

# **Notes for Teachers**

### How to use this resource

Encourage your students to follow our research journey by reading through the resource.

They will encounter a selection of prompt questions and activities as they go through, which will encourage them to reflect on what they are reading.

## 2. Using Resources: What can we learn about them?

Looking at objects is a great starting point for research and science provides us with many different ways of looking. Here are some examples of what the scientific methods we used helped us learn about the objects.

## Infrared (IR) imaging

Infrared (IR) imaging helps to investigate the presence of any lines or marks underneath a painted surface which can give us clues about the way the artist worked. It can also provide information on areas which have been restored or retouched, by detecting non-original materials.

Look at this infrared image of one of the shields

Is there anything you can see now that wasn't visible before?

Some pigments become transparent under infrared light. Here, for example, you can see details of the way the drapery and the halo were sketched before they were painted.

## Ultraviolet (UV) light

Ultraviolet (UV) light can cause some painting materials to fluoresce (emit light). This method can be used to detect if the object has been restored or retouched in the past.



#### X-radiography

X-radiographs help you to see inside the object and show the way in which it has been constructed.

Can you see anything you weren't expecting?

#### **CT** scanning

This method is also used in hospitals and is a series of X-rays taken at different angles to produce cross-sectional images of various slices through an object. This allows us to see right inside the object without cutting into it.

The first 2 scans show that each angel has been carved from a single piece of wood with the shields and even the candlesticks integral to the sculptures. They are not made of several pieces of wood fixed together.

The final scan shows extensive damage to the wood.

The damage was caused by woodworm feasting on this object for a long time! Conservators have checked that the infestation has now stopped, removed insect eggs and filled some of the flight holes, but the damage inflicted can never be completely reversed.

#### Microscopy

Mounting a digital camera on a microscope enables us to take detailed pictures of interesting areas. This helps us to assess the condition of the paint layers, document damage and study painting techniques.

This painted face of the angel on the shield is less than 2 cm across in real life. This photo helps us to see the minute, finely painted details.