Visual Thinking Lecture Notes

**Slide 5**

Our brains construct visual queries to pick up what is important to support what we are doing cognitively at a given instant. Queries trigger rapid eye movements to enable us to pick up information that answers the query.

Some context of the painting can be found at <http://www.ilyarepin.net/they-did-not-expect-him/> The central figure is (probably) the father of the family returned from political exile in Siberia during the Tsarist regime.

This particular painting was studied intensively by Russian psychologist Alfred Yarbus who used a device to map and track visual behaviour of viewers.

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In the image, the green bars are distinct in terms of several feature dimensions: colour, orientation, curvature, and sharpness. We can easily execute eye movements to find the green bars because orientation, colour, and curvature are all feature properties that are processed at an early stage, and early stage properties are the ones that can be used by the brain in directing eye movements.

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If we consider the problem in cognitive terms the reason becomes clear. We can remember at most only a half dozen temporal patterns in an hour of video, and these may not be the important or stereotyped ones. We are not nearly as good at identifying and remembering motion patterns as we are at remembering spatial patterns. Also, every time an ethologist formed the hypothesis that some behaviour might be stereotypical, it was necessary to review the tracks of all the other whales, again looking for instances of the behaviour that might have been missed.

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Additional behavioural patterns:



**Slide 17**

Mind you, learning costs are not a simple thing to measure and don’t always decrease with expertise, because expectations can grow. Arthur Schnabel wrote of the Mozart C major sonata K 545 (<https://en.wikipedia.org/wiki/Piano_Sonata_No._16_(Mozart)>) that it was ‘too easy for children, and too hard for artists’.