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### Da Vinci's *La Bella Principessa* and the uncatchable smile

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In 1998, a little known picture was sold for a modest sum in a New York saleroom and in so doing attracted the attention of the art world. Painstaking analysis by the Oxford art historian Martin Kemp and others, revealed it to be the work of Leonardo Da Vinci (Kemp & Cotte, 2010, Hodder & Stoughton). Given the considerable interest in *La Bella Principessa*, it is perhaps surprising now to suggest that it may contain an illusion. The *Principessa* mouth appears to change shape dependant on whether it is viewed in foveal or peripheral vision and this in turn changes the facial expression and ambience, generating an 'uncatchable smile' experience. Experimental data showed that the uncatchable smile experience can be obtained also by approaching the picture from distance and, when a digital version of the picture was used, by either blurring or pixelating the image. The effect is similar, and perhaps stronger, to that described by the Harvard neurobiologist Margaret Livingstone, in her account of the *Mona Lisa*'s enigmatic smile (Livingstone, 2002, Abrahams). The question arises as to whether Leonardo deliberately used such an artefact as a subtle embellishment to the overall aesthetic - after all, who can resist an uncatchable smile?

