

Tim's Vermeer

OPENING CREDITS

FADE UP: Black TITLE CARDS lettered in white. CUE MUSIC.

Sony Pictures Classics in association with
High Delft Pictures presents

A Penn & Teller Film

Produced by Penn Jillette

PAN over paintings by JOHANNES VERMEER.

Music by
Conrad Pope

Editor
Patrick Sheffield

Director of Photography
Shane F. Kelley

Executive Producers
Peter Adam Golden
Glenn S. Alai
Tim Jenison
Teller

Producer
Farley Ziegler

Directed by
Teller

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

Closeup on TIM JENISON sitting in a chair in his "Music Lesson" set.

TIM

You know, sometimes when I'm laying in bed at night trying to get to sleep, all I can think about is this goal of trying to paint a Vermeer. You know, really, I'm gonna try to paint a Vermeer. And at the face of it that seems almost impossible. And I don't know if I could do it. Uh - you know, it'll be pretty remarkable if I can, because I'm not a painter.

TITLE CARD: *TIM'S VERMEER*

CLOSEUP PAN ON VERMEER'S "THE GIRL WITH THE PEARL EARRING" PAINTING

The voice of PENN JILLETTE narrates:

PENN (V.O.)

The Vermeer he's talking about is Johannes Vermeer, the Dutch artist from the 1600s. Some consider him the greatest painter of all time.

CLOSEUP PAN ON VERMEER'S "THE ASTRONOMER" PAINTING

PENN (V.O.)

When you look at a Vermeer it seems like more than paint on canvas. It seems to glow like the image on a movie screen. That magical quality has mystified the world for 350 years.

CLOSEUP PAN ON VERMEER'S "WOMAN WITH A BALANCE" PAINTING

PENN (V.O.)

How did Vermeer do it? Dutch artists typically learned by apprenticeship and they kept written records to prove their training. But no such documents have ever been found about Vermeer.

CLOSEUP PAN ON VERMEER'S "WOMAN WITH A WATER JUG" PAINTING

PENN (V.O.)

And strangely, when you x-ray these intricate images you don't find the usual artist's sketches underneath. It's as if Vermeer were some unfathomable genius who could just walk up to a canvas and magically paint with light.

TIM (O.S.)

It's possible that Vermeer was using technology to make these beautiful paintings. If he did that, and of course we don't know, there's no documentation that he did this--

EXT. CANAL BRIDGE, DELFT - DAY

Tim speaks on a bridge overlooking a canal in Delft.

TIM (CONT'D)

--it's possible he could paint some pretty remarkable pictures without a lot of training. It's possible that he was more of an experimenter, more of a tinkerer, more of a geek.

INT. "OLD CHURCH," DELFT - DAY

Tim approaches to Vermeer's gravestone in the floor of the Old Church in Amsterdam. The stone reads JOHANNES VERMEER 1632-1675.

TIM (O.S.)

--And in that way I feel a kinship with him because I'm a computer graphics guy,

EXT. CANAL BRIDGE, DELFT - DAY

TIM (CONT'D)

and we use technology to make a realistic, beautiful image, and it's possible that's exactly what Vermeer was doing.

INT. STUDIO SPACE, LAS VEGAS - DAY

Tim draws a rough STICK FIGURE SKETCH on a dry erase board, explaining the drawing to an offscreen MARTIN MULL.

PENN (V.O.)

Tim Jenison is not a painter, he's an inventor. He's always had a talent for figuring out how things work.

BEGIN TIM BIOGRAPHICAL ARCHIVAL FOOTAGE MONTAGE:

TIM AS CHILD PLAYING PIANO

PENN (V.O.)

When Tim was growing up in Iowa, he got a broken player piano, repaired it, and taught himself to play swing music by slowing down the piano rolls so he could follow Fats Waller's fingers.

TIM (in his early 20's) FIXING AN AMPLIFIER IN SHOP

PENN (V.O.)

Tim played keyboards in a rock band for a couple of years and taught himself to fix anything electronic that broke.

TIM'S FRIEND (O.C.)

(from footage)

The amazing wizard!

TIM (in his late 20's) SITTING IN A FIELD WITH WIFE LESLIE JENISON

PENN (V.O.)

He got married, had a family, and built a business repairing

ARCHIVAL FOOTAGE INT. ARCADE

PENN (V.O.)

pinball machines and video games.

ARCHIVAL FOOTAGE EXT. FIRST NEWTEK OFFICE IN TOPEKA; TIM
INT. NEWTEK INTERVIEW FOOTAGE FROM *NBC NIGHTLY NEWS* WITH
TITLE & NBC LOGO: "TIM JENISON: NewTek President"

PENN (V.O.)
 Then, around 1990, he invented a
 way to turn personal computers into
 TV studios for live broadcasting.

ARCHIVAL "VIDEO TOASTER" PROMO VIDEO, SAMPLES OF LIGHTWAVE
 ANIMATIONS FROM "IRON SKY" AND "ABIOGENESIS"

PENN (V.O.)
 He called it the Video Toaster, and
 it won him an Emmy. That led
 him to other amazing achievements
 like LightWave, a program for
 rendering 3D images which won an
 Emmy for his company, NewTek,
 in 2003.

FOOTAGE OF NEWTEK'S TRADESHOW BOOTH

PENN (V.O.)
 Tim's now based in San Antonio,
 Texas, and his company produces the
 TriCaster, used in broadcast,
 web, and live performance.

ARCHIVAL FOOTAGE OF TIM (in his 30's) FLYING HIS HELICOPTER
 ABOVE NEWTEK AND HIS RED NSX SPORTS CAR

PENN (V.O.)
 All this has given Tim the money
 and free time to make things like
 this:

ARCHIVAL NBC NIGHTLY NEWS FOOTAGE OF TIM OPERATING HIS
 INVENTION, A RADIO-CONTROLLED BIRD-FACED ROBOT

PENN (V.O.)
 Frankie, his lip-syncing duck.

HOME MOVIE FOOTAGE OF TIM ON GROUND FLYING A LARGE, SELF-
 MADE RADIO-CONTROLLED AIRPLANE

PENN (V.O.)
 A plane made entirely of stuff from
 a home improvement store.

Tim's plane crashes.

LESLIE (O.C.)
 Oooh!!

FOOTAGE CLIPS OF TIM WTH HIS INVENTION THE "ELECTRIC MOTH"
 FLYING ROBOT

PENN (V.O.)
His electric moth.

TIM
As you raise the light, it comes up
off the floor, and it stays at
exactly the same distance under the
light.

ARCHIVAL FOOTAGE OF TIM ROLLERSKATING WITH HIS INVENTION THE
"SKATE-O-MATIC" - A LARGE BACKPACK FAN THAT PROPELS HIM
AROUND THE PARKING LOT

PENN (V.O.)
And...this.

Tim skates in the parking lot of NewTek.

TIM PLAYING BACH ("TOCCATA AND FUGUE IN D MINOR") ON A
GIGANTIC PIPE ORGAN INSIDE HIS SAN ANTONIO WAREHOUSE

PENN (V.O.)
Here's the pipe organ Tim put
together from four different
churches.

Tim sits at his keyboard, explaining:

TIM
Once I got started, I - you have to
have more pipes, because it's never
quite enough - so I've got three
pipe organs here, plus an
electronic organ that I'm using for
the keyboard.

INT. PENN & TELLER THEATER - DAY

Penn Jillette sits onstage at the Penn & Teller Theater,
empty audience chairs visible in the background.

PENN
Tim and I have been friends for a
really long time.

HOME MOVIE FOOTAGE OF PENN AND TIM EXT. DESERT, TALKING
ABOUT PENN'S CAMERA

PENN
(from footage)
If there was an artist, he would
draw it, what you see...

PENN (V.O.)
 We've cried together at space
 shuttle launches. We flew his Lear
 jet down to Cabo San Lucas to see
 the total eclipse of the sun.

TIM
 (re: Penn's camera)
 So, the devil's in there.

Footage cuts to--

PENN
 (to camera)
 This is Penn, the last day he was
 able to see before he lost God's
 most precious gift looking at the
 eclipse.

FOOTAGE INT. "VOMIT COMET" WEIGHTLESS ASTRONAUT TRAINING
 PLANE - TIM FLOATS IN FOREGROUND

PENN (V.O.)
 Tim's been weightless in an
 astronaut training plane and he
 arranged for me to try it, too. I
 vomited into my own hair.

INT. PENN & TELLER THEATER - DAY

Penn continues his interview, above the title "Penn Jillette
 / Penn & Teller".

PENN
 Tim was not and is not a painter.
 So I didn't know he had this whole
 little sub-obsession with...with
 Vermeer.

CLOSEUP PANS ON THE IMAGE OF DAVID HOCKNEY FROM THE COVER OF
 HOCKNEY'S BOOK "SECRET KNOWLEDGE"

PENN (V.O.)
 Tim's Vermeer project started
 eleven years back in 2002, when his
 daughter gave him a copy of David
 Hockney's book, "Secret Knowledge."
 Hockney wrote that when pictures
 started to look less like this:

LEFT OF FRAME SHOWS A FLAT, MEDIEVAL-STYLE PAINTING TITLED
 "DECEMBER: A MAN SLAUGHTERING A PIG AND SINGEING OFF HIS
 BRISTLES"

PENN (V.O.)
 And more like this:

RIGHT SIDE OF FRAME SHOWS VERMEER'S "THE MILKMAID"

PENN (V.O.)
 That was because artists had found
 new tools to help them.

PAN THROUGH LAYERED 17TH CENTURY DRAWINGS, SCHEMATICS, AND
 TEXTS OF OPTICAL EQUIPMENT

PENN (V.O.)
 In 17th century Holland, high
 quality lenses and mirrors were in
 use everywhere. Telescopes were all
 the rage and science hobbyists were
 experimenting with ways to project
 live images.

PAN ACROSS EARLY DRAWINGS OF OPTICAL PRINCIPLES, CAMERA
 OBSCURAS

PENN (V.O.)
 Hockney challenged conventional
 wisdom by suggesting that when
 artists of Vermeer's day began to
 paint more accurately, they were no
 longer using just their eyes and
 their imaginations. They were
 secretly getting help from optical
 machines - like the camera obscura.

ANIMATION: A CAMERA OBSCURA, WITH MOVING FEMALE "MANNEQUIN"
 FIGURE ON RIGHT

PENN (V.O.)
 Camera Obscura is Latin for "dark
 room". Build a box, any size.

A BOX appears in the animated room, GROWING and SHRINKING on
 Penn's cue. The mannequin reacts with surprise.

PENN (V.O.)
 Could be the size of a shoebox, but
 let's make this one big enough to
 stand inside. It's a -- dark room.

The box is now a full size CAMERA OBSCURA. A HOLE appears in
 the room-side wall of the camera obscura.

GREEN LINES trace out from the hole - towards the twirling mannequin and the BACK WALL of the camera.

PENN (V.O.)
 Drill a little hole in one side of the box and you see something surprising.

The image of the mannequin, waving and dancing, is visible on the back wall of the camera obscura.

PENN (V.O.)
 The image of whatever is outside the box -- in the light -- is projected on the wall opposite the hole, only it's upside down and backwards.

A small red-rimmed LENS floats into the frame, fitting itself in the existing HOLE, which AMPLIFIES the image.

PENN (V.O.)
 You can make the image brighter and clearer by putting a lens in the hole, and you can change the size of the image on the wall by changing the curvature and position of the lens.

FOOTAGE OF FROM DAVID HOCKNEY'S BBC SPECIAL "DAVID HOCKNEY: SECRET KNOWLEDGE"

Wearing a shirt bearing the phrase "Optics Don't Make Marks", DAVID HOCKNEY carries out a drawing experiment within a camera Obscura.

PENN (V.O.)
 Here's David Hockney on a TV special. He's inside a camera obscura, tracing the image of a live model projected through a lens.

Hockney traces the outline of the projected costumed model in charcoal, intermittently holding up a candle to check his work.

TIM (O.S.)
 Hockney was mostly focused on how a
 painter could have traced images
 through a lens.

EXT. CANAL BRIDGE, DELFT - DAY

TIM
 To me what was most striking about
 the Vermeers, as a video guy,

PAN ACROSS VERMEER'S "THE ASTRONOMER"

TIM (O.S.)
 I'm looking at this image and I see
 a video signal, I see something
 that looks like it came out of a
 video camera.

EXT. CANAL BRIDGE, DELFT - DAY

TIM (CONT'D)
 So I thought about how a painter
 could actually copy that. Now most
 people that have played with a
 camera obscura got the idea that
 they could take that projected
 image and somehow paint on it.
 Well, I've tried that and a lot of
 people have tried it, it's
 impossible. What happens is it
 actually fights you, it works
 against you, it's worse than
 nothing at all.

INT. NEWTEK ROOM - DAY

Tim approaches a simple projected image: a rectangle, the
 left side WHITE, and the right side BLUE.

PENN (V.O.)
 Painting on a projection just
 doesn't work.

CLOSEUP of the projected white and blue light.

Tim's hand enters with a BLUE PAINT CARD on the white
 portion. He COMPARES its tone to the blue side.

PENN (V.O.)

Here's a blue that matches very closely the blue in the projection. Imagine this is wet paint. When you put it into the projection, it looks way too dark.

Tim's hand correspondingly puts the blue into the blue half of the projection, showing that this DARKENS THE TONE.

Tim's hand then swings up with another card in the blue half of the projection - it matches the blue tone.

PENN (V.O.)

On the other hand, here's a perfect match. The color that matches the projected color just right. The only color that'll ever do that --

Tim's hand slides the second card to the white half of the projection - it's a white card.

PENN (V.O.)

-- is white.

EXT. ROYAL PICTURE GALLERY MAURITSHUIS, THE HAGUE - DAY

PENN (V.O.)

Tim went around the world studying Vermeer.

INT. ROYAL PICTURE GALLERY MAURITSHUIS - DAY

Tim approaches Vermeer's "Girl with the Pearl Earring" painting.

We see the famous, glowing face in the painting closer over Tim's shoulder.

TIM (O.S.)

They called it "painting with light" - Vermeer "painted with light".

Closeup pans on the "Girl's" face - each stroke and crack visible.

TIM (CONT'D)

You can't paint with light - you have to paint with paint. And so what they're really talking about is this verisimilitude that Vermeer has -

EXT. CANAL BRIDGE, DELFT - DAY

TIM (CONT'D)
- That it just pops.

INT. ROYAL PICTURE GALLERY MAURITSHUIS - DAY

Medium shot of Vermeer's "View of Delft".

TIM (O.S.)(CONT'D)
You see it from across the room and
it looks like a slide, it looks
like a color slide, a Kodachrome.

Tim comes into the frame. We go CLOSER IN to details of the painting - the dock, the church towers.

Tim inspects the painting with his magnifying BINOCULARS attached to his regular glasses.

MONTAGE OF TIM VIEWING VERMEER PAINTINGS

Tim, on a different day, wears the same binoculars on his glasses viewing Vermeer's: "WOMAN WITH A LUTE", "A LADY WRITING A LETTER", "THE LITTLE STREET".

TIM (V.O.)
Seeing the Vermeers in person was a
revelation. It reinforced to me
that I was on the right track.

Tim, with binoculars, inspects Vermeer's "WOMAN IN BLUE READING A LETTER".

TIM (O.S.)
That what I was seeing was an
accurate representation of the
color in that room.

Closeup on the painting "WOMAN IN BLUE READING A LETTER".

TIM (O.S.)
I just had a hunch that there must
be a way to actually get the colors
accurate -

EXT. CANAL BRIDGE, DELFT - DAY

TIM (CONT'D)
 - with mechanical means. Some way
 you could do that in the 17th
 century.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

Tim sits at a table, his large optical lens on one side of
 him.

TIM
 I remember just having this vague
 idea of comparing two colors with a
 mirror, and it didn't go any
 farther than that for a long time.
 Sitting in the bathtub, you know
 that's I guess where you have your
 "Eureka" moments - but, Uh. I don't
 know something about bath water
 you're you know it's just very,
 very relaxing and I was just
 picturing that mirror hanging there
 in space, and I pictured what I
 would see-- and there it was. And
 so I grabbed a piece of paper,

CLOSEUP PAN ON TIM'S FIRST DRAWING OF HIS INVENTION, "THE
 COMPARATOR MIRROR"

TIM (O.S.)(CONT'D)
 - being careful not to get it wet,
 made a sketch; and that was where I
 realized

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (CONT'D)
 Vermeer could have used a mirror to
 paint those paintings.

INT. TIM'S WAREHOUSE - CAMERA OBSCURA - DAY

A black and white photograph hangs upside down on the back
 wall of Tim's camera obscura, lit by a small projected
 circle of light.

TIM (O.S.)
 To test this I propped up a high
 school photograph of my father-in-
 law on the table.

The camera POV moves down to the table, where Tim's hand runs across blank piece of fiberboard. His hand then adjusts the COMPARATOR MIRROR right above.

TIM (O.S.)
I put a piece of Masonite down here
to paint on. I set a small mirror
at a 45 degree angle,

The righted image of the photograph appears in the mirror above the fiberboard.

TIM (O.S.)
- and for the first time in my life
I did just what Vermeer may have
done - I picked up some oil paints
and a brush.

INT. TIM'S HOME - KITCHEN TABLE - DAY

Penn and Tim sit at the kitchen table. Tim sits in front of the same setup of the father-in-law photograph, the mirror, and a blank piece of fiberboard.

TIM
In Vermeer's camera this would be a
projection, a lens is projecting
this image. But to show the actual
mirror painting process we're using
a photograph here.

An overhead shot of the photograph/painting setup as Tim demonstrates what he is seeing.

TIM
You can see that there's a
reflection, and then there's my
canvas down here. And right at the
edge of the mirror I can see both
things at once. I'm just going to
apply paint and either darken or
lighten the paint until it's the
same exact color. And at that
point, when it's exactly the same
color, the edge of the mirror will
disappear.

Tim mixes paint on his easel.

TIM
Alright, and I'm an idiot at this,
I have done this process exactly
twice in my life before.

He begins the painting.

TIM (CONT'D)

What I'm doing is I'm moving my head up and down so that I can see first the original and then my canvas. I'm looking at both things at the same time.

A CLOSEUP VIEW of the beginning of his painting through the comparator mirror.

TIM (O.S.)

Right on the forehead, you can see that they match, because you can't really see the edge of the mirror. That's, that's your clue that you've matched the paint exactly.

Medium of Tim and Penn at the table INTERCUT with closeups of Tim's painting, sometimes through the mirror, as it progresses.

TIM

It's not subjective, it's objective. I'm, I'm a human - a piece of human photographic film at that point.

PENN

What you're doing here is you're essentially blending?

TIM

Yep, I am either darkening or lightening the paint that's already on the surface.

PENN (O.S.)

You aren't tracing any lines cause there are no lines.

TIM

Yeah, that's a characteristic of the Vermeers that makes them unusual is that there weren't lines, and there weren't any lines drawn underneath the paint either.

PENN

It looks like there's these blobs that are emerging into a picture.

The eyes and nose in the painting begin to take form.

PENN (CONT'D)

It doesn't look like the order
you're doing stuff in is not a -
it's not being done mentally.

TIM

No it's -

PENN

And that's what's so nutty about it
--

TIM

You know, if I was better at this
it may be more systematic, I may
evolve into doing it more
systematically but --

Closeup on Penn as he watches Tim paint.

TIM (CONT'D)

-- No matter what I've tried if I
just spend enough time comparing
the mirror to the canvas and
stirring the paint around, it ends
up looking like a photograph.

INT. TIM'S CAMERA OBSCURA - DAY

The comparator mirror stands over a completed PAINTING of
the father-in-law photograph, the photograph above
reflecting into the small area of the mirror.

PENN (V.O.)

And this was the result of Tim's
experiment - it took him five
hours.

The two images MATCH each other in the mirror.

PENN (V.O.)

Not bad for a first oil painting.

WIDE OF VERMEER'S PAINTING "THE MUSIC LESSON"

TITLES: "The Music Lesson / Johannes Vermeer"

Slow push close in on the painting, eventually to the upper
left hand corner.

TIM (V.O.)

The father-in-law picture was proof enough in my mind that Vermeer probably did this. However my father-in-law doesn't look like a 17th century Dutch woman, so I don't think it would be very convincing evidence for a lot of people. So I thought the best way would be to really do a Vermeer. I had the suspicion that it was exactly the

TIM (CONT'D)

same thing. If I could do the father-in-law I could paint a Vermeer. It seemed to me the most powerful demonstration of the idea. The reason I chose "The Music Lesson" is probably because of all the paintings, I think "The Music Lesson" is a great little laboratory, because it's so complete and so self-contained.

Closeup pans through the painting as Tim refers to the specific elements.

TIM (CONT'D)

You know where the windows are, you know how big the windows are, you can reconstruct the harpsichord independent of the painting; the Spanish chair, the viola da gamba, the rug - all these things could be procured, and their appearance is gonna be what it is, independent of Vermeer's painting. It's a little scientific experiment waiting to happen.

We pull wide again on the painting.

EXT. STUDIO SPACE, LAS VEGAS - DAY

Penn, TELLER, and MARTIN MULL walk up to front door of the studio space. Tim greets them at the door.

PENN (V.O.)

Before Tim went to all that trouble, we thought he should run his idea by a working artist.

INT. STUDIO SPACE, LAS VEGAS - PAINTING ROOM - DAY

Tim, Penn, Teller, and Martin walk through the space with optical equipment and painting materials.

PENN (V.O.)
So we called up our friend, Los Angeles-based painter and entertainer Martin Mull-

Tim and Martin arrive at the father in law photo, painting, and mirror setup at a table.

PENN (V.O.)
-and asked him to meet Tim at a studio in Las Vegas and see his gizmo.

Tim reveals the painting from under paper to Martin.

MARTIN (O.S.)
Oh my god.

Tim and Martin at the table are INTERCUT with closeups of the painting.

MARTIN
Oh. My. God. ...Holy cow.

TIM
Took me about half an hour to learn how to operate a paintbrush.

MARTIN
Uh-huh. Oh, good for you, it took me forty years.

Martin continues to peer at the painting with the mirror.

TIM
(laughing)
Well, and the beauty of this technique is that you can make mistakes and see what you did wrong instantly and try to fix it.

MARTIN (O.S.)
This is astounding.

INT. STUDIO SPACE, LAS VEGAS - BOX CAMERA AT WINDOW - DAY

Martin and Tim approach a BOX CAMERA sitting on a small table.

TIM
So this is a camera obscura,
typical of the type -

MARTIN
Ahh!

TIM
- that could be found in the
1600's.

Martin looks into the small image of a car that appears on
the box camera's SCREEN.

TIM (O.S.)
This type of camera obscura is
called a "box camera obscura". It
generally had a ground glass like
this.

Tim points to the viewing screen, then adjusts the lens on
the front of the box.

TIM
It has the ability to refocus by
moving the lens in and out. The
general consensus of people that
believe Vermeer used optics was
that he may have looked at that
image and been inspired by it.

MARTIN
Yeah.

TIM
- And that's the end of the story.

EXT. STUDIO SPACE, LAS VEGAS - DAY

Tim opens the large studio door and he and Martin walk out.
There is another box camera on a table in front of Tim's
daughter NATALIE JENISON, who is seated outside.

TIM
So now that we know there's a way
to copy the colors exactly, I'm
proposing an alternate history of
Vermeer.

MARTIN
Ok.

TIM
 His father's an art dealer, he
 knows something about art, he wants
 to make a painting. He looks at
 this image --

Tim adjusts the lens on the front of the camera, where
 Natalie can be seen reflected.

TIM
 There's my daughter, Natalie. What
 if Vermeer took the camera, turned
 it sideways, and now it's vertical
 like my father-in-law picture.

Tim ROTATES the camera. The image projection is now facing
 the side - the image of Natalie has spun from sideways to
 upside-down.

MARTIN
 Ok--

Tim produces a canvas and lays it on the table next to the
 camera.

TIM
 He takes his canvas, and -

Tim pulls out the comparator mirror.

TIM
 - the secret ingredient: the
 mirror. He positions the mirror
 here -

MARTIN
 Which corrects the inversion?

TIM
 Yeah - it brings it back...

MARTIN
 - And everything...

Martin looks down into the new mirror setup.

In a closeup, Natalie is seen reflected in the mirror over
 the blank canvas.

MARTIN (O.C.)
 And there it is! Clear as can be.

TIM

So if he's in his living room, he puts up some curtains, controls the light, and now picks up his brush and starts to paint. My guess is that "The Girl with the Red Hat" is that first painting.

MARTIN

Wow.

TIM

It's painted over the top of another painting. We can x-ray it and see that there's something else underneath, so maybe this was just a throwaway experiment.

WIDE SHOT OF VERMEER'S "GIRL WITH THE RED HAT"

A push in on the detail of the painting, then we CUT TO:

MARTIN, WHO IS PAINTING WITH THE COMPARATOR MIRROR

Martin's partially completed painting of his daughter is visible through the mirror.

MARTIN (O.S.)

So I understand, Tim, that when you go back to Texas you're going to -

INT. STUDIO SPACE, LAS VEGAS - PAINTING ROOM - DAY

Medium over Martin's shoulder as he continues to paint.

MARTIN

- construct a replica of the exact room where Vermeer painted?

Tim watches him paint. Martin is adept at this - his brushstrokes are small and controlled.

TIM

Yeah.

MARTIN

- And are going to... And you're going to do a painting in his stead, am I right?

TIM

Yep.

PENN (V.O.)

Many of Vermeer's paintings appear to have been painted in the same room - likely the north-facing room on the second floor of the house Vermeer lived in. That's the room Tim plans to construct.

Tim speaks to Martin as Martin continues to paint.

TIM

I really hope to see firsthand what Vermeer was up against -

MARTIN

Mhm...

TIM

If he was using this technique. And try to get some idea of how long it would take, just to get the conditions right -

A closeup of Martin's painting.

TIM

Just mundane things like how much usable lighting do you get in a day.

MARTIN

So you're not going to use any artificial light.

TIM

That's right. And I'm only going to use materials that Vermeer would have had.

MARTIN

Ok --

TIM

So, I'm going to force myself into the constraint of having to grind the pigments and you know, make the paint, and use only pigments that he had access to. Or that he used in his paintings.

PENN (V.O.)

For his experiment, Tim wanted to recreate as closely as possible the conditions that Vermeer was working with.

INT. PENN & TELLER THEATER - DAY

Closeup on Penn sitting onstage.

PENN

Back then you couldn't just run down to the paint store and pick up a tube of paint, so Tim had to learn how to grind and mix the pigments - which I'm now talking about something I know nothing about, but of grinding the pigments and adding in the oil, and however you make paint. If it were left to

PENN (CONT'D)

me to make paint, there would be no paint.

INT. PENN & TELLER THEATER - BACKSTAGE - DAY

Tim sits in a chair in the Theater's backstage area.

TIM

I also learned how to make lenses. I couldn't use a modern lens, they're too good. So I had to build one. So I had to make the form on a lathe, I had to melt the glass, I had to polish it with various grades of abrasives, just the way they made lenses in the 17th century.

EXT. MARIA THIN'S HOUSE, DELFT - DAY

Tim walks up to Maria Thin's house, where Vermeer painted.

PENN (V.O.)

To be sure he was getting everything right, Tim took some time off of work to fly to Holland. He visited Delft, the city where Vermeer had lived, and studied the light and the architecture.

Close on Tim in front of a plaque with blueprints and drawings on the exterior of the building.

TIM
So this is it - this is where
Vermeer painted those magical light
pictures.

EXT. SHOTS OF TIM IN DELFT

PENN (V.O.)
He learned to read Dutch. He
consulted with experts. Measured
furniture in museums, and immersed
himself in Vermeer's world.

EXT. THE REMBRANDT HOUSE MUSEUM, AMSTERDAM - DAY

Pan across small pots of pigment, and the beginning of paint mixing.

BEGIN MONTAGE TIM GATHERING INFORMATION IN DELFT AND AMSTERDAM

TIM MEASURES A SPANISH CHAIR IN THE LAMBERT VAN MEERTEN MUSEUM, DELFT

TIM
Alright, so move it in --

TIM (CONT'D)
Okay, good.

A DIGITAL CAMERA snaps photographs of the Spanish chair with measurements.

TIM CONVERSES WITH MUSEUM DIRECTOR DANIELLE LOKIN OVER A BOOK OF VERMEER PAINTINGS

TIM VISITS THE SITE OF VERMEER'S "VIEW OF DELFT" PAINTING

REMBRANDT HOUSE MUSEUM HISTORIAN ERIC ARMITAGE INSTRUCTS TIM ON MIXING LAPIS LAZULI POWDER WITH LINSEED OIL TO MAKE ULTRAMARINE BLUE PAINT

TIM PHOTOGRAPHS THE TOWN SQUARE OUTSIDE MARIA THIN'S HOUSE

TIM ENTERS "POTTENBAKKERIJ" - A CERAMICS SHOP IN DELFT

Tim carries a book inside.

Tim displays the print of "The Music Lesson" to ANKIE BONNET, at her pottery wheel.

TIM
I would like to get one exactly
like this. Do you think you could
make one?

ANKIE
That's possible, yes.

TIM CONTINUES THE PAINT MIXING LESSON WITH ERIC ARMITAGE

Eric takes the paste they have made, scrapes it with a
palette knife onto a stone grinder.

TIM IN THE "NEW CHURCH" STEEPLE, LOOKING DOWN ON DELFT

WIDE PAN ON THE TOWN SQUARE OF DELFT FROM THE "NEW CHURCH"
STEEPLE

ERIC MIXES THE PAINT WITH THE STONE GRINDER AT THE REMBRANDT
HOUSE, TIM LOOKS ON.

TIM WALKS UP TO THE NEW CHURCH, PAN UP THE STEEPLE --

WHICH FADES TO MATCH:

-- THE CELL PHONE TOWER AT TIM'S SAN ANTONIO WAREHOUSE

EXT. TIM'S WAREHOUSE, SAN ANTONIO - DAY

A Minivan pulls up to the warehouse.

PENN (V.O.)
When he got back to San Antonio,
Tim rented a warehouse that faced
North, just like Vermeer's studio,

A group of people climb out of the car: Penn Jillette,
PHILIP STEADMAN, and RUTH STEADMAN.

PENN (V.O.)
and invited Professor Philip
Steadman over from London to look
over his experiment.

The group meets with Tim and they walk to the second
warehouse.

PENN (V.O.)
While some believe that Vermeer
painted from his imagination,
Steadman found evidence that
Vermeer used optics.

Tim and Steadman enter Tim's Vermeer warehouse.

FRONT COVER OF PHILIP STEADMAN'S "VERMEER'S CAMERA" IS
SUPERIMPOSED OVER --

ANIMATION: OUR SAME CAMERA OBSCURA ROOM

PENN (V.O.)
Steadman is the author of
"Vermeer's Camera." In this book,
Steadman analyzes six of Vermeer's
paintings

Thumbnails of Vermeer's paintings appear on either side of
the book cover: "Lady Writing a Letter with her Maid," "The
Wine Glass," "Lady Standing at a Virginal," "The Music
Lesson," "The Girl with the Wineglass," and "The Concert."

PENN (V.O.)
-- to determine the layout of
Vermeer's studio.

ANIMATION CONTINUES - 3D ANIMATED CAMERA OBSCURA

A red square now appears around the mannequin's upper body,
and a corresponding red square appears on the projected
image on the back wall.

PENN (V.O.)
Then he uses geometry to figure out
where a lens in a camera obscura
would have to go to match each
painting's viewpoint.

The wall of the camera obscura shifts left and right,
affecting the size of the projected image.

PENN (V.O.)
Now he calculates the size of the
projection on Vermeer's back wall,
and compares that to the size of
the corresponding painting.

A YELLOW SQUARE forms around the projection on the back
wall. It lifts out of the room to surround one of Vermeer's
paintings cited above.

Five more yellow squares appear to surround the rest of
Vermeer's paintings.

PENN (V.O.)
For all six, the sizes match
exactly.

The background fades to black.

PENN (V.O.)
It doesn't seem like that would
happen by chance.

The yellow squares fade, leaving the paintings.

PENN (V.O.)
Pretty convincing evidence the
Vermeer used a lens.

INT. TIM'S WAREHOUSE - DAY

On Philip Steadman as he watches Tim prepare their
demonstration.

STEADMAN
Well, tell me about what you're
doing.

Tim carries a white jug over to a lit table, next to a white
flag for lighting.

PENN (V.O.)
Steadman's discovery fit perfectly
with Tim's mirror. So now Tim set
up a test that would use both.

TIM
...And this, uh, we will make an
attempt at painting this.

STEADMAN
Ok.

TIM
...Using the mirror.

STEADMAN
Ok.

TIM
So, now let's go inside the booth.

Tim and Steadman walk to the entrance of Tim's warehouse
CAMERA OBSCURA.

PENN (V.O.)
He and Steadman would try to paint
a jug using his comparator mirror
inside a camera obscura.

ANIMATION ILLUSTRATION: TIM'S CAMERA OBSCURA

Now, in the place of the mannequin, there is a modeled jug on a table lit by an electric light. It is projected the same way on the back wall of the camera.

PENN (V.O.)

...As Tim thought Vermeer had done.

INT. TIM'S WAREHOUSE - CAMERA OBSCURA - DAY

Philip Steadman watches Tim paint the projection of the jug with the comparator mirror.

PENN (V.O.)

They take turns painting. It doesn't matter who does the brushstrokes - the process is objective, and any painter who uses it gets the same result.

Close on the painting.

Philip and Tim switch, now Philip is painting the jug.

Tim again continues the jug painting, Philip watching.

STEADMAN

David Hockney's book came out just after mine...

TIM

What do you remember about the reaction? There was quite a controversy around both books wasn't there?

Various views of the interior of the camera obscura - close on the painting, opposite Tim and Steadman, and behind them toward the lens.

STEADMAN

Enormous, yes, yes. There was a lot of upset, a really deep anguish - amongst the art historians. The painters were...relaxed. They said, you know, "This is a technology, fine, ok."

Close on Steadman, and the jug exterior of the camera

STEADMAN (CONT'D)

But there was something - a really deep hurt amongst some of the art historians which was to do with intrusion of amateurs and crass rationalists into the preserves of art history, it was to do with misunderstanding of the nature of art and cheating and genius, and the idea that an optical method is is - some sort of cheat. Because these are very accurate, measured perspectives. So there are two ways you can do them: You can produce them optically. Or you can set them up geometrically.

Close on Steadman as he explains drawing optically.
ANIMATION: VANISHING POINTS ANIMATE, TO STEADMAN'S RIGHT.

STEADMAN (CONT'D)

If you set them up geometrically, you're using the standard methods, it's a machine, it's an algorithm,

STEADMAN (CONT'D)

you apply the rules. Why is that not cheating?

TIM (O.S.)

Exactly.

Philip laughs.

STEADMAN

Strange, isn't it?

TIM

So, the only legitimate way to make a painting is to just walk up to the canvas, and - "a la prima," paint it.

STEADMAN

(laughing)

But the reason it isn't cheating is that it's hard.

TIM

Yes.

STEADMAN

It's geometry, it's mathematics.

The entire jug is now represented in the painting.

TIM
Well, this certainly is not easy.

STEADMAN
This is not easy, no.

TIM
If Vermeer did this, it wasn't a time saver.

STEADMAN
No, indeed.

TIM
I can't comprehend that someone could paint that from their imagination.

STEADMAN
No.

TIM
Of course the human being is pretty remarkable sometimes.

STEADMAN
To get objects at their true sizes, and to get all the kind of luminous effects... Painters can do miraculous things, it's difficult to say "This is impossible," but some things are more impossible than others.

Tim and Steadman chuckle.

The jug painting is completed - Tim and Steadman sign it with a large black marker.

STEADMAN
(signing)
...Gonna go right off the edge here. So!

TIM
Great. Well, congratulations.

They laugh and shake hands.

STEADMAN
And you. Fantastic.

STEADMAN (O.S.)
I want to think that --

INT. TIM'S WAREHOUSE - EMPTY "MUSIC LESSON" SET - DAY

Philip Steadman holds Tim's comparator mirror as he speaks to the camera. Behind him are prints of Vermeer's "The Music Lesson" and "Lady Writing a Letter with her Maid".

STEADMAN
- this simple, elegant device is something that Vermeer could have used. There's no doubt it's practical, and it's simple.

Wide shots are intercut with closeups on his face.

STEADMAN
You know, it's a plain mirror. This is a 17th century technology they knew all about mirrors, and you can imagine him perhaps thinking of something like what Tim has thought

STEADMAN (CONT'D)
of, but we know nothing from a documentary point of view of how Vermeer worked, there are no descriptions by him, by other people, there are no drawings... We know very little about his life. So the only real source of information to answer a question like that would be the paintings themselves.

Steadman, now in front of the completed jug painting, seems to struggle with his feelings on the painting device.

STEADMAN (CONT'D)
Using Tim's device, it isn't easy, but somehow it does turn you into a machine. You become a machine. Was Vermeer a machine? Maybe Vermeer was strong-minded enough to think, "I'll become a machine".

FADE OUT.

INT. TIM'S WAREHOUSE - PINBALL MACHINE - DAY

Penn, Philip, Tim, and Ruth surround Tim's PINBALL MACHINE as Tim plays. Natalie films on a handheld camera.

PENN (V.O.)

That little picture of the jug took
Tim and Steadman eight and a half
hours to paint.

SERIES OF TIM AND STEADMAN TOURING TIM'S WAREHOUSE MONTAGE

TIM SHOWS STEADMAN HIS PAINT-MIXING SETUP

PENN (V.O.)

and Tim's method worked. But they
were painting in black and white,
and using powerful electric light -

TIM SHOWS STEADMAN HIS COMPUTER IN THE MACHINE SHOP

PENN (V.O.)

- that wouldn't have been around in
Vermeer's day.

TIM AND STEADMAN VIEW THE "MUSIC LESSON" SET ON A MONITOR,
DISCUSS A DRAWING

PENN (V.O.)

Would Tim's mirror work well enough
to paint "The Music Lesson" - in
full color, in natural light?

TIM AND STEADMAN STAND OVER TIM'S LENS KILN

PENN (V.O.)

To find that out Tim would need
Vermeer's room, and everything in
it.

INT. THE VAN MEERTEN MUSEUM, DELFT

A Spanish chair and a ball-leg table stand in the center of
a room furnished with historic Dutch furniture.

INT. PRINSENHOFF MUSEUM, DELFT - A CONVENT WINDOW

The unusual details of the metal lattice in the stained
glass window are evident.

PENN (V.O.)

But museums don't loan stuff from
the 1600's to video engineers with
a wacky hobby.

PAN UP CORDED-OFF SPANISH CHAIR

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM

It would be nice if I could have
hired somebody to build all this
but it was kind of an interactive
process --

INT. TIM'S OFFICE AT NEWTEK, WITH MONITOR OF 3D MODEL OF THE
MUSIC LESSON

TIM (O.S.)

- you know, I had to first model
the room in Lightwave 3D working
from the painting to get the
dimensions and the shapes right.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (CONT'D)

Even though it was a lot of work it
was just easier for me to do it
because as I went I could make sure

TIM (CONT'D)

that the furniture looked like the
furniture in the Vermeers.

CLOSE ON - ELEMENTS OF VERMEER'S "THE MUSIC LESSON", WHICH
CUT TO PENN'S CUES

GIRL AT VIRGINALS

PENN (V.O.)

But Tim is not a dressmaker.

MIRROR ABOVE VIRGINALS

PENN (V.O.)

Or a framer.

CEILING BEAMS

PENN (V.O.)

Or a carpenter.

SPANISH CHAIR

PENN (V.O.)

Upholsterer.

LEADED WINDOWS

PENN (V.O.)
Glazier.

VIRGINALS

PENN (V.O.)
Builder of virginals, which is a
type of harpsichord.

METAL PICTURE HANGER

PENN (V.O.)
Metalsmith.

WOODEN LEGS OF VIRGINALS

PENN (V.O.)
Furniture maker.

BACK WALL

PENN (V.O.)
Plasterer.

FLOOR TILES

PENN (V.O.)
Tile layer.

MEDIUM OF WHOLE PAINTING.

PENN (V.O.)
Or a lens maker.

INT. PENN & TELLER THEATER - DAY

PENN
But he's not an artist either.

BEGIN TIM ROOM FABRICATION AND BUILDING MONTAGE

TIM AT COMPUTER 3D RENDERING OF "MUSIC LESSON" ROOM,
REFLECTED IN HIS GLASSES

PENN (V.O.)
He used what he was, a
technologist, to help him become
all those things he wasn't, so that
he could build his room.

TIM OPENS THE GARAGE DOOR IN WAREHOUSE

BUILDING THE ROOM MONTAGE:

TIM WORKS ON 3D MODEL OF ROOM IN LIGHTWAVE 3D
TIM MOVES FLATS WITH FRIEND FOR CAMERA WALLS
MORE 3D MODEL RENDERS
WORKERS CUT WITH SAWS THROUGH CONCRETE WAREHOUSE WALL
INT. NEWTEK OFFICE TIM AT COMPUTER
INT. WAREHOUSE TIM POURING WAX INTO LENS MOLD
TIM TAKES OUT DRIED WAX LENS MOLD
EXT. WORKERS HAMMERING OUT CONCRETE WALL
EXT. CONCRETE WALL SECTION FALLS TO THE GROUND
TIM WITH LENS MOLD
TIM WITH IPAD AND A COPY OF "VERMEER'S CAMERA"
TIM WITH LENS MOLD STUCK IN FORM
TIM HAMMERING OUT STUCK WAX MOLD, BREAKING IT
TIM WITH FORKLIFT, MOVING FLATS FOR CAMERA OBSCURA
TIM AND NATALIE TAKE OUT PRINT OF THE PAINTING FROM
BACKGROUND OF "THE MUSIC LESSON"
TIM AND FRIEND INSTALL CEILING FLAT OF CAMERA OBSCURA

TIM
This is fun. I mean, this is the
real thing.

TIM ADJUSTING THE CONTROLS ON HIS MILLING MACHINE
STOP MOTION OF MILLING MACHINE CUTTING WOOD FOR A LION HEAD
FINIAL
STOP MOTION OF MILLING MACHINE CUTTING SPANISH CHAIR LEG
TIM WARMING LENS MOLD PLATE WITH HANDHELD BLOWTORCH
SECOND ATTEMPT AT POURING WAX LENS MOLD
TIM AT LIGHTWAVE MODEL OF ROOM
MILLING MACHINE CONTINUES TO CUT OUT SPANISH CHAIR LEG
TIM HAND CUTS THE SPANISH CHAIR LEG PARTS

TIM WITH PRINTED DIAGRAMS AND SKETCHES OF THE ROOM BLUEPRINT

TIM IN HIS OFFICE WITH LIGHTWAVE RENDERING OF ROOM

TIM POURING PLASTER INTO LENS MOLD

CLOSEUP TIM'S HANDS WORKING OUT WRITTEN CALCULATIONS AND MEASUREMENTS OF ROOM

WINDOWS AND PANELS OF LIGHTWAVE 3D WITH IMAGES OF PAINTING SUPERIMPOSED ON 3D MODEL

TIM REMOVING FIRST PLASTER LENS MOLD FROM CARDBOARD

TIM WATCHES AS A CHAIR LEG, RUNNING THROUGH A LATHE WITHIN THE MILLING MACHINE, STARTS SMOKING AND SQUEALING

NATALIE (O.S.)

Is it safe for there to be that much smoke?

TIM

Uh, I don't know, I've never done this before!

Tim readjusts the chair leg in the machine.

NATALIE (O.S.)

Could it heat up and catch fire?

TIM

Well, I guess. I don't know.

NATALIE (O.S.)

(laughing)
...Whatever!

TIM

It's kind of cool...Ok here we go.

Tim turns the lathe on again.

TIM SIFTS PLASTER DUST INTO A BUCKET OF WATER

NATALIE TAPS THE BUCKET OF PLASTER WITH A VENTILATION MASK ON

TIM WORKS AT HIS MILLING MACHINE COMPUTER

THE LARGE TABLE LASER RUNS IN THE WAREHOUSE

TIM LEANS OVER THE TABLE LASER AS IT RUNS

NATALIE CONTINUES TO TAP AND SHAKE THE PLASTER MIX

TIM POURS PLASTER INTO ANOTHER LENS MOLD

TIM CUTS THE END OF A CHAIR LEG IN A CIRCULAR SAW

TIM POURS GLASS SHARDS INTO A LENS MOLD ABOVE A KILN

CLOSE ON A 3D MODEL OF THE LEADING OF THE WINDOWS

VIEW OF A REALISTIC, LIT MODEL OF THE "MUSIC LESSON" ROOM ON
TIM'S OFFICE COMPUTER

TIM PUTS MOLD WITH GLASS SHARDS INTO THE KILN

TIM'S GLASSES IN FRONT OF MONITOR

NATALIE WORKS ON GENTLEMAN'S CLOTHES AT SEWING MACHINE

TIM OPENS THE LID OF THE KILN, WHICH GLOWS ORANGE WITH HEAT

TIM STANDS IN FRONT OF THE MILLING MACHINE CONTAINING A
LATHE AND A VIRGINALS LEG

TIM

Ok, I got a problem with the
virginals leg. It's supposed to be
36 and a half inches long, but -

Tim runs a measuring tape alongside the virginals leg.

TIM (CONT'D)

- my lathe only goes about 34
inches. I mean, I could make the
leg in two pieces. But I think what
I'm gonna do is I'm going to cut
the lathe in two.

Tim cuts the HEAVY LATHE on a massive bandsaw. It cuts
through the metal easily, but tips with the weight
dangerously after it is CUT THROUGH.

Tim installs the newly cut lathe into the milling machine.

TIM (CONT'D)

Generally you don't take a fine
precision machine tool and saw it
in half. But power tools are made
to be jury-rigged.

TIM REMOVES THE COOLED GLASS LENS MOLD FROM THE KILN,
REMOVES THE LENS FROM THE MOLD

TIM GLUES LASER-CUT PLASTIC LATTICE OF THE WINDOW LEADING
INTO THE WINDOW FRAMES

TIM WORKS ON ANOTHER VIRGINALS LEG AT THE MILLING MACHINE

TIM CAREFULLY GLUES IN MORE WINDOW LEADING

COMPUTER MODEL OF THE "MUSIC LESSON" ROOM WINDOWS

TIM WORKS AT A SPINNING POTTERY WHEEL RIGGED TO SAND AND
POLISH THE GLASS LENS

Tim sprays the spinning platform with water with one hand,
and holds the wooden handle stuck to the back of the lens
with the other.

TIM GLUEING WINDOW LATTICE

TIM POLISHING THE LENS CLOSEUP

TIM WITH WINDOW LATTICE

TIM AT COMPUTER MODEL

TIM WITH NEARLY FINISHED SECTION OF WINDOW

TIM SLOWLY AND TIREDLY POLISHING THE LENS

TIM WALKS IN WITH LARGE BOX IN FRONT OF WALL OF VERMEER
PAINTINGS

Tim takes the large box off the dolly, cuts it open, and
from it removes a black instrument case.

Tim unzips the case, removes the VIOLA DA GAMBA, and flips
open a chair to sit on.

Tim props the large instrument on his knee like a guitar.

TIM

Yeah, it's a big guitar.

Tim tunes it. He takes out the bow.

TIM (CONT'D)

Viola da gamba is called a "viola
da gamba" because "gamba" means
leg, and you play it between your
legs.

Tim plays the opening riff of "Smoke on the Water" on the
viola da gamba.

TIM

Hm. I like it.

TIM ADDS SANDING FLOWER STICKERS ON THE MARBLE SURFACE OF THE LENS POLISHING WHEEL

TIM INSTALLS WINDOWS INTO AN UPRIGHT WOODEN FRAME

TIM POLISHES THE FLAT SIDE OF THE LENS ON THE SLAB

A WOODEN PIECE FALLS FROM THE CENTER OF THE WOODEN WINDOW FRAME

TIM, TIRED, LEANS HIS HEAD OVER THE LENS POLISHING SLAB

TIM RUNS A PIANO KEYBOARD THROUGH A TABLE SAW

TIM HOLDS THE LION HEAD FINIALS, HOLDS THEM UP TO THEIR PLACE ON THE PARTIALLY COMPLETED SPANISH CHAIR

TIM AND FRIEND INSTALL THE WINDOW FRAMES TOGETHER

TIM VARNISHES VIOLA DI GAMBA LEGS

TIRED TIM POLISHES LENS

TIM HOLDS A PART OF THE SPANISH CHAIR

TIM
I don't know much about
woodworking.

Tim sands the wooden piece.

TIM (CONT'D)
So... I'm doing this not out of love
for woodworking but out of
necessity because you just can't
buy these stupid chairs anywhere,
and I need one.

TIM INSTALLS THE PILLAR BETWEEN SETS OF WINDOW FRAMES IN "MUSIC LESSON" ROOM

TIM INSTALLS CEILING BEAMS ON LADDER IN "MUSIC LESSON" ROOM

TIM ADDS BACK PANEL TO SPANISH CHAIR

TIM POLISHES LENS... MORE

HANDS FLIP THROUGH A SELECTION OF RUGS

TIM AND FRIEND INSTALL THE SECOND SET OF WINDOWS IN "MUSIC LESSON" ROOM

HANDS CONTINUE THROUGH THE PILE OF RUGS

PAN ACROSS FULLY INSTALLED WINDOWS

TIM WITH PROJECTED LINE DRAWING OF MUSIC LESSON PAINTING ON SMALL SQUARE

TIM WITH SHAPE SAMPLES FOR WOODEN MIRROR FRAME, HOLDS THEM UP TO WALL

TIM IN ROOM TRACING ROOM-SIZE PROJECTION OF LINE DRAWING OF PAINTING

TIM WITH MIRROR FRAME SAMPLES, CHECKING THE LIGHT AGAINST THEM

WORKER BEGINNING PLASTER FINISH OF WALLS IN "MUSIC LESSON" ROOM

TIM WATCHES AS MASSIVE PRINTER CREATES ALL PATTERNED PRINTS FOR THE FRONT OF VIRGINALS

TIM PULLS OF MOUNTING TAPE FOR WOODEN HANDLE OF LENS IN FRONT OF POLISHING SLAB

WIDE OF TIM MOUNTING WHITE SCRIMS OUTSIDE THE "MUSIC LESSON" ROOM WINDOWS

INT. SHOT TIM MOUNTING WHITE SCRIMS OUTSIDE WINDOWS

WORKER CONTINUES PLASTER FINISH OF BACK WALL IN "MUSIC LESSON" ROOM

TIM AND FRIENDS ROLL OVER LARGE FLATS IN SHAPE OF BUILDINGS OUTSIDE "MUSIC LESSON" ROOM WINDOWS

TIM WORKS ON A 3D MODEL OF CHURCH OUTSIDE REAL VERMEER ROOM WINDOWS

DIFFERENT ANGLES OF CHURCH MODEL IN LIGHTWAVE

TIM WITH LARGE FLATS OF FAKE BUILDINGS EXT. WAREHOUSE

TIM IN "MUSIC LESSON" SET ROOM, COMPARING A PRINT OF VERMEER PAINTING WITH HIS ROOM

TIM MOUNTING HIS LENS TO HIS CAMERA OBSCURA IN OPTICAL PAINTING ROOM

SLIDE ACROSS ROUGHLY FURNISHED "MUSIC LESSON" SET

Mannequins are present but not fully clothed. Virginals is built but without paint or its printed skins.

Spanish chair is mostly completed, and viola di gamba rests in its place.

INT. CAMERA OBSCURA - EARLY PROJECTION OF "MUSIC LESSON"
ROOM

TIM SITS IN THE COMPLETED "MUSIC LESSON" ROOM SET

An ANIMATED PROGRESS BAR that reads "WORKING DAYS TO BUILD THE ROOM" counts the number of DAYS it has taken Tim to build his "MUSIC LESSON" room. Finally, it stops.

"WORKING DAYS TO BUILD THE ROOM: 213"

TITLE CARD:

"Can I Just Say For The Record:

This is the hardest thing I've ever done. And I haven't started painting yet. This better fucking work.

--Tim Jenison, Vermeer Project Blog"

INT. YORK ART GALLERY, ENGLAND - DAY

Tim and Steadman stand before a wall-sized painting "Bigger Trees Near Warter" by David Hockney.

PENN (V.O.)

David Hockney is one of Britain's greatest artists. He's famous for paintings like this.

MONTAGE OF CLIPS FROM ENGLAND

EXTERIOR BRITISH PARLIAMENT

PENN (V.O.)

Since his optical theory got Tim started on this journey -

EXT. GREEN PARK/BUCKINGHAM PALACE

CLOSE ON STATUE OF QUEEN VICTORIA

PENN (V.O.)

- he seemed the ideal person for Tim to talk to.

MED. RED-COATED SOLDIERS MARCHING THE STREETS

PENN (V.O.)

Hockney invited us to visit, so we all went to England.

EXT. LONDON EYE; RIVER THAMES

TIM BOARDS TRAIN

TIM (O.S.)

What I knew about David Hockney was
that he was a famous artist.

INT. TRAIN - DAY

Tim sits at a train table with Penn and Teller, all reading
their computers with coffee.

The train moves through the English countryside.

TIM (O.S.)

But, reading his book I could see
that he wasn't a typical artist...

EXT. YORK TRAIN STATION, YORK

Teller, Penn, and Tim walk on the platform.

TIM (O.S.)

...that he was somewhat a
scientist.

INT. PENN & TELLER THEATER - DAY

PENN

Philip Steadman and David Hockney,
to my mind, to the mind of a
skeptic, prove that Vermeer used
some sort of device. But "Secret
Knowledge" and all the Philip
Steadman work are this wonderful,
exciting, tingly whodunit - that
never tells you who did it.

INT. CAR DRIVING TO BRIDLINGTON - DAY

Tim is in the backseat of a car driving to Hockney's studio.

TIM (O.S.)

Hockney showed that artists were
using lenses. Steadman argued that
Vermeer was using a lens. I
believed that Vermeer must have
been using more than just a lens.

They pass trees similar to Hockney's painting and pass horse riders on the single lane.

TIM (O.S.)

The reason to see Hockney was to bounce this idea off him and see if he thought it was plausible.

INT. HOCKNEY'S ATELIER, BRIDLINGTON - DAY

Tim stands across from DAVID HOCKNEY at David Hockney's studio table. Tim is setting up the father-in-law photo and painting setup with the mirror; David Hockney watches him, smoking.

HOCKNEY

How did you figure this out? What are you, a...

TIM

Well, I started thinking about it after I read your book, and -

HOCKNEY

Are you an optical... I mean --

TIM

I design television equipment.

HOCKNEY

Ah I see.

TIM

That's my job. So I -

HOCKNEY

Ok, ok.

Hockney's photographs are visible on the wall behind them as they speak.

TIM

So I know a bit about color and imagery. And I suspected looking at these old pictures from the Golden Age, Caravaggio, Vermeer, Van Eyck, that there must have been a way to copy the tones.

HOCKNEY

Because that's what's quite remarkable, actually, oh yes it is.

Tim continues to set up the father-in-law demo.

TIM
I need to stand on that side of the
table for a second.

Tim comes to the opposite side of the table, and shows
Hockney the comparator mirror.

TIM
So it's a mirror on a stick.

Tim has finished the setup.

TIM
Alright. This is what I saw when I
was painting, if you look straight
down. And of course I started with
a blank --

Hockney looks into comparator mirror.

HOCKNEY
Ah, I see, yes yeah yeah.

TIM
And you can move your head up and
down and you can see different
parts of the image. And that's how
you work your way from one part to
TIM (CONT'D)
the other. ...Now right at the edge
of the mirror, where you see both
images -

Hockney and Tim focus on the small mirror as Tim speaks.

HOCKNEY
Yeah.

TIM
- you can do a direct comparison of
the tone.

HOCKNEY
--Yeah yeah yeah yeah.

TIM
And your eye can instantly see
because they're together, can see
any contrast, because of the mirror
basically disappears. When you have
the right color and only when you
have the right color.

HOCKNEY
(smiles into camera)
Oh yeah yeah yeah, I see... This is
very ingenious.

TIM
So you notice that there is no
parallax when you move your head,
there is no shifting.

HOCKNEY
That's it, no.

TIM
The two images stay locked
together.

HOCKNEY
Why is that, why--

TIM
(talking to someone off-
camera)
Want to look through it? Ok.

HOCKNEY
How is that? I know, it's very
clever.

We see the table from a wider view.

HOCKNEY
I must say, the idea that the
Italians, when you think about the
Italians, they love pictures, the
idea that they didn't use this
because this would have been
cheating, I find childish,
absolutely childish.

TIM
There's also this modern idea that
art and technology must never meet.

HOCKNEY
Yeah.

TIM
You know, you go school for
technology or you go to school for
art but never for both and, but in
the Golden Age, they were one and
the same person.

HOCKNEY

Yeah.

TIM

The interesting thing is that if this was around then, we are seeing photographs. If they were using this and exactly copying that color.

HOCKNEY

Yeah, well I mean...

TIM

It's a photo.

HOCKNEY

Uh, yeah.

TIM

After seeing this, it looks, I mean it's not a complicated piece of equipment, but how likely it is, do you think it is that they may have done this?

HOCKNEY

Oh, I think it's very likely.

TIM

Really.

HOCKNEY

Very likely. Yeah, yeah, absolutely likely. I mean, I'm pretty positive optics -- I mean, there's no explanation for the paintings without optics.

INT. HOCKNEY'S CAR DRIVING THROUGH COUNTRY - DAY

Hockney drives his car with a cap on, smoking. Tim is in the passenger seat on the left.

TIM

But you know, historical evidence, it'd be great to find a lost letter from Johannes Vermeer --

HOCKNEY

Wait a minute. I put a joke letter in "Secret Knowledge."

TIM

You did?

HOCKNEY

A joke letter - this is what historians are looking -- from Hugo van der Goes to Van Eyck: "uh, could you go to ye Bruge Mirror Supply Company --"

Tim laughs.

HOCKNEY

"-- And get one of those makeup mirrors for my wife, you know what I mean." Well, I said, you'll never find a letter like that.

TIM

Yeah.

HOCKNEY

They never wrote down - Van Eyck would not write down the formulas for the paint for the simple reason that somebody might read them and there were other people. They wouldn't write them down. People were sworn to secrecy - oaths that

HOCKNEY (CONT'D)

they took very seriously. You won't, you never... It's naive to think you'll find something. Paintings are documents, aren't they? Aren't they telling you a lot?

CLOSEUP PAN ACROSS VERMEER'S "THE LITTLE STREET"

PENN (V.O.)

Paintings are documents. They contain the story of their own creation. Every brushstroke, every layer of color, every shadow represents another piece of information. To the trained eye, a painting can be read as accurately as any written text.

PIETER DE HOECH'S "WOMAN WEIGHING GOLD" APPEARS ON THE LEFT SIDE OF THE FRAME, FOLLOWED BY A VERMEER'S "WOMAN HOLDING A BALANCE" ON THE RIGHT

The paintings are extremely similar in subject matter and composition, but the painting style is markedly different.

PENN (V.O.)

And you don't need a trained eye to see that Vermeers look different from his contemporaries. They look like video images. He painted the way a camera sees.

WIDE SHOT OF VERMEER'S "GIRL WITH THE RED HAT"

TIM (V.O.)

Ever since photography was invented, people have been noticing optical things about Vermeer. On the "Girl with the Red Hat" there's this lion's head -

The painting shifts to the left side of frame.

TIM (V.O.)

- in the foreground that's fuzzy.

A yellow box appears around the lion head, connecting with a line to a larger yellow box where the lion head is enlarged.

TIM (V.O.)

Your eye naturally refocuses on whatever you're looking at, so something in the foreground is not going to appear to your eye as out of focus. But it could be out of focus if the image was projected with a lens.

VERMEER'S "THE MILKMAID" APPEARS ON LEFT FRAME

"Pointillés" on the foreground basket are highlighted in yellow and enlarged to the right.

TIM (V.O.)

The so-called "pointillés", these little circles of paint, look similar to what you get in a bad lens.

VERMEER'S "WOMAN IN BLUE READING A LETTER" APPEARS ON LEFT

The blue "chromatic aberration" along the girl's jacket is highlighted and enlarged on the right.

TIM (V.O.)

You look at the back of her jacket and there's a faint blue line. And that looks a lot like "chromatic aberration" -

A blue box appears next to the enlarged section of painting, containing a photographic example of chromatic aberration.

TIM (V.O.)

- which is what happens in a crude lens. The edges of objects can develop this rainbow fringe around them.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

Tim holds a print of Vermeer's "The Music Lesson".

TIM

Other evidence -- this falloff of light from the window to the opposite corner is something an artist really cannot see the way a camera sees it.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

Tim stands before the half-completed virginals and partially clothed mannequins in the "Music Lesson" set.

TIM (CONT'D)

It's impossible to see it. But Vermeer painted it the way a camera sees it. Is it possible that some people can see absolute brightness, and some people, most people, can't? You know, the way a musician might have perfect pitch? Ah, you know, that's a question for a - a doctor--

INT. HOTEL ROOM - DAY

DR. COLIN BLAKEMORE sits behind a glass table.

COLIN

I'm Colin Blakemore. I'm a professor at Oxford--

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

TIM
-- Or a scientist that specializes
in human vision...

INT. HOTEL ROOM - DAY

COLIN
- and I've spent most of my career
studying vision and the functions
of the brain.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

TIM
Is Vermeer maybe some sort of a
savant that's different from the
rest of the human race?

INT. HOTEL ROOM - DAY

Tim sits behind the glass table with Colin Blakemore, a
print of Vermeer's "The Music Lesson" on an easel behind
them.

TIM
What if someone said, "Maybe
there's a savant who is so smart,
that he could figure that out."

COLIN
Well he's not smart; I mean, he'd
have to have a very strange retina.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

TIM
Our retinas are made the way
they're made.

INT. HOTEL ROOM - DAY

COLIN
The retina is an outgrowth of the
brain. It's a very complicated
structure in terms of its nervous

organization. The signals go through a complicated network - several layers of different types of nerve cells before they finally get back to the last cells in the chain --

ANIMATION: CROSS SECTION OF THE HUMAN EYE, SHOWING HOW THE OPTIC NERVE PROCESSES VISUAL INFORMATION

A projected image of the mannequin travels through the eye's lens onto the back of the eye, reversed and curved.

COLIN (O.S.)
- whose fibers make up the optic nerve.

A diagram appears. Arrows, representing light, travel from "image" down to "retinal processing" and finally to "optic nerve" at the bottom, decreasing in number as they pass through.

The mannequin continues to wave, demonstrating the reversed projection in the human eye.

PENN (V.O.)
The optic nerve has limited bandwidth, so the signals have to be compressed. One thing we lose in that compression is the ability to record absolute brightness the way a light meter can.

DEMONSTRATION: TWO GRAY SQUARES APPEAR ON OPPOSITE SIDES OF A BLACK FRAME

The squares appear to be the same tone, yet as they travel to meet in the center of the frame, revealing their small difference in tone.

PENN (V.O.)
When we see two values side by side, it's easy to compare them.

The squares travel to their original locations.

PENN (V.O.)
But we split them, that ability goes away.

The black frame lightens, REVEALING -

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

--the SQUARES were actually color samples of the WHITE WALL behind Tim in the "Music Lesson" Set.

TIM

There just isn't any mechanism in the human nervous system to turn the eye into a light meter.

INT. HOTEL ROOM - DAY

COLIN

And this is a very clever trick for reducing information, but it's a disaster if you really want to know about the appearance of the scene because you just can't do it with your brain.

CLOSEUP PAN THROUGH THE BACK WALL OF VERMEER'S "THE MUSIC LESSON"

PENN (V.O.)

Look at the light on the back wall of "The Music Lesson". Every subtlety of brightness is recorded with absolute photographic precision. The unaided human eye is not equipped to do that. But if Vermeer used something like Tim's device, the painting becomes possible.

EXT. BUCKINGHAM PALACE - DAY

PENN (V.O.)

The Queen of England owns Vermeer's "Music Lesson" and she has it there in Buckingham Palace. We thought since we were in England, we'd stop by the palace and check it out. But the Queen said "No."

EXT. GREEN PARK / BUCKINGHAM PALACE - DAY

Tim, Penn, and Teller stand in Green Park, crew members crossing frame. Except for NARRATION, all DIALOGUE IS MUTED throughout this scene.

PENN (V.O.)

So we shot a whole tirade against the Queen.

Penn talks and gestures comically on camera but HE IS MUTED. Teller stands by with a print of Vermeer's "The Music Lesson." Tim stands to the side.

PENN (V.O.)

But then--

EXT. GREEN PARK / BUCKINGHAM PALACE - DAY

Tim stands in Green Park alone, windswept.

TIM

Well, I just came out of that building. That's where the painting is, Buckingham Palace.

PENN (V.O.)

The day before Tim returned home the Queen changed her Royal mind.

Tim continues his explanation, muted.

PENN (V.O.)

She granted Tim a private audience with "The Music Lesson". He had thirty minutes to study the painting. The deal was, he could only record the experience in his head, no photography allowed.

Tim continues:

TIM

-- And, it was a great thirty minutes.

Tim glances back to the palace behind him, recalling the experience.

TIM (CONT'D)

The painting's amazing. It's very different than I thought it would be. The reproductions don't do it any justice at all. The colors are more muted, it's slightly darker, it's got a kind of an overall bluish cast. But the astounding thing is the amount of detail. I put on my magnifying binoculars and looked at the virginals and every stroke of that decoration is there. The Persian carpet, you can see the individual knots.

Tim appears overwhelmed as he describes the painting.

TIM (CONT'D)

The amount of devotion, or
dedication, or obsession to get
that amount of detail that just
makes a general impression on the
viewer, but must have taken months
of hard work --

Tim pauses --

TIM (CONT'D)

I don't know if I can even come
close.

EXT. TIM'S WAREHOUSE - DAY

Clouds float past in the sunny sky.

PENN (V.O.)

When Tim got back to San Antonio,
he was in trouble.

MONTAGE OF TIM WITH SERIES OF OPTICAL EQUIPMENT

CLOSEUP MULTI-MIRROR DEVICE, TIM PEERS THROUGH

MEDIUM OF FURNISHED "MUSIC LESSON" SET

CLOSEUP ON SEAHORSE PATTERNED FRONT OF VIRGINALS

PENN (V.O.)

When he looked directly at the
virginals, he could see the
intricate pattern of interlocking
seahorses that Vermeer painted.

INT. TIM'S CAMERA OBSCURA -- THE "MUSIC LESSON" SET IS
PROJECTED ON THE REAR SURFACE

PENN (V.O.)

When he looked at the projection in
his camera obscura, all those
delicate little lines were too
fuzzy and dim to paint.

Close on Tim's hand as he gestures to the faint projection.

TIM (O.S.)

It was a deal-killer. I had visions
of a failed experiment.

PENN (V.O.)
Tim knew there was something he was
missing.

TIM IN HIS "MUSIC LESSON" ROOM WITH A SMALL GLASS AND WOOD
OPTICAL DEVICE

PENN (V.O.)
He experimented with increasingly
complex arrangements of lenses and
mirrors.

Tim sits at the table in his "Music Lesson" set hot glueing
a lens device together.

PENN (V.O.)
...But nothing worked.

Tim peers through angled mirrors into the set room.

PENN (V.O.)
Then--

INT. TIM'S WAREHOUSE - CAMERA OBSCURA - DAY

Tim sits at the dimly projected "Music Lesson" set.

PENN (V.O.)
Tim had an inspiration.

Tim holds up a MIRROR to the projection on the rear surface.

PENN (V.O.)
He held a mirror against the wall
where the image was being
projected. Now he could see a small
circle of the room sharp and clear
--

A frontal view of the projected image, a small BRIGHT CIRCLE
projected in the center - part of the virginals and the
girl's yellow shoulder.

PENN (V.O.)
-- and hundreds of times brighter.

Tim adjusts the mirror on the back wall - the bright circle
moves.

PENN (V.O.)

By tilting the mirror around, he could see any part of the room he needed to paint. Then he realized if he just replaced the flat mirror with a concave mirror--

Tim pulls a concave mirror on a stand in front of the rear projection.

PENN (V.O.)

-- like a shaving mirror --

The shaving mirror is ILLUMINATED with a bright, crisp image of the projection - LARGER than the previous circle.

PENN (V.O.)

-- he could make the bright circle much larger.

TIM

So I realized that if I could have an image that bright, I didn't have to have this darkroom, I could paint in daylight - which is a huge, huge breakthrough.

ANIMATION: MANNEQUIN AND CAMERA OBSCURA

The camera obscura, left, continues to project the image of the mannequin on the right.

PENN (V.O.)

Tim started in the dark room. But the room is gone. The back wall is a concave mirror.

The wall of the camera obscura DISAPPEARS, and a circular concave mirror is added to the back wall where the projection is.

PENN (V.O.)

All that's left of the traditional camera obscura is the lens.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

For the first time, we see Tim's optical painting setup - a lens in a black frame suspended from an armature.

The camera moves further to see the SMALL SHAVING MIRROR where the projected image once was; the COMPARATOR MIRROR angled between the two.

PENN (V.O.)
 Tim had invented a new optical
 instrument or perhaps rediscovered
 a lost one.

The camera peers down into the comparator mirror, which
 reflects the Music Lesson set through the CURVED MIRROR.

PENN (V.O.)
 In it, he could see well enough to
 attempt Vermeer's level of detail.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

Tim's completed "Music Lesson" set stands behind a print of
 Vermeer's "Music Lesson" painting - an uncanny similarity.

PENN (V.O.)
 He had his room. He had his
 machine. He was now ready to paint.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

An overhead pan of Tim's period Dutch room, which gives way
 to Tim's painting room to the left.

SUPER in LOWER RIGHT CORNER: "1 DAY"

BEGIN TIM'S "MUSIC LESSON" PAINTING MONTAGE

INT. TIM'S WAREHOUSE - PAINTING ROOM

Tim begins to PAINT his VERMEER, starting with the back wall
 of the room.

SUPER reads: "3 DAYS".

MEDIUM SHOT TIM PAINTING - "4 DAYS"

OVERHEAD SHOT OF BACK WALL OF TIM'S VERMEER BEING COMPLETED

Tim's palette rests to the right of the painted section of
 the wall.

"5 DAYS" - TIM BEGINS WORK ON THE CEILING BEAMS

"7 DAYS" - CEILING BEAMS, WINDOW FRAMES APPEARING

"9 DAYS" - RIGHT LENGTH OF CEILING BEAMS

"13 DAYS" - PAINTING AND FRAME ON BACK WALL

TIM
 (exhausted)
 Eugh, oh boy.

"17 DAYS" - GRAY TILES LINED AND FILLED

"18 DAYS" - BLACK TILES SURROUNDING WHITE TILES PAINTED

PAINTING PROGRESSION: TIME LAPSE - TRANSFORMATION OF THE PAINTING

Wall appears, then painting and mirror frame, the ceiling beams, white floor tile, black floor tile, VIRGINALS outline...

INT. TIM'S PAINTING ROOM - DAY

Tim's first skype interview - he speaks directly to the camera. Super: "20 DAYS".

TIM (TO CAMERA)
 Boy, you know, I'm not trying to make this look like a Vermeer, but it really looks like a Vermeer.

"29 DAYS" - TIM FILLS THE VIRGINALS OUTLINE WITH BACKGROUND TONE OF SEAHORSE PATTERN

"30 DAYS" - TIM PAINTS VIRGINALS LEGS

INT. WAREHOUSE - TIM'S PAINTING ROOM - DAY

SUPER reads "35 DAYS".

TIM (TO CAMERA)
 I was cleaning up, and getting ready to put my palette away, call it a day's work, and I looked up at the monitor.

Closeup on the camera that films Tim's painting overhead - the LCD VIEW SCREEN pointed toward us - it shows Tim's painting.

TIM (O.S.)
 And I thought "Oh, man that camera got pointed at the room, it's pointed in the wrong direction, how did that happen?"

Back to Tim at his painting table.

TIM (TO CAMERA)
 And that's the thought that went
 through my head for just a couple
 milliseconds before I realized, no
 I'm looking at the painting.

Back on the camera's SCREEN.

TIM (O.S.)
 And it was just kind of like a
shhwesh [TIM MAKES SOUND EFFECT]

"36 DAYS" - CLOSEUP TIM PAINTING WINDOW LEADING

"37 DAYS" - TIM PAINTS LOWER PORTION OF WINDOW LEADING

We see the intricate detail of the lines Tim paints.

"39 DAYS" - TIM CONTINUES PAINTING WINDOW LEADING ON CLOSER
 SET OF WINDOWS

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (TO CAMERA)
 You know, this project is a lot
 like watching paint dry.

TIM PAINTS ON OPPOSITE SIDE OF PAINTING AS HE WORKS ON
 "GENTLEMAN" FIGURE

"41 DAYS" - GRAHAM TOMS MODELS AS "GENTLEMAN" FIGURE

GRAHAM TOMS, the model for the GENTLEMAN, rests his head in
 a BLACK METAL CLAMP, keeping him in place. He wears the
 gentleman's clothes.

Tim paints his face into the picture, still sitting on the
 right side of the painting.

"42 DAYS" - TIM PUTS A WIG ON GRAHAM

Graham, sporting the "Gentleman's" wig, doesn't look
 thrilled.

Tim paints the hair, collar, and jacket of the gentleman.

He then completes the sash, white sleeves, and hands.

INT. "MUSIC LESSON" SET - DAY

Close pan on the costumes on the mannequins.

TIM (O.S.)
I can paint the costumes by putting
them on mannequins.

Graham again appears in his wig.

TIM (O.S.)
But to paint faces and hands, I
need to use people.

Graham's hand holds the bamboo cane, which is also placed in
a clamp.

TIM (O.S.)
I do everything I can to help them
hold still.

Tim places more clamps on Graham's chin, nose, ears; Graham
alternates between uncomfortable fidgeting and remaining
still.

TIM (O.S.)
It sort of works.

SPED-UP FOOTAGE OF GRAHAM IN HEAD CLAMP

Graham rapidly fidgets in a strange dance, as footage of him
in the clamp is sped up like a time lapse.

Close on GRAHAM'S FACE in the clamp as it rapidly twitches
and moves in the high-speed footage.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

SUPER reads "46 days".

TIM (TO CAMERA)
My daughter Claire is home for a
month from college.

BEGIN CLAIRE MODELING SEQUENCE

INT. TIM'S VERMEER WAREHOUSE - DAY

Tim adjusts lights as daughters CLAIRE JENISON, LUREN
JENISON, and Natalie work on Claire's outfit.

TIM (TO CAMERA)
And it's time to paint the girl, so
I put two and two together, and
used Claire.

Lauren fits Claire into a LARGE WHITE BLOUSE.

TIM (O.S.)
Her two sisters, Lauren and
Natalie, are also in town, so they
worked on fitting the costume and
doing her hair so that it looks
like the girl in the picture.

Lauren and Natalie surround Claire, fitting the skirt, the
yellow jacket, and the hairpiece.

TIM (TO CAMERA)
When they got all that on, she was
a dead ringer for the little Dutch
girl.

Claire enters the Music Lesson set through the curtains.
Lauren and Tim set up a clamp for her head.

TIM (O.S.)
With that completed, we put her in
the head clamp, and positioned her
just right.

Clair sits in the clamp in front of the virginals.

Close on Claire's face in the period outfit.

Tim paints the back of Claire's head.

Claire takes a sip of soda, still constrained by the head
clamp.

Claire fidgets her fingers on the virginals as Tim paints
her headdress.

47 DAYS - TIM WORKS ON THE GIRL'S YELLOW JACKET, CLAIRE'S
REFLECTION IN MIRROR

PENN (V.O.)
Few students have ever been happier
to go back to school.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (TO CAMERA)
...I may repaint that.

The camera shifts suddenly of it's own accord. Tim glances
up nervously.

TIM

Um... 'Scuse me a second. The wind's trying to blow my shade down.

FARLEY (O.S.)

(from skype)

I thought that you were having a ghost visitation.

Tim walks off screen.

TIM (O.S.)

Nope.

The room darkens inexplicably. Suddenly the camera is JARRED forward, and there is a crashing noise.

The white shade FLIES in front of the camera.

TIM (O.S.)

Motherfucker!

Tim crashes around the space behind the white shade, which covers the camera's view.

TIM (O.S.)

Piece of shit.

The shade is removed, and the camera turned to its normal position.

TIM (O.S.)

We're gonna have to go to plan B here. The frame that has my window, and my shades and stuff, it came

TIM (CONT'D)

loose and it fell over and I think everything's ok.

Tim re-enters frame from the left, and sits in his chair.

TIM (TO CAMERA)

Alright. I tend to build things until they're just barely good enough. And sometimes that envelope gets exceeded.

FARLEY (O.S.)

So if anything falls askew, your painting's in no danger, is that correct?

TIM (TO CAMERA)
 (cleaning glasses)
 Oh no, uh, I wouldn't say that!

FARLEY (O.S.)
 Ok.

TIM (TO CAMERA)
 But you know, I can always start
 over.

"49 DAYS" - TIM WORKS ON GIRL'S BLACK SKIRT, RED UNDERSKIRT
 PAINTING PROGRESSION: TIME LAPSE - FURTHER TRANSFORMATION OF
 THE PAINTING

Gentleman's head appears, then his hair and body. Girl at
 virginals from waist up, then her black skirt, then her red
 underskirt.

INT. TIM'S PAINTING ROOM - DAY

SUPER: "51 DAYS"

TIM (TO CAMERA)
 Another interesting thing happened.
 What I noticed while I was looking
 at this, I can see the straight
 lines of the, of the seahorse
 there, and I can see the straight
 lines that I've ruled already on
 the canvas - the framework of the
 virginals. All those are perfectly
 straight lines because I laid 'em
 out with a straight edge before I
 painted them. Well, when I am

TIM (CONT'D)
 trying to align this very close
 now, within a tiny fraction, I can
 see that this straight line isn't
 quite straight in the reflection.

A closeup of the seahorse pattern viewed in the curved
 mirror.

TIM (O.S.)
 It's ever so slightly curved.
 Probably not enough to throw me off
 now that I'm aware of it, but if I
 had just literally painted that
 seahorse pattern -

Closer in on the intricate seahorse pattern in the curved mirror.

TIM (O.S.)
It would have ended up curved like this.

TIM (TO CAMERA)
(gestures in the shape of a horizontal curve)
And, so, I don't know why but I went over and I picked up the Vermeer print.

Tim grabs the print.

TIM (TO CAMERA)
And I go, well obviously uh, Vermeer had no trouble painting those lines straight.

He looks at the print in front of him.

TIM (TO CAMERA)
And then, I held the painting sideways like this --

Tim holds the painting upright facing the camera, so he looks along the side of the flat surface.

TIM
And I'm looking down these straight lines.

He grabs his glasses.

TIM (CON'T)
And there's something really crazy about this.

CLOSEUP INSERT OF THE "MUSIC LESSON" PRINT - VIEWED FROM SIDE ANGLE

The painting tilts at an angle on its side, so the horizontal lines are compressed.

Tim again holds the print at an angle in his painting studio.

TIM (CONT'D)

The top and the bottom of the virginals are absolutely straight because when I look at, look at it down here at an angle, I can see that it's a straight line. The seahorse motif is curved. It goes like this.

Tim runs his hand in a curved shape over the print.

Closeup again on the angled print.

TIM (O.S.)

You can't really tell until you look at it

Tim's finger appears over the print, indicating the curved lines.

TIM (TO CAMERA)

Right down those lines, but. There is a curvature in there. And there's really no logical explanation for that unless -

Tim points his thumb at the CURVED MIRROR.

TIM (TO CAMERA)

- he was using something like this.

Tim looks back to the print.

INT. PENN & TELLER THEATER - DAY

PENN

Tim calls that bend in the seahorse pattern the "seahorse smile". It's a flaw in Vermeer's painting - a mistake that nobody noticed for 350

PENN (CONT'D)

years, and then Tim almost made the same mistake. Tim is not looking for something that will duplicate Vermeer's mistake.

Penn gestures the "smile" shape as he talks.

PENN (CONT'D)

You know, he doesn't know Vermeer's mistake is there. That's either a remarkable coincidence or Vermeer was using Tim's machine, or something very much like Tim's machine to do his painting. As Hockney said, "paintings are documents," and here's --

Penn draws the "smile" shape with his hand.

PENN (CONT'D)

-- a little bit of evidence.

"52 DAYS" - TIM BEGINS THE SEAHORSE MOTIF

CLOSEUP ON TIM'S BRUSH PAINTING THE INTRICATE DETAIL OF THE SEAHORSE MOTIF

EXTREME CLOSEUP ON A PAN BETWEEN THE SEAHORSE PATTERN PAINTING AND THE REFLECTION OF THE PATTERN IN COMPARATOR MIRROR

CLOSEUP ON THE MOSTLY COMPLETED SEAHORSE PATTERN

WIDER LOOK AT THE COMPLETED SEAHORSE PATTERN FULL IN THE MIRROR, COMPARED TO THE ROOM'S REFLECTION

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (TO CAMERA)

Today I painted the seahorse motif, it was a lot of work - I couldn't really sit here for more than fifteen, twenty minutes at a time. Your back just gets extremely tense. I tried to sit in the most relaxed position I could find, which is like this:

Tim sits over painting, resting his arms on the table.

TIM (TO CAMERA)

It's just really nerve-wracking, meticulous, demanding work. I'm not looking forward to doing the rest of the instrument, but at least I know it's doable.

"53 DAYS" - TIM BEGINS WORK ON THE EVEN MORE INTRICATE LOWER VIRGINALS PANEL

Tim's hand inches over the tiny, lace-like lines of the panel's decorative pattern.

His single-hair brush connects the tiny dots to lines in the miniature pattern as he continues it to the right.

He hardly moves at his table as he works, concentrating on a section the size of a dime.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (TO CAMERA)

What I painted today is maybe, what
I expect will turn out to be the
hardest part of the painting,
physically, to do.

"55 DAYS" - TIM BEGINS THE SILK MOIRE PATTERN ON VIRGINALS LID

Tim uses the same minuscule brush on the yellow lines of the more organic, free form back panel.

The tiny lines spider across the panel in what look like chaotic swirls, but correspond perfectly with the existing panel.

The tiny palette of paint Tim holds in his left hand bears paint marks that resembling small hairs.

His marks on the painting approach the left side of the Girl and the virginals.

Tim moves a metal bar across the painting, which allows him to rest his hand without messing the wet paint of the panel.

"57 DAYS" - TIM BEGINS THE PATTERNED TRIM ON THE BACK PANEL OF VIRGINALS

"61 DAYS" - TIM BEGINS THE VIOLA DA GAMBA, ROUGHING OUT THE SHAPE WITH BROWN PAINT

Tim first paints the front face of the instrument floating in space, then shades in the curved sides.

OVER TIM'S SHOULDER AS HE MOVES HIS GLANCE BETWEEN PAINTING AND REFLECTION

"62 DAYS" - TIM PAINTS THE BRIDGE OF THE VIOLA

"63 DAYS" - TIM PAINTS THE C-HOLES, AND THE STRINGS, AND THE TRIM OF THE VIOLA

Tim paints the impossibly thin and difficult pinstripe around the instrument's edge.

"67 DAYS" - TIM PAINTS THE YELLOW "EGG AND DART" PATTERNED TRIM OF THE VIRGINALS FRONT PANEL

INT. TIM'S OPTICAL PAINTING ROOM - DAY

Tim SIGHS WEARILY.

TIM (TO CAMERA)

Man.

He shakes his head.

"68 DAYS" - TIM WORKS ON THE IMPOSSIBLY TINY RED TRIM ABOVE THE SEAHORSE PATTERN

PAINTING PROGRESSION: TIME LAPSE - FURTHER TRANSFORMATION OF THE PAINTING

The girls red underskirt appears, the virginals patterns, viola da gamba, and the reflection in the mirror.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

TIM (TO CAMERA)

Well, yeah this is going to be short because it's about 40 degrees in here. So Karl and I came in here this morning, and looked at each other like "...No." You know, it's really cold in here. So I go, "Wait, I've got this heater in the garage that I never assembled, I got it for Christmas a few years ago, it's one of those patio heaters." So, um, Karl said, "Hey, I'll put it together, let's go get it". So we went and got it, and put it together, it's over there, and fired it up and it worked great, you know, it's nice and toasty, you know? And I said, Karl was sittin' over there with his computer and I said, "Hey look up on there to see if it's safe to use these indoors."

Tim laughs.

TIM (TO CAMERA)

And Karl looks up and says "Yeah, you know it says here it's absolutely not safe to use indoors" - um and I said, "Well, let's just, let's just run it, and we'll you know, be careful, ok, so we'll if we notice any symptoms of carbon monoxide poisoning, you know, we'll shut it off." So I start painting, and I actually painted an elephant on "The Music Lesson," I don't know why I put it there, but it seemed like a good idea at the time. Karl actually -

Tim looks over to where Karl was sitting.

TIM (TO CAMERA)

He put his head down, and he said, "I need a nap." I said, "What did you say?" He said, "I need a nap." I said, "Ok, let's leave right now."

Laughs.

TIM (TO CAMERA)

"Let's shut this thing off and go get lunch." And on the way to lunch driving to lunch, everything sort of cleared up again, you know, we were in a fog. So anyway, that was a bad idea.

"79 DAYS" - TIM PAINTS THE LION HEAD FINIAL OF THE SPANISH CHAIR

Tim is absorbed as he begins, then completes, both lion head finials.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

Tim sits on the opposite side of the painting.

TIM (TO CAMERA)

It was kind of a weird day - I got, uh, came in and started painting this lower cushion, and --

Closeup on LOWER CUSHION of Spanish chair as a SUPER reads "82 DAYS".

TIM (O.S.)
 -- sort of a wave of revulsion
 swept over me. I just wanted to do
 anything in the world but sit here
 and paint for some reason.

Medium of Tim, looking down at his painting.

TIM (TO CAMERA)
 I don't know, just one of those
 things. But I am pretty much ready
 for this painting to be finished.

Off Farley's cue--

TIM
 If we weren't making a film would I
 quit? - yeah I definitely would,
 yeah, I'd find something else to do
 right now.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

Tim sits on the same side of the painting.

SUPER reads "83 DAYS".

TIM (TO CAMERA)
 Well, yesterday when I was painting
 this chair, I was almost, um,
 repulsed by it. I think maybe
 subconsciously I knew that it was
 wrong. And it just didn't look like
 it belonged in the painting to me,
 and I couldn't put my finger on the
 reason why. And as I was trying to
 get to sleep last night, I was just
 sort of laying there and I was
 visualizing that chair and I could
 see it in my mind and I go, that's
 it's the wrong blue, you know, I
 should darken the legs and --

As Tim mentions these parts of the painting, we PAN to them
 on a CLOSEUP of the Music Lesson.

TIM (O.S.)
 -- The top of the chair can't
 possibly be tilted to the left.

WHIP to the top cushion of the Spanish chair.

TIM (O.S.)
 It's like, I'm seeing it and that
 can't possibly be right.

The view FLICKERS between the BEFORE and AFTER views of the cushion. The angle shifts slightly, but we can now see the correct angle of the chair.

TIM (O.S.)
 I realized that I had bumped the
 lens out of position, and that's
 why the chair's perspective was
 wrong.

TIM (TO CAMERA)
 It was totally a subconscious
 thing. Maybe I do have an inner
 artist that knew that was wrong.

"85 DAYS" - TIM WORKS ON THE NEARLY COMPLETED WHITE JUG

A foreground shot of the jug PANS FOCUS to Tim painting behind the lens.

Tim adds delicate highlights to the jug.

"86 DAYS" - TIM PAINTS THE BRASS TACKS ON THE SPANISH CHAIR

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

SUPER reads: "87 DAYS".

TIM (TO CAMERA)
 I thought that the rug would be a
 little more, uh, free form painting
 -

Closeup of the "Music Lesson" set's rug through the comparator mirror.

TIM (O.S.)
 - but this rug is close enough to
 the optical equipment here that I
 can clearly see all those little
 stitches.

Pan down the intricate detail of the rug's weave.

TIM (TO CAMERA)

And, since I can see that, and since my rule is "paint what you see in the mirror", if I want to get that kind of detail, I'm gonna have to sort of, make like the harpsichord here - and just go for the detail.

"98 DAYS" - TIM MAKES TINY DOT MARKS IN A RED FIELD OF THE RUG

"102 DAYS" - TIM PAINTS BLUE RUG DETAILS

A slightly wider view of the rug shows the expanse that Tim must cover with this intricate detail.

INT. TIM'S WAREHOUSE - PAINTING ROOM - DAY

SUPER reads: "107 DAYS".

TIM (TO CAMERA)

So - another day, more dots.

SUPER reads: "110 DAYS".

TIM (TO CAMERA)

Ditto yesterday.

SUPER: "111 DAYS".

TIM (TO CAMERA)

Just painting more dots.

"115 DAYS"

Tim just looks down at the painting and sighs.

"116 DAYS" - TIM PAINTS TINY TRIM WITHIN THE RUG'S FOLDS

"117 DAYS" - TIM'S DOTS NOW COVER THE FORWARD FOLD OF THE RUG

A yellow trail of the rug's stitches stretch toward the bottom of the painting.

PAINTING PROGRESSION: TIME LAPSE - FURTHER TRANSFORMATION OF THE PAINTING

Areas of the completed carpet stretch down toward the bottom of the painting.

The layers of paint come together to form incredible patterns, uncanny in their realism.

Tim's brush ticks across the tiny detail of the rug's fringe.

INT. TIM'S OPTICAL PAINTING ROOM

Marker: "118 DAYS".

An exhausted Tim addresses the camera.

TIM (TO CAMERA)
You know, it gets old painting this
carpet.

"120 DAYS" - TIM PAINTS THE RUG'S REFLECTION IN THE
PAINTING'S MIRROR

"121 DAYS" - TIM PAINTS THE LATIN MOTTO ON THE BACK PANEL OF
THE VIRGINALS

Tim swabs off a minuscule "C" with a cotton Q-tip, which
seems large in proportion to the intricate detail of the
painting.

INT. TIM'S OPTICAL PAINTING ROOM - DAY

SUPER: "122 DAYS".

TIM (TO CAMERA)
(with a sigh)
Oh my god.

Tim wipes a hand down his tired face.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

Marker: "130 DAYS".

TIM (TO CAMERA)
Ah, we're on.

Tim walks from behind the camera towards the wall of windows
in the Music Lesson set. His COMPLETED PAINTING rests on an
easel to his right.

TIM (TO CAMERA)
Ok, so I've been frantically
running around here, setting up
lights.

Tim clears his throat. His painting is an uncannily real representation of the room he is in. Tim straightens to the camera.

TIM (TO CAMERA)
And um, it shows.

He moves a small camcorder out of the shot.

TIM (TO CAMERA)
Today is the denouement, of sorts.
The varnish job.

CLOSEUP PAN on the painting pre-varnish, its colors muted and somewhat chalky.

TIM (O.S.)
For the last several months I've been promising myself that all would be better when the varnish went on, because as the paint dries, it gets light, it gets chalky, it desaturates.

OVERHEAD as Tim paints the clear VARNISH onto his completed painting.

TIM (O.S.)
I've been very anxious to do this, I went along slowly with a small brush and then finally I just grabbed a giant brush, sloshed it in the varnish and just started going to town.

As Tim paints on the varnish, the colors darken and shine.

TIM (O.S.)
-- And everywhere I touched was magic. It - it's pretty astounding.

INT. MUSIC LESSON SET - DAY

Tim stands next to his varnished, completed painting, taking it in.

TIM (TO CAMERA)
Well, you know, today -- today's the day I've been waiting for. Um, it's uh -

Tim cries.

TIM
 I'm sorry --
 (wipes his eyes)
 ... I can't believe it's finished.

INT. DAVID HOCKNEY'S PAINTING STUDIO, ENGLAND - DAY

Steadman, Teller, Tim, Hockney, and Penn gather around Hockney's iPad.

PENN (V.O.)
 We took Tim's painting back to
 England to show Hockney and
 Steadman.

Tim, Hockney, and Steadman take a look at the curved mirror setup.

Tim, seated near the easel, reveals his completed painting to Steadman and Hockney, also seated.

TIM
 Well, this is it.

Hockney and Steadman are bemused, but silent.

TIM (CONT'D)
 So, you know, it's uh --

Hockney rolls closer to the painting on his wheelchair.

TIM (CONT'D)
 -- my first ambitious attempt at
 oil painting, and that's kind of
 part of the experiment, that I'm
 not a painter.

HOCKNEY
 Yeah--

TIM
 You know, but I was trying to show
 the power of the concept.

STEADMAN
 Yeah, mm.

HOCKNEY
 (pointing to rug)
 This is terrific, I must say. We
 noticed this, when we were doing
 our lens experiments, we noticed
 that especially on these kind of

HOCKNEY (CONT'D)
cloths, on the projection you saw
every weave - that you couldn't in
the real one, and you get that in
Vermeer. I think that's very very -
-

STEADMAN
I think this is - this is better
than Vermeer.

TIM
Better than Vermeer?

HOCKNEY
You do feel the weave of the um

STEADMAN
Yeah, you really do.

HOCKNEY
Of the um, carpet.

STEADMAN
It's actually wooly isn't it?

HOCKNEY
Amazing, actually. It had to be
something similar, it had to be.

STEADMAN
I mean, there's no doubt that
you've proved one thing, Tim - that
you can paint a painting of this
degree of detail and precision in a
- well, it's not exactly a camera
obscura, but it's an optical
machine.

TIM
And that's really what I set out to
prove, is that it could have been
done that way.

STEADMAN
Sure. I mean there's no doubt about
that.

TIM
There's no way that it proves that
Vermeer did.

STEADMAN

That's the second question obviously, yes - did Vermeer work that way.

HOCKNEY

Yeah, but it makes you rather convinced that's what he did.

TIM

(making a "meter" with his arm)

I'm getting a little more convinced all the time. I would say I'm about 90 percent there. But you know, if there was some historical...record-

HOCKNEY

Well, the idea that a painting isn't a historical record is from literary people who seem to just not look at pictures and just read texts. This is a document in itself, I know people are going on about documents. Paintings and drawings are documents, they tell you a great deal. You've made a document that's proving something, it is. It's fascinating, I mean, you set out to do some research and I think you've succeeded in what - you've shown it's possible to do it, if you've, as I say, if you've recorded it very well,

TIM

Yeah, yeah.

HOCKNEY

I think it might disturb quite a lot of people.

TIM

I certainly hope so.

HOCKNEY

Which is fine, that's fine, why not.

INT. TIM'S WAREHOUSE - "MUSIC LESSON" SET - DAY

The camera, filming a wide of the whole "Music Lesson" room, cranes down until it reaches TIM'S "MUSIC LESSON" PAINTING.

The camera continues to move until the two images - the real room and the painting - MATCH PERFECTLY.

CLOSEUP PAN ACROSS TIM'S VERMEER PAINTING

Closeup on the details of the ceiling, mirror, virginals.

PENN (V.O.)

My friend Tim painted a Vermeer. In a warehouse. In San Antonio. He painted a Vermeer. And is Tim an artist, or is Tim an inventor?

Pan across the windows, tile floor.

PENN (V.O.)

I think the problem is not trying to pick one of those two for Tim to be, but the problem is that we have that distinction.

Pan across viola da gamba, Spanish chair.

PENN (V.O.)

What Tim has done is given us a - an image of Vermeer as a man who is much more real, and in that way much more amazing.

Pan across rug, chair.

PENN (V.O.)

I mean "unfathomable genius" doesn't really mean anything. Now he's a fathomable genius.
(laughs)

Extreme closeup pans of jug, carpet.

TIM (V.O.)

If there's any great merit in this picture as a work of art it's Vermeer's. It's Vermeer's composition, and it's Vermeer's invention. It's been forgotten for 350 years.

Wide pan across whole painting.

The camera rests in the center of the painting.

A TIME LAPSE PROGRESS BAR APPEARS AT THE BOTTOM OF A BLACK SCREEN

The bar begins at 2008, and reads "DAYS SINCE THE START OF
TIM'S VERMEER PROJECT"

The blue counter rolls past 2009, 2010, 2011, 2012, stopping
as it hits 2013.

The final day count: 1,825

INT. TIM'S BEDROOM - DAY

Tim stands in his bedroom - his FINISHED PAINTING hangs in a
brown frame above his fireplace.

He looks back at the painting, then to the camera, and
smiles.

BOB DYLAN SINGS "WHEN I PAINT MY MASTERPIECE" BEGINS AS --

END CREDITS ROLL.

THE END.