimension. I came to realize, therefore, that “Botty Shelly” was really the uterine opening – Annie Sprinkle’s “Public Cervix” – rendered as a vessel of metaphysical transformation.

Incidentally, please see at:

<http://www.cs.unca.edu/~dickson/Klein/Klein.html>; my models of the Moebius band and Klein bottle, which I believe really shows how the latter is derived from the former. Now, to show how the Steiner Roman surface, and thus the Etruscan Venus are really forms of the Klein bottle – not obvious and quite another

matter for future visualization. And, also, accidental homage to Duchamp in my other work:

<http://emsh.calarts.edu/~mathart/Zoetropes.html>

<http://emsh.calarts.edu/~mathart/Zoetropel.html>

[http://emsh.calarts.edu/~mathart/portfolio/images/ZoeDisembl2\\_512.jpg](http://emsh.calarts.edu/~mathart/portfolio/images/ZoeDisembl2_512.jpg)

Note the inverted bicycle wheel in the construction, which is not apparent in the finished three-dimensional Zoetrope.

[Natural Mathematical language directly converted to a four-dimensional object in physical space-time.]

Respectfully,

Stewart Dickson

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**BELLE da COSTA GREENE A  
Biographical Sketch of a  
Friend & Acquaintance of  
Aleister Crowley**

Response to Bonnie Jean Garner, Duchamp Bottles Belle Greene: Just Desserts For His Canning  
Editor's Note: we found the letter below on the Internet, and asked its author, Steve Jackson, to allow its publication.

Letter on Crowley and Greene, written from Steve Jackson, to Jerry and Marlene

Dear Jerry and Marlene,

My compliments on your excellent web site. I'm researching Crowley's activities in America from 1914 to 1919, and think that I may be able to add a few names and some additional information for your list of *Friends and Acquaintances*.

click to enlarge



Figure 1

Among the numerous women mentioned by Crowley in his *Magical Record of the Beast*, May 31, 1920ev, is the name Belle Green. This is almost certainly Belle da Costa Greene (Fig. 1), J.P. Morgan's librarian. Bonnie Jean Garner describes her thus: "Belle Greene became J.P. Morgan's librarian in 1905, and following his death she became the director of his library, working there for a total of forty-three years. Empowered by J.P. Morgan, and then by his son Jack, Greene spent millions of dollars buying and selling rare manuscripts, books and art. She travelled frequently and lavishly to Europe, staying at the best hotels – Claridge's in London and the Ritz in Paris. It was even said that "on trips abroad, made on Morgan's behalf, she would take along her thoroughbred horse, which she rode in Hyde Park." Belle Greene was described as beautiful, sensual, smart and outspoken. One author writes that "she daringly posed nude for drawings and enjoyed a Bohemian freedom." Never married, she favored affairs with rich or influential men, with a focus on art scholars. Another scholar states, "her role at the Morgan Library placed her at the center of the art trade and her friendship was coveted by every dealer." For many years, Belle Greene wielded an astounding amount of power in the art world and moved comfortably in elite social circles... Belle Greene was a black woman who denied her color to pass herself as white. Evidence indicates that whispers and rumors about her passing circulated around her throughout her life. People like Isabella Gardner, society patron of the arts with close ties to Harvard and a peer of Morgan's, wrote that Belle Greene was a "half-breed" in a private letter (1909) to Bernard Berenson and his wife, Mary, saying, "But first you must both swear secrecy. If not, please do not read anymore of this."... In order to pass, Greene and her mother decided to change their name. (Actually, you could say that they altered their label.) They added "da Costa," claiming to be part-Portuguese to account for their dusky appearance, a common strategy used for passing. True to the rumors, not only were they black passing for white, but Belle Greene's father was the distinguished lawyer and public figure, Richard Theodore Greener, the first black undergraduate to receive a degree from Harvard."

The Morgan Library is located at 29 East 36th Street in New York, just two blocks from Crowley's residence during most of 1915. Belle Greene (and J.P. Morgan, for that matter) were familiar with lawyer and art patron John Quinn, who had befriended Crowley when Crowley arrived in America, and supported him financially by purchasing copies of Crowley's books. As Garner shows, Quinn was able to find some sort of employment for the French futurist Marcel Duchamps, when Duchamps arrived in New York in 1915, by using his influence with Greene, who was acting as paymaster for Morgan. This arrangement with Duchamp did not last long, and seems to have inspired one of Duchamps "readymades", as Garner demonstrates in her essay, "Duchamps Bottles Belle Greene: Just Desserts For His Canning".

If I am correct, Quinn did a similar favor for Crowley. Both Quinn and J.P. Morgan were pro-British regarding the war. If Crowley had been sent "on a mission" by some branch of British Intelligence, it is not unlikely that he would receive a warm welcome, and some form of financial backing, as he infiltrated the German propaganda machine in America, passing himself off as a traitor to England.

Crowley himself said about this trip, "I had intended, when I left England, to conclude my special business in New York within a fortnight, to make a little splash in any case, and to get home in a month on the outside." In spy jargon, assassination is sometimes referred to as "wet work".

That's all for now. Got more if you want it. I'd be very interested in hearing any comments you may have.

Thanks, and good health.

Steve

<http://www.redflame93.com/Greene2.html>

**Afterword from Steve Jackson  
following our request for publishing his letter**

I have been researching the subject of Aleister Crowley's activities in America during the years of the "Great War" for some time, and had already suspected that he had received sponsorship and/or employment with J.P. Morgan. And, learning that Duchamp was in New York at the same time, I wondered if the two might have met, since they both were friendly with John Quinn. Bonnie Jean Garner's revelations about the relationship between Duchamp and Belle Greene seem to parallel Crowley's experience, though Crowley seems to have lasted somewhat longer on the Morgan payroll.

Crowley was in America acting as an agent of the British Government, as was John Quinn. J.P. Morgan was the chief financial agent for the British Government in the US, and was likely sponsoring Crowley's Intelligence work. Since Crowley was attempting to infiltrate the Irish revolutionary movement in America, and succeeded in infiltrating the pro-German "Propaganda Cabinet" of George Sylvester Viereck, it was important for Crowley to keep his distance from Morgan. At least publicly. Perhaps the J.P. Morgan Library was being used to quietly channel funds to Crowley.

To speculate further, it is at least possible that Morgan had his own private Intelligence Department, dedicated to helping the Allied cause. Other contemporary plutocrats, such as the rubber baron Thomas Fortune Ryan and arms magnate Sir Basil Zaharoff, employed spies like Claude Dansey and Sidney Riley. With the responsibility of providing the British (and French) with the sinews of war, Morgan could scarcely do less. And who better to run such a private Intelligence Department than the formidable Belle Greene?

And so I wonder about Duchamp's employment with the Morgan Library. Is it possible that he, like Crowley, was on some secret mission in America? I realize that Duchamp may seem like the most unlikely of spies, but successful agents are usually unlikely suspects.

Once more, my compliments on your fine publication, and to Bonnie Jean Garner for her brilliant detective work.



## Marcel Duchamp and Branding

When we are talking about products/services, one cool leap is to examine the production of Marcel Duchamp. I'm going to focus in four milestones of his artistic legacy to examine his works and ideas in the context of branding.

1.- The Nude: This piece represented his contribution to an innovative art stream, futurism. It's an example of vanguardism, something that stands on the frontline of innovation. He wanted to express an IDEA. The Movement itself becomes the point, instead of painting a 'thing.' Duchamp used futurism to help him jump from retinal art to an idea-based art.

2.- The readymades: With these works Duchamp showed his boredom of vanguard"isms". The many "isms" of the beginning of the XXth Century quickly went from revolutionary to standard. They lost their attracting power and art pieces became pure retina satisfaction objects. Duchamp claims here for the author's signature. If art = a thing, then anything can be art. Logically, resulting from this is that the author's signature/Brand is what makes the art. Moreover, the author's signature does not have to be included in the production: you can subcontract all the productive process. However, if you sign it, your Brand's expression remains. Following Raymond Roussel's ideas, he also thought of a Painting Machine to do the painting act and reserved himself to sign the work or make little changes (draw moustaches to the Monalisa) in his "branding" process.

3.- The Bride is an Idea beyond it's objectual reality. You can find different dimensions when trying to understand The Bride. The physical/mechanical: The object itself = The thing. (It's a glass with different non figurative drawings.) It symbolizes a bride stripped bare by her bachelors, even... He says the title is essential part of the piece. He goes beyond the thing, into the Idea that includes a story and the



assembly.

A. The Story as it's told in his Green and White Boxes tells one of the most incredible stories I have ever read. The Bride is moved by a physical strength called "Love gas"... Duchamp creates the first virtual reality in art history. Tom, here, at the Cafe, likes saying a web place is pure design. I like saying it's pure dream, fantasy. You can concoct a world that just exists on the web and enrich your brand. Duchamp recognized he was telling a marvellous story and that his art went beyond the color tubes, and had more to do with poetry.

B. The Assembly parts are from the same elements of the Bride but stress one point. "The watcher makes up the art work". In the Bride Duchamp gave the clues to transfer the story onto Glass. In the assembly it's the watcher's eye who creates art, tells the story. She/He is part of the story, star of the drama. Duchamp's "branding" is an advertising's first principle—"Make your customers heroes of your story."

Regards,

Felix Gerenabarrena  
InnovationFuze

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**Reply to Kline's response to  
"Straight Forks and Pneumatic  
Tires:                   Historicizing**

# Duchamp's *Bicycle Wheel* of (1913)"

"The factor in the comfort of the fork, its springiness or compliance, the degree to which it will bend in response to a bump in the road, is the horizontal displacement of the fork tips from the straight line passing through the head tube. A curved fork and a straight fork with the same position of fork tips will have about the same compliance."

I don't think it's that simple, and particularly not with a fork made of taper-gauge tubing (such as Reynolds -wall thickness kept constant by making it thinner at the lower end before the tubing is rolled do make the blades taper). As Dick miller surmises, the curved part of the fork, which nearly reaches the horizontal, will give it somewhat more compliance than one which achieves the same trail with straight blades. Even a fork with straight blades will have a horizontal component of flex, because the head tube is at an angle and the blades are angled slightly more. But with a curved fork, there is more of a vertical component to the flexing -and it is the vertical displacement, not the horizontal displacement, which cushions against bumps in the road.

But in any case, the compliance of the fork is still much less than that of the pneumatic tire.

"By 'straight', I think John means in line with the head tube."

Yes, that was the case with the early safety bicycles shown in Sharp's book, to which I gave page references.

"There are road forks which have straight blades which are angled forward so that they have trail."

True, and they would have even more trail if they were not angled forward.

John S. Allen

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## **Response to “Straight Forks and Pneumatic Tires: Historicizing Duchamp’s *Bicycle Wheel* of (1913)”**

“Straight forks were used on highwheelers as well as boneshakers. A curved fork does somewhat smooth the ride, because it is springier than a straight fork – however, its effect in smoothing the ride is much less than the effect of the pneumatic tires or the highwheeler’s large front wheel.

The factor in the comfort of the fork, its springiness or compliance, the degree to which it will bend in response to a bump in the road, is the horizontal displacement of the fork tips from the straight line passing through the head tube. A curved fork and a straight fork with the same position of fork tips will have about the same compliance. By “straight”, I think John means in line with the head tube. There are road forks which have straight blades which are angled forward so that they have

trail.

DouglasKline

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## Postcard and Duchamp

### I.

[click to enlarge](#)



Figure 1  
Front view of  
Duchamp's postcard  
to Katherine Dreier, 1933

There is a Tout-Fait article, dated May 2000 by Hans de Wolf. He thinks Duchamp appears in a postcard sent from Duchamp to Katherine Dreier (Fig. 1). There are 2 men behind the Duchamp figure that look an awful lot like Man Ray and Andre Breton. At least in my opinion. Could this be possible?

### II.

I was deeply saddened by the news of Prof. Goulds death. I

consider him one of my favorite authors. I didn't always completely understand him, but I always enjoyed his sense of humor and his constant quest to understand the universe.

I was pleasantly surprised to see that he and Dr. Shearer have been analyzing my favorite artist, Marcel Duchamp. His "Readymades" finally made sense. I had previously thought of these items as his most boring work, but now they are my favorite.

Incidentally, Austrian violinist Fritz Kriesler deceived his fans by performing "Recently Found" compositions of famous 17th and 18th century composers, which he had in fact wrote himself, but in their style. He admitted his deception and probably did it out of a sense of modesty, rather than trying to change the ideas of what is and is not music.

c'est la vie,  
Keith Sacra

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## **Minerva, Arachne and Marcel**

Historians of art like to believe that they can solve the riddles of interpretation posed by masterpieces of old painting. Firm in the conviction that a great painting is endowed by its creator with a unique, unambiguous message, we struggle to recover that meaning through the use of textual and visual evidence. And, up to a point, the historical method can recover the forgotten aspects of works of art created centuries ago.

*Las Hilanderas* is proof of this assertion; for over two centuries, the subject was mistakenly identified as a view of women at work in a tapestry factory. Velazquez had painted the

picture around 1658, for a friend named Pedro de Arce, a *funcionario* in the royal palace. By the early eighteenth century, the picture was believed to represent a scene from everyday life, "mugeres que trabajan en tapizeria." With this description it is listed in the inventory of Luis de la Cerda, IX Duke of Medinaceli, who in 1711 surrendered it to the royal collection. By the end of the century, this interpretation of the subject had metamorphosed into an incontrovertible fact, as demonstrated by entries in the royal inventories, where it is called by the enduringly popular title, "*Las Hilanderas*".

It was only in the twentieth century that the original and accurate identification of the subject began to be recovered, a process that required forty-five years to unfold. In 1903, the English critic C.R. Ricketts observed that the composition depicted on the tapestry hung on the rear wall was a partial copy of Titian's *Rape of Europa*, now in the Isabella Stewart Gardner Museum, Boston, but formerly owned by Velazquez' patron, Philip IV. (It had been acquired for the Spanish royal collection by Philip II.) Some years later, in 1940, Enriqueta Harris, the great English velazquista, identified the helmeted figure in the background as Minerva, who was gesturing toward Arachne. However, Harris believed that these two mythological figures were woven into the tapestry, a misapprehension corrected in 1948 by the American scholar Elizabeth DuGue Trapier, who pointed out that all the figures in the small background space were standing in front of the wall hanging. As it happened, 1948 was the culminating year in the recovery of the original subject. Maria Luisa Caturla, the renowned archival researcher, published an inventory of the original owner, Pedro de Arce, which was dated 1664. In this inventory, the title of the painting is listed as the "fabula de aragne." Articles by Diego Angulo Iniguez (1948) and Charles de Tolnay (1949) definitively confirmed the identification of the subject as an illustration (a highly-original illustration) of a passage from Book VI of Ovid's *Metamorphoses*. According to this venerable literary source, Arachne was a Lydian weaver

who claimed that her skill exceeded that of Minerva. She was punished for her pride by being converted by Minerva into a spider, the scene that is about to occur in the background of Velazquez' painting.

Far from ending discussion of the painting, the retrieval of the subject opened a new chapter in the historiography of *Las Hilanderas*. Velazquez' composition is highly allusive and ambiguous. By virtue of his original conception of the antique text, the artist raises questions which both demand and frustrate attempts to answer them. Who are the women in the foreground? Who are the elegantly-dressed females who accompany Minerva and Arachne? Why did Velazquez reverse the logic of the composition, placing the climactic moment of the story in the distance instead of in the foreground? And what is the purpose of the quotation from Titian's *Rape of Europa*? By a cruel paradox, the correct identification of the subject only obfuscated the significance of this masterpiece.

It would be tedious to review and analyze in detail the myriad of interpretations that have been inflicted on *Las Hilanderas* over the last six decades. One proposes that the painting is a political allegory, another that it symbolizes the virtue of prudence, another that it is Velazquez' claim that painting is a liberal art not a manual craft and that he, therefore, is entitled to noble status. Although they differ one from another, these interpretations do share a common trait. Their authors assert with the absolute conviction, on the basis of the assembled evidence, that they have unlocked the "secret" of this masterpiece. Unconsciously, however, they make the opposite point—that no single interpretation can possibly be sufficient. Although ambiguity is the sworn enemy of the historical sciences, it is a precious resource of artistic creation. *Las Hilanderas* is the validation of reception theory, which holds that the meaning of art works is altered as the expectations and presuppositions of viewers change over time and through circumstance. It also proves that multiple

meanings need not be self-contradictory. Indeed, I would argue that a great work of art demands a multiplicity of responses if it is not to become mere illustration.

Elena del Rivero clearly has arrived at the same conclusion. Her appropriation of *Las Hilanderas* is incredibly witty and perverse. Interpretations of her deconstruction of the painting could go in many directions, for it is a richly evocative work. Allow me to speak of Elena's work in purely personal terms. I confess that when I first saw it, I nearly fell off my chair. My intense reaction exemplifies how meaning escapes the control of the artist, at least when the artist has not attempted to reduce significance to boring certainty. As my eyes scanned the image, I saw that Elena had invited an improbable intruder into the magical world of *Las Hilanderas*, none other than the most enigmatic, elusive artist of the twentieth century, Marcel Duchamp. Velazquez and Duchamp in the same imaginary space! They had, in fact, inhabited the space between my ears for decades.

I encountered Velazquez and Duchamp at approximately the same time, in the late 1950s, a formative moment in my life. I had the good fortune of belonging to a family in which art was an obsession. My parents, Jean and Leonard Brown, were pioneering collectors of Dada and Surrealism, and Marcel Duchamp was a household god. My parents talked about him incessantly and in reverential tones. They regarded Duchamp as the most original artist of the twentieth century, and this at a time before his all-pervasive influence had become an acknowledged fact. My mother baptized him as "Leonardo Duchamp," which was her way of expressing the belief that Duchamp and Leonardo da Vinci were extraordinary polymaths endowed with an ability to look into the future. Furthermore, each had essentially abandoned the practice of painting to pursue interests which can only be called extra-artistic. My mother also discovered a parallel between Duchamp's *Green Box*, a strange assortment of sketches and writings related to his greatest work, the *Bride Stripped*



*Bare by Her Bachelors, Even*, and the notebooks of Leonardo da Vinci. In both cases, the workings of the artist's mind were presented as pieces of something larger that was never fully revealed. Duchamp was very pleased with the compliment and signed his print, the *Chessplayers*, with a dedication to my father: "From Leonardo Duchamp to Leonardo Brown." Chess was the obsession of Duchamp's later life, and he appears in Elena's version of *Las Hilanderas* in the midst of his most notorious game of chess, the one that took place in Pasadena on 18 October 1963, against his naked opponent, Eva Babitz. Marcel enters the world of Minerva and Arachne as a destabilizing presence. It is a move that Velazquez, the master of ambiguity, would have certainly approved.

Duchamp, of course, was still alive when his spirit possessed our household and my parents eventually came to know him in person. They would travel to New York from our home in the provincial city of Springfield, Massachusetts, and meet Duchamp at his gallery or in a restaurant. On one occasion sometime in the late fifties, I accompanied them and had the opportunity to shake his hand. I hardly knew what to say and therefore said nothing. This was a very impoverished response from someone who aspired to be a historian of art, and I have tried to do better in my innumerable encounters with Velazquez. The first of these occurred in 1958, when, as a young student in Madrid, that I started my regular visits to the Museo del Prado, that shrine to the art of Velazquez, which would soon lead me to a career as a student of the master and of the Spanish Golden Age.

As I have mentioned, Duchamp and Velazquez are a most unlikely couple but they have been beloved inhabitants of my mental world. I see them as reticent artists, as brilliant critics of accepted modes of art-making, as cryptic analysts of accepted systems of beliefs and as masters of ambiguity, too respectful of art to bind it with the shackles of certainty. With brilliant insight, Elena del Rivero has brought them together

in a way that seems completely natural, although it is obviously highly artificial. By collapsing the twentieth century into the seventeenth or, if you like, propelling the seventeenth into the twentieth, Elena's interpretation of *Las Hilanderas* invites us to ruminate on the art of two of the most subversive masters in the history of western art. As such, it claims a place of honor in the historiography of this masterpiece and the never-ending history of its reception.

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## **Desnuda-vestido, vestida-desnudo: Les amoureuses (Elena & Rrose), con Duchamp al fondo**

Marcel Duchamp está frente al tablero de ajedrez, muy concentrado en una partida contra (o con) una joven completamente desvestida, sentada en el lado opuesto. La escena captada en esta fotografía se desarrolla en una sala del Pasadena Art Museum (California) el 18 octubre de 1963, con ocasión de la primera exposición retrospectiva que se le dedicó al artista, apenas cinco años antes de su muerte. Todos los testimonios de la época coinciden al describir a aquel Duchamp como un hombre saludable y jovial, aunque su edad, 76 años, no pareciera ya la más adecuada para jugar con chicas desnudas. La foto, en efecto, tiene obvias implicaciones eróticas, situados como están los jugadores delante de una réplica de *La mariée mise à nu par ses célibataires, même*, que había elaborado Ulf Linde ante la imposibilidad de que el

vidrio original pudiera trasladarse desde el Museo de Filadelfia hasta Pasadena.

Sabemos en realidad que la foto forma parte de una inocente performance preparada por el fotógrafo Julian Wasser con la complicidad de Walter Hopps, comisario de la exposición de Pasadena, y de una amiga de éste, Eve Babitz, que accedió a posar para ésa y para algunas otras tomas (como la que muestra a Duchamp fumando un puro junto a su *Fuente* con la muchacha al fondo). No consta quién ganó aquella partida o si llegó a terminarse siquiera, pero sí nos han contado que casi todos parecían estar algo nerviosos. Eve se mostró aliviada cuando supo que en la fotografía seleccionada por Wasser para la publicación, el pelo caía sobre el lado derecho de su rostro, tapándolo por completo<sup>(1)</sup>. Las contraposiciones de la obra eran, así, completas: un hombre mayor, vestido de negro, con la cara descubierta, juega al ajedrez con una mujer joven y desnuda, de piel muy blanca, y en cuya cabeza sólo se percibe una lisa melena negra. Distanciamiento y “belleza de indiferencia”, por utilizar la propia formulación duchampiana. El artista mira las piezas del ajedrez cuyos ecos formales evidentes se hallan en los moldes mágicos y en el molino de chocolate de la maquinaria soltera, muy visibles al fondo; el cuerpo de Eve Babitz, por su parte, remite a la “vía láctea carne”, colgada en la parte más elevada del *Gran vidrio*, en el vértice superior de un triángulo perfecto cuyas esquinas inferiores están constituidas por los asientos de ambos jugadores. El azaroso mecanismo amoroso de la creación duchampiana se proyectaba así sobre la vida real, testimoniada por el documento fotográfico. En ese primer plano, con la esqueletizada y metafísica obra de arte al fondo, la novia ha sido desnudada ya por su(s) soltero(s), y bien podría adivinarse que el juego va muy adelantado. No está lejos el final feliz.

Pero Elena del Rivero se ha apropiado de esta fotografía y la ha digitalizado, para imprimirla en múltiples fragmentos

rectangulares que ha dispuesto luego como un mural en cinco hileras horizontales. Hay unos pequeños marcos blancos de separación entre los cuadraditos, como si éstos fueran las viñetas de una gran fotonovela. Y es esta sutil contaminación de un género narrativo lo que convierte al documento de Pasadena en una historia: cada fragmento del espacio se transmuta en una unidad de tiempo, como si la nueva lectura secuencializada de la imagen obedeciera a cada uno de los movimientos sucesivos de las piezas en el juego del ajedrez. Ahora bien: delante de Eve Babitz, tapándola por completo, hay otra mujer, sentada en la misma posición, y con el rostro oculto, igualmente, por una melena negra. No es la *Eva* (del) original, ofrecida desnuda al juego más o menos interminable, sino una mujer mundana, notoriamente vestida, entregada a la contemplación ensimismada de unos collares de perlas, símbolos tradicionales de la vanidad. Se diría que el relato continúa así fuera, en el ámbito donde se ha situado ahora la fotógrafa. Esa modelo (la propia artista, al parecer), con camisa de malla negra y amplia falda dorada, sería una seguidora hipotética de la narración que está detrás de ella, y su "identificación" con la chica que juega al ajedrez se opera en términos ficticios, como cuando vivimos vicariamente las peripecias de un personaje novelesco. ¿O tal vez no? Su atuendo y su postura recuerdan un poco al tema tradicional de la Magdalena arrepentida (pensamos, por ejemplo, en la interpretación de Caravaggio); la ropa, desde luego, no es la de un vestido de novia, y bien podría ser la de una (falsa) princesa o la de una prostituta de lujo ataviada para una fiesta de "solteros", *même*. En cualquier caso, una mujer anónima (no tiene un rostro visible), tan completa y ostentosamente vestida, sentada delante de esa foto de Duchamp, ¿nos está invitando al desnudamiento?

Y dado que la narración debe seguir, ¿quién lo ha de realizar? O más claramente, ¿quién ha de suplantar, por obvias razones de simetría, a la figura de Marcel Duchamp que continúa visible en los recuadros escaneados clavados en la pared de

atrás? Parece evidente, en fin, que esta presencia femenina exige la de un ente masculino, même, situado en frente, presumiblemente desnudo, que daría una vuelta de tuerca en el interminable proceso del desnudamiento. No creo que sea disparatado hacer una lectura algo feminista de una obra como ésta, que parece hacer recíproca la proposición duchampiana: “el (recién) casado desnudado por su(s) soltera(s), mismamente”. Pero es el vacío de ese hipotético ente masculino, su hueco espacial, lo que parece obligarnos a situar a *Les amoureuses (Elena & Rrose)* de Elena del Rivero (2001) en la estela de los *Étant donnés*. En efecto, en la instalación póstuma de Duchamp que conserva el Museo de Filadelfia, es el mirón el que completa la obra, participando en una actividad amorosa que se ofrece, como promesa, a través de los agujeros del portalón. Elena del Rivero parece invitarnos, igualmente, a plantar nuestra silla frente a su muchacha vestida: soy yo, el espectador, un ser humano concreto (o más específicamente un hombre), el protagonista que falta. La artista sugiere de esta manera que mirar es sólo una actividad preliminar, y que nada percibiremos, tal vez, si no nos desnudamos y si no estamos dispuestos a jugar.

J.A.R., enero de 2002

---

## NOTES

[Footnote Return](#)

1. Todos los detalles de aquella sesión, incluyendo reproducciones de las tomas fotográficas descartadas, pueden encontrarse en Dickran Tashjian, “Nothing Left to Chance: Duchamp’s First Retrospective”. En Bonnie Crearwater (editor), *West Coast Duchamp*. Grassfield Press, Miami Beach, Florida, 1991, pp. 61-83.

---

# Response to “The Magic Number”

Dear John,

Thank you for the thorough reading of my pieces (yup, and Hirschhorn is certainly an intelligent enough artist not to have fallen into my little trap!). There is, of course, a very detailed article on the 8/9 bachelors in the pages of *Tout-Fait: The Bachelors: Pawns in Duchamp’s Great Game*

In terms of the 1964 edition, your thoughts are intriguing, yet the numbers do not quite add up. It becomes pretty tricky. The number of the entire set of Ready-mades (and semi-ready-mades, etc.) in this edition is 14. Each of them is numbered 1/8-8/8. Yet in addition to those there are three replicas reserved for artist (MD), publisher (A. Schwarz) and the Philadelphia Museum. On top of that, there are two more replicas for museum exhibitions, bringing the number up to 13 (!). Research throughout the years has led us to conclude that a much higher number was produced (some stolen from Schwarz’s warehouse, missing the small copperplate or the case and/or the signatures. All in all, it’s a pretty fuzzy affair.

Best, Thomas Girst

---

# The Magic Number

Tom Girst, Editor in Chief:

Have been greatly enjoying latest issue of *Tout Fait*, after noting not once, but twice you brought attention to Duchamp's 1964 Readymades edition. In the Barnes interview it was surrounded by the usual dismay this edition brings, fair enough. Then, in the correspondence with Hirschhorn you appeared to have taken a decidedly heavy hand in reference to this edition, using it as a form of entrapment to elicit a response from Hirschhorn in regards to his own recent works potential "commercial" value. It was to Hirschhorn's credit that he did not "trip" on this edition or reference it to his own works, but he clearly rebuked any notion that Duchamp ever compromised his own works, Bravo, Hirschhorn. I believe I can shed some light around the "dismay" of this Duchamp/Schwarz venture. First, in the Barnes interview he preferences his concern by stating that at least in regards to *Etant donnés* the work appears "to flesh out the Bride" placing it full cycle in relation to the *Large Glass*. The very same statement can be said of the Ready-mades edition, as usual with Duchamp the "shock" is hidden in plain sight. The answer, Dear Tom, is in the exact number of the editions "8".

Does this number ring any bells? As *Etant Donnés* belongs to the realm of the Bride, so the Ready-mades belong to the realm of the Bachelors. Return to the notes in the *Green Box*, where Marcel lets us know that the Bachelors were conceived as a game of 8!, only changed to 9 with the addition of himself, a reluctant station master (in an non-autobiographic way as possible). As reluctant as the "lost" original Ready-made brings the number 8 to 9! In fact seen from this angle the Ready-mades appear as a collective form of "portraiture", a sort of Bachelors composite (although non-auto, you understand). Keep up the great work.

Sincerely,

John Mcnamara  
mac2u22@hotmail.com

---

# Bicycle Wheel Stool

click to enlarge

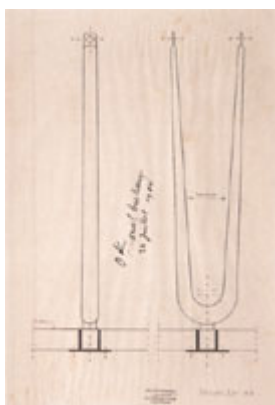


Figure 1  
Marcel Duchamp,  
*Bicycle Wheel*  
(Fork), 1964

As a small point, the 'straight fork' (Fig. 1) might not be a functional on the road fork at all, but rather a wheel truing stand. These are still available to those of us who ride regularly, and resemble forks. When wheels go over bad bumps, over time, the spokes can loosen and the rim needs to be pulled back into shape. It is adjusted in such a bracket with added measuring tools to detect wobble and roundness. I don't know how this enters into the thinking about the bike wheel, but I thought it might be useful to share. I am delighted to contribute to anything Stephen Jay Gould had a hand in. His



work has given me so much pleasure and clarity of thought.  
Thank you.

Fig. 1

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# **Straight Forks and Pneumatic Tires: Historicizing Duchamp's *Bicycle Wheel* of (1913)**

click images to enlarge





- Figure 1  
*Bicycle Wheel*  
(1913) on a Stool.  
Photograph taken  
at Duchamp's studio,  
circa 1917
- Figure 2  
*Bicycle Wheel*  
(1913) on a Stool.  
Photograph taken  
at Duchamp's studio,  
circa 1917
- Figure 3  
*Bicycle Wheel*  
(1913) on a Stool.  
Photograph taken at  
Duchamp's studio,  
circa 1917

In response to a discussion of the Duchamp bicycle sculpture on the massbike listserv, I have a couple of quibbles about statements on bicycle history on your page [http://asrlab.org/articles/why\\_bicycle\\_wheel.htm](http://asrlab.org/articles/why_bicycle_wheel.htm)

The following statement is not entirely accurate:

"The straight fork bicycle might have looked fine, but the irregular twists, turns, throws and pitches of a Bicycle Wheel, when attached to a straight fork, were dangerous and unstable—hence, the name given to the bicycle with a straight

fork design: the "Bone Shaker."

The term "boneshaker" applies to bicycles built from approximately 1863 to 1878, with a relatively small front wheel constructed like a wooden wagon wheel—the bicycle shown in Illustration 6 on the page is of this type. Most bicycles made from approximately 1878 to 1890 had tensioned steel spokes, a larger front wheel and a smaller rear wheel. These bicycles had straight forks and were called "ordinaries", "highwheelers" or, with derogatory intent "penny farthings"—not "boneshakers."

The rough ride of the boneshakers was due largely to the solid steel or rubber tires. Highwheelers also had solid rubber tires, but the ride was smoother—the large front wheel, nearly directly under the rider, bridged road surface irregularities better. The rear wheel was small, but it was far behind the rider, and the frame member between the rear wheel and the saddle was rather long and flexible.

The real breakthrough in ride quality came with the introduction of Dunlop's pneumatic tires in the 1890s—along with chain drive, this invention made for a comfortable ride with the bicycle frame design still in use today.

Straight forks were used on highwheelers as well as boneshakers. A curved fork does somewhat smooth the ride, because it is springier than a straight fork—however, its effect in smoothing the ride is much less than the effect of the pneumatic tires or the highwheeler's large front wheel.

The boneshaker in your illustration has a vertical steering axis, a straight fork and therefore zero trail. It was discovered at some time in the early development of the bicycle that a bicycle was self-steering (like a supermarket shopping cart caster) if it has trail—that is, if the tire contact patch is behind the projection of the steering axis to the road surface. Only a bicycle with trail can be ridden no-

hands. This was the case with typical highwheelers; the slight tilt of the fork's attachment to the frame created the trail.

With the rear-wheel chain-driven safety bicycle, the steering axis had to be tilted even further so the front wheel would clear the rider's feet. Although the fork of such a bicycle is curved ("raked") \*forward\* at the bottom, the tire contact patch is still \*behind\* the steering axis. A straight fork would bring the wheel closer to the rider's feet and place the tire contact patch too far behind the steering axis, resulting a heavy feel to the steering, and excessive response to shifts in rider position.

What is the provenance of the fork in the Duchamp construction? It might be from a unicycle – unicycles still use straight forks to this day. Or it might be from an old highwheeler, and cut down to fit the smaller wheel used in Duchamp's construction. Or, more likely in my opinion, the fork could be from an early safety bicycle, for example, the "bantam" bicycle shown on page 20 of the book \*Bicycle Science\*, 1983 edition (MIT Press), by Whitt and Wilson and also on page 158 of the wonderful 1896 book \*Bicycles and Tricycles\*, by Archibald Sharp (reprint edition from MIT Press, 1979). Many early safeties had a straight fork. There are other examples of such bicycles on pages 154, 280 and 288 of Sharp's book.

And in connection with this, the following statement is not accurate:

"Manufacturers had not produced bicycles with straight forks for over 30 years Many safeties made in the 1880s and early 1890s had straight forks. So 20 years is accurate; 30 years is not. That is why I consider it most likely that the Duchamp for was salvaged from an old, disused safety bicycle."

I am not a real expert on old bicycles. A member of the Wheelmen, who collect and restore old bicycles, might have a

more definite opinion of the provenance of the fork. I am sending this message to the massbike list and Prof. Wilson, who, I'm sure, will be interested in having a look at your page.

John S. Allen  
jsallen\*at\*bikexpert.com  
<http://www.bikexpert.com>

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# The Up-Side-Down Evidence for the Non-Determination of the Morphology of the *Draft Pistons*

Dear Tout-Fait,

[click to enlarge](#)

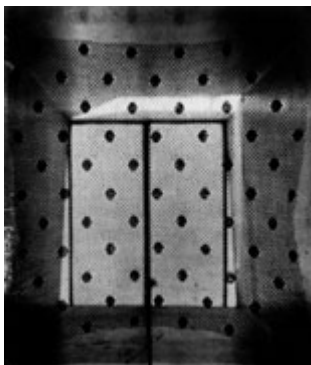


Figure 1  
Marcel Duchamp, signed  
version of *Draft Pistons*, 1914

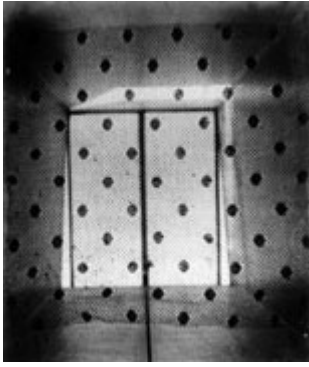


Figure 2  
Marcel Duchamp,  
unsigned version of  
*Draft Pistons*, 1914

With regard to the two extant *Draft Piston* photographs which are supposed to determine the shapes of the three openings in the Milky Way, it seems to me that Duchamp's signature and dating of one of these photographs has authorized a certain orientation which has been accepted too uncritically.

For a long time there was, I thought, something a bit peculiar about these two photographic prints (the way they were always reproduced). They didn't read correctly. More visible in some reproductions than in others can be seen two spindly hooks attached to the gauze or netting. But – as reproduced – these hooks are at the base of the photographs.

Also, the lighting in the photographs didn't seem to be right. If, as Duchamp later recalled, these photographs were made at an open window (perhaps in May 1915 on the top floor of 23, Rue St. Hippolyte?), then the shadows and the way the natural light falls are all wrong – but not if you turn the photographs upside-down. I believe Duchamp signed and dated one of these photographs upside-down with intent, perhaps inferring that the signature doesn't necessarily orientate the work – or rather, can perhaps authorize (as in authorizations of the *Bride*) a certain dis-orientation (Discuss!).

Incidentally, as 23 Rue St. Hippolyte was still under construction when Duchamp moved there in 1913, I don't think

it would be too far-fetched to presume that the enclosure directing the currents of air – within which the netting or gauze appears to be hung – is a section of ventilation or central-heating duct [see also: Linda Dalrymple Henderson, Duchamp in Context, (Princeton, NJ: Princeton University Press, 1998)].

Yours in an-artism,

Glenn Harvey  
15 The Green  
Mistley  
Manningtree  
Essex CO11 1EU  
UK

Figs. 1, 2

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## Response to “Windows in My Village”

Dear Jim Hausman,

Please send us photographs of your local French windows. We're interested.

Below, you'll find two illustrations (Fig. 3 and Fig. 4, pp. 1024, 1025) from De Chiara, Joseph, Julius Panero and Martin Zelnik (eds.) Time Saver Standards for Interior Design and Space Saving (New York, McGraw-Hill, 1991). These references are among those that led me to my claim that French windows

swing outwards. Please note captions and text below:

click images to enlarge

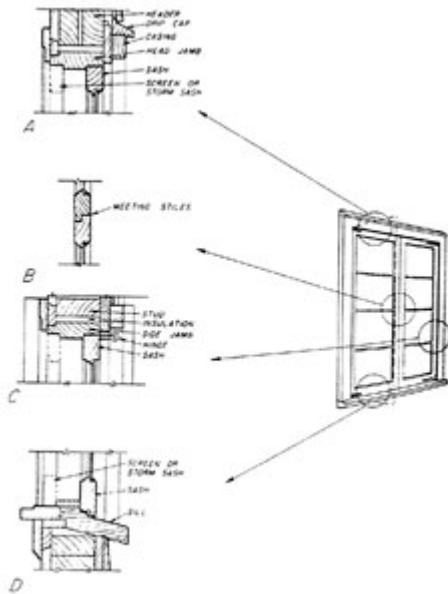


Figure 3  
Outswinging casement sash.  
Cross Sections: A, head jamb;  
B, meeting styles; C,  
side jamb; D, sill.

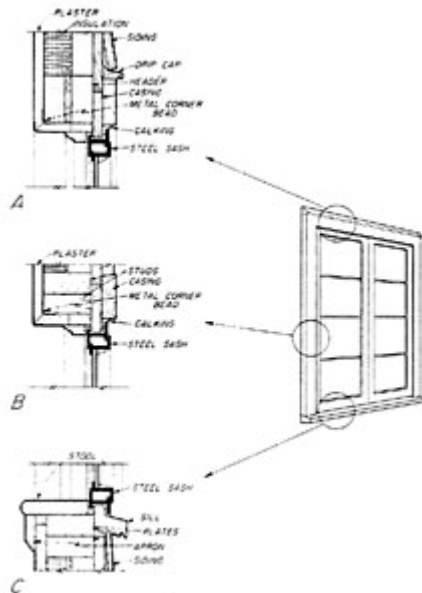


Figure 4  
Solid-section steel outswinging  
casement sash. Cross sections:  
A, head jamb; B,  
side jamb; C, sill.



In the book History of Interior Design and Furniture (New York: Van Nostrand Reinhold, 1997), author Robbie G. Blakemore writes that starting in the second half of the 17<sup>th</sup> century, windows “sometimes rose from the floor to almost ceiling level and had double valves (sometimes termed French windows), in which the casements pivoted from the jamb [...] When wood frames replaced the stone transoms and mullions and with rectangular panes it was possible for the casements to open outward.” (p. 164).

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## Windows in My Village

click to enlarge





Figure 1

Figure 2

Marcel Duchamp, *Fresh  
Widow*, 1920 (back)

Marcel Duchamp, *Fresh  
Widow*, 1920 (front)

To Rhonda Roland Shearer –

Contrary to your comment on “Fresh Widow,” French windows *\*do\** open in – that way the shutters can open out!

Jim Hausman  
resident of Chavenay, France

---

## Just a Thought: Duchamp and Spencer

Dear Tout-Fait,

Duchamp, in a communication to Katherine Dreier in Paris, once sent a subtly altered photograph of a seemingly typical bar scene. On examination, spatial relationships were “out of whack” when referred to any rational floor plan. This may

anticipate the work of the mathematician Donald Spencer (1912-2001) on systematic distortions of complex assemblages. Duchamp fooled the untutored eye by rearranging the spatial context in such a way that a non-visual logic replaced the logic of perspective (but in a superficially undetectable way). Such an alteration is, of course, reversible. This answers the requirement of reversibility in any complex distortion, which, in effect, is an operation for which an equation can be written. I wonder if any relationship could be traced between Duchamp's anticipatory work and the later, formal work of Spencer and other geometers.

With best wishes to all,

Timothy Phillips

---

## **Transfiguring Triviality**

In his response to Jean Clair's article, Arthur Danto makes a reference to Hegel by way of introduction; "It is true that in Hegel's view, art is a superceded moment of Absolute Spirit, and it is in this sense that Hegel famously pronounces the end of art. Its mission, in Hegel's system, is to be taken over by metaphysics." It is not entirely obvious how this fits into the context of twentieth century art after Duchamp.

In another paragraph (which I have mercilessly truncated) Danto says: "Closing the gap between art and life .. Pop refused to countenance a distinction between fine and commercial, or between high and low art. ...nothing an artist made could carry meanings more profound than those evoked by everyday garments, fast food, car parts, street signs. Each of these efforts aimed at bringing art down to earth, and transfiguring, through artistic consciousness, what everyone

already knows.”

click to enlarge



Figure 1  
Andy Warhol,  
*Marylin Monroe*, 1967

Warhol's approach was to appropriate something (a graphic design) that was already art (though categorized as "commercial art") and offer it as high, avant-garde, fine, or "business" art (take your pick of terms). Thus the only thing the context changed was the price...and the "autograph." Instead of appreciating the value of the label as art (sending us out to grocery store shelves to "collect" it for a few dollars) the result only reaffirmed the power of the art-world to assign arbitrary value and make it believable.

If "nothing an artist made could carry meanings more profound 'than events or objects from everyday life'" (a suggestion Duchamp once made on viewing a propeller) and if these are things "everyone already knows" what is this "artistic consciousness" that we seem to need to "transfigure" ... why does it need transfiguring anyway? Do we need artists to tell us what we already know?

Is it possible that by closing the gap between art and life it is art that becomes irrelevant? If art cannot provide an insight into life, a fresh view of the quotidian or a clarification of its value and meaning...if it just shows it to

us and asks us to celebrate its dull uniformity, glossy chic or garish banality as it is -and as the best life can offer- why would we need art at all? Danto says; "I saw it as the task of aesthetics to show how to distinguish art works from real things when there was no visible or palpable difference between them." But haven't we already arrived at the position that now there is no difference? "Art" is indistinguishable from any other commercial product or media sensation except as a speculative or investment vehicle for the very rich.

There have been many moments in the art of both East and West when artists called attention to everyday life and common objects. In every case either our attention was directed to something important about them, something uncommonly noticed, or their use as material transformed by the artist into a newly insightful event. In no case was the value seen to inhere in their triviality. It is a bit ironic that the distinctly non-trivial work of Duchamp has been used as pretext by generations of artists intent on making triviality a career path. The trivial has not been transfigured but everything else, even rage and disgust, has been trivialized. But then, as Danto has pointed out before, art has ended. It has not, however, become metaphysics.

Kirk Hughey  
kirkparisl@aol.com

---

## **RR, Art, Ah!**

Duchamp's 'R's

The prevalence of excessive "R"s in Duchamp's œuvre may seem to hold a clue for those who care, or "ose"--dare, to look. After all a Frenchman struggling with the English language

might pronounce those “Rs” as “arse” a term which refers in colloquial English speech to a measure of daring. Duchamp so loved to use colloquial speech and puns. And to all accounts he loved, as the Americans say, to “get some arse,” his pursuit of the ladies being legendary.

The influence of Raymond Roussel on Duchamp is often cited but not sufficiently documented. The double R’s of Raymond Roussel’s initials figure into Duchamp’s female pseudonym: Rose Sélavy.<sup>(1)</sup> This name could be a conscious tribute to Roussel, Duchamp here giving him life. Rose Sélavy / Roussel, la vie–Roussel, life. This could be a measure of his respect for Roussel.

click to enlarge



Figure 1  
Marcel Duchamp,  
*Tonsure*, 1919



Figure 2  
Marcel

Duchamp, 50 cc  
of Paris Air, 1919

One of Roussel's later plays was called *L'Etoile au Front—the Star on the Forehead*. Duchamp's famous haircut in which he had a star cut into the hair on the back of his head may be a joke in which he has reversed the forehead, in French "le front," or in English pronunciation, the "front" of his head, for the back.

The significance of Duchamp claiming to be a "breather" is also connected to Roussel and the excessive "R." The word "hair" when pronounced with a heavy French accent "air" is a homophony to the French pronunciation of the letter "R"—Roussel's initials, RR. Every time Duchamp evokes an "R" he is evoking not only Roussel, his own haircut, but also the "Air" which he so relished.<sup>(2)</sup>

Duchamp's gift to Walter Arensberg of a glass phial of *Air de Paris* continues the trail. The French pronunciation of the letter "R" is also a homophony of the word "err" to wander, stray or to err in the English sense of making an error. The "Air de Paris " Air of Paris that Duchamp gave Arensberg in the United States does in fact err, or wander, from Paris—"Air / err de Paris." Duchamp, as an expatriate, had also wandered from Paris—"il err de Paris"—he wanders/strays from Paris. There is also a lexical link between *Air de Paris* and Duchamp's later Monte Carlo gambling spree. This lexical link continues as "Paris" is not only the name of a city but the plural of the noun "pari" which means in English—"bet" or "wager." Duchamp's "Air/Err de Paris," the "error of bets" prefigures his recognition of his Monte Carlo betting spree as an error of judgement.

Returning to Duchamp's gift to Arensberg, "Air de Paris," we have established that the words "Air" and the French pronunciation of the letter "R" are homophones. "Air/R de Paris." If we substitute the English pronunciation of the

letter "R" for the French pronunciation of the same letter "R," which is pronounced the same as the English word "Air," we can see a further correlation. The letter "R" when pronounced in English is also the equivalent of the French pronunciation of the word "art," the "t" being silent. Hence in substituting the French pronunciation of the letter "R" = English "Air" with the English pronunciation of the letter "R" = French "Art," we have, instead of "Air de Paris," "Art de Paris." This is in fact what Duchamp gave Arensberg. "Art" from Paris, which was Air. Equivalences.

Looking once again at Duchamp's use of the double "R" of Roussel's initials we can, in applying a similar cross linguistic procedure to the interpretation of this usage, extrapolate from the "Rr" of Rose Selavy—in English/French pronunciation "Art err"<sup>(3)</sup>—Art errs. Or Art (with a capital A—high art) errs or wanders—Art/R errs/r—ose Selavy—ose, c'est la vie—dare, that's life. Art has entered into life. Similarly one can extrapolate Art/air—ose c'est la vie. Art/air—dare that's life. Art and the air of life are equivalent. Dare to breathe.

Duchamp may have made a further comment on the status of art through his use of the double "R." In a reference to Jarry he says "Arrhe is to art what merdre is to merde."<sup>(4)</sup> *Arrhe*—from the (feminine) word for a (monetary) deposit—*arrhes*, and *art*, similarly to *merdre* and *merde*, are homophones in French. Duchamp's cynical interpretation of the relation between art, money and shit/shitte is here presented succinctly. Jarry's "merdre" is similar to money in the bank, a deposit or "arrhe" and "art" is placed similarly to shit. "Arrhe" and "art" are in French homophones with the English pronunciation of the letter "R." There is a further stress on the letter "R" with the redundant "R" in Jarry's neologism "merdre."<sup>(5)</sup> This redundant "R" recalls the redundant "R" of Rose. It seems Duchamp's stress on the redundant "R/art" may be a cynical



statement about the status of art. If the redundant “R/art” (from “merdre”) is placed similarly to “arrhe” or cash in the bank what would we deduce from this? That this type of monetarily motivated art is shit?

Enough about “R”s “arse” and their extrapolations. Maybe we have wandered too far or maybe we just err and its time to find some fresh air.

---

## Notes

[Footnote Return](#)

1. Other commentators— including Thierry de Duve in his Kant and Duchamp (Cambridge, Massachusetts: MIT Press, 1996); and André Gervais in La Raie Alitée d’Effets have noted the similarity between Rose Sélavy and Roussel.

[Footnote Return](#)

2. George Bauer playfully expounds some of these correlations in his article entitled “Roussel— Duchamp” in La Quinzaine Littéraire, no. 407 (1983): 14–15. He does not however make the front/back connection.

[Footnote Return](#)

3. French conjugation of the verb to err or wander.

[Footnote Return](#)

4. Marcel Duchamp, Duchamp du signe (Paris: Flammarion, 1994). “Arrhe est à art ce que merdre est à merde.”

[Footnote Return](#)

5. The second “r” is redundant. The word is pronounced similarly to the French word for shit.

Figs. 1, 2

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# The Stereochemistry of Boats and Chairs

I would like to add some observation to the intriguing notion of cyclohexane mentioned in Robert Ausubel's response to "Boats and Deckchairs". One might add that the terms "boat" and "chair" are international standard in teaching the peculiarities of cyclohexane in stereochemistry. We find the terms "Boot" (boat) or "Wanne" (tub) and "Sessel" (chair) in German, "bateau" and "chaise" in French study books, to mention just those I cared to check. According to the dictionary the terminology developed between 1890 and 1918 (when it was firmly established), hence well into the time when Duchamp put together the majority of his notes for the "White Box." I find it hard to believe that he was not somehow aware of the origin of this specific pair of terms. Maybe he learned of the bateau-chaise conformations of cyclohexane through some popularisation in a book or an article for non-scholarly readership. It would be helpful to track down possible source material. It is, however, easy to understand why he should find it intriguing. It was probably sufficient to him that the interconversion of the conformations of cyclohexane, metaphorically termed "boat" and "chair," is indeed a fold-back operation, hence a member of the family of rotations. For that alone it remains another fascinating clue to how Duchamp's perceptive mode was conditioned.

Stephan E. Hauser  
University of Basel (art historian)

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## 3-D goes 4-D

This letter was received by *Natural History* and forwarded to *Tout-Fait*, as the original article appeared simultaneously in both *Tout-Fait* and the millennial issue of *Natural History*, December 1999- January 2000, volume 108, no. 10, pp. 32-44

Zirahuén Lake  
July 27, 2000

Dear Stephen J. Gould,

For quite a few months I had been trying to write to you about my thoughts after reading your and Rhonda Roland Shearer's essay "Boats & Deckchairs". I have greatly enjoyed your column since the early 90's but this essay was especially meaningful for two reasons. First because on this occasion I thought of something you apparently did not. I was initially reluctant to accept that I might have realized something you (or Duchamp!) had not, but the more I thought about it the less reluctant I became. Now I dare to share it with you and ask for your opinion. The second reason is because on announcing your retirement from the column, I realized with a mix of joy and sadness that I would barely catch the immense pleasure and honor of sharing an issue of the magazine [*Natural History*] with you. As my article, "Touchy Harvestmen," will be featured next October. I will begin with my reflections on your 4-D essay, and this will bring me back to my harvestmen's [daddy-long-legs] 4-D perspective.

I haven't read Abbott's *Flatland* (I certainly will) but from your digested excerpts I can conclude that A Square didn't

have to fly too high above Flatland to see the shocking and never before imagined perspective being offered from a 3-D world. Of course the higher the better, but just standing a bit above the plane and stretching the neck and peeping would be enough to see Mr. Circle all at once, though somewhat deformed as an ellipse. (Similarly to when we are lost in the woods and need to climb a tree or a hill to have a map view of where the heck we are and where we are trying to go.) The perfect view of Mr. Circle is at a right angle from above, but any angle larger than zero allows for seeing him all at once, even though the shape distortion increases as the angle diminishes. I would put my money down and say that A Squares' big "WOW!" was just after taking-off and long before reaching a straight angle above Mr. Circle. An experience much like the very first time we fly as children and realize that we can see a whole block or field all at once just after taking-off, long before reaching a complete view.

If I got that right and I properly understood that the analogy should work when going from 3-D to 4-D as well, then I think we (especially us primates) do have a chance to have that 4-D perspective of a 3-D land. In fact, the great majority of us have it all the time, literally in front of our noses. The genesis of my argument goes back to my childhood when staying late in bed. Laying on my side, I would amuse myself by switching between the two different perspectives of the landscape of blankets in front of my face, shifting as I closed each eye. Then, I would force both eyes to focus and converge on something just a few inches from my nose, and close one, and then the other (you see where I'm going?). Then I remembered a zoology teacher of mine in college saying what a "convenient idea" it was in primate evolution to have two frontal eyes, enabling us to judge distances when jumping from branch to branch. And the last relevant revelation along this line, before your essay, came when I took the instructions leaflet of my binoculars and read it (one wanders who on earth would read the directions for a pair of binoculars!). This

only occurred as I was trying to kill time while waiting in the rain forest for the end of a butterfly copula that had lasted several hours already. It said that when you see through your binoculars (if they are the kind that includes mirrors), the objects not only look closer, but the 3-D view is "deeper." This was because the two sources of the image coming from the objects to each tube are wider apart than your eyes; I thought that was pretty cool too and kept on peeping at "deeper" butterfly sex.

So when I read your article, I first thought it would be possible to do something like using two periscopes (the kind people use to see parades above the crowd) oriented sideways (and maybe slightly forward) to look at an object in front with one eye on each periscope. I wondered if the brain could still handle and integrate that (as it can when the two sources of image are slightly separated when looking at binoculars), and this would look even "deeper", more in 4-D! However, that would be like A Square trying to see Mr. Circle from almost directly above, closer to a straight angle, with less shape distortion. But we are always looking at things from two different points anyway: from each eye. This difference is negligible with a distant object, but less and less when the object gets closer to the point where we could see it from opposite ends: between our eyes. We know since we were kids we can only focus so close, even crossing our eyes, but I think that is enough to stretch our necks out of 3-D land. A practical object to do this with is for instance is a 3.5" floppy disk (which in fact is a solid "square" case with a real floppy disk inside, but that doesn't matter now). It is an object with true volume, although conveniently flattened for our purposes to a couple of mm, a flattened "cube". If you place it vertical and perpendicular to your face, just between your eyes at the minimum distance at which you can focus and converge your eyes on a single image of the edge facing you (10-20 cm), you are looking at the two full sides of the disk at once. If you close one eye, you only see the opposite side

and nothing of the other.

In other words, my argument is that if we only had one eye, or if we had them on opposite sides of our head as many birds and mammals, we would be true prisoners of the 3-D prison. In that case, we would be unable to see objects from two points at the same time. As long as we have two (eyes) views of the same object (depth vision), and if I understood your essay correctly, we are having a 4-D view of the world, or at least somewhere between 3-D and 4-D. This is as if A Square stood on a chair, on its toes, stretched its neck and could see a deformed Mr. Circle. Leaving primates and owls aside, I was trying to think of animals that had shape-perception with eyes that could really look at an object from different sides at straight angles, maybe some mollusk? But even if there is such we would still need to ask it what that's like. We would be back to where A Square was trying to explain to their friends what it's like up there, so let's better try it ourselves (September 16 is independence day in Mexico and they sell those periscopes in the street to see the parade, I'm getting myself two of them!).

However, visual animals are probably not the most interesting to consider for the cum-hyperhypho-embraced perspective, but those whose main perception of the world come through tactile stimuli, and which can wrap objects to perceive them. It is true that us primates, especially as kids, handle a lot of objects and get the "4-D perception" of them through our hands or mouth. This reminds me of a TV program showing how they allowed this blind-since-birth sculptor to climb on a specially made structure around Michelangelo's David to touch and embrace ("observe") it... he was delighted.

But the true masters of cum-hyperhypho-embracing must be something like flatworms, snakes, octopuses (in spite their good view), and one of my favorite creatures: harvestmen, or daddy longlegs. Many species, including the one I have studied, see nothing but changes in light intensity above

them, and their hearing and smelling are hopeless. But they sure have legs, and they do much more than walking with them. As they progress, they are constantly assessing their very complex 3-D environment through their 8 “channels”, with an accuracy that must exceed our poor tactile perception, and that depends clearly on touching objects on several sides at the time. In short, they might not have the resolution primates or owls have, but their depth perception is clearly better, and it’s the only one they got!

During the the many field hours I was working with harvestmen for my dissertation, on top of the great fun they provided me, I frequently read your column lying in my field hammock. It was then that I shared that View of Life, never imaging that I would someday have an excuse to share details of mine with you, which is to a great extent yours anyway. Regardless of your thoughts on my 4-D speculations, I deeply thank you for all this time.

Truly yours,

Rogelio Macías-Ordóñez

Departamento de Ecología y Comportamiento Animal

Instituto de Ecología, A.C.

México

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## Rolling the “RRRR”

Stephen Jay Gould’s text is very interesting and full of pleasant “interactive consonants.” Though it seems important to add Frantz Fanon’s “R- assimilationist” so to speak, to the discussion. Fanon actually devoted part of his book “Black Skin, White Mask” (1952) to the importance of language and pronunciation. A doctor and trained psychoanalyst, Fanon

discovered an obsession of pronouncing the letter "R" by the people from the French speaking Antilles (Martinique and Guadeloupe). To differentiate themselves from other black people in Paris during the 1950's and 60's, these so-called "assimiléé," went out of their way to pronounce the rolled "R," producing an exaggerated sound effect. The general French black population had a tendency to skip and not pronounce the consonant.

Fanon cites an example where a costumer in a Parisian coffee-shop asked loudly for a beer, consciously rolling each "R" at the appropriate moment. The result was much more than he had hoped for, and sounded like, "GARRRRÇON ! UN VÈ DE BIÈ." The proper phrase should have been, "GARÇON ! UN VERRE DE BIÈRE." By putting too much pressure on the first "R" in Garçon (Waiter), the man was unable to keep the two other ones, in Verre (Glass) and Bière (Beer).

This example can be reinterpreted through S.J. Gould's approach. Here one might say that "Verre = Vert" (the color Green) and Bière = Bierre (in this case coffin, like the shape of the Rigaud perfume bottle). Finally, "Eau de Voilette," the piece of cloth used by widows to cover their face can be read also as "Eau de Violette" (color for the funeral).

As an additional grammatical point, the gender for the word CORDE is feminine, not masculine. In French we say "une corde," and in accordance with S' ACCORDE (liaison) it becomes SA CORDE (Her Rope).

I loved the whole text. Best regards,

Marc Latamie



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# Watching the Detectives



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Illustration 4  
Photograph showing a

lady veiled in the antique lacespan>

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Photograph of Marcel  
Duchamp by Hans  
Hoffmann, Munich, 1912

“L’oeuvre d’art est toujours basée sur ces deux poteaux du générateur et du spectateur, et l’étincelle qui vient de cette action bipolaire donne naissance à quelque chose comme l’électricité.”

Bill Tanch

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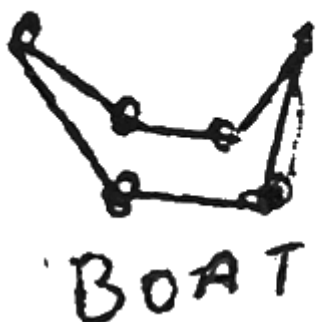
## Response to “Boats & Deckchairs”

Dear Dr. Gould;

When I saw the headline of the article you and your wife wrote in the December-January *Natural History*, as a chemist, one thought came to my mind: cyclohexane. As I read the article, I realized that the connection may be germane.

When learning organic chemistry, the structures initially are written as two-dimensional. Only later are three-dimensional representations introduced. Hence, methane (CH<sub>4</sub>) initially is presented as a Greek cross with carbon in the middle and the four hydrogens attached to it as the directions of the compass, with angles of 90°. Later, one learns the actual three-dimensional structure is different. Mutual repulsion keeps the hydrogens as far away from each other as possible, giving a tetrahedral structure.

Similarly, initially, cyclohexane is written on the board or paper as a perfect hexane. When the third dimension is introduced, we learn that the structure is puckered, with two more-or-less stable conformations, called the boat and the chair.



The chair structure is somewhat more stable in cyclohexane and therefore is the predominant one existing in nature in the pure compound. But the substitution of other groups for some of the hydrogens may make a difference in which structure is preferred.

I find it interesting that Duchamp picked these two objects, boat and chair, to represent his thoughts on three- and four-dimensional world, while we chemists associate them with the difference between two- and three-dimensional representations. Is it a coincidence?

Sincerely yours,

Robert Ausubel  
New York, NY

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# Response to “What Makes the *Bicycle Wheel* a Readymade?”

click to enlarge



Illustration 1

Duchamp's Studio,  
33 West 67 Street,  
New York, 1917-18

© 2000 Succession Marcel  
Duchamp ARS, N.Y./ADAGP, Paris.

click to enlarge

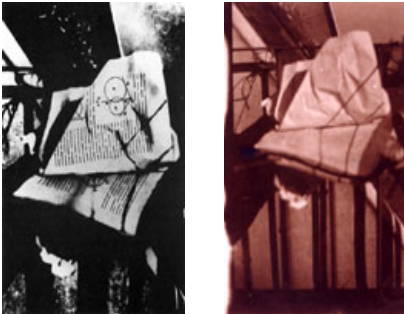


Illustration 2

Marcel Duchamp,  
*Unhappy Readymade*, 1919

© 2000 Succession Marcel Duchamp ARS, N.Y./ADAGP, Paris.

The Duchamp *Bicycle Wheel* (1913), and *Stool* was only referred to by Duchamp but was never seen because Duchamp claimed that it was “lost” and undocumented by any photographs.

The 1941 print of his *Bicycle Wheel* in the *Boite en Valise* (the first time that we see a visual representation relevant to, but not actually depicting, his 1913 original) was chosen

by Duchamp from a series of at least five studio photographs (circa 1916-17) taken of the 2<sup>nd</sup> version, made in his New York studio. The photograph that Duchamp selected to use for creating his 1941 *Boîte pochoir* print appears to be retouched. (We are in the process of subjecting this image to forensic analysis for further determination of the specific alterations.) Based upon the depicted bicycle wheel and stool shapes, I argue that the movement of the wheel would hardly be relaxing (as in watching a fireplace) but would, in fact, continually wobble out a warning of an eventual crash and fall of the stool. (See my article "Why is the Bicycle Wheel Shaking?")

click to enlarge



Illustration 3  
Marcel Duchamp,  
*Rose Sélavy by Man  
Ray*, 1921

© 2000 Succession Marcel  
Duchamp ARS, N.Y./ADAGP, Paris.



Illustration 4  
Marcel Duchamp, *Cover for*

*"Le Surréalisme, même," Winter*

1956, 1956

© 2000 Succession Marcel

Duchamp ARS, N.Y./ADAGP, Paris.

In addition to the distorted shape of the bicycle wheel and stool in the source photograph for Duchamp's 1941 *Boite en Valise* print (see Illustration 1), the stool rungs and legs are extremely blurred in ways that contrast with the other, more sharply-focused, surface. One is led to ask – are the legs and rungs askew due to photographic or physical alterations? Duchamp's use of photographic alterations would not be surprising. Scholars readily acknowledge that Duchamp, throughout his career, retouched photographs. Examples include *Unhappy Readymade* (1919) (where Duchamp adds the appearance of a printed geometric axiom to a photograph of book pages whose typeface had been washed away by rain), the famed Rose Selavy portraits (1921) by Man Ray (where Duchamp enhances Rose's hands), and the cover of *Surrealism, Même* (1956) (where Duchamp retouches a photograph of his concave fig leaf sculpture to enhance the illusion of convexity already, in part, created by special effects lighting). (See illustrations 2, 3, 4)

click to enlarge



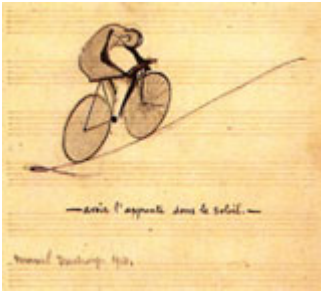
Illustration 5

Marcel Duchamp,

Photo of Duchamp riding  
on the Bicycle, 1902

© 2000 Succession Marcel

Duchamp ARS, N.Y./ADAGP, Paris.



## Illustration 6

Marcel Duchamp,

*To Have the Apprentice*

*in the Sun*, from the

*Box of 1914*, 1914

© 2000 Succession Marcel

Duchamp ARS, N.Y./ADAGP, Paris.

Moreover, Duchamp knew that the common bicycle design for front wheels incorporated a curved fork and yet in his 1916-17 2<sup>nd</sup> version he uses a straight fork! Note here a boyhood photo of Duchamp riding his bicycle in 1902 and his drawing from the 1914 Box – both depicting the curved forks that were conventionally used even when Duchamp was a child (see Illustrations 5 & 6). One must not forget that enthusiasm for new technologies, gadgets and inventions was at its zenith in the early 20th century. Since straight forks were only briefly in used in modern “safety bicycle” design (and therefore quickly became obsolete by the late 1880’s), Duchamp appears to be making a conscious point when he selects, in 1916-17, an obsolete design for a “readymade” during an era that embraced hi-tech mass production. Even in 1916-17, most junked bicycle fork parts readily found (using modern spoked wheel and metal rim) would be curved in shape and any straight fork design infrequently found as visual oddity appearing retrograde and old-fashioned (and most often seen with a primitive wheel and wood spokes).

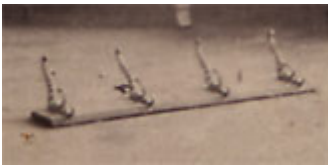
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# Response to “‘Infusion Ball’ or ‘Holy Ampule’?”

click to enlarge



Marcel Duchamp, *Fountain*,  
1917 © 2000 Succession Marcel  
Duchamp ARS, N.Y./ADAGP, Paris



Marcel Duchamp, *Trébuchet*  
(Trap), 1917 © 2000 Succession  
Marcel Duchamp ARS,  
N.Y./ADAGP, Paris.



Marcel Duchamp,  
*Hat Rack*, 1917  
© 2000 Succession  
Marcel Duchamp ARS,  
N.Y./ADAGP, Paris.

We truly appreciate the effort that you made to research the



historical context for Duchamp's alleged "Paris Air Medical Ampule."

Despite Duchamp's contention that his objects were mass-produced readymades, the fact remains that no exact duplicate exists for any of his productions in the historical record. No scholar has ever found – in any museum catalogue or collection, or dealers' storerooms – any exact object (urinal, coatrack, hatrack, etc.) that, according to Duchamp's claims, was mass produced, store bought and readymade. Is this not strange? If an object is mass produced, by definition and logic, the attempt to find a duplicate design should not be analogous to searching for a needle in a haystack or scraping the bottom of a barrel, as has been the case.

So little evidence exists for the art historical orthodoxy's assumption – namely, that readymades are mass produced, and were therefore readily found in stores. Therefore, a reversal of the typical question of evidence about the status of Duchamp's objects must be proposed. We should be persuaded by, and judge only by, direct evidence any claim that Duchamp objects are, in fact, readymade.

Using three illustrations of infusion devices, your letter lists three criteria met by Duchamp's ampule in your judgement.

1. A closed vessel for sterilization
2. It can be used as an infusion system (with a bottom to break for connection to a tube)
3. "Convenient apparatus to hang over the patient's bed because of the glass hook"

Yet when I look at your three illustrations, I fail to follow your conclusion that the Paris Air ampule "combines all three functions in one piece made of the same uniform material."

Figure 1 does not have a glass hook and, like Figure 2, is safely and securely held by a metal clasp. Therefore the hook

and the ampule are separate, not uniform materials as in Duchamp's ampules. Indeed, Figure 3 is very suggestive – but unlike Figure 1 and 2, which appear to be accurate technical drawings from medical catalogues, Figure 3 with its inclusion of a hanging curtain and rough, hand-drawn quality is unclear. Considering Figure 3's earlier 19th century date, this device was replaced by more practical and safe designs shown in Figure 1 and 2. The cylinder form of Figure 2 shares, with the mass-produced ampules developed in France during the first years of the 20th century, a shape that can be safely packed into boxed rows (see my Illustration A of an early 20th century ampule mass-production factory).

click to enlarge



Illustration A

Photograph showing a factory mass-producing ampules, France, early 20th century

I have handled many European and American ampules and have “opened” them (see video). It would have been very tricky to attach a hose to the jagged end of an ampule. If indeed a glass hook was ever incorporated (as Figure 3 is unclear), the motion of a patient's arm would have led to stress on a glass hook that would likely cause it to break or become dislodged. Logic and practicality would lead to the further development of a metal, not a glass hook – as shown by the historical chronology held within your illustrations, beginning with Figure 3, then Figure 1, and Figure 2 as the most historically

recent in the series.

But let's say that you are correct and that Figure 3 was among the early experiments in hand-made infusion devices that Duchamp saw hanging in a pharmacy as an "old pharmaceutical/medical instrument for decoration" (as you write). Is this one-of-a kind and obsolete hand-made infusion ampule to be accepted by us as evidence of Duchamp's use of a mass produced, easily found, store-bought readymade object?

As to size, I believe that the facts about sizes of infusion balls actually used and made would be extremely important to know. For example, what if infusion ampules – even early custom-made ones – were only more than 125 cc in volume? This fact would further indicate that Duchamp had his own ampule made. Or on the contrary, if you discovered that infusion ball ampules were only made in 35 cc and 125 cc in volume, this would suggest that Duchamp exploited the two standard sizes for his original 1919 and 1941 *Boite en Valise* versions, etc. Furthermore, we have testimony by experts that a pharmacist would not have needed unusual skills to convert a mass-produced ampule into a custom-made version similar to Duchamp's larger 1919 and smaller 1941 Paris Air objects. In fact, Duchamp tells us that he had his 1941 ampules version custom made.

- Click image for video (QT 2.6MB)
- Click image for video (QT 2.6MB)
- Click image for video (QT 2.0MB)

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- Demonstration of the breaking of two antique ampules at the Art Science Research Laboratory, NY
- More contemporary ampule (with thicker glass)
- Display of various antique ampules at ASRL, NY

I believe that the question of Duchamp's readymade ampule is very much aided by your research, but must still continue! I would love to find out more about infusion devices. If, in fact, infusion balls were "available in a great variety of sizes for different medical indications," evidence and images of mass-produced infusion balls matching Duchamp's Paris Air (1919) should readily be found, and should now be in the historical record in a duplicate form, not just as resemblances. A duplicate of Paris Air (1919) (alas, for people who want to believe in readymades) has not yet been found. We may be facing another Loch Ness monster or Big Foot. People will believe that Duchamp's Paris Air (1919) ampule was a mass-produced readymade even in the face of little or no evidence.

---

# What Makes the *Bicycle Wheel* a Readymade?

Dear *Tout-Fait*,

This question is in my mind and it drives me crazy...

Is the *Bicycle Wheel* a readymade?

One of my first contacts with the work of Marcel Duchamp was an interview he gave (in French) in the late 60s. He explained very well what the idea behind a readymade is. He also explained the process that led to the *Bicycle Wheel*.

I remember that he said he used to live in a small apartment in Paris and he wanted to have a fire to warm the place, and also because it would have been nice to have a fire in this small apartment. As he didn't have any "cheminee de coin," he couldn't have any fire. He came up with the *Bicycle Wheel* on the "tabouret" because moving the wheel reminded him of the movement and sound of a fire. Knowing that, I was a bit confused, as that could mean that the *Bicycle Wheel's* purpose is to "imitate" a fire.

When Miro takes two plates, a rock and a rack and places them together so that they look like a strange personage, no one says it is a readymade. And I agree. Its purpose is to imitate or give birth to a poetic living form. It is on purpose that this living form looks human in some way (to make it easier for us to understand, maybe).

Anyway, I don't see so many differences between Miro and his plates and rocks, and Marcel Duchamp and his *Bicycle Wheel* (I am only talking about the *Bicycle Wheel*, I understand why the

*Bottlerack*, for example, is a readymade).

I know you might be wondering why I am sending this question to *Tout-Fait*. Well, you are actually the only person I know who might be able to correct me, and also, it is an opportunity to thank you for the journal. I was very happy to read all of the articles, and really stoned by the news concerning the copies and the *3 Standard Stoppages* (!!).

Thanks for the help, and I can't wait to read the second edition of *Tout-Fait*.

---

## Duchamp and Repetition

Dear Rhonda,

Who said, he hated repetition? Exactly – that was the crucial point in staring at Marcel Duchamp's work for almost one century. The solution does not lie in an agreement of the scholars, but in the deconstruction of this vain palace of interpretations. You are doing the main job. Just looking at the phenomena and describing the context – the context not of the original work, but of our own knowledge. It does not matter what his intentions were, but what we can understand. We all know that Marcel Duchamp will be of importance still in the next decades, much more than all the Picassos. But to realize this, someone had to come and tell us: He did not do the thing as he was declaring and explaining to them. We have to think on our own (Oh, gosh) – that's the difficult thing. For this reason you are discovering seemingly simple things, such as the "Green Box" surprises and the 3 Stoppages (which

really tell us “Stop the pages of art history”). Is it all so obvious, but not for blind men. Our beloved Marcel Duchamp is falling apart – that makes him hateable, but interesting again and again.

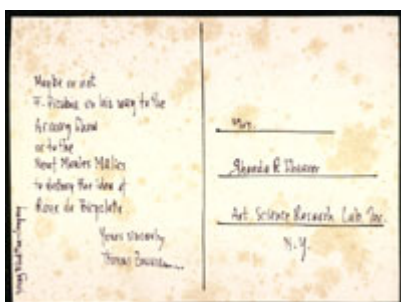
Regards,

Prof. Dr. Thomas Zaunschirm

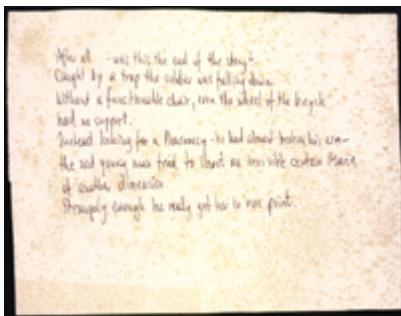
Department of Art History, Essen University, Germany

p.s.- Many congratulations for your online-magazine. One could not wish for more.

Some Duchamp-related postcards from Thomas Zaunschirm:



- Figure 1
- Figure 2
- Figure 3



- Figure 4
- Figure 5
- Figure 6

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# Response to “Duchamp’s Veiled Intentions Regarding *Draft*”



# *Pistons Gauze*"

click to enlarge

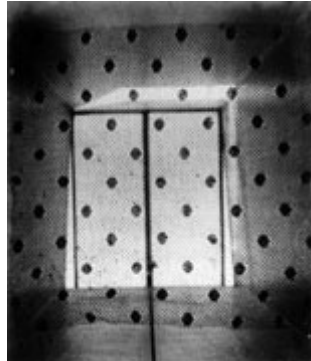
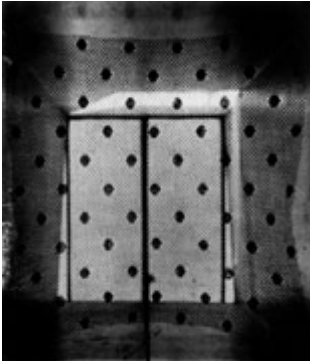


Illustration 1

Marcel Duchamp,  
signed version of  
*Draft Pistons*, 1914

© 2000 Succession Marcel  
Duchamp ARS, N.Y./ADAGP, Paris.

Illustration 2

Marcel Duchamp,  
unsigned version of  
*Draft Pistons*, 1914

© 2000 Succession Marcel  
Duchamp ARS, N.Y./ADAGP, Paris.

*Rhonda Roland Shearer responds:*

Your interesting and correct observation of the difference between the *Draft Pistons* in the *Large Glass* and his two photographs leads to other evidence of Marcel's mischievous methods! Duchamp claims to have taken three photographs of fabric blown by air currents through a window (of the three photographs only two remain, as Duchamp claims to have lost the third). (See Illustration #1 and #2.) Richard Hamilton writes that the size of the actual cloth that Duchamp used was 1 meter square. <sup>(1)</sup>By opaque projector,

click to enlarge



### Illustration 3

Enlarged drawing of  
the *Draft Piston*

I enlarged the *Draft Piston* photographs to 1 meter square. The impossibility of this large 1 meter square size quickly became apparent, as the dots on the lace would then be more than 1 inch in diameter. (See Illustration #3.) Sewn dots depicted in Illustration #4 occurring in antique lace are only, approximately, the size of a pencil eraser. Moreover, antique lace of similar type, when scaled to match the lace depicted in Duchamp's photos, would measure approximately  $3\frac{3}{4} \times 4\frac{3}{4}$  inches. Therefore, the lace was not 1 meter square and could not have been in a window curtain (as scholars have assumed). Illustrations #5A, B and C compare old lace to one *Draft Piston* photo scaled to match the size and ratio of actual antique lace. #4C shows an approximation to the actual size of lace that Duchamp used for creating his *Draft Piston* photography. By further logic, one must also challenge whether the open "window" in the *Draft Piston* photograph is an actual window or the opening of a miniature box with the  $3\frac{3}{4} \times 4\frac{3}{4}$  inch lace hanging in front.

click to enlarge

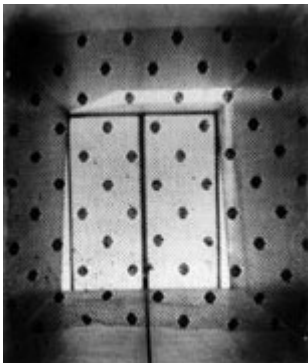


Illustration 4

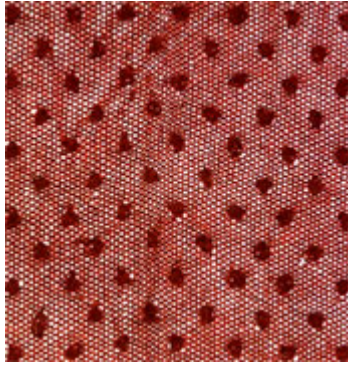
Photograph showing a woman veiled in antique lace

As an additional point of interest, I discovered that if one puts the two *Draft Piston* images side by side into a stereoviewer, an impressive 3-D stereo effect is generated. In light of Duchamp's interest and his history in creating many original stereoworks, (including stereo-pair images to be seen in stereoviewers included is his 1941 *Boîte en Valise* miniature museum of his life's work), the two *Draft Pistons* photos, working as a stereo pair, is not likely to be accidental. Perhaps the resulting stereo image that one sees from the fusion of the two *Draft Piston* photos in a stereoviewer is the third *Draft Piston* image that Duchamp said he "lost" and has now been refound!

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- Illustration 5A
- Illustration 5B
- Illustration 5C
  
- Marcel Duchamp, unsigned version of *Draft Pistons*, 1914 © 2000 Succession Marcel Duchamp ARS, N.Y./ADAGP, Paris.
- An old lace, shown here in red (originally in black) to better illustrate the contrast
- Comparison by overlaying the old lace with the lace in the *Draft Pistons*

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## Notes

[Footnote Return](#)

1. In a telephone conversation of March 10, 1999 between Thomas Girst / Art Science Research Laboratory, Inc.

and Richard Hamilton, Mr. Hamilton stated that he only “made the assumption” that the “Draft Pistons” were fabricated by hanging a one-meter-square Net (net curtain or veiling) above a radiator (text in italics quoted from: Richard Hamilton. *Collected Words*. London: Thames & Hudson, 1982. p. 229). In addition, he mentioned that he “definitely did not get this information from Duchamp” and that he derived his guess regarding the size from the length of the “Standard Stoppages” and by looking at the 1914 photograph.

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## **Duchamp’s Veiled Intentions Regarding *Draft Pistons Gauze***

Hello *Tout-Fait*,

What a find! I’m an “anartist” and post-grad art history and theory student at the University of Essex in the UK (Dawn Ades and Margaret Iversen are my tutors).

This first issue was tremendous. More please!

Apropos of Rhonda and Stephen’s article on the “Standard Stoppages,” I’m probably not the only Duchampian to notice, also, that the two extant photographs of gauze (hanging over a radiator/in front of a window) bear little relation to the morphology of the “draft pistons” in the Milky Way of the *Large Glass*. Is this yet another case of Marcel’s methodological mischievousness?

Glenn Harvey B.A.(Hons) M.A.  
Dept. of Art History and Theory  
University of Essex, UK

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# Response to 'Duchamp and Dreier'

*William Anastasi responds:*

I was pleased to learn that Katherine Dreier has been the subject of a doctoral dissertation. If there is evidence showing that the Tomkins and Marquis accounts of her relationship with Duchamp are off base, adjustments would be welcome. Dr. Angeline states that "correspondence between Dreier and Duchamp does reveal that the *Large Glass* was indeed accidentally broken, unbeknownst to both Duchamp and Dreier..." This is the explanation given by Duchamp to J.J. Sweeney and Pierre Cabanne. But Duchamp's marvelous all-weather disclaimers proclaim that *Each word I tell you is stupid and false* and *All in all I'm a pseudo, that's my characteristic*. He was begging posterity to question everything about him, and particularly his statements. I have not succeeded in reaching Dr. Angeline to learn of his sources, but if he is citing letters from the artist, these disclaimers may apply. In any case, (and especially in view of these famous remarks) letters cannot *reveal* that the *Large Glass* was accidentally broken, they can only say so.

Marcel Duchamp was clearly creating his own myth. A telling attestation of this can be found in the opening paragraph of William A. Camfield's *Marcel Duchamp: Fountain* (Houston: The Menil Collection, 1989). Before embarking on a 180-page dissertation about this enormously influential work from 1917, Mr. Camfield cautions, "We do not even know with absolute certainty that Duchamp was the artist – he himself once attributed it to a female friend..." For all we can tell, Duchamp may have been in collaboration with female friends

even at this early date.

William Anastasi  
New York, NY

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## Duchamp and Dreier

Dear *Tout-Fait*,

Congratulations on an exciting and generally brilliant issue! As a co-editor of an online arts journal (*PART*, <http://web.gsuc.cuny.edu/dsc/part.html>) I am impressed with what you have done.

One quibble – the Anastasi article about the *Large Glass*, while intriguing, unfortunately falls into the same wrongheaded clichés about Katherine Dreier and her relationship to Duchamp that the general literature has perpetuated for far too long. My doctoral dissertation on Dreier tries to present a more even-handed version of their relationship and it is a shame that an otherwise adventurous article would rely on as flippant a source as Tomkin's biography and simply repeat its glib assertions.

Moreover, the correspondence between Dreier and Duchamp does reveal that the Glass was indeed accidentally broken, unbeknownst to both Duchamp and Dreier, while in storage/transit. Duchamp was in Europe at the time and in fact had to travel to the States expressly to repair the Glass.

The relationship to Jarry still intrigues. I just think it is time that art historians remembered to not sacrifice fact in the make of a theory.

Best Regards,

Dr. John Angeline

The Graduate Center at City University of New York

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# 'Infusion Ball' or 'Holy Ampule'?

click to enlarge



Figure 1  
Sir Roger's Infusion Apparatus,  
*A Catalogue of Surgical  
Instruments and Medical  
Appliances*, Allen &  
Hanburys Ltd., London, 1938, p. 186

To the Editor:

Stimulated by the article "*Paris Air*" or "*Holy Ampule*" by Girst and Shearer in the December 1999 issue of *Tout-fait*, I conducted some research about the history of infusion medicine. The "*Paris Air*" ampule used by Duchamp for his artwork combines three main functions of an infusion apparatus. First it can be used as a closed vessel to keep sterilized fluids. Second it can be used as an infusion apparatus. (One simply has to break the far glass ends, connect a tube infusion system to the lower one and gravity draws the fluid into the patient's vein.) Third it is the most convenient apparatus to hang over the patient's bed because of



its glass hook. Most strikingly, the “Paris Air” ampule combines all three functions in one piece made of the same uniform material.

By using a medical infusion ampule for his artwork Duchamp cites, likely without knowing, from a very interesting part of the history of medicine. Blood letting as a medical treatment has been known since ancient times, but its contrary “infusion” was not tried until Harvey discovered the system of blood circulation in the mid 17th century. In 1656 Sir Christopher Wren wrote the first report about experiments of injections into dogs’ veins. Although he was a successful medical scientist of his time he changed his profession in 1665 to architecture and built fifty churches in London including the famous St. Paul’s Cathedral. (Remember that the ancient Egyptian god of medicine, Imhotep, used to be a physician and architect as well.) The first report of venous injections into humans was published by Johann Sigismund Elsholtz in Berlin in 1665. <sup>(1)</sup> Lacking proper materials like small needles and microbiological knowledge like methods of sterilization, the next reports suggesting infusions as a standard medical treatment were not published before the late 19th century. Most of these reports describe different infusion equipment as well as methods of sterilization. Again, it took nearly two to three decades until infusions became a well-established treatment in World War I and World War II.

click to enlarge



Figure 2

Closed Sterile Ampoule,  
*de l'Asepsie dans la Pratique  
Chirurgicale Procèdes de Sterilisation,*  
de Robert & Leseurre, 1930, 141

Closed ampules as a container of pharmaceutical products were first described by Harnack in 1883 <sup>(2)</sup>. Three years later they were brought into mass production by Limousin in Paris<sup>(3)</sup>.

Most of the first infusion vessels were open systems like the example of Sir Roger's infusion apparatus (figure 1)<sup>(4)</sup>. It resembles the shape of the "Paris Air" ampule, but the top end is open and bears a metal hook. Also some closed sterile ampules existed like the one described by de Robert & Leseurre in 1903 (figure 2), which combined a sterile container and infusion apparatus<sup>(5)</sup>.

The one report about an infusion apparatus which resembles the "Paris Air" ampule best was published by Maurice Boureau in Paris in 1898 (figure 3) <sup>(6)</sup>. Boureau describes a method of sterilization and the use of what he calls an "Infusion Ball" for infusing "Serum Artificial." In medical terms "Serum Artificial" is synonymous to "Serum Physiologique" which is also printed on the "Paris Air" ampule and describes a 0.7% – 0.9% Sodium Chloride solution.

click to enlarge

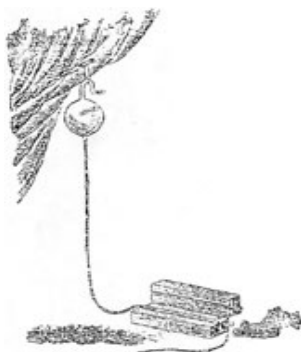


Figure 3

Infusion Apparatus, published  
by Maurice Boureau in Paris,  
1930, seen from  
*Zur Entwicklung der Infusion  
slösungen in der ersten Hälfte  
des 20. Jahrhunderts,*  
Karin Bischof, Diss. Basel,  
1995, p. 307

Some questions still remain unanswered. 1. If Boureau's report is from 1898 but Duchamp didn't buy his ampule till 1919, could he have bought an actual "Infusion Ball?" 2. What size is an "Infusion Ball"? Trying to answer the first question one has to bear two conditions in mind: Pharmacists have always been very traditional, therefore using old pharmaceutical/medical instruments for decoration of their pharmacies. Moreover, early in the 20th century the production of pharmaceutical products was individual rather than mass production. The first condition leaves the possibility that Duchamp bought an old instrument. However, because of the second condition, it is still possible that Duchamp bought a new ampule because infusion systems and ampules varied a lot in shape and design. The latter may also be the answer to the second question. If the ampule used by Duchamp was an "Infusion Ball" there is no need to argue about the size. Like most medical/pharmaceutical instruments infusion systems were and are available in a great variety of sizes for different medical indications.

In summary, especially with the knowledge of the Boureau report, it becomes more likely that Duchamp bought an infusion ampule made after Boureau's description for his "Paris Air" artwork rather than having had one produced by a skilled pharmacist. Why would a pharmacist produce a unique "Paris Air" ampule resembling the "Holy Ampule" when there already existed a pharmaceutical/medical apparatus like Boureau's "Infusion Ball" which resembled the shape of the "Paris Air"

ampule even better?

Yours,

Cand. Med. Tobias Else, Innsbruck, Austria

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## Notes

[Footnote Return](#)

1. Elsholtz, Johann Sigismund. *Neue Clystier Kunst wodurch eine Arznei durch eine eröffnete Ader bezubringen*. Berlin 1665

[Footnote Return](#)

2. Harnack, Erich. *Lehrbuch der Arzneimittellehre und Arzneiverordnungslehre. Auf Grund der dritten Auflage des Lehrbuchs der Arzneimittellehre von R. Buchheim und der Pharmacopoea Germanica*. ed. II. Hamburg/Leipzig 1883.

[Footnote Return](#)

3. Limousin, S. "Ampules hypodermiques, nouveau mode de preparation des solutions pour les injections hypodermiques" in *Archives de Pharmacie I*, 1886.

[Footnote Return](#)

4. Figure taken from Allen & Hanburys Ltd. *A Catalogue of Surgical Instruments and Medical Appliances*. London 1938.

[Footnote Return](#)

5. de Robert & Leseurre. "de l'Asepsie dans la Pratique Chirurgicale Procèdes de Sterilisation."

[Footnote Return](#)

6. Boureau, Maurice. "La technique des injections de serum artificiel," Diss. Med. Paris 1898. Figure taken from Bischof, Karin. "Zur Entwicklung der Infusionslösungen in der ersten Hälfte des 20. Jahrhunderts," Diss. Basel 1995

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*Rhonda Roland Shearer responds:*

click to enlarge



Figure A  
Marcel Duchamp,  
*Fountain*, 1917

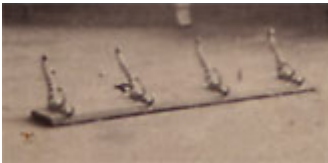


Figure B  
Marcel Duchamp, *Trébuchet*  
(Trap), 1917

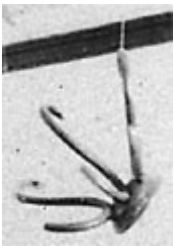


Figure C  
Marcel Duchamp,  
*Hat Rack*, 1917

We truly appreciate the effort that you made to research the historical context for Duchamp's alleged "Paris Air Medical Ampule."

Despite Duchamp's contention that his objects were mass-produced readymades, the fact remains that no exact duplicate

exists for any of his productions in the historical record. No scholar has ever found – in any museum catalogue or collection, or dealers' storerooms – any exact object (urinal, coatrack, hatrack, etc.) that, according to Duchamp's claims, was mass produced, store bought and readymade. Is this not strange? If an object is mass produced, by definition and logic, the attempt to find a duplicate design should not be analogous to searching for a needle in a haystack or scraping the bottom of a barrel, as has been the case.

So little evidence exists for the art historical orthodoxy's assumption – namely, that readymades are mass produced, and were therefore readily found in stores. Therefore, a reversal of the typical question of evidence about the status of Duchamp's objects must be proposed. We should be persuaded by, and judge only by, direct evidence any claim that Duchamp objects are, in fact, readymade.

Using three illustrations of infusion devices, your letter lists three criteria met by Duchamp's ampule in your judgement.

1. A closed vessel for sterilization
2. It can be used as an infusion system (with a bottom to break for connection to a tube)
3. "Convenient apparatus to hang over the patient's bed because of the glass hook"

Yet when I look at your three illustrations, I fail to follow your conclusion that the Paris Air ampule "combines all three functions in one piece made of the same uniform material."

Figure 1 does not have a glass hook and, like Figure 2, is safely and securely held by a metal clasp. Therefore the hook and the ampule are separate, not uniform materials as in Duchamp's ampules. Indeed, Figure 3 is very suggestive – but unlike Figure 1 and 2, which appear to be accurate technical drawings from medical catalogues, Figure 3 with its inclusion

of a hanging curtain and rough, hand-drawn quality is unclear. Considering Figure 3's earlier 19th century date, this device was replaced by more practical and safe designs shown in Figure 1 and 2. The cylinder form of Figure 2 shares, with the mass-produced ampules developed in France during the first years of the 20th century, a shape that can be safely packed into boxed rows (see my illustration A of an early 20th century ampule mass-production factory).

click to enlarge



Illustration A

Photograph showing a factory mass-producing ampules, France, early 20th century

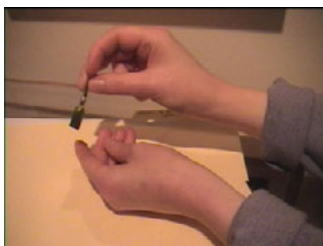
I have handled many European and American ampules and have “opened” them (see video). It would have been very tricky to attach a hose to the jagged end of an ampule. If indeed a glass hook was ever incorporated (as Figure 3 is unclear), the motion of a patient’s arm would have led to stress on a glass hook that would likely cause it to break or become dislodged. Logic and practicality would lead to the further development of a metal, not a glass hook – as shown by the historical chronology held within your illustrations, beginning with Figure 3, then Figure 1, and 2 as the most historically recent in the series.

But let’s say that you are correct and that Figure 3 was among the early experiments in hand-made infusion devices that Duchamp saw hanging in a pharmacy as an “old

pharmaceutical/medical instrument for decoration” (as you write). Is this one-of-a kind and obsolete hand-made infusion ampule to be accepted by us as evidence of Duchamp’s use of a mass produced, easily found, store-bought readymade object?

As to size, I believe that the facts about sizes of infusion balls actually used and made would be extremely important to know. For example, what if infusion ampules – even early custom-made ones – were only more than 125 cc in volume? This fact would further indicate that Duchamp had his own ampule made. Or on the contrary, if you discovered that infusion ball ampules were only made in 35 cc and 125 cc in volume, this would suggest that Duchamp exploited the two standard sizes for his original 1919 and 1941 *Boite en Valise* versions, etc. Furthermore, we have testimony by experts that a pharmacist would not have needed unusual skills to convert a mass-produced ampule into a custom-made version similar to Duchamp’s larger 1919 and smaller 1941 Paris Air objects. In fact, Duchamp tells us that he had his 1941 ampules version custom made.

- Click image for video (QT 2.6MB)
- Click image for video (QT 2.6MB)
- Click image for video (QT 2.0MB)



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- Demonstration of the breaking of two antique ampules at the Art Science Research Laboratory, NY
- More contemporary ampule (with thicker glass)
- Display of various antique ampules at ASRL, NY

I believe that the question of Duchamp's ready-made ampule is very much aided by your research, but must still continue! I would love to find out more about infusion devices. If, in fact, infusion balls were "available in a great variety of sizes for different medical indications," evidence and images of mass-produced infusion balls matching Duchamp's Paris Air (1919) should readily be found, and should now be in the historical record in a duplicate form, not just as resemblances. A duplicate of Paris Air (1919) (alas, for people who want to believe in readymades) has not yet been found. We may be facing another Loch Ness monster or Big Foot. People will believe that Duchamp's Paris Air (1919) ampule was a mass-produced ready-made even in the face of little or no evidence.

Figs. A, B and C

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# Response to “Boats & Deckchairs”

Dear Drs. Gould and Shearer,

Thank you for your interesting article in the December issue of *Natural History*. It led me to an alternative interpretation of his boat/deckchair illusion using the notion of a cross-section, which is implicit in the passage from *Flatland* that you quoted.

Imagine three spheres in space. One can obtain a 2-dimensional representation of them by taking a cross-section, that is, slicing through them with a plane. The result would be a collection of circles in the plane. Depending on which plane one chooses, the relative sizes of the circles will be different; as one moves the plane, they will grow and shrink in the way Abbot describes.

Now imagine three objects in 4-space (three 4-spheres, for example). One can obtain 3-dimensional representations by slicing them with a 3-dimensional space (a “hyperplane”) and, again, depending on which hyperplane one chooses the objects will have different sizes. If the objects are 4-spheres, then the 3-dimensional hyperplane slice will be a collection of ordinary 3-dimensional spheres of different sizes. And again, as one moves the hyperplane around the spheres will grow and shrink. Thus, rotating Duchamp’s postcard achieves the optical illusion of this growing and shrinking process by causing one to reassess the sizes of the objects. Duchamp invites one to replicate the growing and shrinking process involved in moving the hyperplane around by holding the card vertically and “considering the optical illusion produced by the difference in their dimensions.”

This interpretation may capture more precisely the

mathematical intent of his words.

Sincerely,

Bill McCallum  
Department of Mathematics  
University of Arizona (Tucson)

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## Response to “Boats & Deckchairs”

To the Editor:

In their essay on a note by Marcel Duchamp about the fourth dimension (*Natural History*, 12/99-1/00), Stephen Jay Gould and Rhonda Roland Shearer emphasize the fact that no other previous Duchamp scholar has ever noticed that the text of this particular note relates to the image of three boats in a landscape that appears on its verso. Although they go on to explain that there are various reasons for why this observation had not been made before – without explanation – they specifically single out my writings as an example of a Duchamp scholar who missed this very point.

This is a perfect example of biased and prejudicial scholarship. Since it was employed by a Darwinian like Gould, it is difficult to resist comparing his actions to that of natural selection, one that, in this case, functions within the ongoing evolution of his and his wife’s indomitable quest to find hidden meanings in the work of Marcel Duchamp. If these writers were really going to be fair in assessing my powers of observation, after having cited my description of this note, they would have gone on to quote the very next

sentence of my writings: "Although it has been assumed that these paper fragments were selected arbitrarily and that they bear no relationship to the subject of the notes themselves, at least one note referring to the 'legs of the [Chocolate] Grinder' appears, appropriately, on the verso of a torn fragment of candy wrapping advertising the town of 'Hershey, PA.'" (*The Mary and William Sisler Collection*, Museum of Modern Art, New York, 1984, p. 143). In the note discussed by Gould and Shearer, I did not notice a relationship between the subject of the fourth dimension and the image appearing on its verso for one very specific reason: I am not wholly convinced that there is one (not when I wrote about these notes over fifteen years ago, nor even now after having read their elaborate argument).

First of all, these authors claim that "Duchamp's object is not, in fact, a commercially produced postcard but an original painting, almost surely by Duchamp himself." This is a perfectly reckless assertion, particularly since it is made without a single shred of supporting evidence. Stylistically, the image bears no relationship whatsoever to any other work by Duchamp from this period, unless, of course, Duchamp feigned an artistic style totally foreign to his own artistic sensitivities (even if this were the case, then we are presented with no reasonable explanation for why Duchamp would have employed such a strategy). The authors then point out that on the verso of this image, "a vertical line in the middle and four horizontal lines to the right" were "inked in by hand" to "mimic the address guides of a normal postcard." These lines would prove critical, for according to the authors, they provide a clue that the image on the other side must be rotated in order to be understood for its fourth dimensional message. But even here, how can we be sure that Duchamp drew these lines? I – for one – doubt very much that he did.

I share the belief that Duchamp's note was written on a

“pseudo-postcard,” that is to say, a watercolor executed on a relatively thick piece of drawing paper and cut to resemble the size and format of an ordinary, commercially-produced postcard. But it is hardly necessary to prove that Duchamp himself physically rendered this image; simulated, one-of-a-kind postcards of this type can still be purchased on the streets of Montmartre to this very day, affording tourists the option of sending their correspondents relatively inexpensive original works of art. In order to make the function of their product clear, it is usually the artist who draws the address lines on the verso of the image as well as.

It is, of course, entirely possible that Duchamp might have noticed a casual resemblance between the three rather poorly-executed boats on the facing side of this card and an overhead view of deckchairs, causing him to muse on the subject of the fourth dimension (just as I had earlier noticed that an advertisement for Hershey’s Chocolate inspired Duchamp to write about the leg of the *Chocolate Grinder*). But I do not – for a moment – believe that he drew this image to serve as an illustration of his ideas. The boats on this card bear a resemblance to one another *not* because their proportionate sizes were meant to illustrate a concept of the fourth dimension, but simply because after having drawn literally hundreds of similar boats, for the sake of convenience and expediency, the Montmartre artist repeated the same pattern that – by then – had been engrained in his visual memory.

Lastly, I find it preposterous that in such a highly respected publication devoted to the sciences, the authors are allowed to refer to their relatively-minor observation as a “discovery.” Indeed, the following claim is highlighted in the text: “Shearer *discovered* the key as we indulged in our favorite pastime: playing mental chess with Duchampian puzzles.” If these authors see only puzzles in Duchamp, then I am afraid they shall remain forever blinded to his most important message. In my opinion, they would be better guided

by following the advice contained in one of his most memorable statements: "There is no solution because there is no problem."

Francis M. Naumann

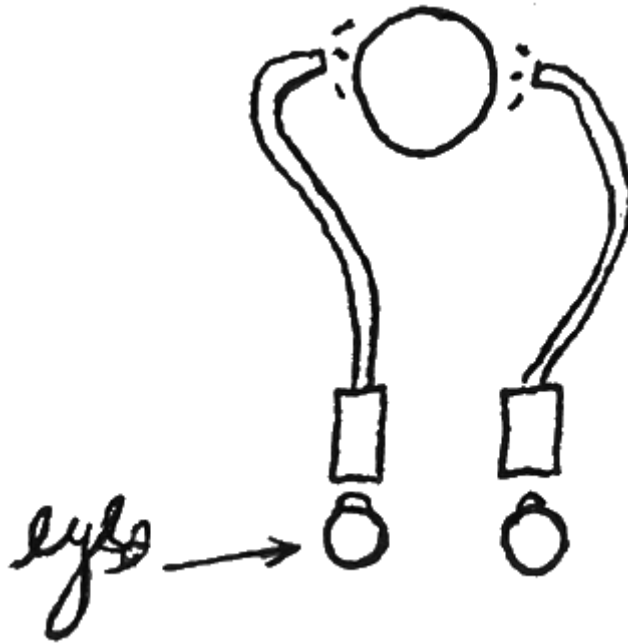
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## **Response to "Boats & Deckchairs"**

Dear Professors,

I am only vaguely familiar with the concept of the fourth dimension, and your fascinating essay in the January *Natural History* will encourage me to investigate it. I believe that you are away of some points that I would like to make and ignored them for brevity's sake, but let's see.

One of the overriding proposals of the essay was that we cannot view both sides of an object at the same time. Actually there are several ways that this would be accomplished, the simplest, by the used of a septum and mirrors. A more easily-understood way would be to use two fiberoptic endoscopes, each focused on opposite sides of the object, and each viewed simultaneously by opposite eyes as follows (I'll use a sphere since my drawings of cubes, viewed on opposite corners, appear confusing).



Note, however, that even though we have provided the brain with the simultaneous view of each side of the object, we have not enhanced the three-dimensional view into a fourth dimension. In fact, with no common detail visible to each eye, the percept is either diplopia if the two sides are too dissimilar, or fusion to a single, flat, two-dimensional disc.

The hand has many individual tactile sensors, which contribute to the 4-dimensional mental image of the penknife that the brain is programmed to interpret. If A-square were a Cyclops, he could not have appreciated the new stereoscopic view provided by the sphere; there are monocular clues to depth, but the 3-dimensional appreciation requires binocularity. Similarly, we are limited by the bilaterality of the visual system to a maximum view of three dimensions. By my calculation, four eyes, on flexible stalks, and the necessary brain functions to interpret the images would be the minimum requirement. (But you know, I really do not have any trouble visualizing this when I conceive of it this way, with four eyes and four endoscopes, perhaps because of my training. And I do recognize that we are minimizing the spatial elements in these examples).

There are two issues that I need to investigate regarding the

4th dimension. First, why is it necessary to understand it in visual terms, particularly human vision? Is this just a prejudice based on our human emphasis on vision? Why isn't the hand/penknife example adequate, as it appears to be to me? Secondly, is this all very simplistic? Do we also have to incorporate a view from both insides as well as from the outside of an object to attain appreciation of the fourth dimension?

I better go dig out my old textbooks or hit the library.

Sincerely,

James L. Schmitt, O.D.  
Muncy, Pennsylvania