

FILM RESTORATION AN ART & A SCIENCE

ACADEMY

THE BEST TOOLS FOR THE BEST OUTCOME

There's nothing quite like the magic of movies.

Motion pictures can transport you around the world (and beyond!); they can help you travel through time. But what happens when it's the footage that needs bringing into the modern-day?

That's where the art of film restoration comes in.

Restoration is the only way to maintain a movie's magic and ensure that films are preserved for the future. Whether we're talking about World War II footage or someone's home movies, all films deserve the chance to be seen — they deserve the chance to transport the viewer into the world that was once created for them.

We sat down with **JO GRIFFIN**, COO at **R3STORE STUDIOS** part of the **FILMWORKZ** Family who told us how the art of restoration requires far more than fantastic footage. You need the right people and the right tools to create **INCREDIBLE** results.





JO GRIFFIN



RESTORATION IS A RESPONSIBILITY

Digitizing and restoring film not only preserves the content for future generations — it has a number of other benefits, too.

If a piece of analog footage is lost or damaged, there's no way of getting it back. **R3STORE STUDIOS** and other restoration companies work on film from the dawn of the medium in the late 1800s to more recent films, all with an eye towards preserving history.

R3store's team has been involved in many film projects with the purpose of protecting moments in history, including:

Scanning and grading the only film recording of Prince Charles and Lady Diana's royal wedding for the **ASSOCIATED PRESS ARCHIVE**. Now, this footage can be watched in 4K quality — revealing never-seen-before details.

Working with the **ROYAL GEOGRAPHICAL SOCIETY** on some very warped film which they hadn't been able to transfer using Telecine machines. They thought the footage was lost, but when they came to us we used our top of the range film scanner to scan and save highly valuable and precious footage. 'You really do need the right kit and people to handle these precious items' says Jo .

BFI'S UNLOCKING FILM HERITAGE PROJECT, was a first of its kind project to digitise 10,000 films; 5,000 coming direct from the BFI and 5,000 from around the country. Have a look at the **BFI PLAYER**, and see if you can spot footage from your hometown!



WISH YOU WERE HERE, 1973



FILM RESTORATION STEP-BY-STEP

So what does it take to breathe new life into old film?

**'AT R3STORE WE USE A COMPREHENSIVE PROCESS TO MAKE SURE EVERY FILM IS HANDLED WITH CARE AND RESPECT. WE WON'T GO INTO ALL THE NITTY-GRITTY DETAILS HERE (FOR THAT, YOU CAN COME VISIT US AND SEE THE STUDIO FOR YOURSELF!). BUT HERE ARE THE BASICS'.
JO GRIFFIN.**

INSPECTION AND REPAIR

This first step is arguably the most important. Before we can even think about digitization or restoration, we need to know what we're working with. So, before anything else, we take time to thoroughly inspect the film.

Old film can have a number of physical issues that need to be properly addressed prior to cleaning or scanning. And this step, strange as it might sound, is one of the best parts of the job.

Why? Because every reel of film tells a story. Old cuts and joins show you glimpses of people who have handled the film in the past. It's our job to make sure those joins are sturdy; any that won't hold up to cleaning or scanning will be carefully repaired.

Film that's been projected many times over, encountered less than ideal equipment, or been stored in less than perfect conditions (which, let's be honest, is quite a lot film!) can have a wide range of damage from the heat or cold or bad handling. All of **R3STORE STUDIO'S** scanners are sprocketless to ensure the film is gently handled while it's scanned. Here's an example of some film from the 1923 Tour de France - this footage was shot on Nitrate film and you can see the scratches in the film.

We work with many regional and national archives who painstakingly preserve their film in the best, climate controlled environments. Unfortunately, not all film out there has been stored so well so often the film needs a lot of prepping and cleaning before we can scan it.





1923 TOUR DE FRANCE FOOTAGE



DON'T HAVE THE TIME OR EXPERTISE TO UNDERSTAND WHAT YOU'VE GOT?

Our bespoke consultancy service, **R3ALISE**, will do the legwork for you from 'soup to nuts'

DISCOVER

Allow us to come and assess and create an inventory of your archive so you know what you have to work with.

DEFINE

Evaluate the content, how can it be monetized.

PRODUCE

Digitise the content, it can be seen by everyone!

PUBLISH

license the footage or even make a film!

CONTACT US to learn more INFO@R3STORESTUDIOS.COM

Imagine you're working with a canister of film found in a film editor's dusty attic or even a barn; it's probably picked up some dust; if it was a projection print it will have picked up dust and particles from projection as well as scratches.

Once we're done with initial inspections it's time to get cleaning where we use an ultrasonic cleaner that removes surface dirt and gets the film ready for scanning.

R3:alise
a Filmworkz company



SCANNING PICTURE AND AUDIO

Next comes the fun part: scanning and digitizing the film.

At **R3STORE STUDIOS** we use state-of-the-art equipment to scan films frame-by-frame and create an individual image of each frame into a DPX file. DPX is a super high-quality digital film file that lets you keep all the detail and data of the original film in a convenient digital format.

If you've got a film, we can probably scan it, no matter what format you're working with including:

STANDARD 8 - SUPER 8 - 9.5MM - 16MM - 35MM - 70MM

Depending on the user case and desired end format, we can convert films into SD, HD, 2K, and 4K files; rest assured that each project is treated with the same reverence and respect.

WHETHER WE'RE WORKING ON HOME MOVIES SHOT ON SUPER 8 CAMERAS OR MASSIVE 70MM PRINTS OF BLOCKBUSTER MOVIES, THEY ALL GET THE SAME CARE, BECAUSE THEY'VE ALL CONTRIBUTED TO THE HISTORY OF FILM AND THEY ALL MEAN SOMETHING TO SOMEONE.

As you might expect, such an important part of the process takes time. Scanning is done in real-time for 2K footage and at half run-time for 4K. It takes a while to get through longer projects or big collections, but seeing the end result is worth the wait.



ROYAL GEOGRAPHICAL SOCIETY



GRADING

Once the scanner stops whirring, it's time to head into our **FILMWORKZ NUCODA GRADING** suite for full color grading. At **R3STORE STUDIOS** our expert color graders carefully enhance and adjust the overall tone of the film. We can also tinker with single colors, tones, shadow areas, and more, to have precise control over the look and feel of the footage.

As you might imagine, professional color grading can be a long and expensive process. And while we're always happy to take on any project, sometimes it makes more sense to spend a restoration project budget differently. We always recommend scanning, to make sure you have digital copies of your footage. But if you only have the budget for scanning, you can try your hand at grading yourself with **NUCODA** grading software and using **FILMWORKZ** as a pay-as-you-go option.

DIGITAL RESTORATION: THE WATCH-OUTS

Now that the film is digital, it's easier to work with. But, in a way, digital restoration requires more consideration and caution. This is particularly important with historically or culturally important material. We need to make sure we're not accidentally "changing" history, after all!

AS JOSH CLARK, FILM AND RESTORATION SUPERVISOR FOR ITV CONTENT DELIVERY, SAYS: "RESTORATION IS ABOUT GETTING BACK TO HOW IT WOULD'VE LOOKED WHEN IT WAS FIRST SHOT — AND NOT TRYING TO ENHANCE BEYOND THAT."

Thankfully, the high-quality digital files give us access to all the detail available in the master material. We mentioned AP's footage of Prince Charles and Lady Diana's wedding earlier, and that's a great example of just how much detail the film footage held. All other news agencies had switched to SD tape at that point, so now AP's 4K film footage gives a much clearer picture of the event than any other source. Look closely and you can see the fine lace on Diana's famous 25-foot long train and you can clearly make out individual tassel strings adorning Diana's horse-drawn carriage.

And sometimes, this increased level of detail can lead to new historical discoveries:

'IN ANOTHER PROJECT, WE WERE RESTORING WORLD WAR II FOOTAGE FOR THE IMPERIAL WAR MUSEUM WHEN WE CAME ACROSS A SCENE WITH TANKS. PREVIOUSLY, ONLY SD TELECINE TRANSFERS OF THIS FOOTAGE WERE AVAILABLE. BUT THE 2K SCANNED FILM GAVE US SO MUCH MORE DATA TO WORK WITH TO THE POINT OF LETTING US READ INDIVIDUAL TANK LICENSE PLATE NUMBERS. WITH THAT INFORMATION, RESEARCHERS AT IWM COULD LOOK UP EACH TANK AND PINPOINT WHO WAS INSIDE AT THE TIME THE FILM WAS SHOT' SAYS JO

'WE'RE ALL ABOUT FACILITATING THESE MOMENTS OF DISCOVERY — AND WE LOVE SEEING JUST HOW MUCH FILM CAN TEACH US ABOUT THE PAST'



PICTURE RESTORATION

Now it's time for some computer magic. What once took ages to do manually, can now be managed by **AI**. We use **FILMWORKZ'S PHOENIX SOFTWARE** to do automated passes utilizing the DVO tools to remove dirt, stabilize the image, and deal with any flicker or scratches.

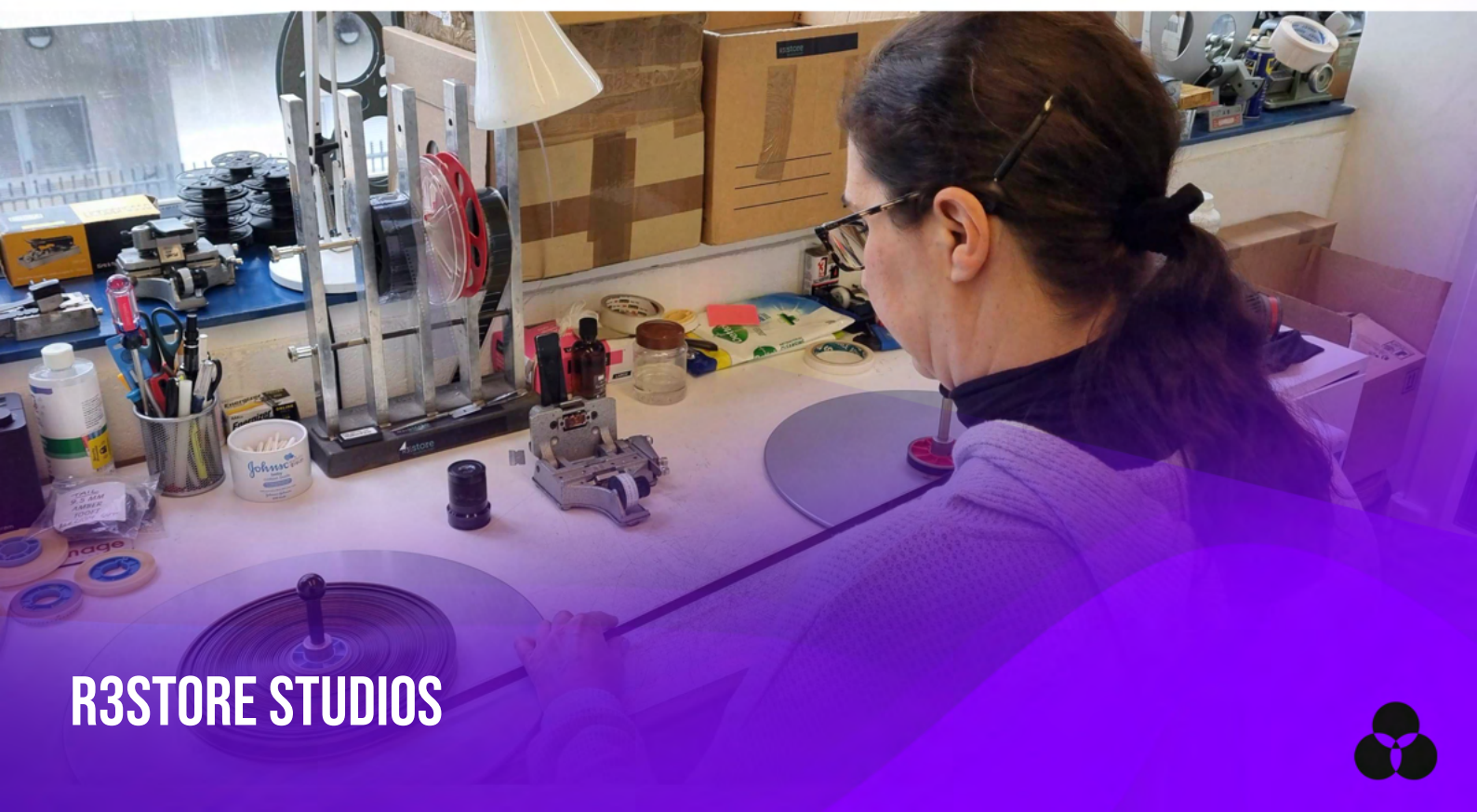
PHOENIX IS SIMPLY THE BEST ON THE MARKET, and our skilled team uses it to meticulously review each frame ensuring that all relevant details are retained and artifacts are removed.

Plus, having someone manually review the footage is an extra quality assurance check, which is why we're known for delivering some of the finest restoration projects in the world. The manual review helps us make sure that any items the software removed — but shouldn't have — are put back in.

Consider this: have you ever watched golf? You might remember that the little white golf ball is often no more than a white speck on the screen. We've restored some wonderful footage of golf tournaments; one of the issues here is that some software thinks the golf ball is actually dirt on the film.

Manually adding golf balls back into each frame can be tedious and time consuming but by using **PHOENIX** with the addition of **DVO DIRT MAP** we were able to ensure we retained the golf balls (same for tennis balls for the project we did for the Wimbledon Tennis Archives)

It's always exciting to find new ways to optimize the restoration process and improve our workflows, because it means we can spend more time working with more great film.



R3STORE STUDIOS





BJORN BORG AND JOHN MCENROE WIMBLEDON, 1981



THE ART OF RESTORATION WITHOUT ANY OF THE EXCLUSIVITY

You might be thinking that this whole process sounds expensive. And you'd be right.

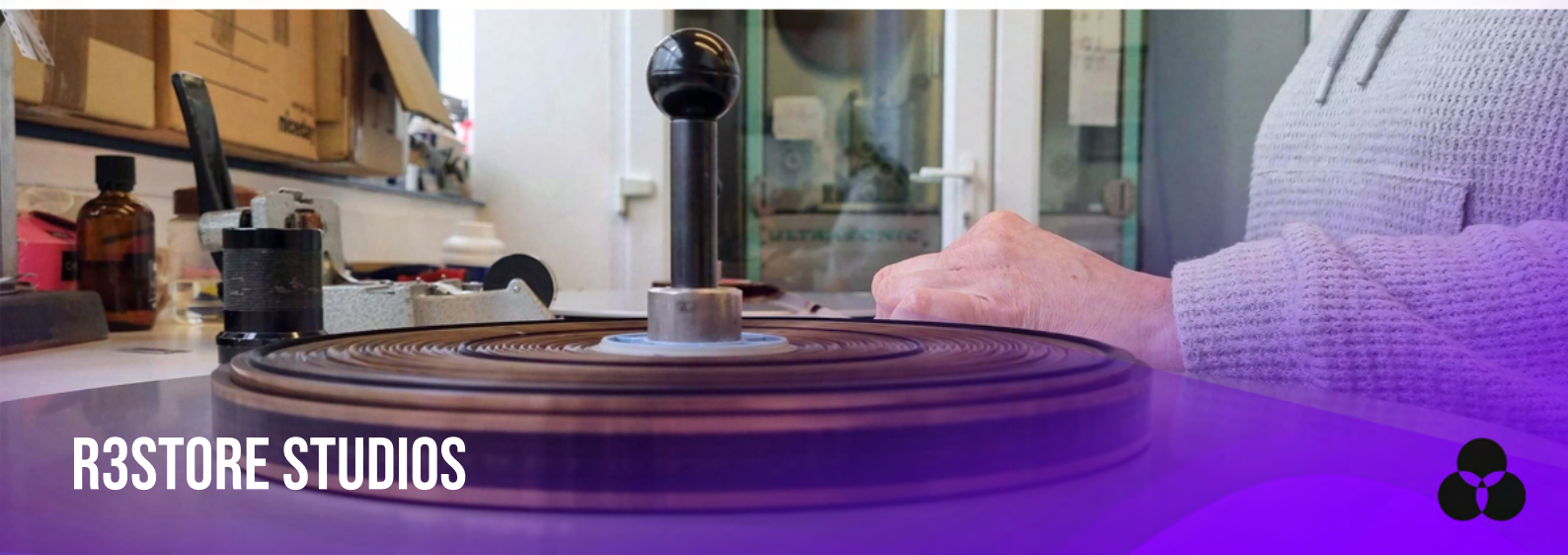
The professional equipment we use in our Studio would require investment in excess of £1m to set up (and that assumes you know how to use it!) Plus we have a highly skilled team of professionals trained in all of our processes.

Not every restoration project has to be expensive, though, and we encourage clients to tell us their budgets so we can make recommendations about the best use of their money.

Do you have an unlimited budget? Then go all out and have R3store inspect, clean, scan, grade, and restore the film for you!

For projects with a smaller budget, sometimes it makes sense to select a handful of processes instead of the full package. We'll always recommend getting your film scanned, but after that the choice is yours. We suggest picking processes that have the most visible impact on the finished product, like image stabilization and automated dirt removal.

For those inclined to DIY, there's the **FILMWORKZ SUITE OF PAY-AS-YOU-GO TOOLS**. Filmworkz makes professional-quality restoration tools accessible to everyone. Just make sure you get your footage digitized first — that old film reel won't fit into your computer!



R3STORE STUDIOS



PARTNER WITH R3STORE STUDIOS

Reach out and tell us about your project and we'll show you how we

CREATE INCREDIBLE

restoring your treasured footage with the passion and experience
it deserves to keep the "movie magic" going for years to come.

ACADEMY@FILMWORKZ.COM

