Volume 2

On the Persistence of a Modest Medium

The Role of Editorial Illustration in Print and Online Media

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Volume two of two. This thesis is submitted in partial fulfilment of the requirements of the Royal College of Art for the degree of Doctor of Philosophy.

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Appendix Contents

1 Quantitative Visualisation on Illustration Usage in the Illustrated London News (1880-1910)

The following visualisation is a small sample study of the changes in illustration usage at the *Illustrated London News*, during the period discussed in this thesis (1880-1910). This period represents a time of media transformation, changing reproduction technologies between wood engraving and halftone printing process. The significance of this change for editorial illustration is discussed in Chapter 2.

The aim of the sample study is to visualise image usage and the changes over time, during the period between 1880-1910. This in order to create insight into the position and change of particular illustration formats, in the relation to the contextualising publication and written text.

The schematic visualisation represents all the spreads from the May editions of 1880,1890, 1900, and 1910 of the Illustrated London News, a weekly newspaper. Each edition is presented as rows of small graphic representations of double pages, so called spreads. Each spread is coded according to day-month-year-page-number: for instance 010518802. Editions are shown in order of historical appearance.

Written text is shown as columns of non specific placeholder text, whilst the images are shown as coloured boxes, with a textual representation of the related caption. The particular image use is defined by type of image (wood engraving, line drawing, halftone illustration, halftone photograph etc.) and this is made visible through colour coding.

Further a distinction is made between particular content: news and editorial written text and image, art reproductions and advertising, whereby art reproduction and advertising (text and image) are marked as coded colour boxes. Content differentiation is not developed, other than showing whether there is use of image or text, only in case of the pages of advertising. Quantification of image is further developed through the approximate position and the size of the image, visualized through the size, shape and position of the coloured boxes.

1.1 Observations

1. In 1880, there were only wood engravings, and engraving with wash and line drawing: some line drawings have a more sketcherly line, whilst some line art show a more controlled, tight line and technical drawings. In 1910 there was no longer any use of wood engraving. Whilst photography dominated, halftone illustration was still a seizable part of the printed production. For instance on the 7th of May 1910 there were 20 pages filled with illustrations, whilst there were 38 pages filled with photography.

2. The editions get larger over time, and the amount of image based pages also grows: for instance on the 8th of May 1880, the edition had 24 pages of which 11 have pictures, where on the 7th of May 1910 the edition had 40 pages of which 24 pages have images. Note that on the 7th of May 1910 King Edward died, which had a large impact on the content of the editions that followed, including a special edition. On the 21st of May 1910, there were 58 pages of which 40 contain pictures. The newspaper became more visual over the period observed and the amount of illustrations and photographs grew.

3. Most illustration would be positioned on separate pages from the text. In May 1880, in most cases, there would be no integration of image and text on the pages, whilst in 1910 the pages were still more than fifty percent illustration only.

4. In May 1910 embellishment around the photographs was used, but not around illustrations; there was no use of embellishment in earlier editions.

5. From May 1890 the layout displayed various experiments with image placement and image formatting, including images placed over a diagonal, images cropped in oval shapes and placed in patterns over the page.

1.2 Legenda

wood engraving

wood engraving with wash

line sketches

line art: technical drawing

line art: other

halftone illustration

photographic image

pattern or embellishment

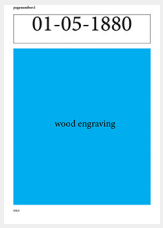
cartoon

mixed media

full colour image

art reproduction

advertising



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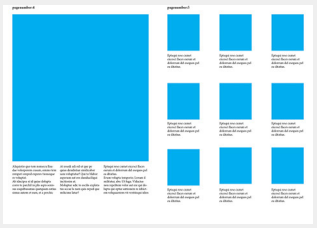

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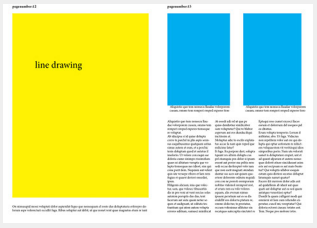

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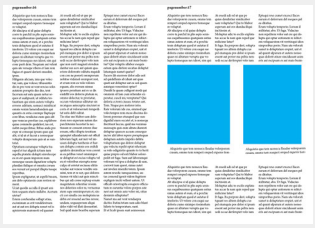

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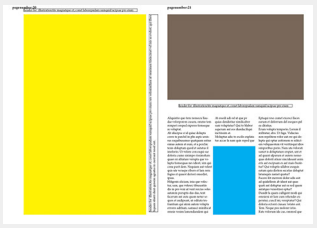

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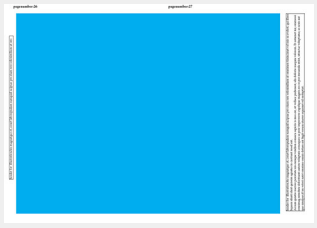

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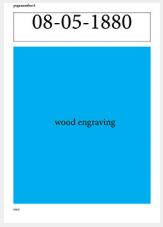

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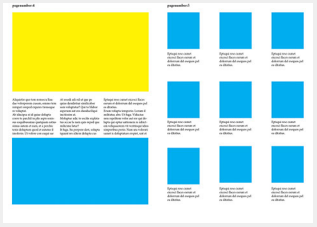

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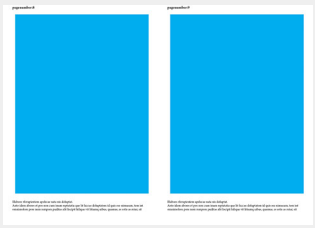

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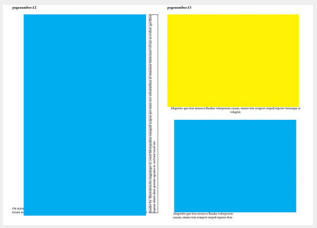

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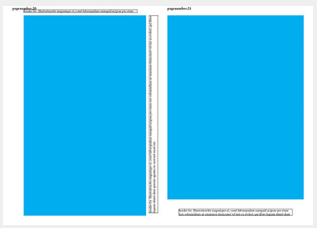

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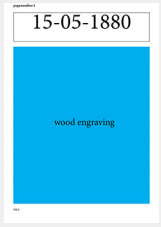

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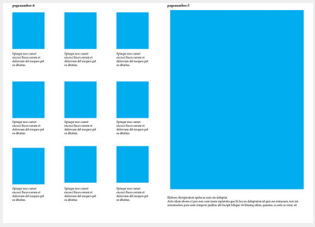

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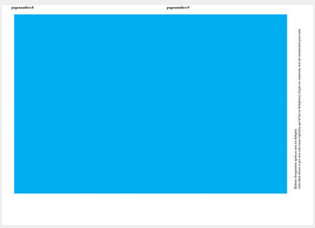

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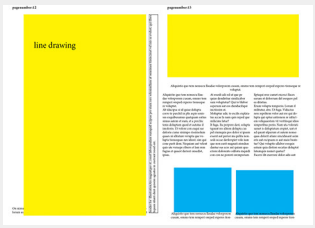

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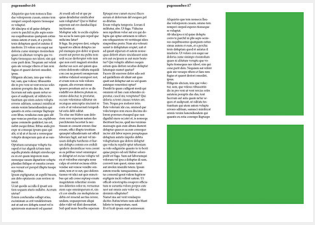

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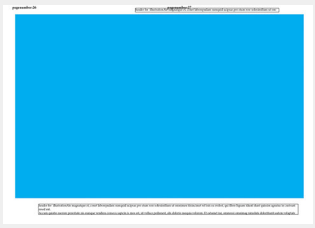

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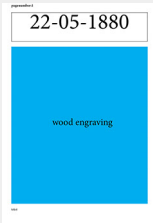

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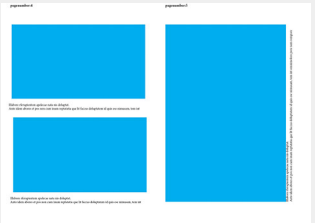

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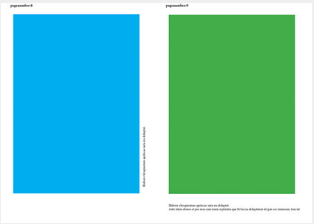

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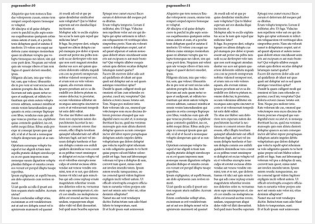

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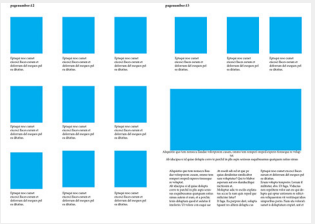

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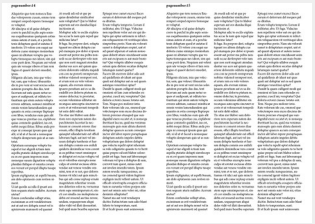

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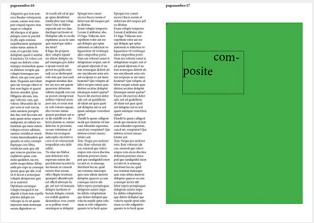

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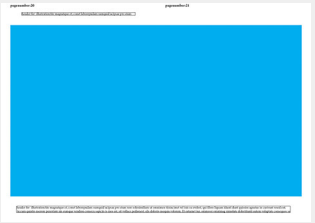

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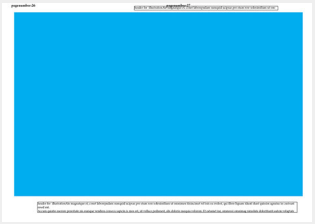

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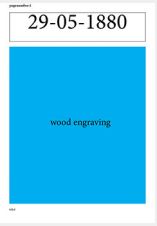

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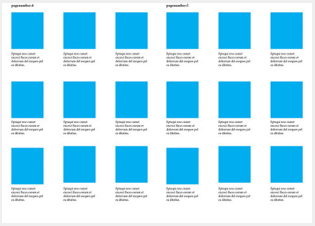

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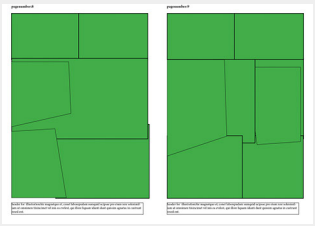

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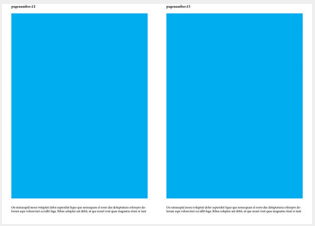

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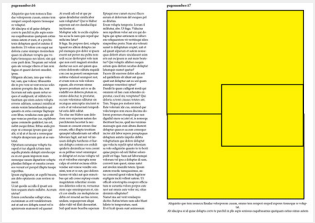

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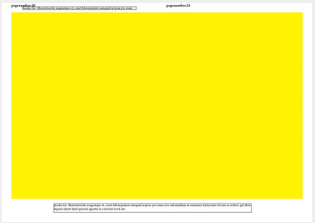

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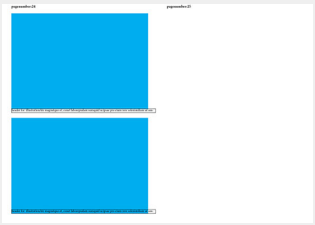

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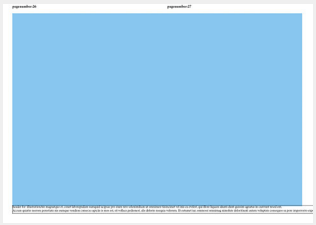

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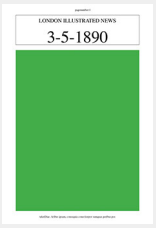

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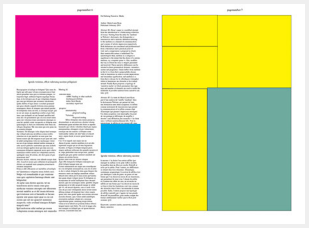

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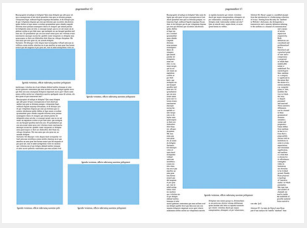

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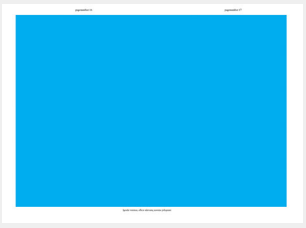

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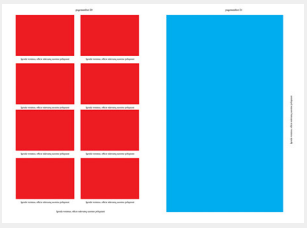

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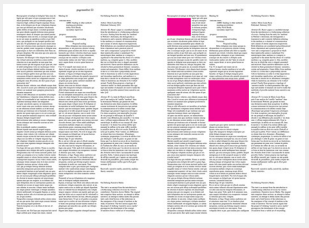

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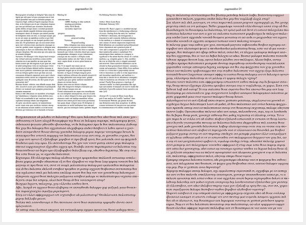

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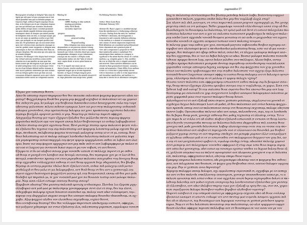

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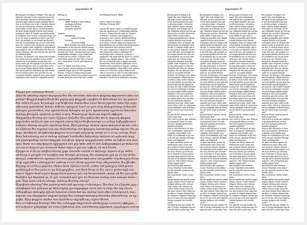

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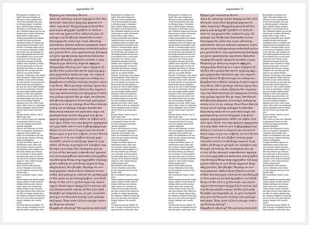

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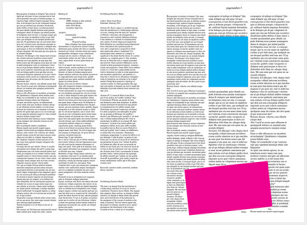
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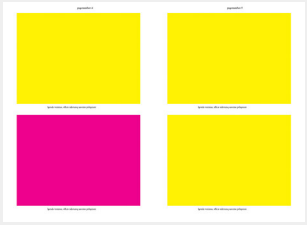
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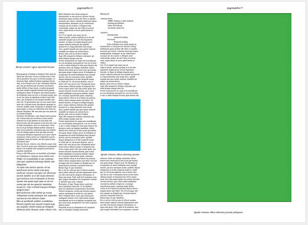
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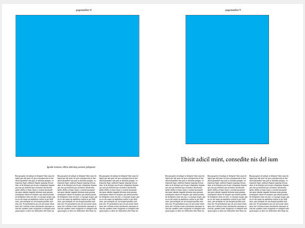
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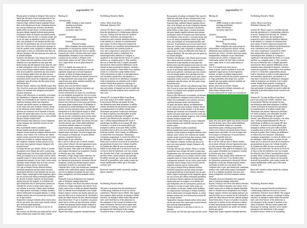
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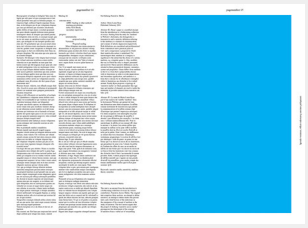
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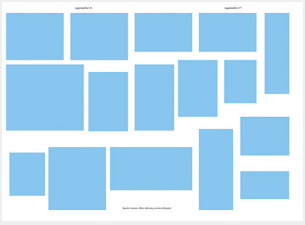
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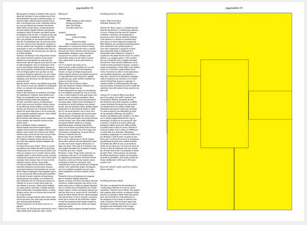
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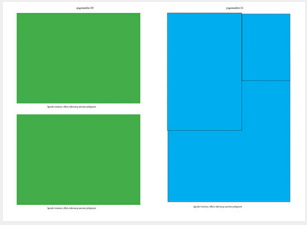
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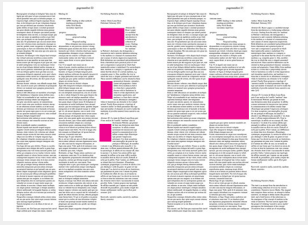
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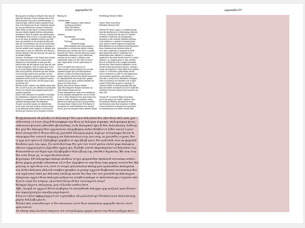
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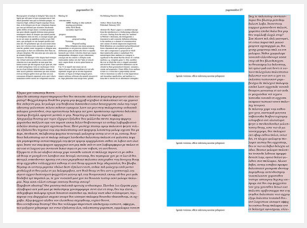
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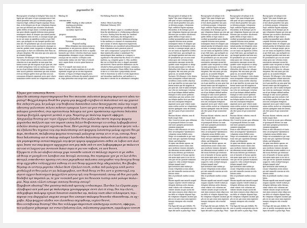
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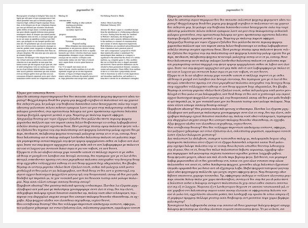
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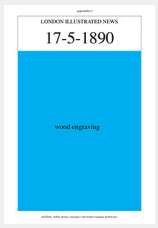

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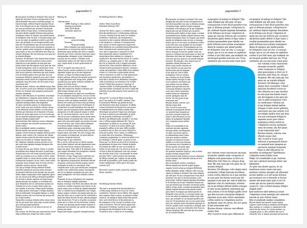

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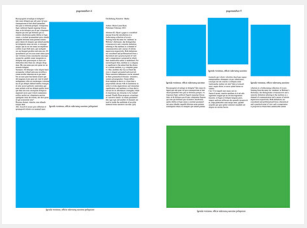

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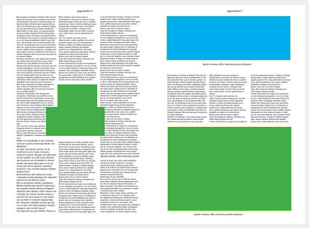

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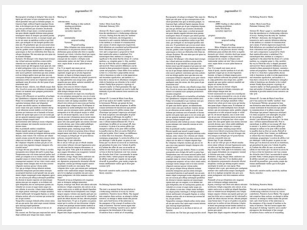

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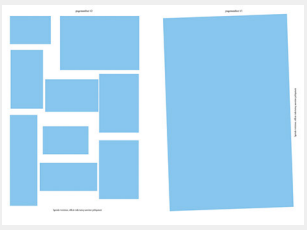

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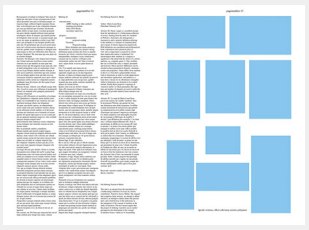

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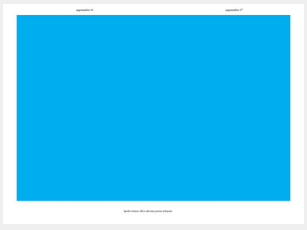

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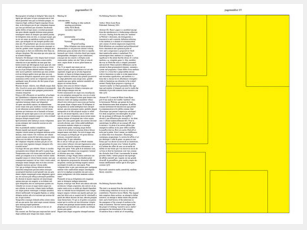

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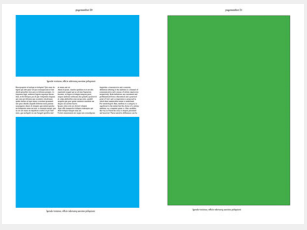

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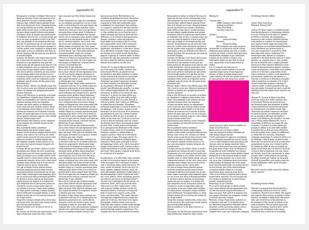

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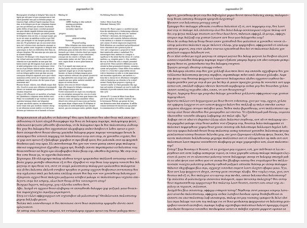

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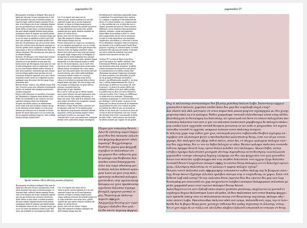

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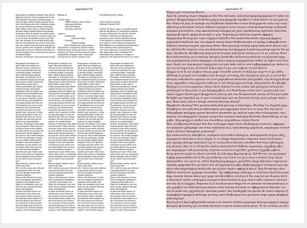

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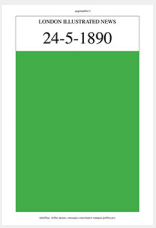

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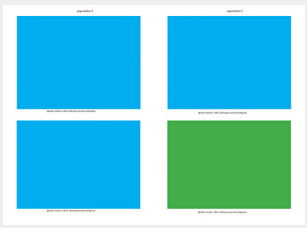
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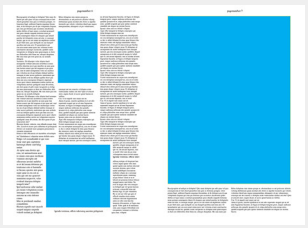
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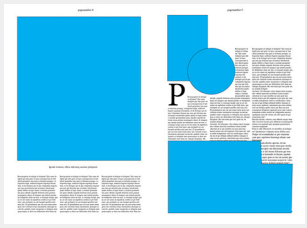
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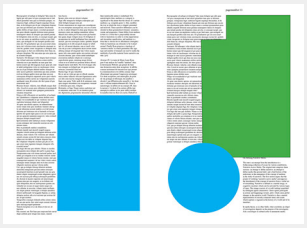
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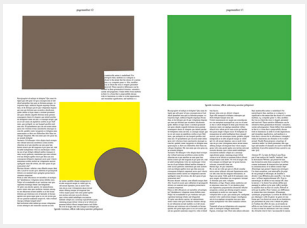
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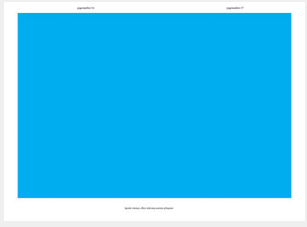
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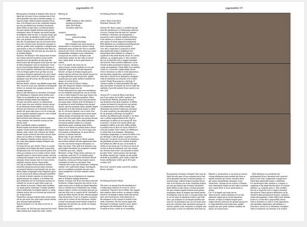
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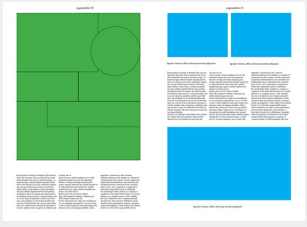
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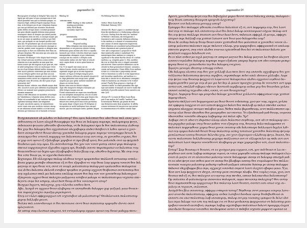
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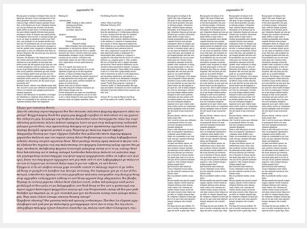
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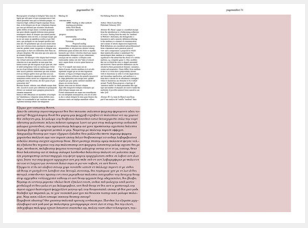
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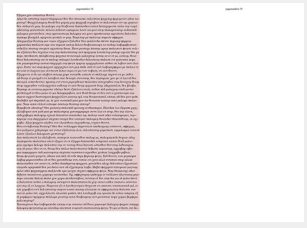
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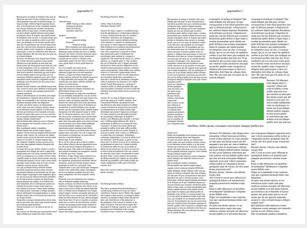

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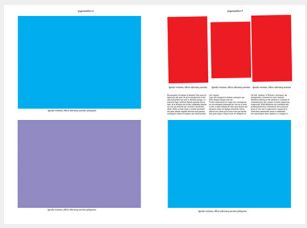

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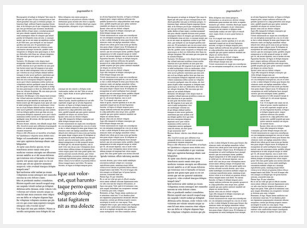

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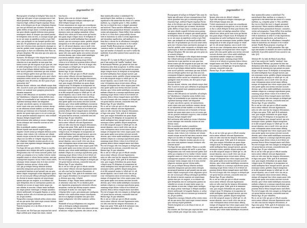

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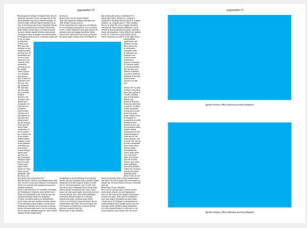

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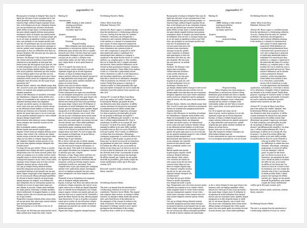

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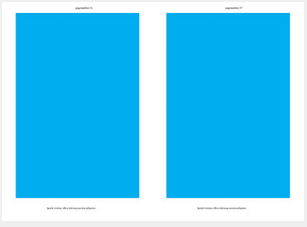

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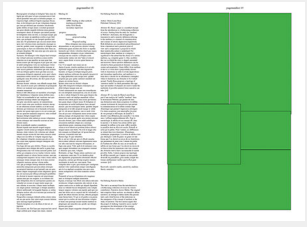

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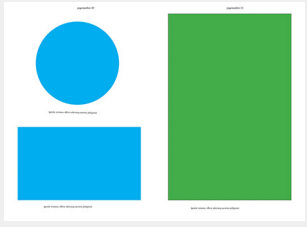

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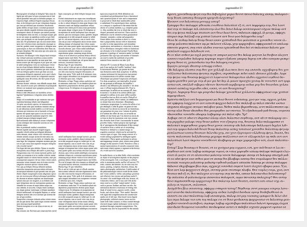

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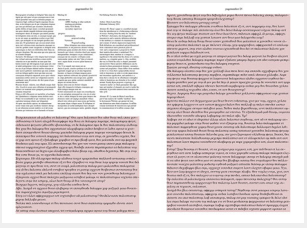

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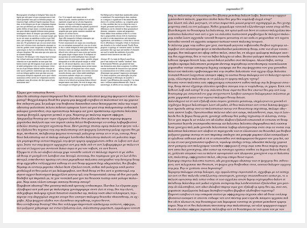

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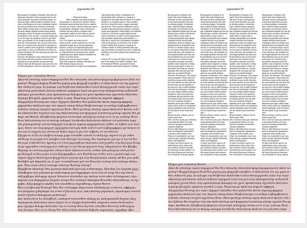

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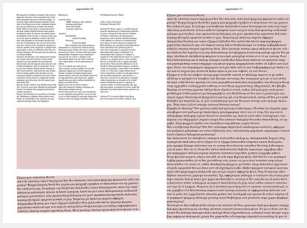

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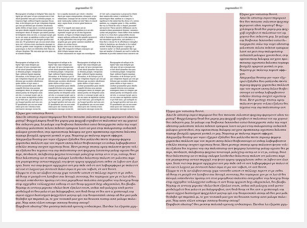

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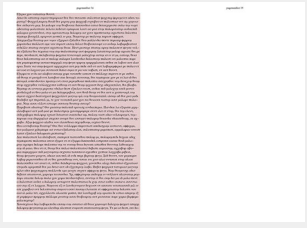

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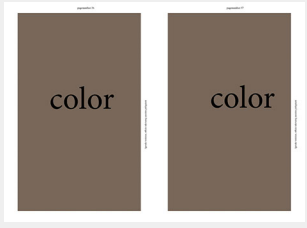

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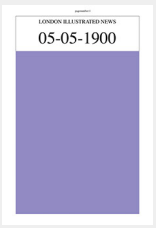

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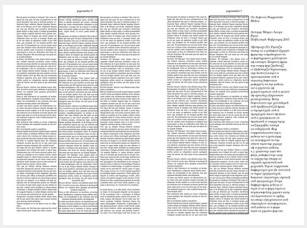

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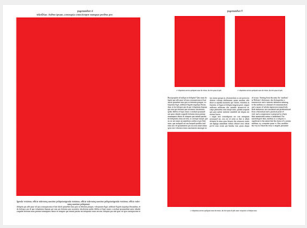

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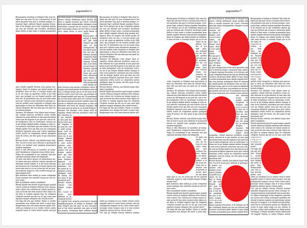

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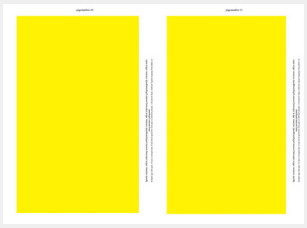

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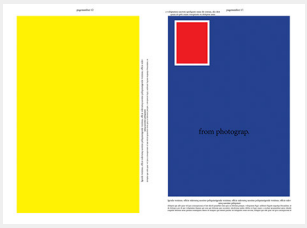

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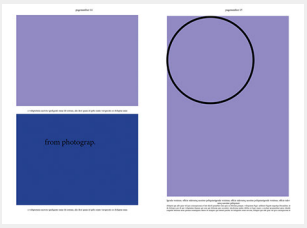

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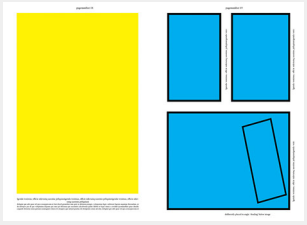

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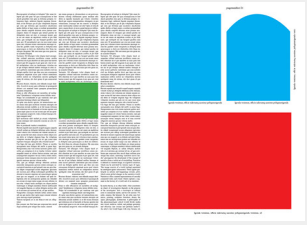

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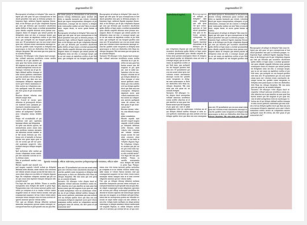

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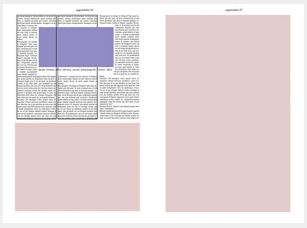

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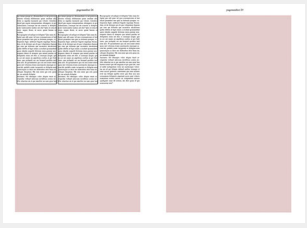

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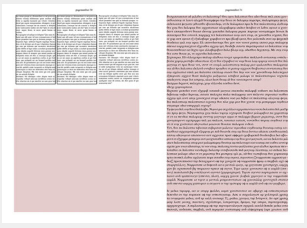

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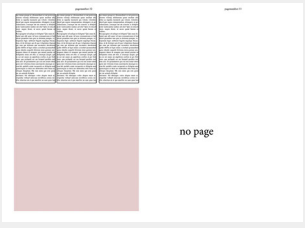

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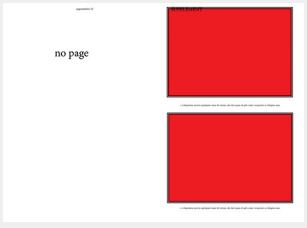

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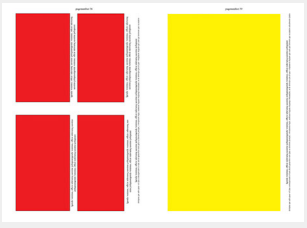

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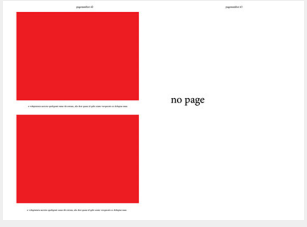

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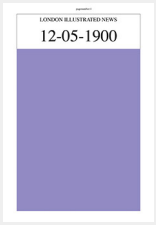

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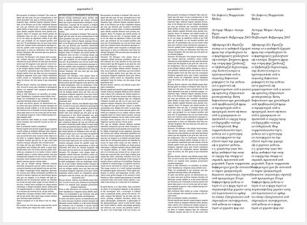

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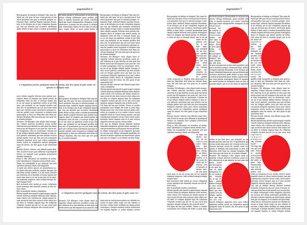

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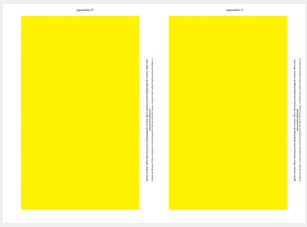

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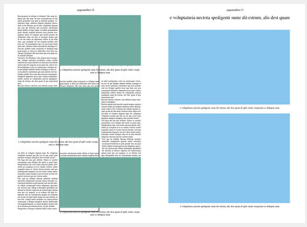

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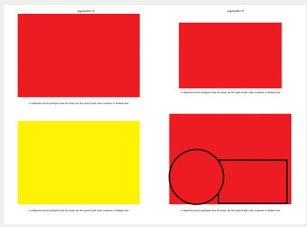

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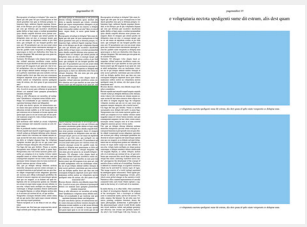

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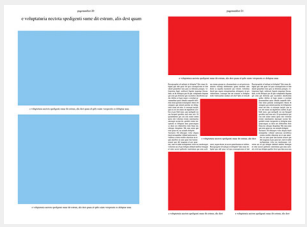

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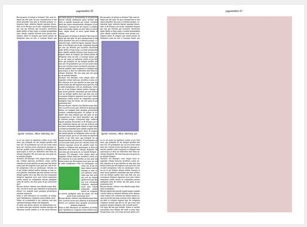

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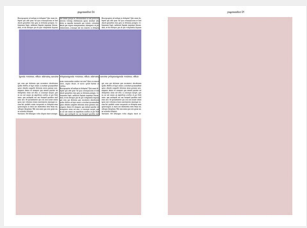

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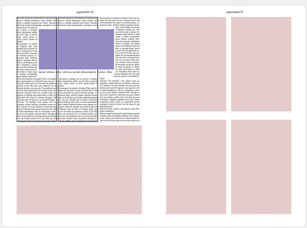

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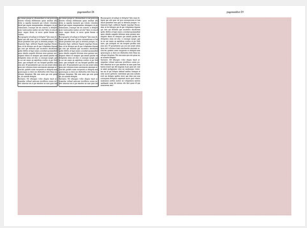

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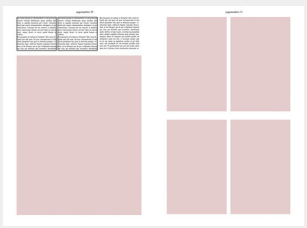

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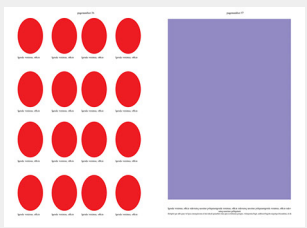

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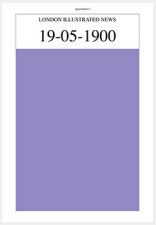

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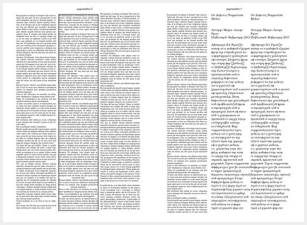

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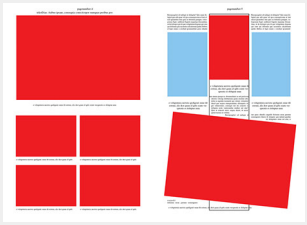

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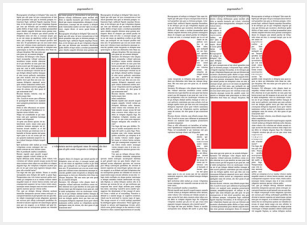

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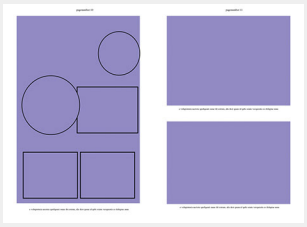

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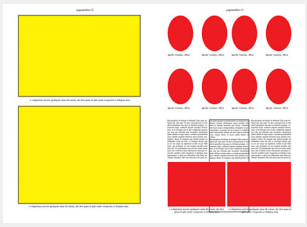

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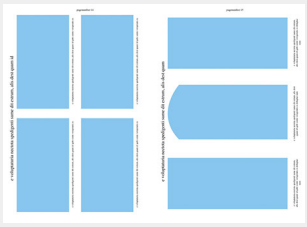

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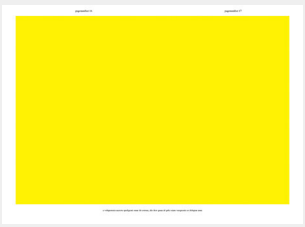

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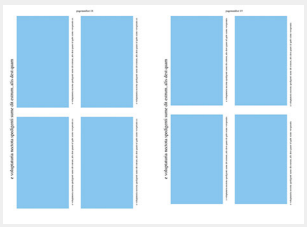

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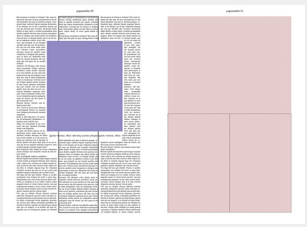

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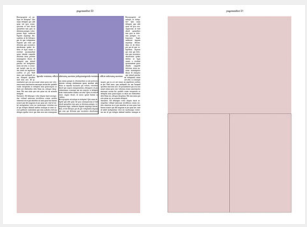

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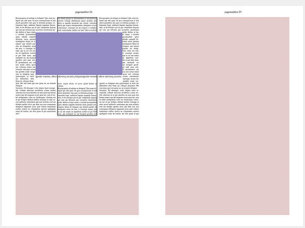

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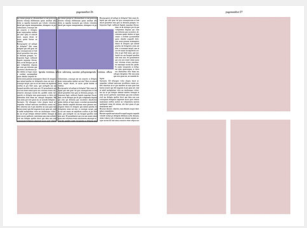

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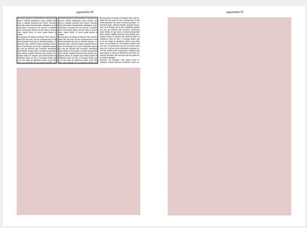

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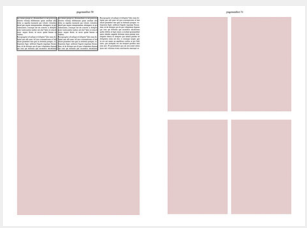

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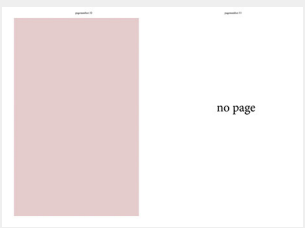

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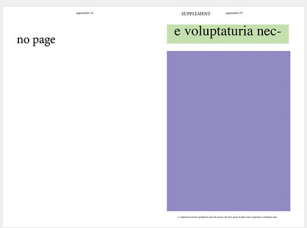

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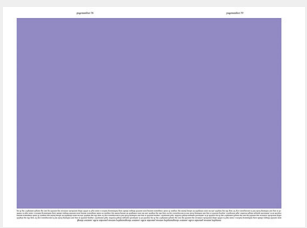

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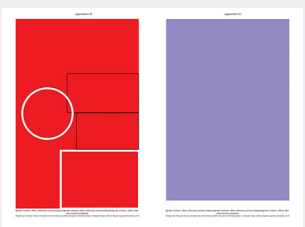

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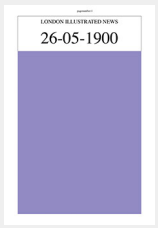

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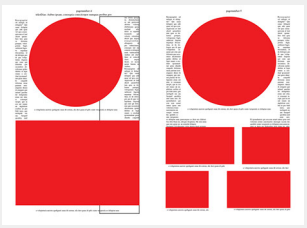

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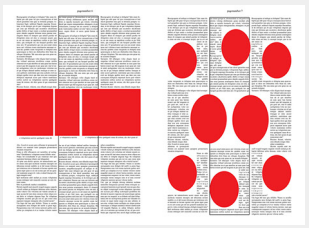

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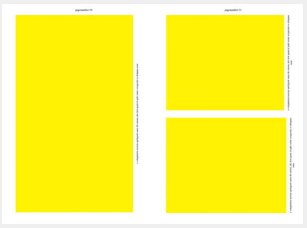

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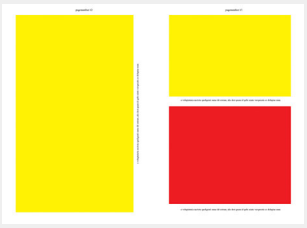

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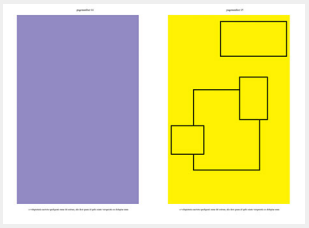

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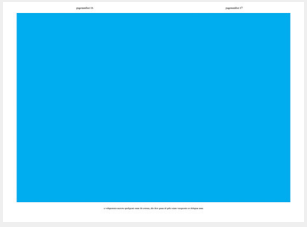

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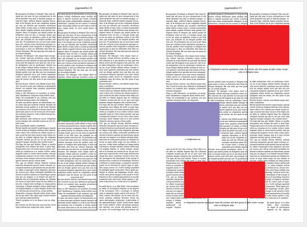

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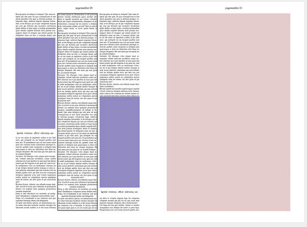

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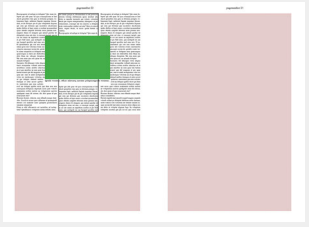

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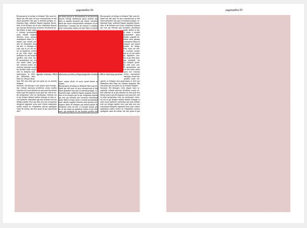

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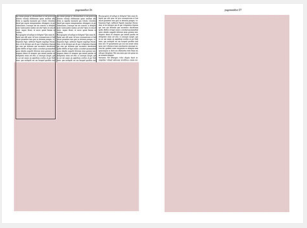

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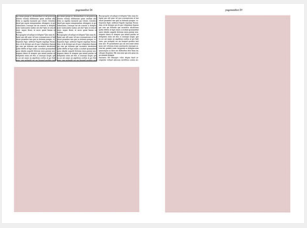

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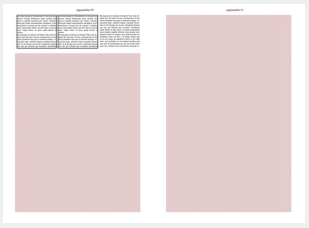

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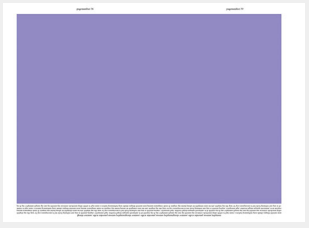

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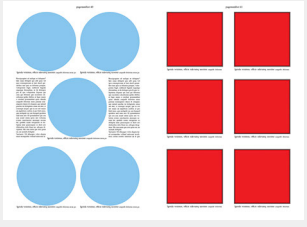

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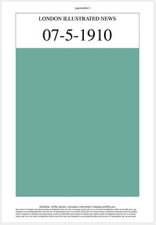

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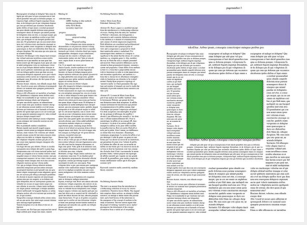

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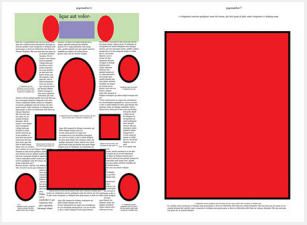

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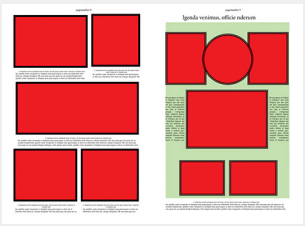

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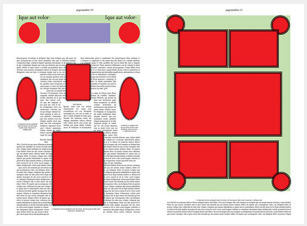

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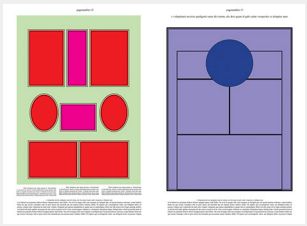

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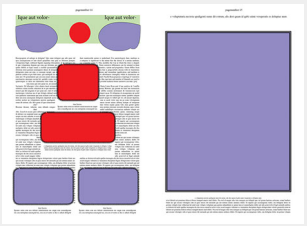

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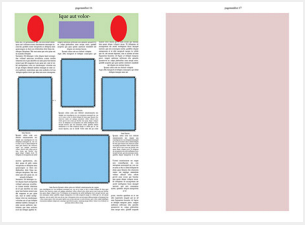

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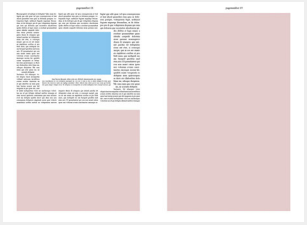

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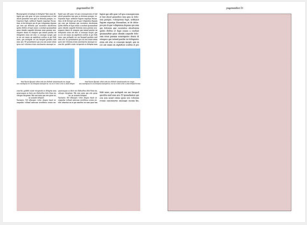

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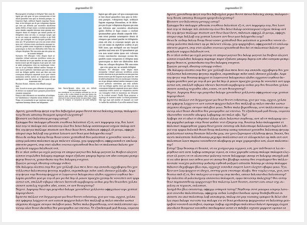

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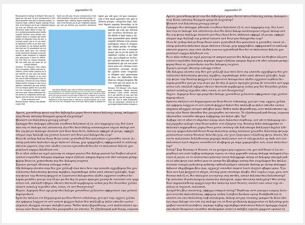

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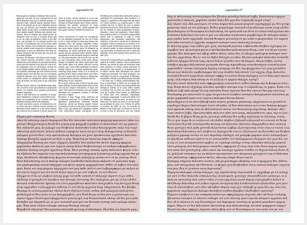

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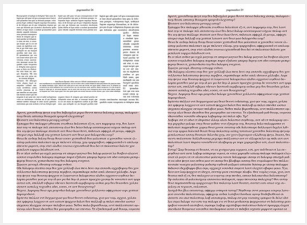

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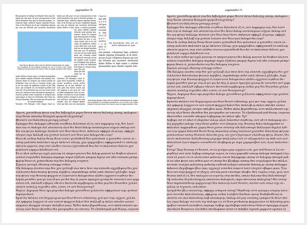

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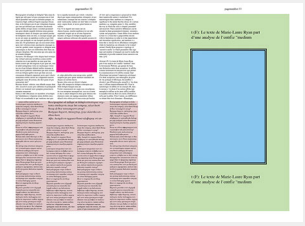

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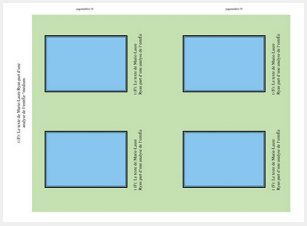

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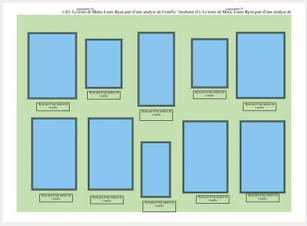

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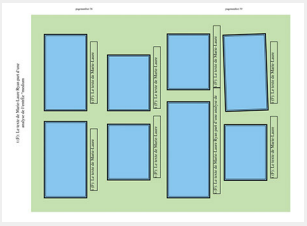

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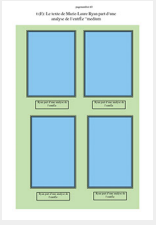

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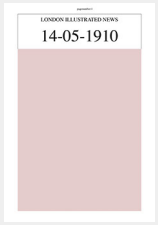

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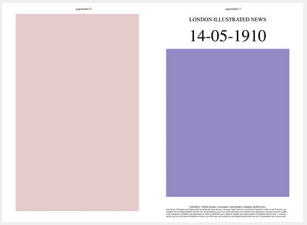

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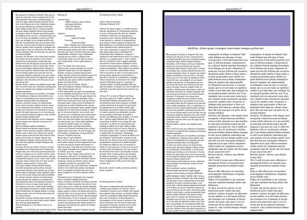

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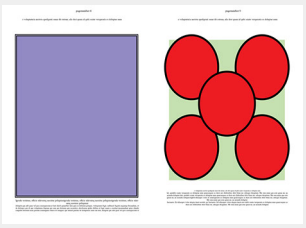

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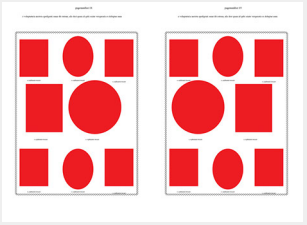

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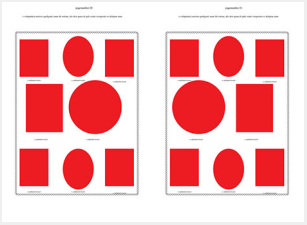

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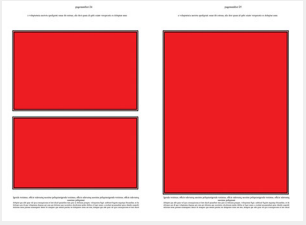

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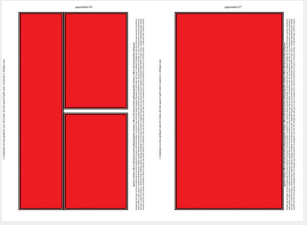

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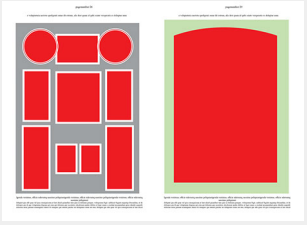

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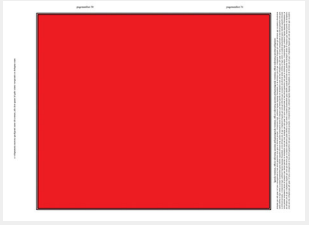

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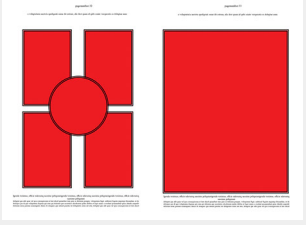

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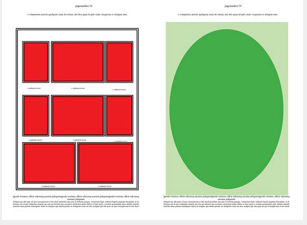

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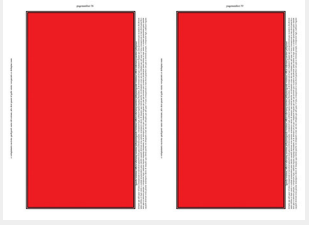

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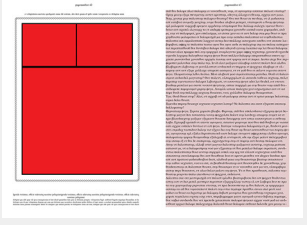

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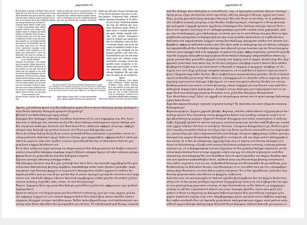

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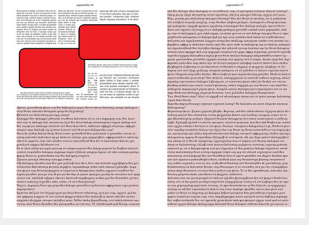

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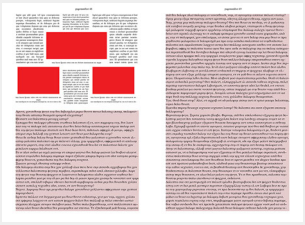

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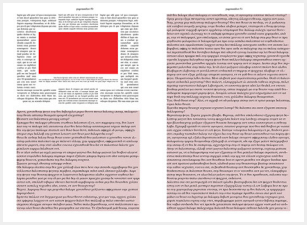

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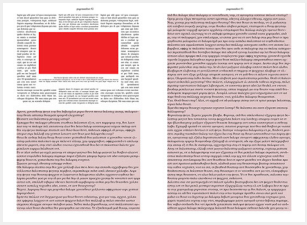

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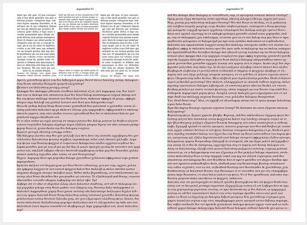

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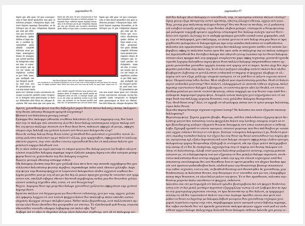

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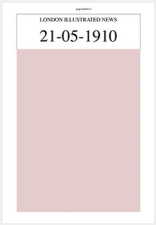

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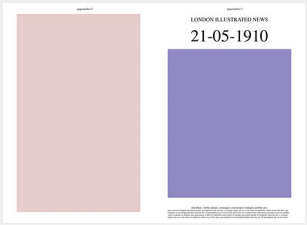

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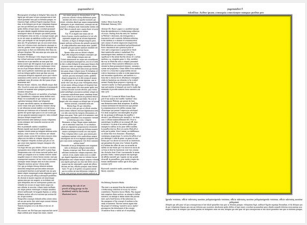

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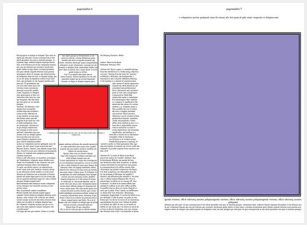

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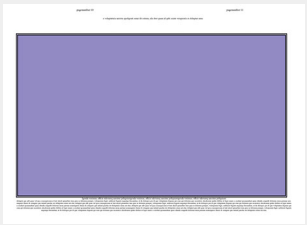

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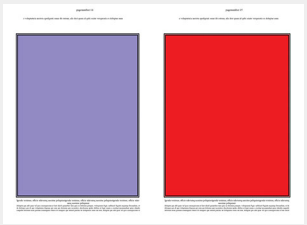

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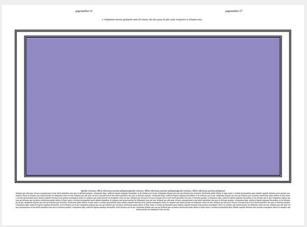

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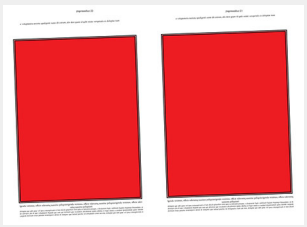

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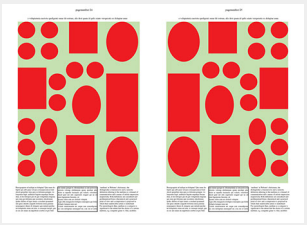

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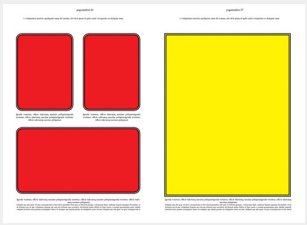

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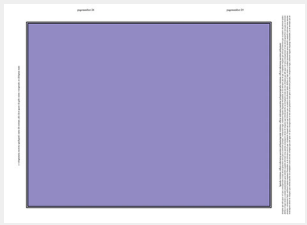

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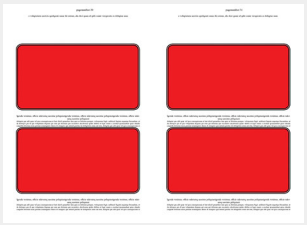

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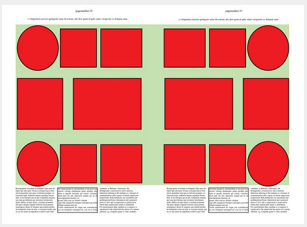

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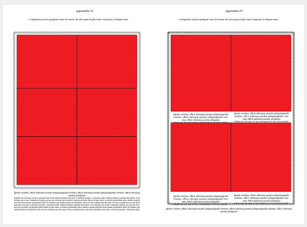

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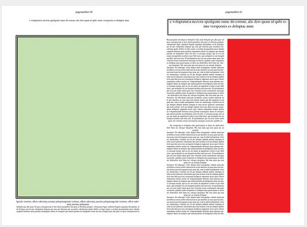

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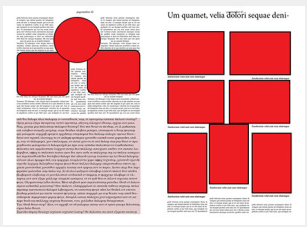
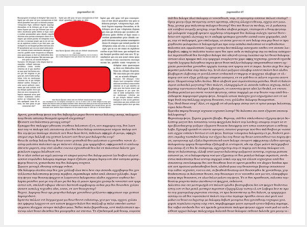
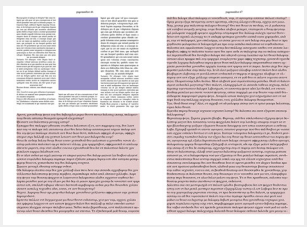


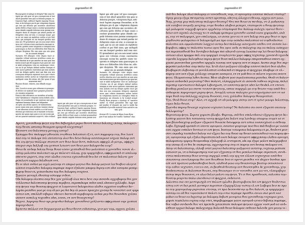
layout LIN 2105191022



layout LIN 2105191023

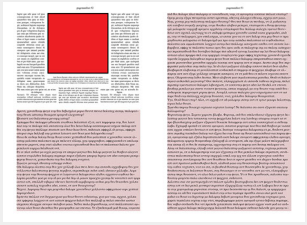


layout LIN 2105191024

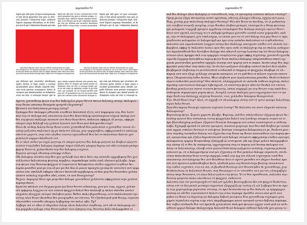


layout LIN 2105191025

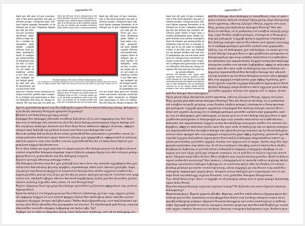
layout LIN 2105191026



layout LIN 2105191027

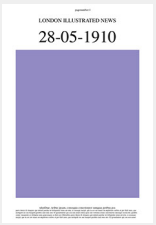


layout LIN 2105191028

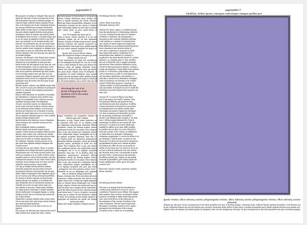


layout LIN 2105191029

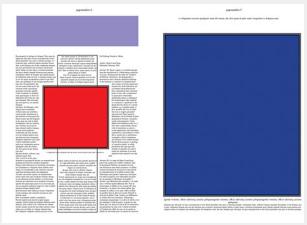
layout LIN 2105191030



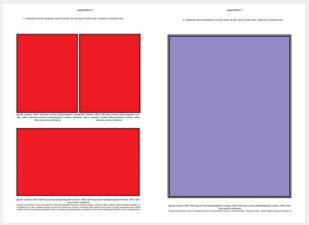
layout LIN 28051910



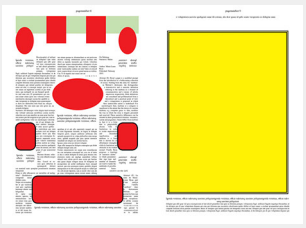
layout LIN 280519102



layout LIN 280519103

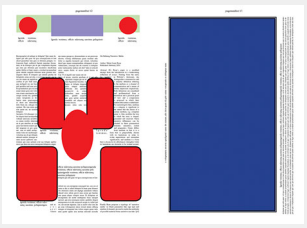


layout LIN 280519104

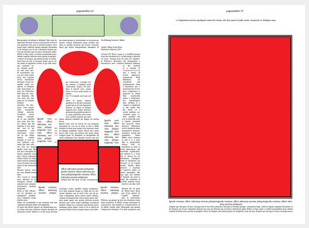


layout LIN 280519105

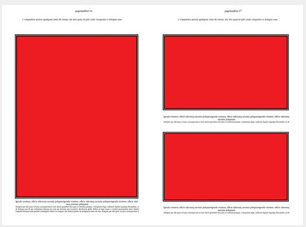
layout LIN 280519106



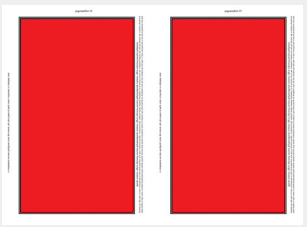
layout LIN 280519107



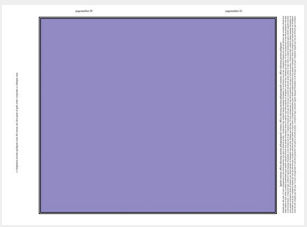
layout LIN 280519108



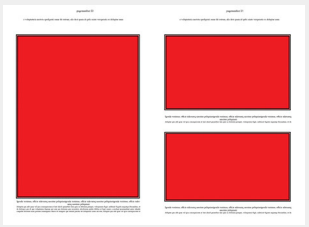
layout LIN 280519109



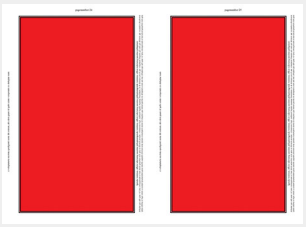
layout LIN 2805191010



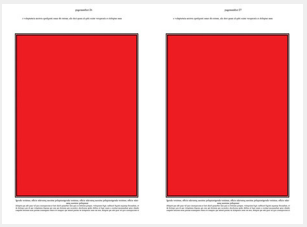
layout LIN 2805191011



layout LIN 2805191012

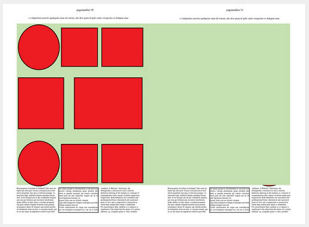


layout LIN 2805191013



layout LIN 2805191014

layout LIN 2805191015

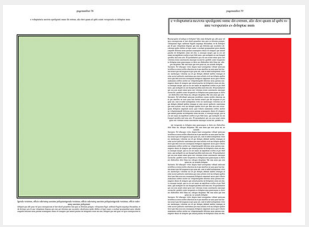


layout LIN 2805191016

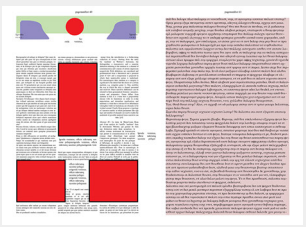
layout LIN 2805191017

layout LIN 2805191018

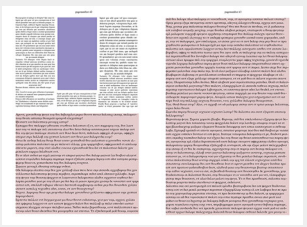
layout LIN 2805191019



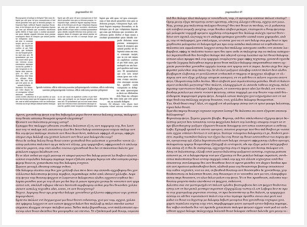
layout LIN 2805191020



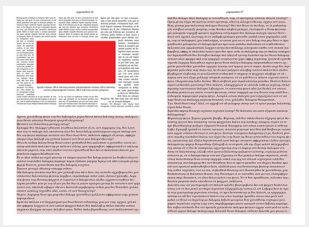
layout LIN 2805191021



layout LIN 2805191022



layout LIN 2805191023



layout LIN 2805191024

layout LIN 2805191025

2 DataRabbit; Analysis of Data Properties for Illustrational Purposes

The following tables represent a selection of creative studies of the various data types and properties, which can be experienced through manifestation and behaviour of particular designed shapes. The tables present a variety of property indicators such as units of measurement, growth, volume and veracity. They further describe the effects of the data properties on particular visual elements. Each form includes file information, property descriptions and descriptions of the particular effects, as well as sample images.
The tables present subjective observations, created in support of image studies that explore the possibilities and similarities of movement and change that occur, when live data is applied towards meaningful image creation.

The studies are of a composition of a set group of vector based computational elements. Together they represent an abstracted shape of a rabbit's head. The composition consists of three variable elements; two elongated 'ear' shapes and one circular 'head' shape, plus three fixed elements, three dots: two white 'eyes' and one pink 'nose'. Collectively the group of programmed images are called: DataRabbits. Individual files are called after the type of data stream, plus the extension rabbit and an image file number. The significance of these live image experiments is discussed in chapter 6.
A revisit of the image file, as discussed in the forms, might not give the exact result as described. Firstly the experience of the live images is durational and is dependent on real-time occurrences. Secondly due to continuous changes in the development of the API, online network structures and network politics, access to particular data streams might be altered in terms of access. The live image programs and recorded animations can be accessed on the USB Drive.

The following forms are included:
bbc_newsrabbit_1
stock_rabbit2
stock_rabbit3
stock_rabbit4
time_rabbit AMPM_1
time_rabbitAMPM_2
time_rabbit_24_hour_1
time_rabbit_24_hour_2
time_sun_rabbit_7
twitter_rabbit
weather_rabbit
weather_rabbit 3

	data properties of interest for image and behaviour creation			
sketch name	**bbc_newsrabbit_1**			
file name	bbc_newsrabbit_1.pde			
name data type	BBC news items			
location source	http://feeds.bbci.co.uk/news/rss.xml			
access	Open access			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	open	This BBC xml gives a list of all news items available on the current news website. The category of news item can be isolated and selected, apart form 'uk', 'world', there are items such as 'sport', 'Europe', 'weather', 'education' etc. All recognisable tags.The average of items is not fixed, but for instance for uk in general around 50 items.	
range	How many / what kind of many measurable units?			
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	quantitative		The data is a series of strings with each a same construction with different keywords.
discrete or continuous	Does it have values in between points?		Not applicable	
maximum value	Is there a maximum?		open	
minimum value	Is there a minimum?		0	
duration	What is a (common) cycle/ length of measurement?		24 hours	
growth curve , behaviour	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	random	Above 0 there is no fixed amount of news-items. Amount can change every time the website is updated, update is irregular, in the daytime can be five or more, fewer at night (from 1 per hour)	
positive negative growth	Direction of movement.	both positive and negative		
volume	Amount of data available at any time (small, medium, large, very large, random)		small	
velocity	Quality of the data stream.	fixed streaming intervals	time between intervals	Unsure
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	Availability: none, little, high	xml	
veracity	Rate of ambiguity	None,little, high	none	
describe sketch	**ears**	Colour: the colour can vary from black to red Width: can vary from 0 to max, most likely around 40-50 items		
	head	Colour: the colour can vary from white to black Diameter: can vary from 0 to max, most likely around 40-50 items		
	other			
How is data used in this example?	The data string in which a news item is categories is selected and investigated. The tag for category is isolated and counted. The amount of uk news items and world news items are counted.			
What behaviour does it enable?	The changes are a few times a day, but not often and not regulated. The movements are jolty, but infrequent. The movement between changes is relatively small, due to a constant average of items available online. The object is therefor relatively steady			
How does the code enable the data?	Through the selection of delineators and word stings a word can be selected. The amount of times this word appears can then be calculated. The numerical values are selected and fed into the algorithm without any alteration.			

Figure 1, bbc_newsrabbit_1, BBC news availability of uk and world news items at Saturday 19th of April 18.53

	data properties of interest for image and behaviour creation			
sketch name	**stock_rabbit2**			
file name	stock_rabbit2.pde			
name data type	Stock market values, Barclays, Lloyds			
location source	http://download.finance.yahoo.com/d/quotes.csv?s=LLOY.L&f=sl1d1t1c1ohgv&e=.csv http://download.finance.yahoo.com/d/quotes.csv?s=BARC.L&f=sl1d1t1c1ohgv&e=.csv			
access	Open access through yahoo			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	continuous	The values of share prices widely differ between companies. But they are changing within the same environment and time constraints (FTSE100, trading hours). Based on the market trade each has its own fluctuations and velocity. This is not pre-set, but the result of buying and selling, driven by, for instance, news events and trading rapports that predict certain trends. Market movements generally are on average no more than 7 % per annum. There is no movement outside trading hours.	
range	How many / what kind of many measurable units?	Open ended	Share value in points.	
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational	rational
discrete or continuous	Does it have values in between points?	discrete	no	
maximum value	Is there a maximum?		There is no maximum	
minimum value	Is there a minimum?		0	
growth curve , behaviour	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	fluctuating	The changes are mostly quite small: percentage points, but constant during trading hours	
positive negative growth	Direction of movement.	Both positive negative		
volume	Amount of data available at any time (small, medium, large, very large, random).	large	The stock points represent the final outcome of buying and selling, which is a vast amount of actions going on at the same time.	
velocity	Quality of the data stream.	streaming	time between intervals	Intervals are determined by the api. There is no data stream on weekends, public holidays, after 17.00 and before 9.00.
variety	Is it this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	High, there are many media outlets	data format used: csv	
veracity	Rate of ambiguity.	little	Due to the API versus the speed of automated trading, there is a delay.	
describe sketch	**ears**	Colour: fluctuating between black and red, which is the max colour. Width: fluctuating between 0 and any maximum.		
	head	Colour: fluctuating between white and black. Diameter: fluctuating between 0 and any maximum.		
	other			
How is data used in this example?	The data is used as calculable components with a fluctuating nature, with minimum of 0 and in principle no maximum. The API is set to collect data from 2 different (FTSE 100) companies within the same environment. They differ in value, which gives significantly differing outcomes.			
What behaviour does it enable?	Share prices widely differ between companies. But they are changing within the same environment and time constraints (FTSE100, trading hours). The behaviour is unpredictable. Based on the market trade each of them has its own fluctuations and velocity in these. This is not pre-set, but is the result of buying and selling driven by for instance news events and trading rapports that predict certain trends. Except that market movements generally are on average no more than 7 % (per annum). There is no movement outside trading hours. The continuous movements are small, but within this a lot of fluctuations.			
How does the code enable the data?	Because the share value is rather large, to be implemented without some adjustment, for the visual, the price is divided by factor 4. This does mean however that any fluctuation needs to be more than 5 points to be just about visible. Lloyds is used to drive the ears, Barclays is driving the head.			

Figure 2, stock_rabbit2, Saturday 19th of April 2014 at 17.12(trading)

	data properties of interest for image and behaviour creation		
sketch name	**stock_rabbit3**		
file name	stock_rabbit3.pde		
name data type	Stock market values, Barclays, Lloyds		
location source	http://download.finance.yahoo.com/d/quotes.csv?s=LLOY.L&f=sl1d1t1c1ohgv&e=.csv http://download.finance.yahoo.com/d/quotes.csv?s=BARC.L&f=sl1d1t1c1ohgv&e=.csv		
access	Open access through yahoo		
	description	**select**	**remark**
type of data	Is it a one-off fixed amount or continuous?	continuous	The values of share prices widely differ between companies. But they are changing within the same environment and time constraints (FTSE100, trading hours). Based on the market trade each has its own fluctuations and velocity. This is not pre-set, but the result of buying and selling, driven by, for instance, news events and trading rapports that predict certain trends. Market movements generally are on average no more than 7 % per annum. There is no movement outside trading hours.
range	How many / what kind of many measurable units?	open ended	Percentage. Gains and loss in value per days trade.
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational
discrete or continuous	Does it have values in between points?	continuous	no
maximum value	Is there a maximum?	no	Average; the 'swing' is no more than 5 percentage points, more than 10 is exceptional.
minimum value	Is there a minimum?	no	
growth curve , behaviour	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	fluctuating	The changes are mostly quite small: percentage points, but constant during trading hours.
positive negative growth	Direction of movement.	both positive negative	
volume	Amount of data available at any time (small, medium, large, very large, random).	very large	The stock points represent the final outcome of buying and selling, which is a vast amount of actions going on at the same time.
velocity	Quality of the data stream.	streaming	time between intervals: Intervals are determined by the api. There is no data stream on weekends, public holidays, after 17.00 and before 9.00.
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc.?	high, there are many media outlets	data format used: csv
veracity	Rate of ambiguity.	little	Due to the API versus the speed of automated trading, there is a delay.
Describe sketch	**ears**	Colour: fluctuating between black and red, which is the max colour. Width: fluctuating between 0 and any maximum.	
	head	Colour: fluctuating between white and black. Diameter: fluctuating between 0 and any maximum.	
	other		
How is data used in this example?	The data is used as calculable components with a fluctuating nature, with a minimum of 0 and no maximum. Due to daily trends, the movements are constrained, and only visible over a longer period of time. The API is set to collect data from 2 different (FTSE 100) companies within the same environment. Because they are about trading percentages, the starting point of each individual company is not important, it's about daily fluctuations.		
What behaviour does it enable?	Share prices widely differ between companies. But they are changing within the same environment, and time constraints (FTSE100, trading hours). The behaviour is unpredictable. Based on market trade, each has its own fluctuations and velocity. This is not pre-set, but is the result of buying and selling, driven by, for instance, news events and trading rapports that predict certain trends. Except that market movements generally are on average no more than 7 % (per annum). There is no movement outside trading hours. The continuous movements are small, but within this, a lot of fluctuations.		
How does the code enable the data?	The daily fluctuation is rather small to make visual impact, implementation requires some adjustment, other wise the visual is rather constrained in size. Barclays is used to drive the ears, Barclays and Lloyds are driving the head.		

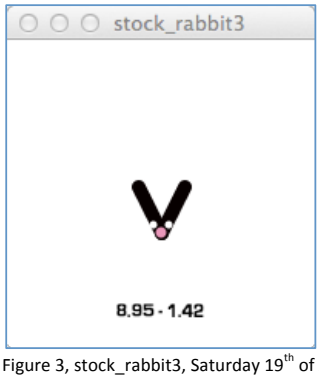


Figure 3, stock_rabbit3, Saturday 19th of April 2014 at 17.12 (no trading)

	data properties of interest for image and behaviour creation		
sketch name	**stock_rabbit4**		
file name	stock_rabbit4.pde		
name data type	Stock market values, Barclays, Lloyds		
location source	http://download.finance.yahoo.com/d/quotes.csv?s=LLOY.L&f=sl1d1t1c1ohgv&e=.csv http://download.finance.yahoo.com/d/quotes.csv?s=BARC.L&f=sl1d1t1c1ohgv&e=.csv		
access	Open access through yahoo		
	description	**select**	**remark**
type of data	Is it a one-off fixed amount or continuous?	continuous	The values of share prices widely differ between companies. But they are changing within the same environment and time constraints (FTSE100, trading hours). Based on the market trade each has its own fluctuations and velocity. This is not pre-set, but the result of buying and selling, driven by, for instance, news events and trading rapports that predict certain trends. Market movements generally are on average no more than 7 % per annum. There is no movement outside trading hours.
range	How many / what kind of many measurable units?	open ended	Share value points
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational
discrete or continuous	Does it have values in between points?	continuous	no
maximum value	Is there a maximum?	no	On average the 'swing' is no more than 5 percentage points, more than 10 is exceptional.
minimum value	Is there a minimum?	no	
growth curve , behaviour	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	fluctuating	The steps between are mostly quite small: 'after the comma' changes, but constant during trading hours
positive negative growth	Direction of movement.	Both positive negative	
volume	Amount of data available at any time (small, medium, large, very large, random).	Very large	The stock percentage points represent the final outcome of buying and selling of stock, which equals a vast amount of actions happening at the same time.
velocity	Quality of the data stream.	streaming	time between intervals: Intervals are determined by the api. There is no data stream on weekends, public holidays, after 17.00 and before 9.00.
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	High, there are many media outlets	data format used: csv
veracity	Rate of ambiguity.	little	Due to the API versus the speed of automated trading, there is a delay.
Describe sketch	**ears**	Colour: fluctuating between black and red, which is the max colour. Width: fluctuating between 0 and any maximum. Length: fluctuating between 0 and any maximum.	
	head	Colour: fluctuating between white and black. Diameter: fluctuating between 0 and any maximum.	
	other		
How is data used in this example?	The data is used as calculable components with a fluctuating nature, with minimum of 0 and no maximum. Daily trends are constrained and only visible over a longer period of time. The API is set to collect data from 2 different (FTSE 100) companies within the same environment.		
What behaviour does it enable?	Growth of width and length of ears; diameter of head; and colour shift from black to red (ears) and black to white (head). The behaviour is unpredictable and erratic, mostly with a margin of 5 %. The change can be growing or shrinking. If there is a sudden and large shrinkage or growth, the movement can be stopped. There is only movement during trading hours.		
How does the code enable the data?	The daily change has been enlarged to be visible, the algorithm sets a focus on the last percentage and enlarges this with the factor 3- to encourage visibility of the small fluctuations and a velocity in movement.		

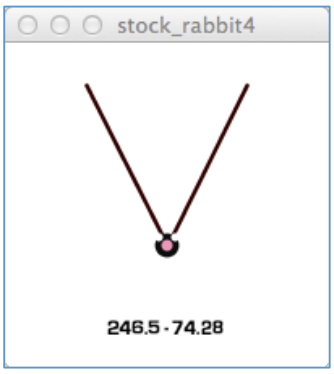


Figure 4, stock_rabbit4, Saturday 19th of April 2014 at 17.12 (no trading)

	data properties of interest for image and behaviour creation			
sketch name	**time_rabbit AMPM_1**			
file name	time_rabbit AMPM_1.pde			
name data type	Time: minute and seconds			
location source	Processing communicates with the clock on your computer using, milliseconds, seconds, minutes, hours, days, months and years. It returns the current hour time in a decimal value based on a twenty four hour clock cycle.			
access	The image is related to the computer clock, this clock can be set manually or automatically connecting with the time zone of the current location of the computer (through WIFI).			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	fixed	fixed also in AM PM	
range	How many / what kind of many measurable units?			
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	quatitative	rational	
discrete or continuous	Does it have values in between points?	discrete		
maximum value	Is there a maximum?			
minimum value	Is there a minimum?	12 hours 60 minutes, 60 seconds		
growth curve , behaviour	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	cyclical	There is a cycle of the 24 hours, divided in 12 hours AM and 12 hours PM- divided in 2 equal parts; set to change at midnight, 12.00 PP to 0.00 AM and noon, 12.00 AM to 0.00 PM. There is also the cycle of 60 minutes per 1 hour and 60 seconds per 1 minute or 60 x 60 seconds per hour.	
positive negative growth	Direction of movement.	positive		
volume	Amount of data available at any time (small, medium, large, very large, random).	small		
velocity	Quality of the data stream.	streaming	time between intervals	1 millisecond
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?		Automated access in computer	
veracity	Rate of ambiguity.	none		
describe sketch	**ears**	Colour: changing from black to very dark red, during the period of a minute in intervals of a second; 0-59. Width: growing during the period of 1 hour in intervals of minutes: 0-59.		
	head	Colour: is gradually changing from black to grey over of 1 minute in intervals of seconds; 0-59. Diameter: The size of the head over of 1 minute in intervals of seconds; 0-59.		
	other			
How is data used in this example?	The data is used as calculable components with a cyclical nature, with a fixed interval, based on minima and maxima. Seconds and minutes have been applied as separate variables.			
What behaviour does it enable?	Positive growth; width and diameter and colour change; because the changes are constraint to a relatively small range, the appearance of change is smooth. A unit of an hour is the largest visible change to appear (ears go down to 1 pixel), sudden reset to a minimal and dark shape (in this case 1 pixel, or the colour black) gives a visual jolt capable of attracting attention. Other changes are more subtle.			
How does the code enable the data?	The clock functions is an imported 'code-library' (fixed coded component) as part of java.utilities, application is semi-automated. In this case, 24 hours were translated into 2 time units: AM and PM. AM and PM are used on some xml-sites. The time functions had been translated into integer calculable units. No adaptations have been made.			

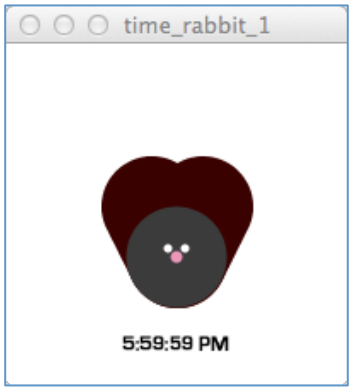


Figure 5, time_rabbit AMPM_1, 5.59.59

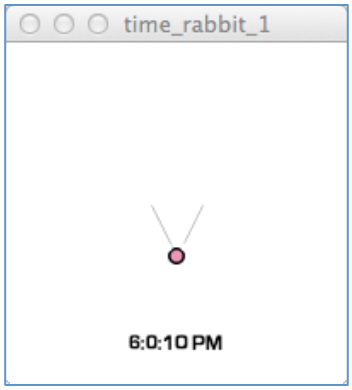


Figure 6, time_rabbit AMPM_1, 06.00.10

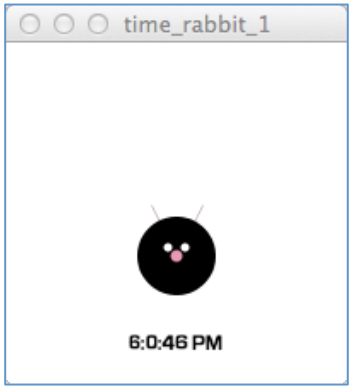


Figure 7, time_rabbit AMPM_1, 06.00.46

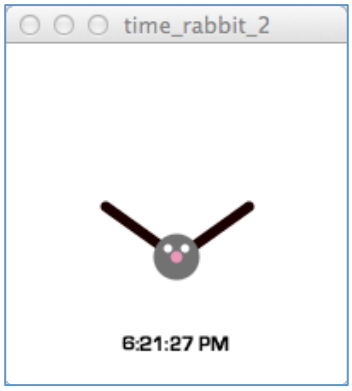


Figure 8, time_rabbit AMPM_1, 06.21.27

Figures 5-8, time_rabbit AMPM_1, around the changing between 59 minutes and 0 minutes, head and ear shape back to 0. Together these images show the changing position of the ears, and the quality of change in ears over period of one hour.

	data properties of interest for image and behaviour creation			
sketch name	**time_rabbitAMPM_2**			
file name	time_rabbitAMPM_2.pde			
name data type	Time: hours, minute and seconds			
location source	Processing communicates with the clock on your computer using, milliseconds, seconds, minutes, hours, days, months and years. It returns the current hour time in a decimal value based on a twenty four hour clock cycle.			
access	The image is related to the computer clock, this clock can be set manually or automatically connecting with the time zone of the current location of the computer (through WIFI).			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	fixed	Fixed also in AM PM.	
range	How many / what kind of many measurable units?			
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	quatitative	rational	
discrete or continuous	Does it have values in between points?	discrete		
maximum value	Is there a maximum?	12 hours 60 minutes, 60 seconds		
minimum value	Is there a minimum?	0		
growth curve	What is a (common) cycle/ length of measurement?	cyclical	There is a cycle of the 24 hours, divided in 12 hours AM and 12 hours PM- divided in 2 equal parts; set to change at midnight, 12.00 PP to 0.00 AM and noon,12.00 AM to 0.00 PM. There is also the cycle of 60 minutes per 1 hour and 60 seconds per 1 minute or 60x60 seconds per hour.	
positive negative growth	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	positive		
volume	Direction of movement.	small		
velocity	Amount of data available at any time (small, medium, large, very large, random).	streaming	time between intervals	1 millisecond
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?		Automated access in computer	
veracity	Rate of ambiguity	none		
Describe sketch	**ears**	Colour: changing from black to very dark red, during the period of a minute in intervals of a second; 0-59. Position: changing position during. Fixed at the central end point; one ear moves clockwise and the other anticlockwise; the period of 1 minute in intervals of minutes: 0-59. Width: growing over a period of an hour from 1 to 11 pixels.		
	head	Colour: is gradually changing from black to grey over of 1 minute in intervals of seconds; 0-59. Diameter: the size of the head over of 1 minute in intervals of seconds; 0-59.		
	other			
How is data used in this example?	The data is used as calculable components with a cyclical nature with a fixed interval and with minima and maxima. Seconds and minutes have been applied as separate variables.			
What behaviour does it enable?	Positive growth: width and diameter, position both clockwise and anti clockwise and colour change; The colour changes are visible because these have been adapted to space between 0 and 255, the max colour hue. The appearance of change is jittery, witch creates a sense of pulsation. The growth of the ear width is very subtle and only notable over a longer period. Within an hour the change is from 1 to 11, which is slow in terms of animation.			
How does the code enable the data?	The clock functions is an imported 'code-library' (fixed coded component) as part of java.utilities, application is semi-automated. In this case, 24 hours were translated into 2 time units: AM and PM. AM and PM are used on some xml-sites. The time functions had been translated into integer calculable units. No adaptations have been made.			

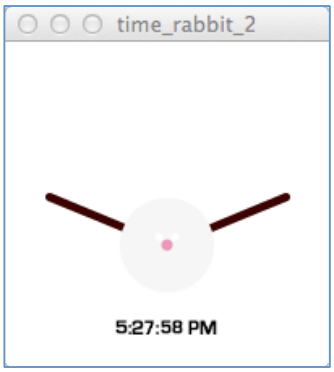


Figure 9, time_rabbitAMPM_2, 5.27.58 PM

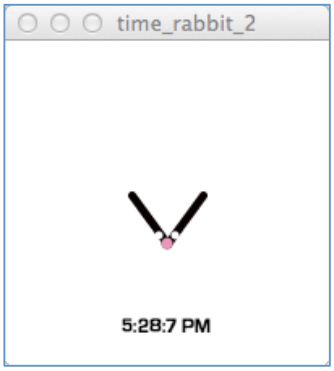


Figure 10, time_rabbitAMPM_2. 5.28.7PM

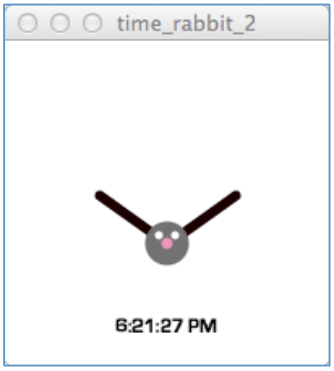


Figure 11, time_rabbitAMPM_2, 6.21.27 PM

Figure 9-11, show the changing position of the ears of image: time_rabbitAMPM_2, and the quality of change in ears over period of one hour.

	data properties of interest for image and behaviour creation			
sketch name	**time_rabbit_24_hour_1**			
file name	time_rabbit_24_hour_1.pde			
name data type	Time: hour, minute and seconds			
location source	Processing communicates with the clock on your computer using, milliseconds, seconds, minutes, hours, days, months and years. It returns the current hour time in a decimal value based on a twenty four hour clock cycle.			
access	The image is related to the computer clock, this clock can be set manually or automatically connecting with the time zone of the current location of the computer (through WIFI).			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	fixed		
range	How many / what kind of many measurable units?	hour: 24 minute: 60 second: 60		
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational	
discrete or continuous	Does it have values in between points?	discrete		
maximum value	Is there a maximum?	24 hours, 60 minutes, 60 seconds		
minimum value	Is there a minimum?	0 hours, 0 minutes 0 seconds		
growth curve	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	cyclical		
positive negative growth	Direction of movement.	positive		
volume	Amount of data available at any time (small, medium, large, very large, random).	small		
velocity	Quality of the data stream.	streaming	time between intervals	1 millisecond
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	None; little; high	Inbuilt access in computer	
veracity	Rate of ambiguity.	none		
Describe sketch	**ears**	Colour: changing from black to red over the period of a minute at intervals of a second; 0-59. Width: the width of the ears are growing during the period of a minute at intervals of a second; 0-59. Length: the length of the ears is growing during the period of a minute at intervals of a second; 0-59.		
	head	Colour: gradually changing from black to over the period of a minute at intervals of a second; 0-59. Diameter: The head is growing during the period of a minute at intervals of a second; 0-59.		
	other			
How is data used in this example?	The data is used as calculable components with a cyclical nature and fixed interval, using minima and maxima (hour, minute, second) as separate variables, but also calculated into one single value.			
What behaviour does it enable?	Positive growth: length, width and diameter and colour change; A sudden reset to a fixed point (in this case 1 pixel, or the colour black) In this example, exactly the same value has been applied to all variables. Visually this creates a rhythmic and regular pattern.			
How does the code enable the data?	The rate of growth is based on the minimum unit per second, calculated to create a precise interval between 0 and 255, for the duration of a minute. The minimum and maximum value of a hue in the RGB spectrum.			

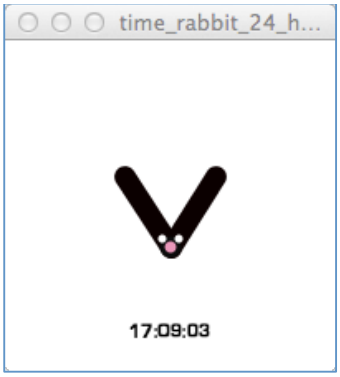


Figure 12, time_rabbit_24_hour_1, at 3 seconds.

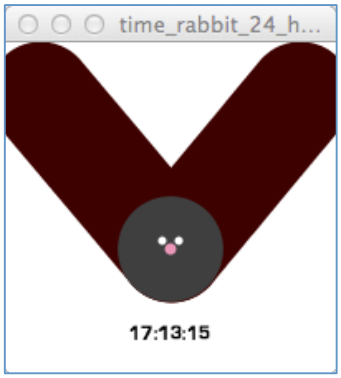


Figure 13, time_rabbit_24_hour_1, at 15 seconds.

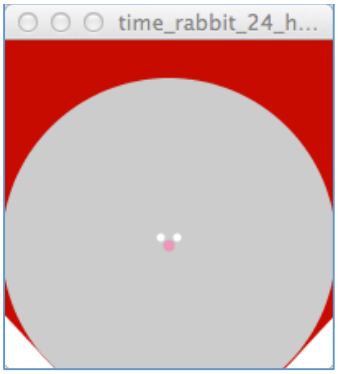


Figure 14, time_rabbit_24_hour_1, at 45 seconds.

Figure 15, time_rabbit_24_hour_1, at 59 seconds.

	data properties of interest for image and behaviour creation			
sketch name	**time_rabbit_24_hour_2**			
file name	time_rabbit_24_hour_2.pde			
name data type	Time: hour, minute and seconds			
location source	Processing communicates with the clock on your computer using, milliseconds, seconds, minutes, hours, days, months and years. It returns the current hour time in a decimal value based on a twenty four hour clock cycle.			
access	The image is related to the computer clock, this clock can be set manually or automatically connecting with the time zone of the current location of the computer (through WIFI).			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	fixed	This time measurement is related to the computer clock, set to 24 hours, data can be manipulated through the manipulation of the computer clock.	
range	How many / what kind of many measurable units?	Hour: 24 minute: 60 Second: 60		
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational	
discrete or continuous	Does it have values in between points?	discrete		
maximum value	Is there a maximum?	24 hours, 60 minutes, 60 seconds		
minimum value	Is there a minimum?	0 hours, minutes and seconds		
growth curve	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	cyclical	There is the cycle of the 24 hours, but also the cycle of 60 minutes per hour and 60 seconds per minute or 60 x 60 seconds per hour.	
positive negative growth	Direction of movement.	positive		
volume	Amount of data available at any time (small, medium, large, very large, random).	small		
velocity	Quality of the data stream.	streaming	time between intervals	1 millisecond
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	none little high	Inbuilt access in computer.	
veracity	Rate of ambiguity.	none		
describe sketch	**ears**	Colour: changing during the period of an hour at intervals of a minute; 0-50. Width: The width of the ears are growing during the period of a minute in intervals of a second; 0-59. Length: The length of the ears is growing over the period of 24 hour in intervals of seconds; 0-86400.		
	head	Colour: gradual changing from black to red over the period of 24 hour in intervals of seconds; 0-86400. Diameter: The size of the head is growing during the period of 24 hour in intervals of an hour.		
	other			
How is data used in this example?	The data is used as calculable components with a cyclical nature, with a fixed interval and with minima and maxima (hour, minute, second). These has been applied as separate variables, but also calculated into one single value.			
What behaviour does it enable?	Positive growth: length, width and diameter and colour change; A sudden reset to a fixed point (in this case 1 pixel, or the colour black).			
How does the code enable the data?	Because the clock functions are pre-programmed in Processing, they are directly applicable as functions within the code. Some adaptations had to be made: The rate of growth of the ears was 'tempered'- divided by factor 1000, otherwise most of the action would 'happen' outside the frame. The rate of growth of the head has been with a factor 3, otherwise the growth per hour would be not visible enough.			

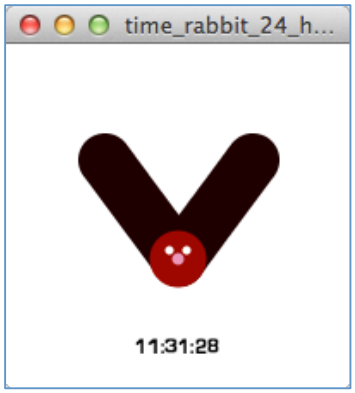


Figure 16, time_rabbit_24_hour_2, at 11:31:28.

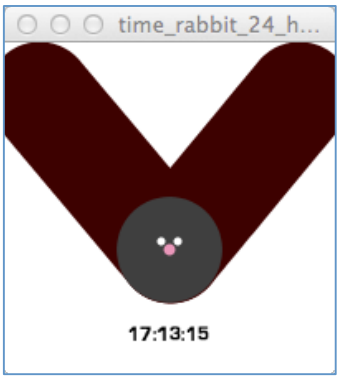


Figure 17, time_rabbit_24_hour_2, at 17:13:15.

	data properties of interest for image and behaviour creation			
sketch name	**time_sun_rabbit_7**			
file name	time_sun_rabbit_7.pde			
name data type	Sunrise sunset			
location source	http://weather.yahooapis.com/forecastrss?w=26360988&u=c			
access	Yahoo-api open source			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	continuous	Determined by location and date.	
range	How many / what kind of many measurable units?		There are indefinite units between beginning of the day and end of the day.	
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational	The data is fixed to location and the time of year (season and year) and time of day. The time of the sunset and sunrise gradually changes.
discrete or continuous	Does it have values in between points?	continuous		
maximum value	Is there a maximum?	item<24.0		
minimum value	Is there a minimum?	0		
growth curve	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	cyclical / spiralling	There is cyclical day-night rhythm, but also a shifting of key moments of sunrise, sunset, depending on the moment in the annual calendar. Geographic location also determines these moments.	
positive negative growth	Direction of movement.	positive		
volume	Amount of data available at any time (small, medium, large, very large, random).	small		
velocity	Quality of the data stream.	streaming		
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	widely available	Data format used: xml	
veracity	Rate of ambiguity.	none		
Describe sketch	**ears**	Colour: cycling from black at sunrise to white at noon. Then back to black at sunset. Width: growing from a width of 200 pixels after sunset, from sunrise they shrink to 1 pixel width at noon, then grow back to large again. At a certain point, untill its maximum size the object will fill up the entire background.		
	head	Diameter: The diameter changes from 0 to a maximum size, around half the frame. Colour: changes from black at sunrise to white at noon and back to black at sunset.		
	other	The shape of the head is not continuously in sight. At sunrise and sunset, the head shape is too small to see and the ears are so large that the appearance is as a background with three dots. At noon only the pink 'nose' is visible. Further towards noon, the ears disappear behind the head shape leaving only a ball shape.		
How is data used in this example?	The data is used as calculable components with a cyclical nature with a fixed interval, with minima and maxima (sunrise, noon, sunset and midnight, plus real-time). The API used is set for Brighton UK in real-time.			
What behaviour does it enable?	It enables positive growth, cyclical and spiralling movements. It can also be divided in two connected and equal movements/ day and night (shrinking and expanding over a years time or AM and PM fixed, with changeable pivotal key point. There are two kinds of variables: fixed- midday and midnight and moving, real-time, sunrise and sunset, where sunrise/ sunset are fixed for the duration of a day and real-time creates the active component.			
How does the code enable the data?	Using the minute as the smallest devisable unit, all times had to be recalculated to this standard. As some of the total amounts can be too large to create a visible impact, it needs to be normalised. This can differ per variable. Further to create a fixed interval between white and black the variables are adjusted to fit this scale (0-255); The variables are created form algorithms in which the various types of time are added, subtracted, multiplied and divided which created different rhythms and movements.			

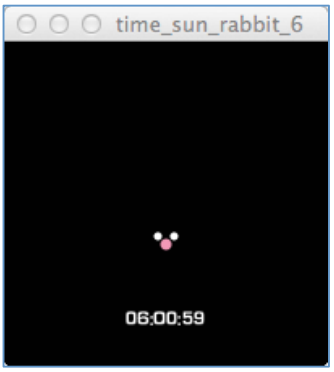


Figure 18, time_sun_rabbit_7, at 06.00.59.

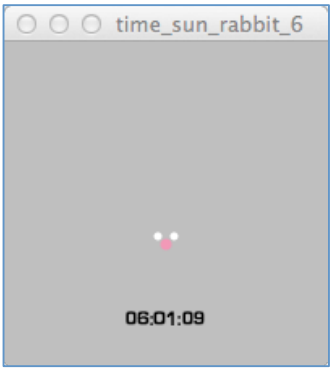


Figure 19, time_sun_rabbit_7 at 06.01.09.

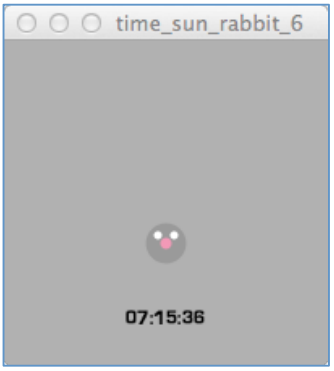


Figure 20, time_sun_rabbit_7 at 07.15.36.

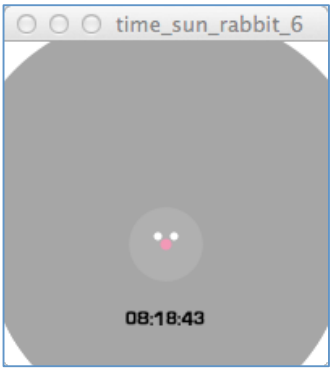


Figure 21, time_sun_rabbit_7 at 08.18.43.

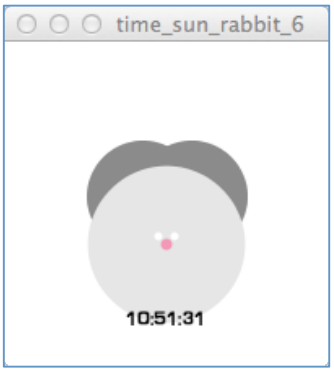


Figure 22, , time_sun_rabbit_7 at 10.51.31.

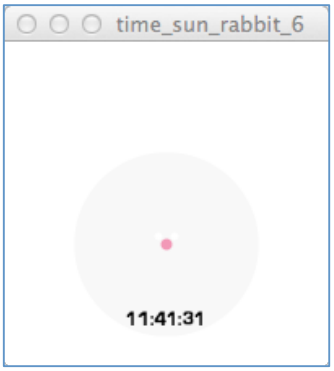


Figure 23, time_sun_rabbit_7 at 11.41.31.

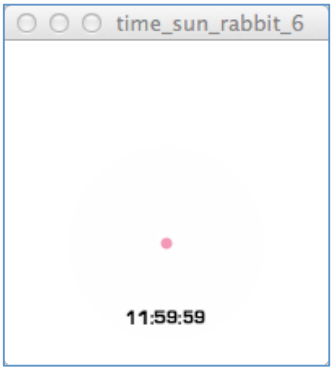


Figure 24, time_sun_rabbit_7 at 11.59.59.

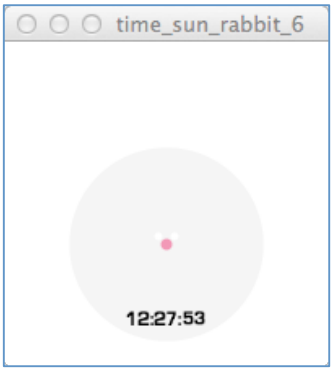


Figure 25, time_sun_rabbit_7 at 12.27.53.

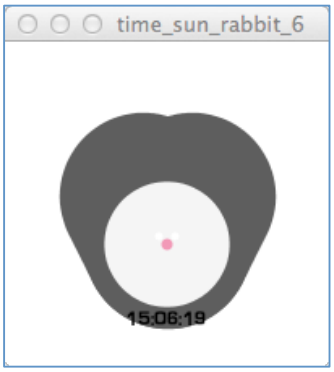


Figure 26, time_sun_rabbit_7at 15.08.19.

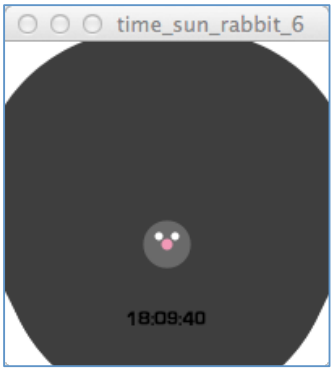


Figure 27, time_sun_rabbit_7 at 18.09.40.

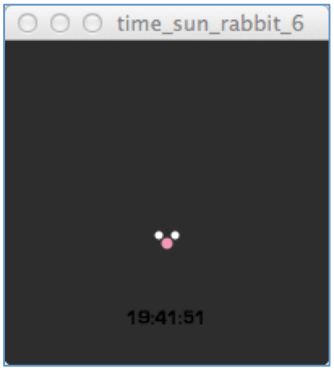


Figure 28, time_sun_rabbit_7 at 19.41.51.

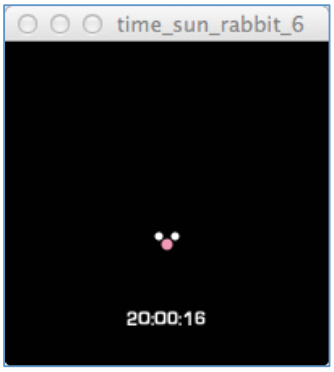


Figure 29, time_sun_rabbit_7 at 20.00.16.

Figure 18-29, time_sun_rabbit_7, various stages between 0.00 hour, sunrise (6.01), 12.00, sunset (20.01) and midnight

	data properties of interest for image and behaviour creation			
sketch name	**Twitter_rabbit**			
file name	Twitter_rabbit.pde			
name data type	Twitter feed			
location source	twitter			
access	Open access after authentication			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	open	Continuous, with limitation set by provider	
range	How many measurable units?	open	tweets	
type of measurement	Quantitative: like text, or types etc.; categorical: nominal: yes/ no; ordinal: numerical hierarchy, interval with set intervals; rational: and or minimum maximum values+ set interval.	quantitative	nominal	Based on search criteria: the amount of tweets analysed and interval between the tweets ; this can be anything from the amount of characters, location, sender, content, time of day etc.
discrete or continuous	Does it have values in between points?	continuous	no	
maximum value	Is there a maximum?		no	
minimum value	Is there a minimum?		0	
growth curve , behaviour	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	random	Depending on the search	
positive negative growth	Direction of movement.	positive negative both		
volume	What is the shape of its change: logarithmical lots in the beginning than les; exponential little in the beginning than more?	very large		
velocity	Quality of the data stream.	streaming	time between intervals	Set by provider, but potentially the stream is open.
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	high	data format used: api	
veracity	Rate of ambiguity.	depending	Depending on search criteria, information is presented.	
Describe sketch	**ears**	Colour: the colour can vary from black to red. Width: can vary from 0 to 150, most likely around 0-20.		
	head	Colour: the colour can vary from white to black. Diameter: can vary from 0 to 150, most likely around 0-20.		
	other			
How is data used in this example?	The twitter stream is filtered based on the word 'feel'. The tweets selected (maximum of 150 tweets at one single time, are categorised based on defined positive or negative wording. Positive keywords are: "good", "wonderful", "better", "love", "great", "achieve", "amazing", "better", "lucky", "raise", "breakthrough", "compliment", "laugh", "smile", "sunny", "ambitious", "yes", "promotion", "present", "super". Negative keywords are: "bad", "down", "shit", "worse", "tired", "awful", "unproductive", "upset", "stressed", "overworked", "tired", "unemployed", "bored", "hate". The usage of the words is counted.			
What behaviour does it enable?	Width, colour and diameter change erratically within a relative small constraint. The constraint are being set by the data feed. The shape changes follow a steady interval pattern, though does not necessarily equate this.			
How does the code enable the data?	There are several locations to influence the visual outcome- first the keyword that determines the search, than the selection criteria and their relative value. In this case where the search query is 'feel'- there are more tweets with the word good, happy etc. where some words are less often used. Here the two criteria lists can be manipulated to suit certain outcomes. The next point of manipulation the amount of queries and the interval rate in which they are downloaded. To enhance the erratic behaviour the scale of colour values is offset against the range of tweets queried, but this value is squared- forcing more notable jumps.			

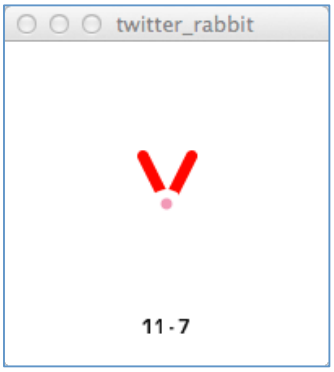


Figure 30, Twitter_rabbit.

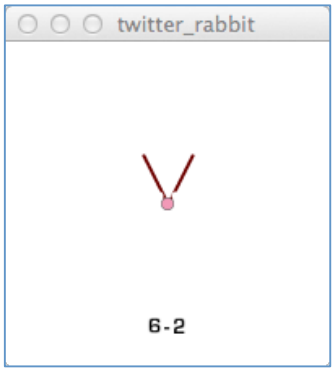


Figure 32, Twitter_rabbit.

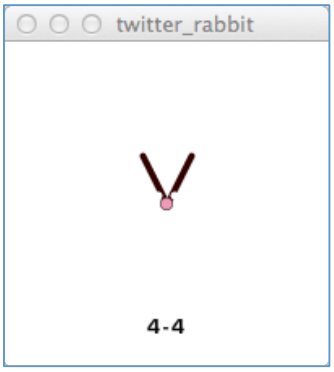


Figure 31, Twitter_rabbit,.

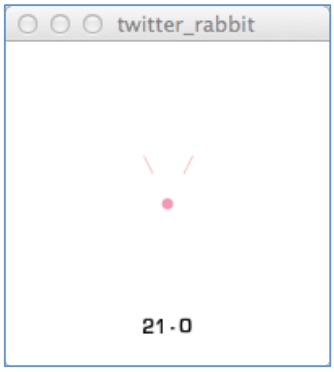


Figure 33, Twitter_rabbit.

Figure 30-32, Twitter_rabbit, tweets on 21 April 2014- 16.00 keyword: feel, category: positive negative words.

Figure 33, Twitter_rabbit, tweets on 21 April 2014- 16.00 (visit of prince George – baby to Australia, new Zealand) keyword: prince George, category: positive negative words.

	data properties of interest for image and behaviour creation			
sketch name	**weather_rabbit**			
file name	weather rabbit.pde			
name data type	Weather in Brighton: temperature, wind direction, wind speed			
location source	http://weather.yahooapis.com/forecastrss?w=26360988&u=c			
access	Open source via web			
	description	**select**	**remark**	
type of data	is it a one-off: fixed amount or continuous	fixed but speed/ temperature has open max)	The Yahoo weather app gives access to weather data specified by location. Apart form temperature and wind speed there is also data on sunrise, sunset, atmosphere etc.	
range	How many / what kind of many measurable units?		Temperature: degrees, wind speed: mph, wind direction: degrees	
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational	
discrete or continuous	Does it have values in between points?	continuous		
maximum value	Is there a maximum?		Temperature uk- highest ever recorded: 38.1 Average max Brighton: 20 Speed: uk-highest ever recorded: 278 Average: 37-55 km	
minimum value	Is there a minimum?		Temperature uk: lowest ever recorded: 27 Average min Brighton: 2 Speed: 0	
growth curve	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	fluctuating cyclical	Temperature/ speed : fluctuating Direction: cyclical	
positive negative growth	Direction of movement.	positive negative both	Direction can be both positive and negative.	
volume	Amount of data available at any time (small, medium, large, very large, random).	small medium large very large random	small	
velocity	Quality of the data stream.	intervals	time between intervals	http://feedback.weather.com/knowledgebase/articles/30897-android-how-frequently-does-the-weather-data-upda Proprietary technology provides current conditions for 1.9 million locations for the contiguous United States updated every 20 minutes. Hourly Forecast is updated once an hour. Detailed 36-Hour forecast is updated once an hour. 10-Day forecast is updated once an hour.
variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc?	Availability variable	data format used: pdf, xml, GPS, video, web other…	
veracity	Rate of ambiguity.	little	Based on intervals	
Describe sketch	**ears**	Colour: the colour can vary from black to red. Most average the colour would be between black and very dark red. Only in the most extreme cases would the colour be a more pure red. Width: can vary from 0 to 360- creating a black background, with the head possibly still visible. Length: can vary from a 'negative length, the ear going down, rather than up, to a positive length. Position: ears move counter each other in clockwise or anticlockwise directions.		
	head	Colour: the colour can vary from black to white. Most average the colour would be between black and dark grey. Only in the most extreme cases would the colour be a more white. Diameter: can vary from 0 to 360- creating a grey background no ears visible.		
	other			

How is data used in this example?	The three different dynamics are limited in average range, though their maximum (and minimum in case of temperature) can be extreme. Depending on location. Per location movements will be limited. The movement between changes is gradual. Some data ranges are rational- e.a. have an absolute 0. This can function well in relation to objects that can have no negative value.
What behaviour does it enable?	It enables positive and negative growth: length of ears, diameter head, width ears positive and negative movements: position of ears. It enables colour change: though these values are most often very moderate in this geographic location- changes will be slight, except with extreme weather conditions.
How does the code enable the data?	A call is made through the xml data, connecting to three particular codes. These are then directly related to the object, without any adjustment. In the url of the xml there is postcode of location- this can be altered- revealing a different object.

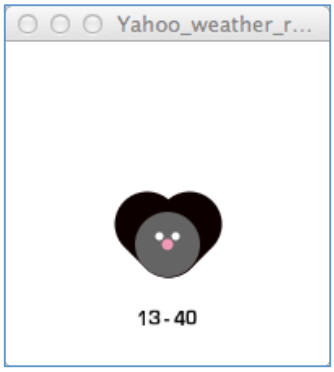


Figure 34, weather_rabbit, Brighton UK

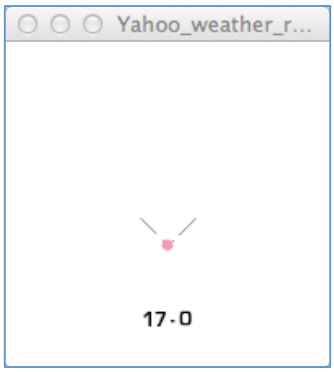


Figure 35, weather_rabbit, Los Angeles US
https://weather.yahoo.com/united-states/california/los-angeles-2442047/

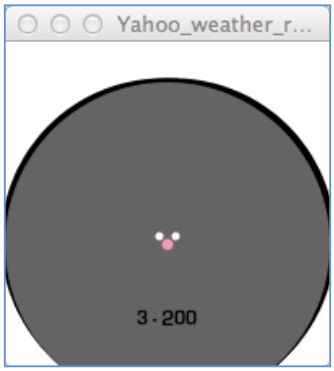


Figure 36, weather_rabbit, Rejkjavik Iceland
https://weather.yahoo.com/iceland/reykjavik/reykjavik-980389/

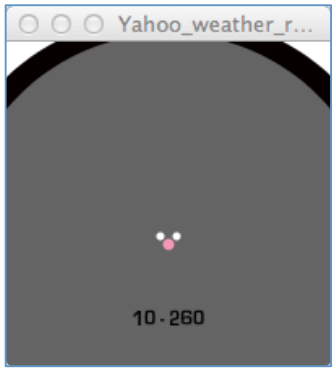


Figure 37, weather_rabbit , Melbourne AU
https://weather.yahoo.com/australia/victoria/melbourne-1103816/

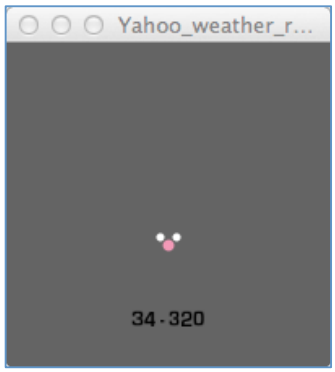


Figure 38, weather_rabbit , Abu Dhabi AE
https://weather.yahoo.com/united-arab-emirates/abu-dhabi/abu-dhabi-1940330

Figure 34-38, all images taken on April 18-2014 about 16.00

	data properties of interest for image and behaviour creation			
sketch name	**Weather rabbit 3**			
file name	weather_rabbit3.pde			
name data type	Weather in Brighton: temperature, wind direction, wind speed			
location source	http://weather.yahooapis.com/forecastrss?w=26360988&u=c			
access	Open source via web			
	description	**select**	**remark**	
type of data	Is it a one-off fixed amount or continuous?	fixed but speed/ temperature has open max)	The Yahoo weather api gives access to weather data specified by location. Apart from temperature and wind speed there is also data on sunrise, sunset, atmosphere etc.	
range	How many / what kind of many measurable units?		Temperature: degrees, wind speed: mph, wind .direction: degrees.	
type of measurement	Quantitative: like text, or types etc.; Categorical: nominal: yes/ no; Ordinal: numerical hierarchy, interval with set intervals; Rational: minimum maximum values, set interval, absolute 0.	categorical	rational	
discrete or continuous	Does it have values in between points?	continuous		
maximum value	Is there a maximum?		Speed: uk-highest ever recorded: 278 Average: 37-55 km	
minimum value	Is there a minimum?		Average min Brighton: 2 Speed: 0	
duration	What is a (common) cycle/ length of measurement?		24 hours, hour, year or season	
growth curve	What is the shape of its change? Logarithmical lots in the beginning than les; Exponential: little in the beginning than more; Cyclical; Fluctuating; Random; Linear etc.	fluctuating cyclical	Wind speed: fluctuating, but not going below 0. Fluctuations most often steady. Direction: cyclical.	
positive negative growth	Direction of movement.	positive negative both	Direction can be both positive and negative, not below 0 Wind direction: Direction: cyclical	
volume	Amount of data available at any time (small, medium, large, very large, random).	small medium large very large random	small	
velocity	Quality of the data stream.	intervals	time between intervals	http://feedback.weather.com/knowledgebase/articles/30897-android-how-frequently-does-the-weather-data-upda Proprietary technology provides current conditions for 1.9 million locations for the contiguous United States updated every 20 minutes. Hourly Forecast is updated once an hour. Detailed 36-Hour forecast is updated once an hour. 10-Day forecast is updated once an hour.
Variety	Is this data widely available? Data format: in what form is the data gathered and available as: pdf, xml, GPS, video, web etc.?	high	data format used: xml	
veracity	Rate of ambiguity.	little	Based on intervals	
Describe sketch	**ears**	Colour: the colour can vary from black to red. Most average the colour would be between black and very dark red. Only in the most extreme cases would the colour be a more pure red. Width: can vary from 0 to 360- creating a black background, with the head possibly still visible. Length: can vary from zero to a maximum of 180.		
	head	Colour: the colour can vary from black to white. Most average the colour would be between black and dark grey. Only in the most extreme cases would the colour be a more white. Diameter: can vary from 0 to max, but most be will be around 0-20.		
	other			

How is data used in this example?	The different dynamics, are limited in average range. Also due to moderate climate in the geographic location it is set (Brighton), though in wind speed the maximum can be in the two hundreds. The movement between changes is gradual. The data ranges have an absolute 0. This can function well in relation to objects that can have no negative value.
What behaviour does it enable?	It enables positive and negative growth: length of ears, diameter head, width ears positive and negative movements but never below 0: It enables colour change: though these values are most often vary. Changes will be slight, except with extreme weather conditions.
How does the code enable the data?	The data is directly related to the object, only adjusted in case of the length of the ears. In the url of the xml there is postcode of location- this can be altered- revealing a different object.

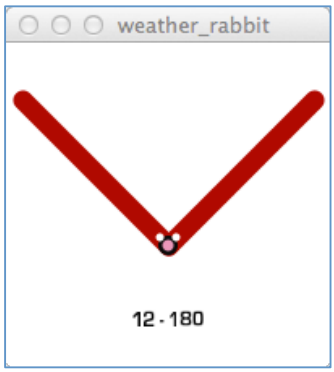


Figure 39, Weather rabbit 3,wind speed and wind direction on 23-4-2014

3 100 Working Mice

Below is the description and working notes of the creation and development of the illustration *100 Working Mice*. The description will give insight into the conceptual background, the development of the creative ideas, the structure and elements of the illustration and finally some explorations of the data sources.

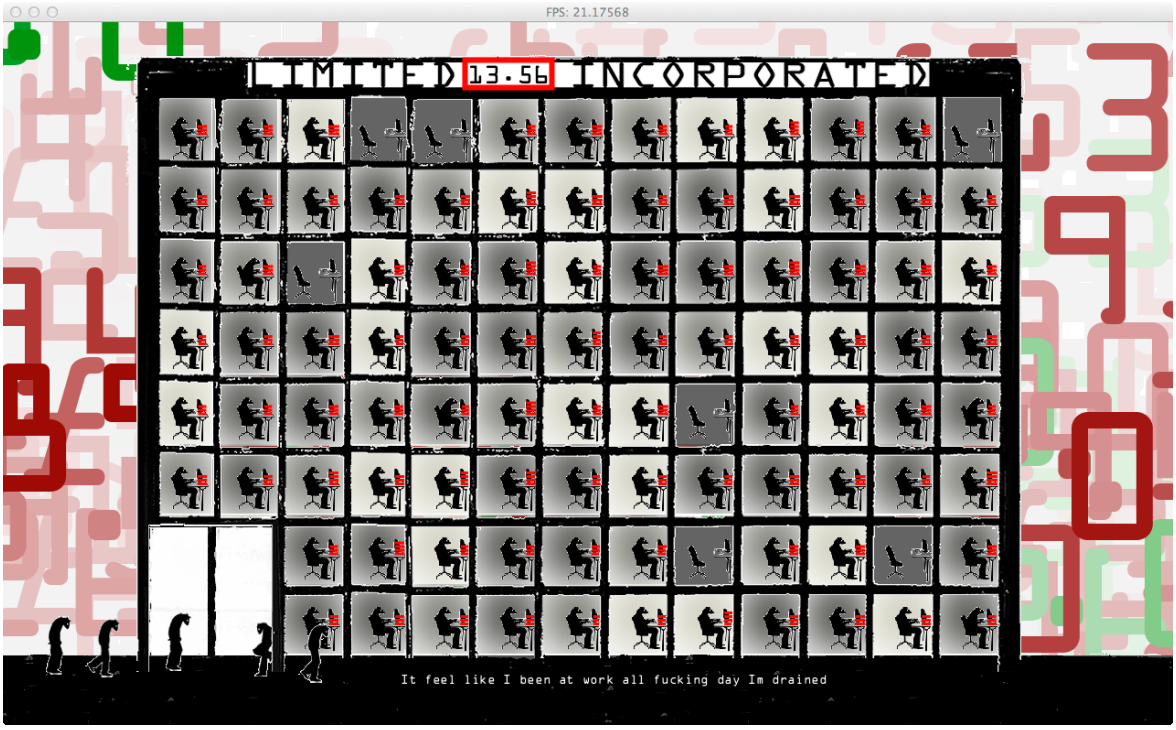
Further discussion on the content, signification and illustrational properties of the illustration is discussed in Volume 1-Chapter 6, Case 2 (p.120) and Case 3 (p.127).

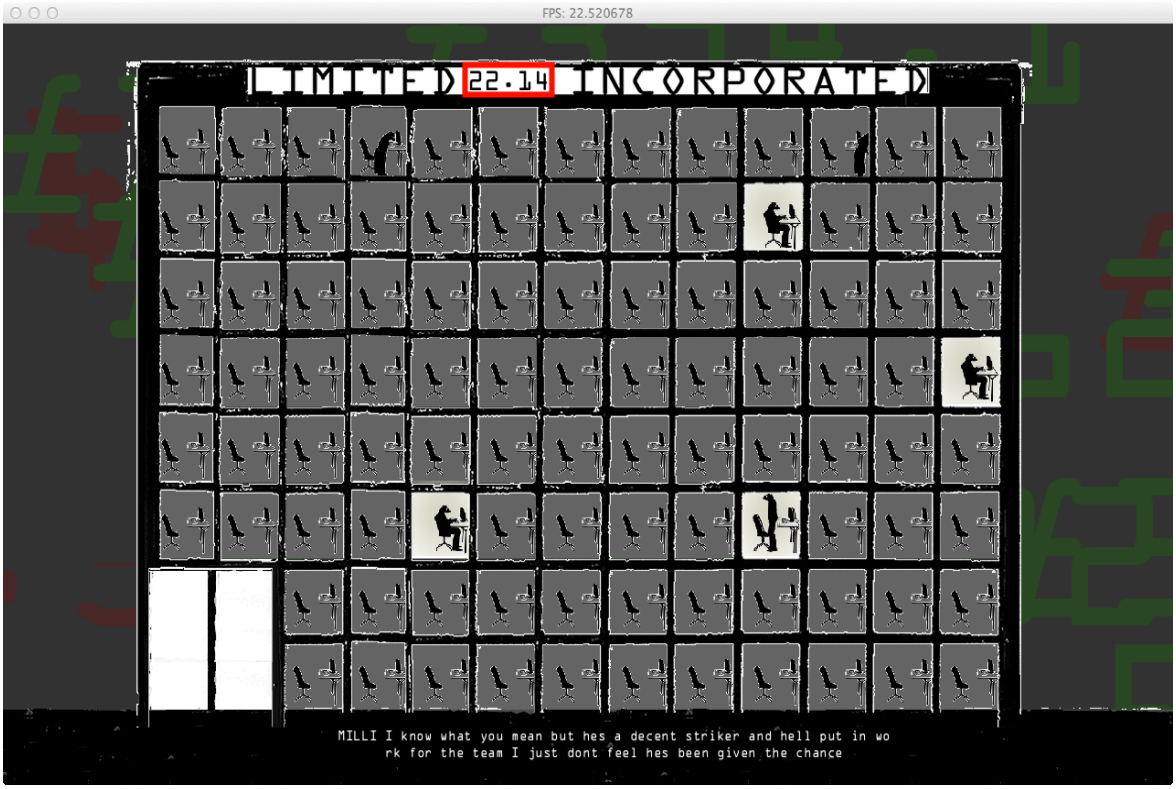
The illustration *100 Working Mice* is a visual commentary, presenting in real-time metaphor of the 24-hour economy, where anthropomorphic mouse-like characters show a life, defined by work. This life is repetitive and uniform, with overtime and underpayment as part of an enslavement loop. This image illustratates the report of Coote and Franklin for the New Economic Foundation, in which the importance of a shorter working week is being promoted and explained (Time on Our Side, 2013).

Where the report is not visibly present, the image illustrates in an indirect way the report itself, but suggests the questions it raises. These are questions about the sustainability of the present work-life balance, where an increasingly depersonalised employment system, as part of the market driven economy, drives work ethos. The quality of life of those who live and work within this system is often ignored, when it comes to measuring the 'human' reality of the success of a market economy.

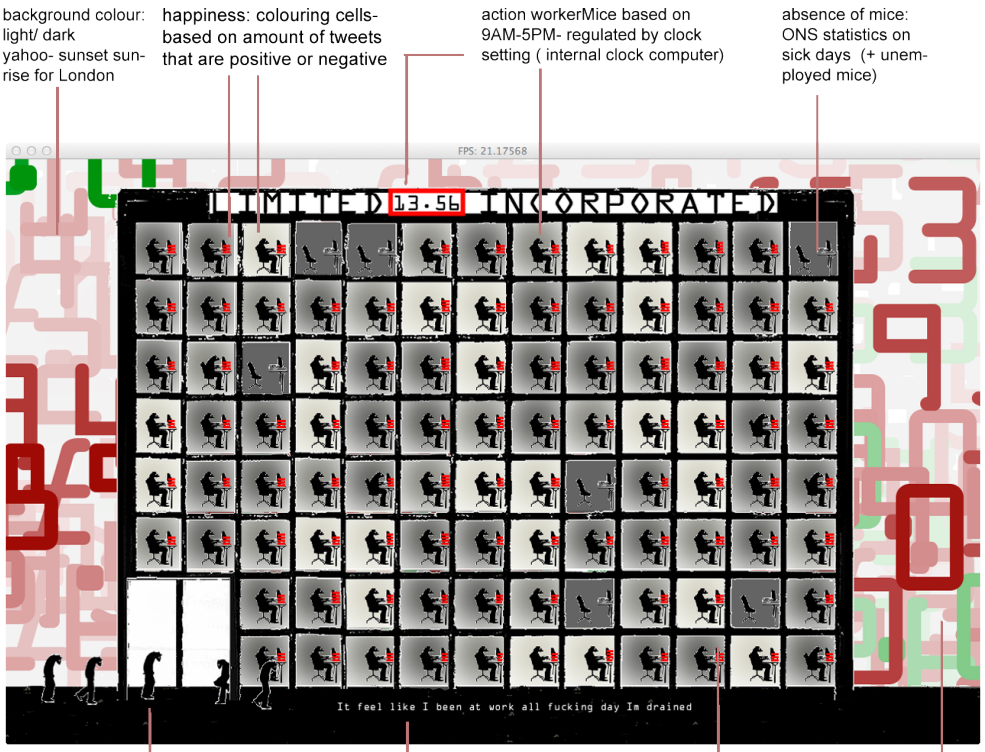
The present popular determination of a countries well-being seems to be based on economic data only, coming from economic measuring instruments such as the *GDP*, the stock market and unemployment figures. But alternative economic measuring tools have been developed, such as the *OECD-Better Life Index*[1], *Genuine Progress Indicator*[2], *Happy Planet*

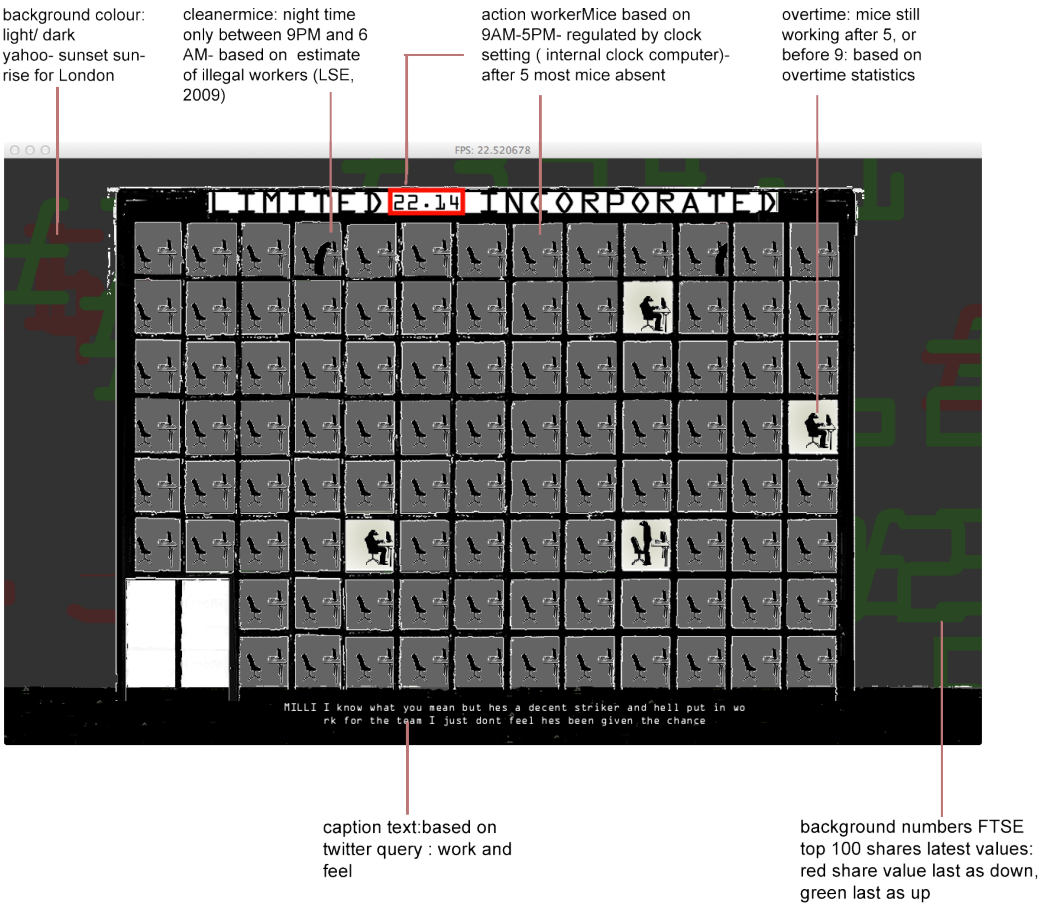
1 oecdbetterlifeindex.org/
2 rprogress.org/sustainability_indicators/genuine_progress_indicator.htm





Top left hand page, figure 1: ***WorkerMouse at computer desk, m*****ain character in 100 WorkingMouse.**
Top figure 2: ***100 working mice- daytime-*** **final version August 2014.**
Bottom figure 3: ***100 working mice- nighttime-*** **final version August 2014.**





Top figure 4: Representation of all data sources and their influence on the behaviour and expression of *100 Working Mice* illustration- daytime- final August 2014.

Bottom figure 5: Representation of all data sources and their influence on the behaviour and expression of *100 Working Mice* illustration- nighttime- final August 2014.

Index[3], and *Gross National Happiness*[4]. They have in common that they give greater value to other qualities of life than those that can be measured in financial terms only, such as ecology, social cohesion, personal development and happiness. These kinds of models are gaining ground, though as yet have not seen much effect on government policies.

This illustration brings a range of prominent economic data streams together and edits, amalgamates and visualises the data. But through the personal lens of the author, this data drives a notion of work-life balance and well being that does not equate present working conditions.

This report is chosen as a theme for this data driven editorial illustration, becaue the subject is rich in data support, it links into current debates on the developments of work-life balance and the growing discussion around alternative economic structures. Further the report and theme show a clear ideological positioning and potential for both engagement and reflection. In terms of creating a live illustration it offers a temporal and on-going relevance. The story has continuity inherent in the subject and the potential for change, in the situation described. Furthermore, the current debates around the topic gives the theme currency within the context of editorial publishing.

3.1 Considerations

Early experiments with the mice as workers started with the consideration of contrasting story elements within the Fatcat case study, creating a counter movement which could give the Fatcat a counterpoint. But the combination of the construction of the office, mice and fat cat together presented the potential for an exciting experiential result, but at the same time, brought a level of complexity in construction that would hinder the research discussion. Figure 17,18,19,20 show the sketches of these early developments. For the purpose of research I simplified the concept and continued the image concentrating on the actions of the mice.

One concern was the online editorial environment of which the illustration was to be part, which meant that the material and technological possibilities and limitations needed to be taken into account. In the construction the illustration needed an the allowance for fast and versatile creation and alterations, this meant for instance limitation in file-weight. But also as the image was limited in its visible size, the characterisation needed to be clear. Too much detail would hinder readable visual expressions and instant visual recognition.

Further considered was the range of multimedia and interactive expressions, though this did not necessarily lead to implementing direct interaction with the reader. The illustration was to be an authored expression, where the personal handwriting of the illustrator was to be part

3 happyplanetindex.org/
4 gnh-movement.org/

of its identity. The quality of expression would be based on the role of the image as illustration and thus on the qualities discussed in Chapter 3.

Lastly this illustration was constructed with the purpose to be examined and explored for research. Therefor it needed to offer the opportunity to examine its technological construction, the editorial and expressive decisions and outcomes. For instance, within the data selection, writing and manipulation of the code and within the visual mark making, the individual elements needed to be tracked for their agency as well as examined for the levels of integration.

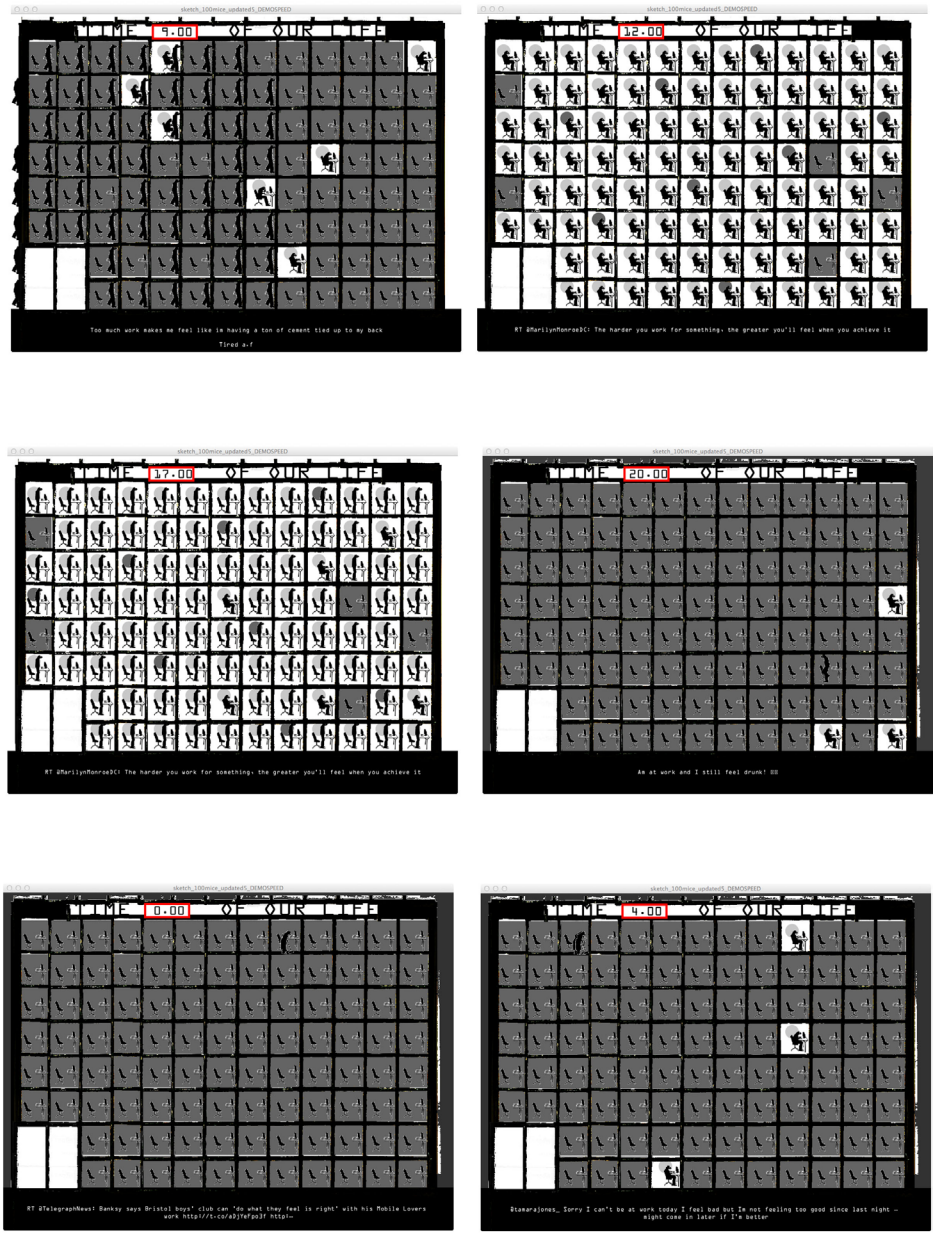


Figure 6: Six different moments in a twenty-four hour cycle of the *100 Working Mice* illustration (earlier version): 09.00- (most) *WorkingMice* entering; 12.00- *WorkingMice* working; 17.00 *WorkingMice* leaving (most); 20.00 (some) *WorkingMice* doing overtime one *WorkingMouse* leaving for home; 0.00- *CleanerMice* cleaning the building; 04.00 (some) WorkerMice already or still doing overtime.

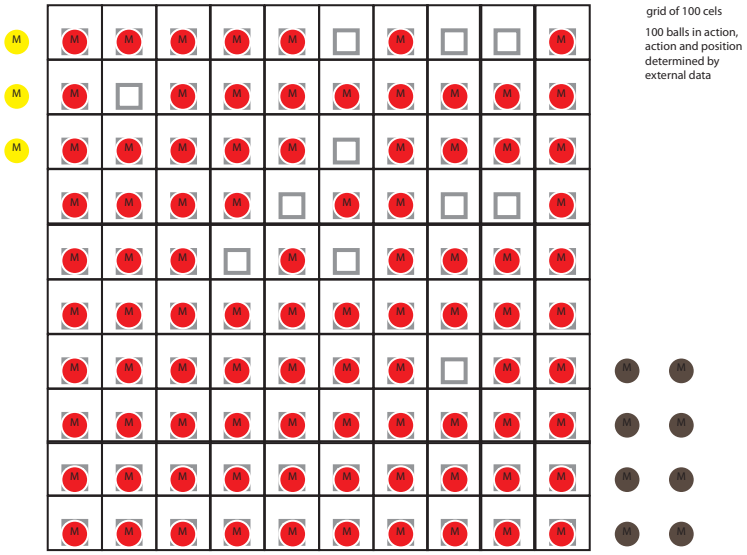


Figure 7: Schematic diagram of grid of 100 WorkingMice and the desk spaces; the red ball represent present mice; the yellow balls represent absent mice, due to illness; the grey mice represent absent mice due to unemployment figures.

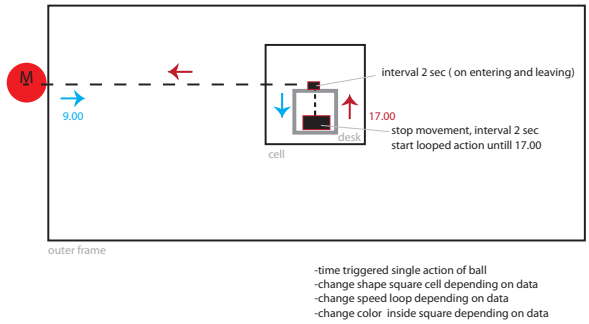


Figure 8: Schematic representation of the movement of the WorkerMouse; entering, waiting next to desk, sitting, typing, getting up, leaving.

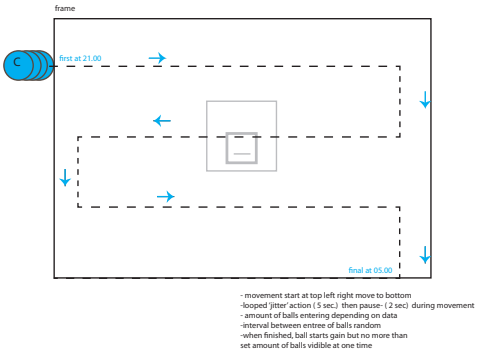


Figure 9: Schematic representation of the movement of the CleanerMouse (earlier version); entering, sweeping floor till end of office building, moving down a floor, sweep in the other direction , move down etc., till the bottom of building- then start again.

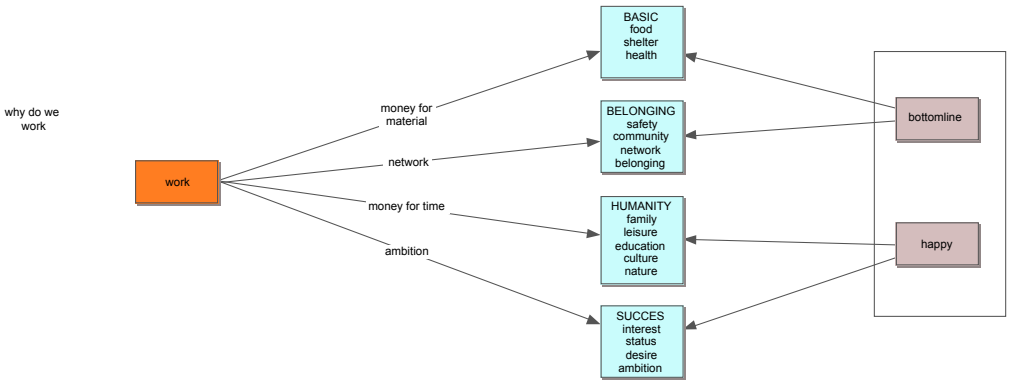


Figure 10: Schematic representation of reasons for working-Why do we work?- towards deciding work pressure and tempo change in typing (concept).

3.2 Visual Narrative

100 Working Mice presents a metaphoric office called *Limited Incorporated*, which is populated by anthropomorphic mouse-like characters (see figure 1, 11 and 12). The illustration shows in real-time a 24-hour cycle of the actions that take place in and around the office (see figure 6).

The illustration presents two cycles, a daytime shift, where a hundred WorkerMice work at their desks, and a night shift, when several CleanerMice come in and sweep the office 9 (see figure 12). In principle all WorkerMice come in and start work at the standard office hours 9 am and keep working and leave at 5 pm. However some mice will already be working at their desks. These mice have come in earlier. Some desks remain empty and the room remains dark, suggesting absence of a WorkerMouse, due to illness.

At the start of the day, all desks have a stack of red files, which reduces over the period of a working day (see figure 16). The desks should be empty by 5 pm. A certain percentage of extra files are distributes throughout the day, which means that some WorkerMice will not have gotten through their stack of work at the end of a day. Further the rooms, in which the WorkerMice work, change in grey-tone. The more negative the mood, the darker the room will be. At 5 pm most WorkerMice leave, however some will remain working at their desks, 'doing overtime'. Gradually over the course of the evening and night, these mice will also leave.

In front of the office UnemployedMice loiter around the entrance to the building and walk up and down the street in front of the office, like most WorkingMice they start at 9 am and leave at 5 pm.

At 9 pm CleanerMice come in, they sweep the floor of the office from right to left, move one floor down, then from left to right and so on, until they reach the bottom. They repeat this pattern unmill they leave at 5 am.

All change and actions are based on (real-time) data coming from various sources such as stock markets, commodity markets, GDP, bureau of National Statistics, OECD, seasons, Twitter, computer time and others. Change and disturbance of this pattern comes from factors like overtime, unemployment and illness (data from Office of National Statistics).

3.3 Drivers

The image is driven by streaming data input and will be in constant flux. Change will relate to real-time events, the twenty-four hour clock and corresponding routine activity. There will be moments of more active change and sudden active behaviour, for instance, at the start of the working day and when new financial or social data is published. However there are many moments where the action is slow and the image seems static.

To witness the active moments the viewer will need to make an effort to be present at that particular time. This offers the potential to announce

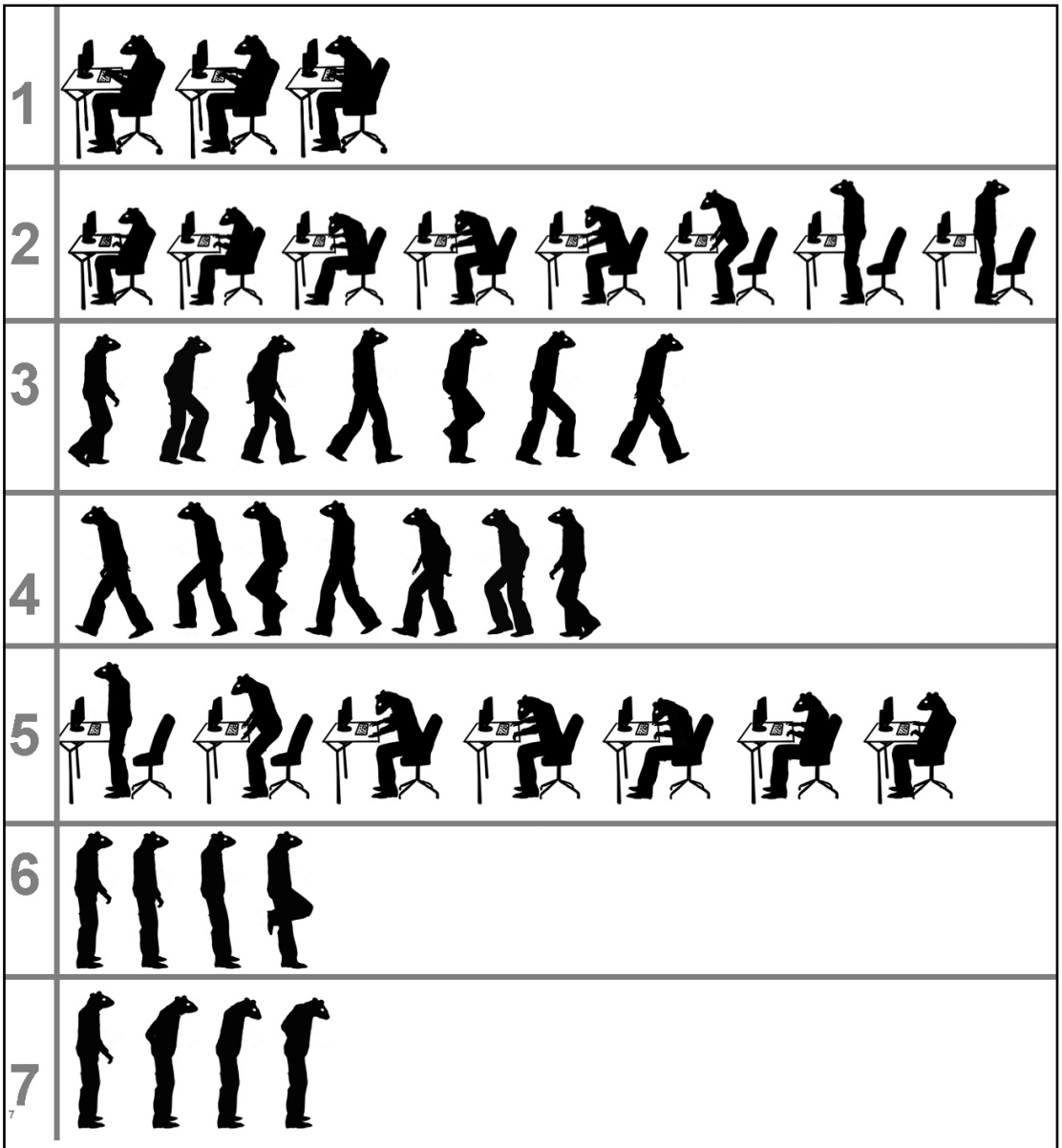


Figure 11: animation frames of *WorkingMice* and *UnemployedMice*, various sequences.

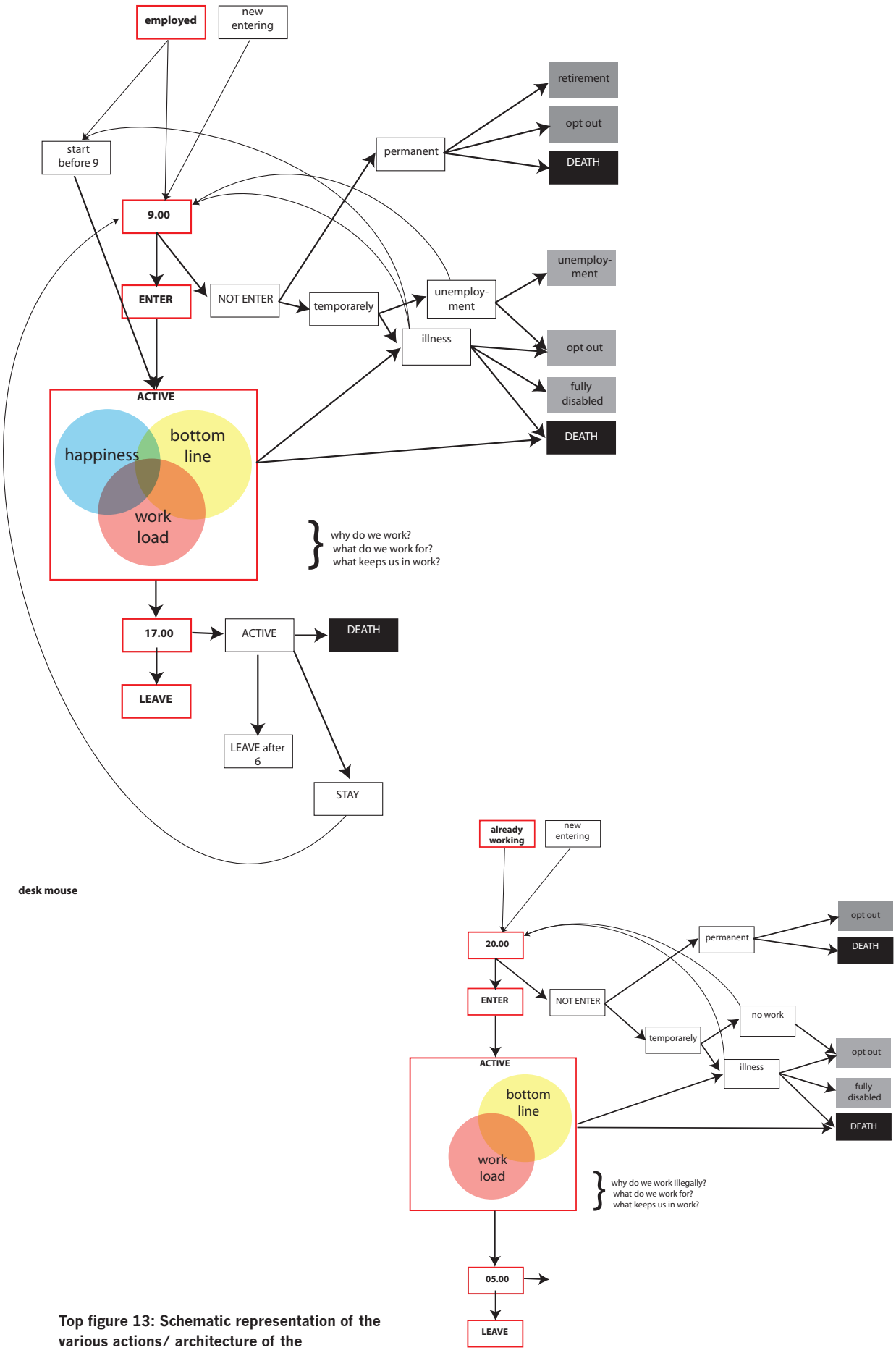
1. actions at desk
2. sequence getting up and leave
3. sequence walking in
4. sequence walking out
5. sequence sitting down
6. unemployed mouse slumping
7. unemployed mouse standing

these moments as mini-media events. Further there will be unique one-of changes and unpredictable incidents, based on the randomisation of statistical occurences such as death at work or bankruptcy.

3.4 Elements: WorkingMice and UnemployedMice

The mice represent the 100 percent employment potential. They perform average work by typing on a computer at a desk from nine to five. The computer is chosen as the most ubiquitous working tool.

The behaviour is driven by various data: their presence is determined by employment percentage, overtime, illness and death rates during working years. The level of activity is set by GDP (in concept). This behaviour will be adjusted when new data comes out.



Top figure 13: Schematic representation of the various actions/ architecture of the *WorkingMice/ UnemployedMice* stages.

Right figure 14: Schematic representation of the various actions/ architecture of the *CleanerMice* stages.

Default Behaviour of WorkingMice

At 9 am the mouse comes in and walks to his desk. The mouse will stop and sit down. The mouse will start typing. At 5 pm the mouse stops. The mouse will stand up and leave.

Actions are: walking in, standing still, sitting down, start typing, typing + watching screen sequence, stop typing, getting up, walking out.

Concept The tempo of typing is determined by the GDP.

The majority of mice come in at 9 am and leave at 5 pm, Monday to Friday.

A percentage of mice will come earlier and leave later, and some come in at the weekend.

A percentage of mice will stand to the side and walk up and down at random moments- the unemployed.

(Concept) A percentage of mice will die at their desk –the empty chair can be taken by a new mouse- either from the unemployed- or a new one coming onto the 'market'- this is a rare occurrence.

A percentage of desks will remain empty = equal to the unemployed + illness.

Figure 12: *CleanerMouse*, figure left sweeping, figure right in rest.

3.5 Elements: CleanerMice

The *CleanerMice* represent the black economy[5]. They come in at 9 pm, start at the right hand top of the building and work their way down to the ground floor, going from floor to floor, from left to right. They continually sweep the floor, pushing their broom in acontinuous looped animation. When they reach the ground floor and it is not yet 5 am, the proces repeats itself from the top to the bottom. At 5 am they leave like ghostlike characters, dropping down to the ground floor and then disappear.

3.6 Elements: Office Building

The *WorkingMice* and *CleanerMice* work in an office building, which has space for 100 desks. The rather grim and machinelike office, in the first versions carried the slogan 'TIME OF OUR LIFE',on its roof, which can be seen in figure 6. This has been replaced by name more suggestive of a generic company name 'Limited

5 Usually untraceable, and hence untaxable, they are business dealings that are not reflected in a country's gross domestic product (GDP) computations. An integral part of most economies, it is a cash based system in which transaction records are kept in secret. Though it employs illegal (and even criminal) methods, it is a survival practice where expression of entrepreneurial activity is made difficult by a maze of regulations.
What is black economy? definition and meaning [WWW Document], n.d. BusinessDictionary.com. URL businessdictionary.com/definition/black-economy.html#ixzz2TLgSHTcm (accessed 8.17.14).

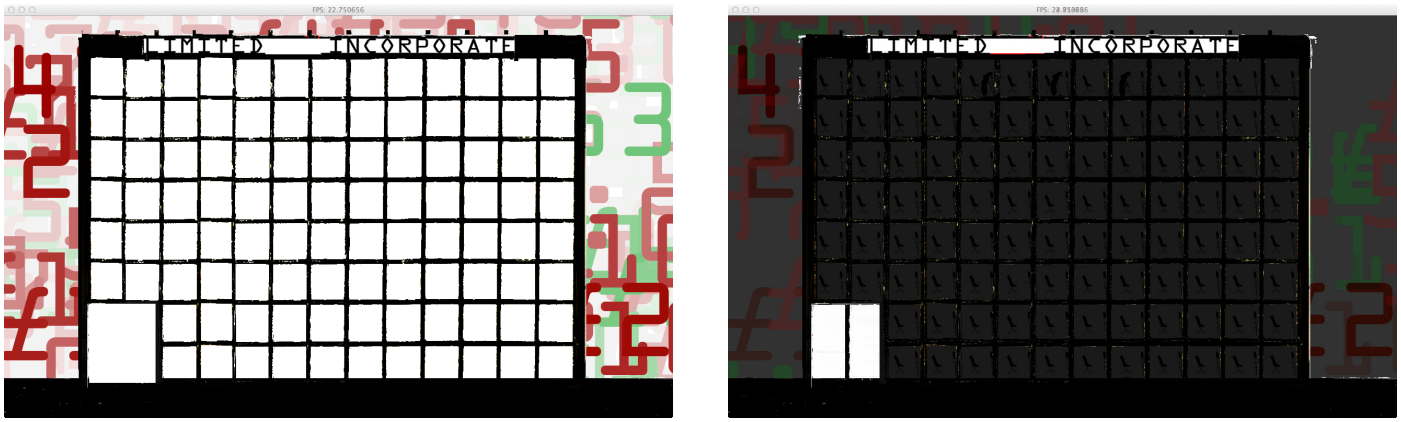


Figure 15: background and office building, left day time, right night time.

Incorporated,' where the two words are deliberately chosen as they the more negative connotation towards the limited view of onto the quality of life for those that are 'incorporated' (see figure 2, 3, 4 and 15)
A large digital clock divides the name. Company name and clock, together with the captions (tweets) are to give an instant signifying relationship, between the illustration and the external story that is told through the images.

3.7 Elements: Background

Around the building big red and green numbers appear in random locations and change continually. (see figure 15) These numbers refer to the FTSE 100 share values and appear real-time. If a value has gone up a number will appear as green. If it has gone down, the number will appear as red. After trading hours the last values remain visible. Further the background changes from night to day, following the real-time sunset and sunrise in London.

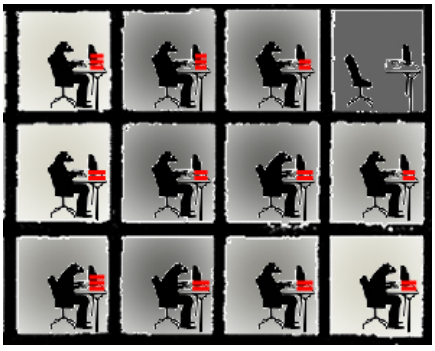


Figure 16: behind the WorkingMice there is a halo of grey representing mood. On the desk there is a stack of red lines representing workload.

3.8 Elements: Halo Behind WorkingMice (Mood)

The shades of the grey halo behind the typing mice and the text caption at the bottom of the illustration represent the emotional state of the illustration (see figure 16). The lighter the room, the more positive the mood. The quality of the mood is based on the average outcome of a series of tweets captured around keywords of 'feel', 'work' and a selection of qualifying words such as 'bad', 'awful', 'hate' or 'good', 'wonderful' and 'love'. Every time new tweets are imported, the average of the mood of these tweets determines the halo behind the individual mouse. This means that each mouse in principle has an individual emotional status, which and throughout the working day can change colour.

3.9 Elements: Caption

One of the tweets is used as the illustration caption. This sets an alternative but changing storyline, to which the image becomes the illustration. As these tweets are particularly filtered for their content, they all all reveal themselves as emotional statements around work. These captions can create a range of possible interpretations, which can be humorous, oppositional, possibly cynical, but also positive.

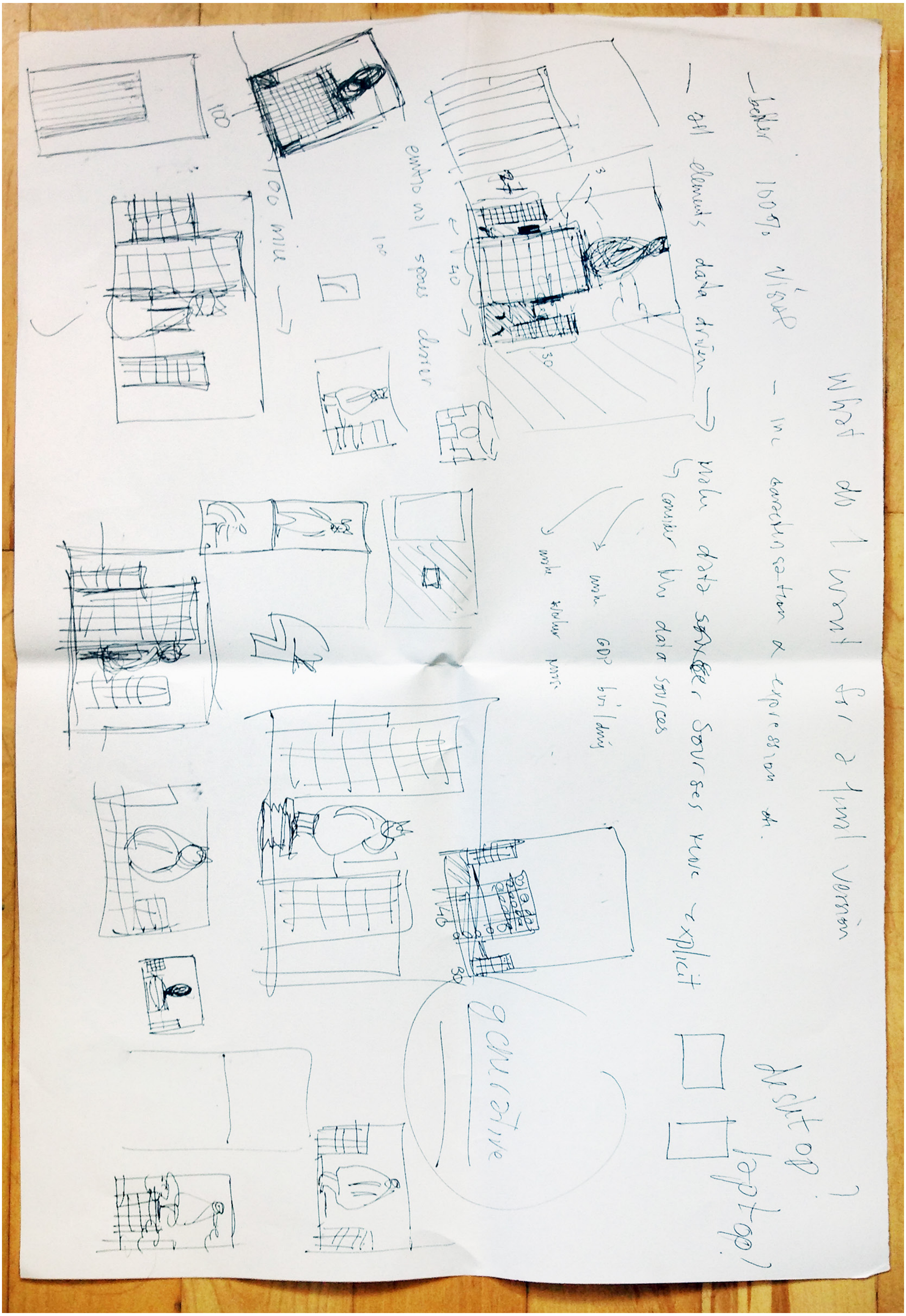
3.10 Elements: Stack of Files

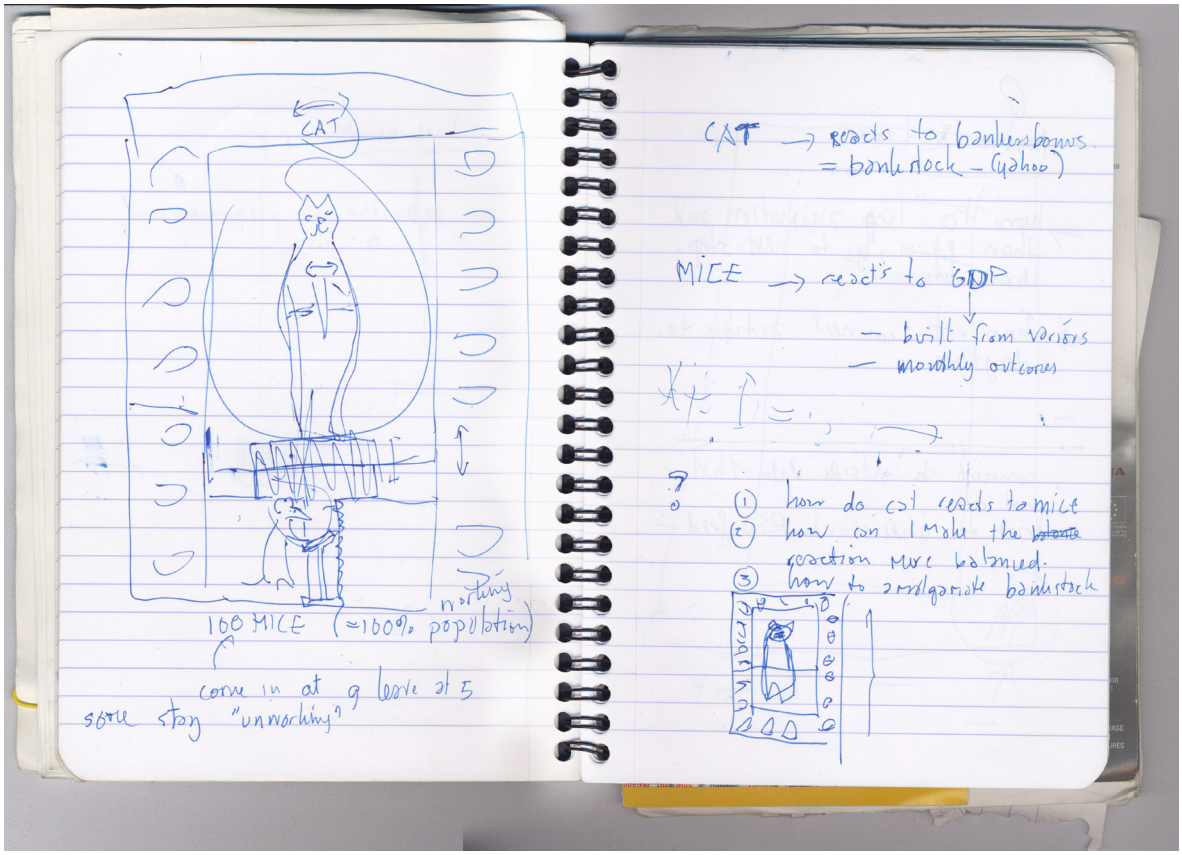
On each desk there is a pile of red files (see figure 16) , a stack of red lines that represent the daily workload, they refer to the potential for work pressure or work stress. The stack of lines gradually disappears over the course of a day, and should be cleared at 5 pm, but, based on the 80 percent sensation of work pressure, this will not be the case for most mice. However the workload does not always relate to the WorkingMice doing overtime. The stack of lines is a visualisation of the sensation of pressure.

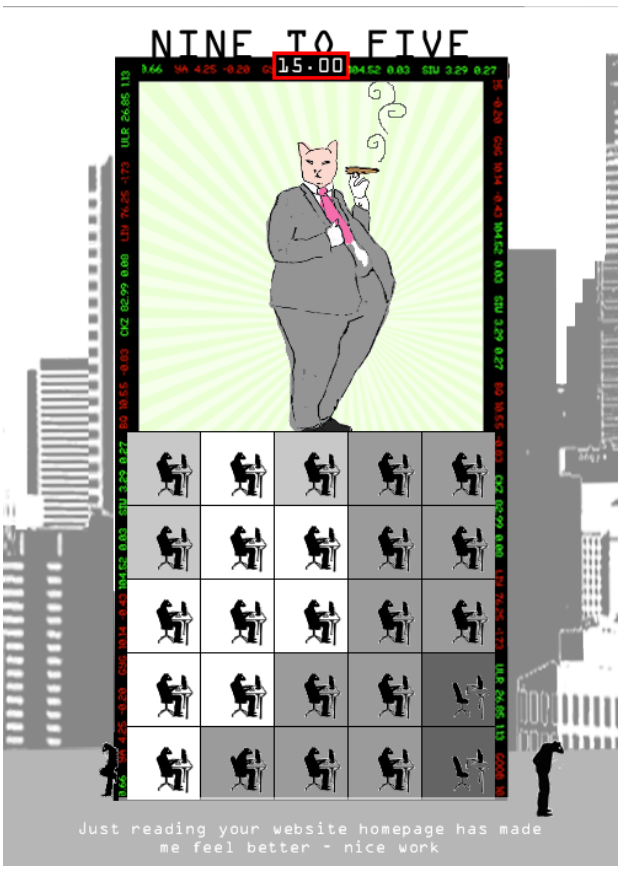
3.11 Economic Data Sources

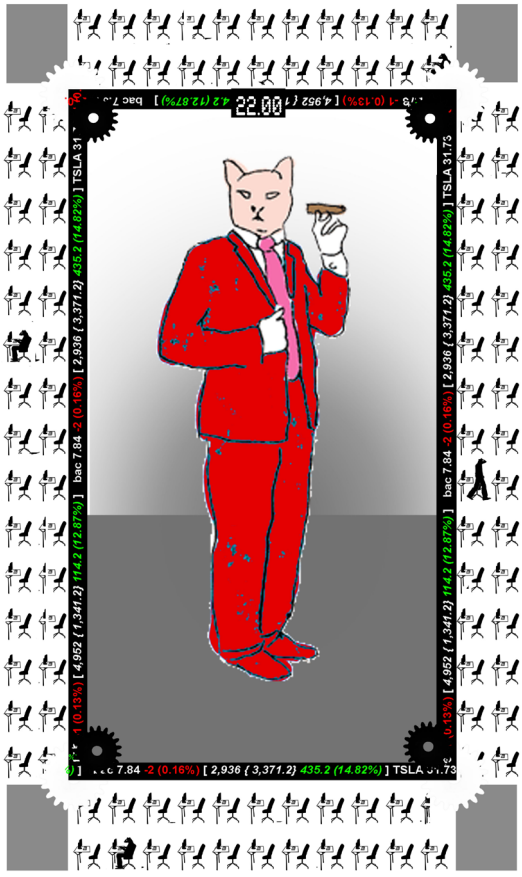
Each object is driven by different statistics and data sets (how this is applied is shown in schedule below). Some of the data are streamed (twitter, yahoo) some are adjusted at set intervals (ONS) and some are continuous and integrated in the computer (time). At present, the data from ONS is not automated and need to be adjusted manually, as the formatting of the data at source is not computer readable through external machines.

Apart form the daily routine, behaviour is coloured through happiness and workload, and these represent qualitative indicators of the quality of the working life. There are many factors that could be taken into consideration, for instance anything from reasons to work, which is a complex and personal mixture of drives; fulfilment, ambition, social to the financial and the ability to work, which can affected by anything from personal, mental and physical health, through to commuting and office politics. To give some idea of its importance within the context of the illustration, I use twitter as a qualitative and very subjective colouring, where it is both an indicator and a creation of context.


desktop?
laptop?
generative







Left, figure 17 and top right figure 18: fist rough sketches of *FatCat* and the *WorkingMice*- in the concept the idea of the *Fatcat* got extended into a the duality of the market and labour, represented by the *Fatcat* (market) and the labouring Mice (labour) at their office desks.

Bottom left, figure 19: Mockup sketch, screen image *Fatcat* and the *Working Mice*, first iteration- based on Afghan War Rug design patterns.

Bottom right, figure 20: Second iteration Mockup sketch *Fatcat* and the *WorkingMice*.

actions of mice

reference	action	amount/ percentage	amount		external input
stage	stage: building- each room has a table and chair in it- room is grey when unused				
workermice	come in at 9, sit down at desk, type till 17.00 then leave the same route as coming in	100%	100-influenced by unemployed, sickdays and overtime		computer clock (- depending on location and setting of individual computer)
unemployment	The file in from the left go through the 'door' move to the right floor, then file to their desk	7.10%	7		Office of National Statistics
overtime	coming in earlier leave later	20%	(see processing sketch for distribution) random distribution over workers		Office of National Statistics
sickdays	don't come in for full day	4.5 out of 260	2	select random between workers	Office of National Statistics
cleanermice	come in at 9 in the evening and keep sweaping from right to left, go down a floor, then from left to right, go down a floor etc. when they are at bottom floor, they leave. There are always 3 cleaners in the building, spaced out. When it is 6 in the morning they leave- drop from teh building to the ground then walk to the left- of stage	3.2	3		Office of National Statistics
workpressure	a pile of 4 red files are on the desk. Every 2 hours a file disappears- so at 5 o'clock there are no more files. 80 percent get 20 % extra piles , 20 & get 2x20 %. Piles disappear at 24 hours.	80 % feel stresses, 20 % feel overstressed	8 or 12 or 16	all get 4 files(work for 8 hours- deminished with one pile an hour-pile 80 get extra of these 20 get 2x extra	http://www.statisticbrain.com/stress-statistics/
hapiness	around the head of the mouse a 'halo' =cloud (ellipse appears, when there is a negative tweet, the cloud gets darker, when it gets a positive tweet the cloud gets lighter- can perhaps be done by 'alpha' channel of each ellipse? . Max= 'white cloud' min = black cloud. Each tweet affects a next cell, till all cells are affected. Then the tweet adds up to the already-existing coloring(alpha)-When there is no mouse- no halo . The size of the halo is 2/3 of room.	all	1 tweet per cell, continuous		twitter
gdp	?// not clear yet				ONS
ftse	numbers in sky changing red / green	all			yahoo- ftse
fatcat	a 'fatcat' walks past the building once a day- talking on the phone at a random moment between 9 and 5	the income of the one percent earned in relationship to the normal working week	1 a day		can be changed via external input- manually in code
clock	24 hour clock- there is a clock at the top of the building				internal clock computer
day/night	dark light based on sunset sunrise, outside ad around the building				yahoo- sunset sunrise for London

concept in grey

Table 1: All actions of the illustration 100 Working Mice(in grey actions not implemented), final August 2014.

indices used	represents	what does it influence	how	data- behaviour	source	streaming
rythms						
24 hour	24 hour	clock, rhythm of cat/ mice		24 hr. loop	computer	yes
day/night rhythm	day/night rhythm	light dark/ cleanermice		365 day loop	yahoo	yes
working day	working day	action cat and mice		loop	inherent	yes
weather	weather	?		variable	yahoo weather	yes
cat	**markets**					
FTSE		waistline cat	FTSE Up-fatter the cat/ FTSE down- cal slimmer	accumalative positive/ negative starvation- death- over indulgence	yahoo	yes
commodities		speed sigar smoking	commodities up- higher smoking tempo/ commodities down- slower smoking tempo	?	?	?
workermice	**workforce**					
working hours	working hours	work actions	come in to work-work and leave	24 hr. loop	inherent	yes
employment rate	employment rate	amount of mice in work	the percentage unemployer are represented by empty desks and equal amount of mice hovering outside the building	min-max 0-100%	ONS	no
overtime	overtime	amount and length of time mouse stays at work outside 9-5	mice come inearly, leave late or work at weekends percentage is randomly spread over time	beased on fixed percentage- spread random	ONS	no
?	work load	posture of mouse	the more workload the more hunched the mice	min max-min= hanging back in chair- relaxed/max= fully hunched over	ONS	no
illness	illness	amount of mice in work	mice do not appear at work	min-max 0-100 absence	ONS	no
death rates between 16-65	death at work	moue dying at work	mouse keels over- triggers action: 2 other working mice drag mouse out (then return to desk	min-max 0-100%	ONS	no
cleaner mice	**illegal workforce**					
illegal work	illegal work	mice coming in after dark+ 20.00 - leaving at 6.00	cleanermice come in and sweep floor fromtop to bottom- disappears, next comes in again- looped	min-max 0-100%	ONS	no
office	**ability to work**					
gdp	amount of work produced	size of building and size of cell	gpd determines growth of shrinkage of building-	accumalative positive/ negative	ONS	no/ ?
twitter: keywords work+ descriptive	happiness	color of workcell/ text	the more negative words- the darker the space/ more positive lighter- percentage out of 100	min-max white- 100 % positive/ black- 100% negative	twitterfeed	yes

Table 2: indices of data streams used to drive expression in illustration *100 Working Mice*, final August 2014.

data agregate/ big data	what data		URL	discription
GDP	agregate: Gross domestic product by category of **expenditure**			is the market value of all officially recognized final goods and services produced within a country in a given period of time.
		households in/ out		
		investments in/ out		
		exports in / out		
		gross final expenditure in/out		
CPI- consumer price index			http://www.ons.gov.uk/ons/rel/cpi/consumer-price-indices/december-2012/cpi-and-rpi-reference-tables.xls	what people spend their money on and how much
oecd hapiness index	agregate; developped to measure a more human idea of well being than GDP		http://www.oecdbetterlifeindex.org/about/better-life-initiative/	
			http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/january-2013/index-of-data-tables.html#tab-Earnings-tables	avarage weekly earnings: EARN01 Average Weekly Earnings - total pay1- show weekly pay
		redundancy rate	http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/january-2013/table-red01.xls	redundancy: level and rates
		unemplyment rates	http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/january-2013/table-unem01.xls	unemployment
		working long hours	http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/january-2013/table-hour01.xls	hours officially stated
			http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/january-2013/table-hour01.xls	overtime
		life expectency	http://www.ons.gov.uk/ons/rel/vsob2/weekly-provisional-figures-on-deaths-registered-in-england-and-wales/week-ending-25-01-2013/weekly-deaths---week-04-2013.xls	death rate of the workingpopulation
		self reported health		
		air pollution		
		well being	http://www.ons.gov.uk/ons/dcp171766_287415.pdf	
FTSE	**100 top companies UK**			

Table 3: analysis of various data agregates and their influence (in potential).

Table 4 : Analysis of potential of the various data agregates and their influence - from the OECD, your better life index.

OECD BETTER LIFE INITIATIVE
YOUR BETTER LIFE INDEX - List of indicators and definitions

measurables	work	life	TOPICS	INDICATORS	DEFINITIONS	SOURCES		
rent house size avarage commuting time		housing satisfaction	Housing	Rooms per person	It signals whether the persons occupying a dwelling are living in crowded conditions. It is measured as the number of rooms in a dwelling divided by the number of persons living in the dwelling.	EU-SILC for European countries and from comparable national surveys for non-EU countries		
		commute		Housing expenditure	it is calculated by dividing the final consumption expenditure of households in housing and maintenance of the house by the net adjusted disposable income of the households.	OECD National Accounts database		
		living standards	Income	Household disposable income	It includes income from work, property, imputed rents attributed to home owners and social benefits in cash, net of direct taxes and social security contributions paid by households; it also includes the social transfers in kind, such as education and health care, that households receive from governments. Income is measured net of the depreciation of capital goods that households use in production.	OECD National Accounts at a Glance		
				Household financial wealth	It consists of various financial assets owned by households (e.g. cash, bonds and shares) net of	OECD National Accounts at a Glance		
	employment rate		Jobs	Employment rate	It is the share of the working age population (people aged from 15 to 64 in most OECD countries) who are currently employed in a paid job. Employed persons are those aged 15 and over who declare having worked in gainful employment for at least one hour in the previous week, following the standard ILO definition.	OECD Employment Outlook		
	living wage			Long-term unemployment rate	It is the number of unemployed who have been unemployed for one year or more as a share of the	OECD Employment Outlook		
	Job security			Personal earnings	It shows the average annual earnings per full-time employee			
				Job security	it is the share of dependent employment with job tenure of less than 6 months.	OECD Employment Outlook		
		weather	Environment	Air pollution	It refers to the population-weighted average concentrations of fine particles (PM10) in the air we breathe (measured in micro grams per cubic meter); data refer to residential areas of cities larger than 100,000 inhabitants. Particulate matters consist of small liquid and solid particles floating in the air, and include sulphate, nitrate, elemental carbon, organic carbon matter, sodium and ammonium ions in varying concentrations. Of greatest concern to public health are the	OECD Environmental Outlook	World Bank	
		light		Water quality	it shows the percentage of people reporting to be satisfied with the quality of local water			
	relevance		Civic engagement	Voter turnout	It measures the extent of electoral participation in major national elections. Only the number of votes casted over the population registered to vote are considered. The voting-age population is generally defined as the population aged 18 or more, while the registered population refers to the population listed on the voters' register. The number of votes casted are gathered from national ministries, ethnic and national electoral management bodies	OECD Society at a Glance	International Institute for Democracy and Electoral Assistance (IDEA)	
		family life		Consultation on rule-making	It describes the extent to which formal consultation processes are built-in at key stages of the design of regulatory proposals, and whether mechanisms exist for the outcome of that consultation to influence the preparation of draft primary laws and subordinate regulations. This indicator is a composite index aggregating various information on the openness and transparency of the consultation process used when developing regulations	OECD Regulatory Management Systems' Indicators Surveys 2005, 2008 and 2009, OECD, Paris		
		health	Health	Life expectancy	It is the standard measure of the length of people's life. Life-expectancy measures how long on average people could expect to live based on the age specific mortality rates currently prevailing. Life-expectancy can be computed at birth and at various ages.	OECD Health Database	OECD Health at a Glance: Europe	OECD Health at a Glance: Asia/Pacific
	physical work environment			Self-reported health	It is based on questions of the type: "How is your health in general?". Data are based on general household surveys or on more detailed Health Interviews undertaken as part of the official surveys in various countries.	OECD Health Database	OECD Health at a Glance: Europe	OECD Health at a Glance: Asia/Pacific
	appreciation	personal happines	Life Satisfaction	Life Satisfaction	It measures overall life satisfaction as perceived by individuals. Life satisfaction measures how people evaluate their life as a whole rather than their current feelings. It is measured via the Cantril Ladder (also referred to as the Self-Anchoring Striving Scale), which asks people to rate how they value their life in terms of the best possible life (10) through to the worst possible life	OECD Society at a Glance	OECD Factbook	
	working hours		Work-life balance	Employees working very long hours	It shows the proportion of employees who usually work for pay for more than 50 hours per week. The data exclude self-employed workers who are likely to chose deliberately to work long hours.	OECD Labour Force Statistics		
		leisure		Time devoted to leisure and personal care	It presents data from national time use surveys on the hours devoted to leisure and personal care in a typical day.	OECD Time Use Survey		
	working at best level colleagues							
		aspirations						

domestic income

current prices, 3rd q. 2012			percentage change last year	percentage change last quarter
this	gross national INCOME at market prices	389604	4.1	2.3
Minus	MINUS net income from abroad	743		
is	gross DOMESTIC PRODUCT at market prices	388861	3.4	1.7
minus	MINUS basic adjustment	44748		
is	gross value added at basic proces	344113	2.4	1.8
chained volume measure, reference year 2009				
	gdp at market proces	361568	0.9	0.9
	MINUS basic adjustment	35026		
	gross value added at basic proces	326542	1	0.9
	gross values added at factor cost	323158	1	1

stress at work

percent

80 percent feels stressed at work
30 who say they are "always" or "often" under stress at work 30 %

14 low pay
14 unreasonable workload
11 Annoying coworkers
11 commute
8 unsuitable job
7 poor worklife balance
6 lack of advancement
4 fear of fired

http://www.statisticbrain.com/stress-statistics/

total working population

100

jobless		7.8
employed		71.2
total		79
unaccounted for		10
self employed	guess	11
informal	guess	6

The TUC analysis found that over one in five workers (21 per cent) regularly worked unpaid overtime last year, an increase of 0.7 percentage points since 2009 and the highest proportion since 1997.
21% avarage 7.2 hours pp

	weekly	
overtime	18.6 do overtime	
avarage workingtime		
overtime		1.20

http://www.ons.gov.uk/ons/rel/ashe/annual-survey-of-hours-and-earnings/2013-provisional-results/stb-ashe-statistical-bulletin-2013.html#tab-Total-weekly-and-overtime-paid-hours

Percent of people who regularly experience physical symptoms caused by stress	77%
Regularly experience psychological symptoms caused by stress	73%
Feel they are living with extreme stress	33%
Feel their stress has increased over the past five years	48%
Cited money and work as the leading cause of their stress	76%
Reported lying awake at night due to stress	48%

Table 5: Various calculations of statistical data towards implementation in the illustration *100 Working Mice* (in potential).

Extrinsic	Intrinsic
Good promotion prospects	Good relations with your supervisor
Good pay	A job where you can use your initiative
A secure job	Work you like doing
Convenient hours of work	The opportunity to use your abilities
Choice in your hours of work	An easy work load
Good fringe benefits	Good physical working conditions
Good training provision	A lot of variety in the type of work
Friendly people to work with	

what makes a good job

http://www.skillsdevelopmentscotland.co.uk/knowledge/newsletter/what-makes-a-good-job.aspx

Table 2 - Ranking of Job Attributes

Overall Ranking	Job Attributes	Intrinsic or Extrinsic?
1	Work you like doing	I
2	A secure job	E
3	The opportunity to use your abilities	I
4	Friendly people to work with	I
5	A job where you can use your initiative	I
6	Good relations with your supervisor/manager	I
7	Good pay	E
8	Good physical working conditions	I
9	A lot of variety in the type of work	I
10	Good training provision	E
11	Convenient hours of work	E
12	Choice in your hours of work	E
13	Good promotion prospects	E
14	Good fringe benefits	E
15	An easy work load	I

what makes a good employee

1. Have a good attendance and punctuality record
2. Wear appropriate clothing for the environment.
3. Follow health and safety rules and other instructions given to you
4. Ask for help if you need it
5. Listen to and work well with other colleagues
6. Be accurate in your work and manage your time well
7. Be honest
8. Be enthusiastic and show pride in your work
9. Show respect for the company's clients and handle confidential information properly
10. Show a willingness to learn

Table 6: Various calculations of statistical data towards implementation in the illustration *100 Working Mice* (in potential).

Figure 1: ***Bits and Pages Logo*****, Student work HKU, 2012.**

4 Bits & Pages

Bits & Pages (B&P) is practical, higher education, research project that explores, within online communication platforms, the context, position and development of visual design and in particular editorial illustration. The project is an initiative of Nanette Hoogslag- PhD researcher at the Royal College of Art, London and the HKU- Utrecht School of the Arts, Utrecht, The Netherlands.

Central to this project are the changes, possibilities and particular needs for visualisation within online editorial media that come with the ever-expanding digital technologies, network technologies and the development of mobile carriers. From traditional printed media, online media publication not only presents obvious material differences, but its very different structure poses far reaching conceptual, aesthetic and experiential changes for content and design. For the visual designer and image-maker the question is which creative processes, knowledge and skills are needed to make meaningful and effective contributions in this dynamic environment.

For the duration of two semesters illustration, interaction, media and graphic design students from the Design School at the HKU, and design management students, from the HKU Art and Economy School, have collaborated in a multi-disciplinary research group to explore these questions.

4.1 Background

Newspapers, magazines and other periodicals are no longer developed from the principles of the printed edition. The online digital processes now drive content, form and production. This determines the distribution, selection and visualisation of information and how readers experience and internalise this. Printed publications are disappearing rapidly and the few (new) printed titles are using the exclusivity of print as a unique selling point, often in conjunction with a web presence. Online, particularly with the rise of the tablet, there is now a fast growing reading audience that has moved to web and tablet editions as their first point of call.

To design a good comprehensive reading experience for an online publication has become a complex task, since the publisher and designer no longer controls the carrier, content and experience.

For starters, there is a wide range of presentation platforms, such as the smartphone, game-consoles, smart TV's, tablets, laptops etc., each with their own technologies and formats. Beyond this, they are produced by various competing companies like Apple, Google and Samsung and competing browsers such as Safari, Chrome, Firefox and Internet Explorer, who battle for market domination and often do not share each others protocols. Further the users themselves are able to adapt the look and feel of the interface of their device as well as preselect preferred subjects, without necessarily following a publisher's route-map.

In order to create a consistent, efficient and swift output for the user for every platform, at any given moment, the responsive content management system has been developed and is applied universally. This has standardised the handling and visual presentation of text and image to a narrow format.

To further complicate matters, content is often presented in modules simultaneously or related to various other media platforms; for instance via social media, in articles outside the publication itself, in archives or in print editions and vice versa. This allows the reader to access multiple sources and follow their own path of interest.

The responsive design systems and the hybridisation of content, might be giving access to much more information than ever before, but has meant a loss in the quality of the reading experience and controversially with it, a loss in understanding and internalisation of the content. The much heard phrase, 'too much information', might point to the enormous amount of information that has been made available, but perhaps more so, it points to the lack of ability for users to make sense of all this information.

Though GUI- design (Graphic User Interface) has long been part of the development of computers, the focus has been on the man-machine relationship and unlocking the information potential.

But more and more the need for the interface to be visually structured and appealing, traditionally part of graphic design and illustration, is recognized as central for successful interaction. Long understood within games design and data visualisation, visual recognition, navigation, storytelling and aesthetics are core to their design principles. But within online editorial publishing, the traditional design considerations of text and image, their relationships and the significance of the image are still overruled by the singular focus on information distribution.

Within online publication, the importance of a well-designed reading experience is slowly being recognized. Early experiments of online magazine design and illustration present itself within tablet-apps, special features to web editions, gamification as narrative format and interactive data visualisation. New forms of graphic design and illustration are developing from a merger with interface and interaction design.

This will require designers and image creators that understand the language and traditions of image and text, but also understand the language of the new media[1]. They do not necessarily need to be masters in both areas, but they need to be able to comprehend the calculating, networking and interactive powers of the computer alongside the subjective, guiding and expressive powers of the visual. More than the ability to create an attractive surface it demands a conceptual understanding.

4.2 HKU and PhD Research

B&P is developed as a case study of a PhD research into new forms of editorial illustration in online media. This research on the one hand looks at the specific role and meaning of illustration (within the editorial context), while on the other, it looks closely at the changing context of online media and what the consequences are for the position and expression of the illustration within it. The department of illustration in the HKU recognized the need for more in-depth research into the digital developments of illustration, where the traditional field of editorial illustration, a staple part of the illustrator's income, creating illustration with articles in printed magazines or newspapers, is rapidly shrinking. Yet many new possibilities are opening up in the digital field, for instance in the games industry, but no specific curriculum has been developed around it. As the present skills are taught, the most likely position for graduating illustrators would be that of a contracted draftsman within a games design studio. Illustration as an independent critical contribution within editorial media is losing out.

The B&P project would benefit academic research, the participating students as well as the curriculum and development of participating schools.

The research would critically follow the student's findings, their progress,

1. Manovich, L., 2002. The Language of New Media, MIT Press.

their reflections and outcomes and place these within a wider research context. The students would get the benefit of new skills and cross-departmental collaboration, lectures and meetings with professionals in the field, next to analytical reflections on their outcomes framed by the context of the latest insights. The HKU would gain a network and knowledge of this developing area of expertise, whilst the analysis of the project and research will feed into curriculum recommendations and experience within the tutorial team.

Figure 2: ***Students preparing for interview*****, Bits & Pages Student work HKU, 2012.**

Figure 3*: Students creating model for animation,* Bits & Pages Student work HKU, 2012.

4.3 Assignment

Teams of HKU students (BKV, KMT and Art& Economy) were asked to work together and create a series of illustration-based articles for a fictional publication, exploring in content and form the concept of online illustration. The publication was to be a hybrid magazine: a combination of a printed magazine and a 'magazine-app'.

Central to the articles were the student's own reflections and explorations in the use of illustration online, and a series of interviews with well-known, mainly Dutch, leading illustrators, designers and thinkers in the area of digital imaging (V2, Olivier Otten & Baschz, Momkai, Dauw Design, Henk Oosterling, Dutch Design Association, USTWO (London-UK), LUST, IJsfontijn- Judith de Graaf, Barbara Mulderink).

Students had to consider both illustration as well as new media in the use of technologies, design and strategies. They had to take into account the limits of the print/ app publication format, the content of the articles, and of course their own skills, expressions and interests.

Design management students also researched the e-publishing industry.

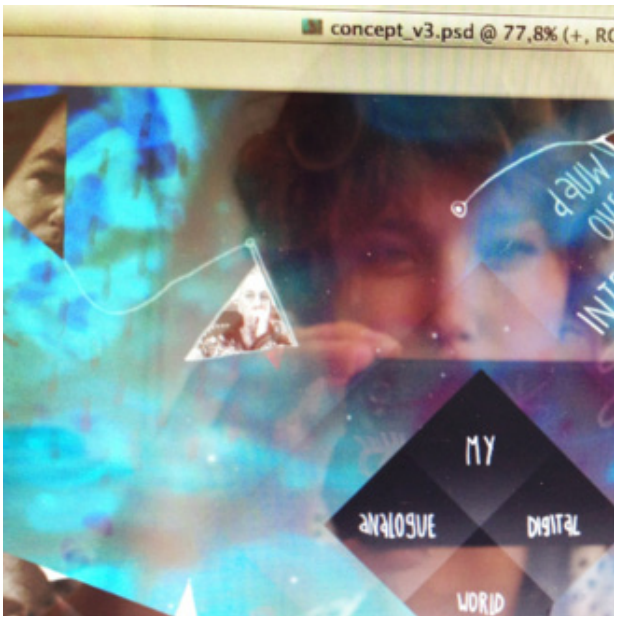


Figure 4: ***Student analysing his project,*** **Bits and Pages Student work HKU 2012.**

4.4 Process

It took the students most of the first semester to comprehend the specific approach needed for online illustration. The different and sometimes opposing kinds of conceptual and design thinking held within interactive design and illustration, needed to interweave and expand into a combined new form. Not only did the students need to collaborate from the very start, but also they needed to translate the principal concepts of each other's discipline into joint thinking. Preconceived ideas, including those on their

own field, and what online illustration was to be, were critically examined. This allowed for fundamental discussions that were needed for open-minded practical exploration. For instance, it raised questions around creative authorship, the nature of interaction, expression and narrative, user interaction and user participation, as well as the different dynamic structures available from multi-media, real-time or networked systems, juxtaposed with the ambiguity and reflective qualities of the illustrated image.

It was interesting to note that in this exploration of a new territory, the tutor's understanding developed along with the students.

It took until the second semester for the students to open up to the true possibilities that lay in the technical, practical and creative side of the assignment. This time graphic design students also participated; they were to explore new concepts around the magazine-app, which also fed back into the work of the others. It resulted in strong original concepts, which they developed into high quality prototypes.

Of course the next step should have been the execution of these prototypes. But this would require more time and other skillsets, like software programming and the practical know-how of e-publication. At this point in time that was not available.

Figure 5: ***Sketches for New Presentation Platforms*****, Bits & Pages, Student work HKU, 2012.**

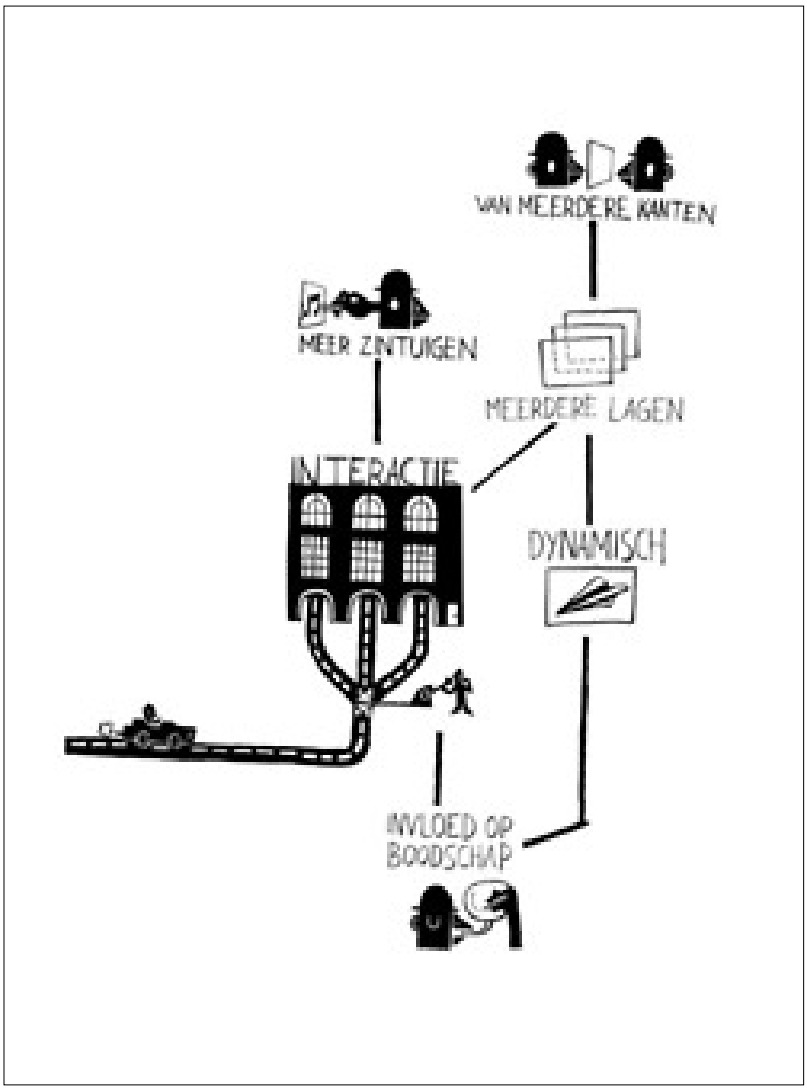


Figure 6: ***Discussion around New Illustration Formats-2*****, Bits & Pages Student work HKU, 2012.**

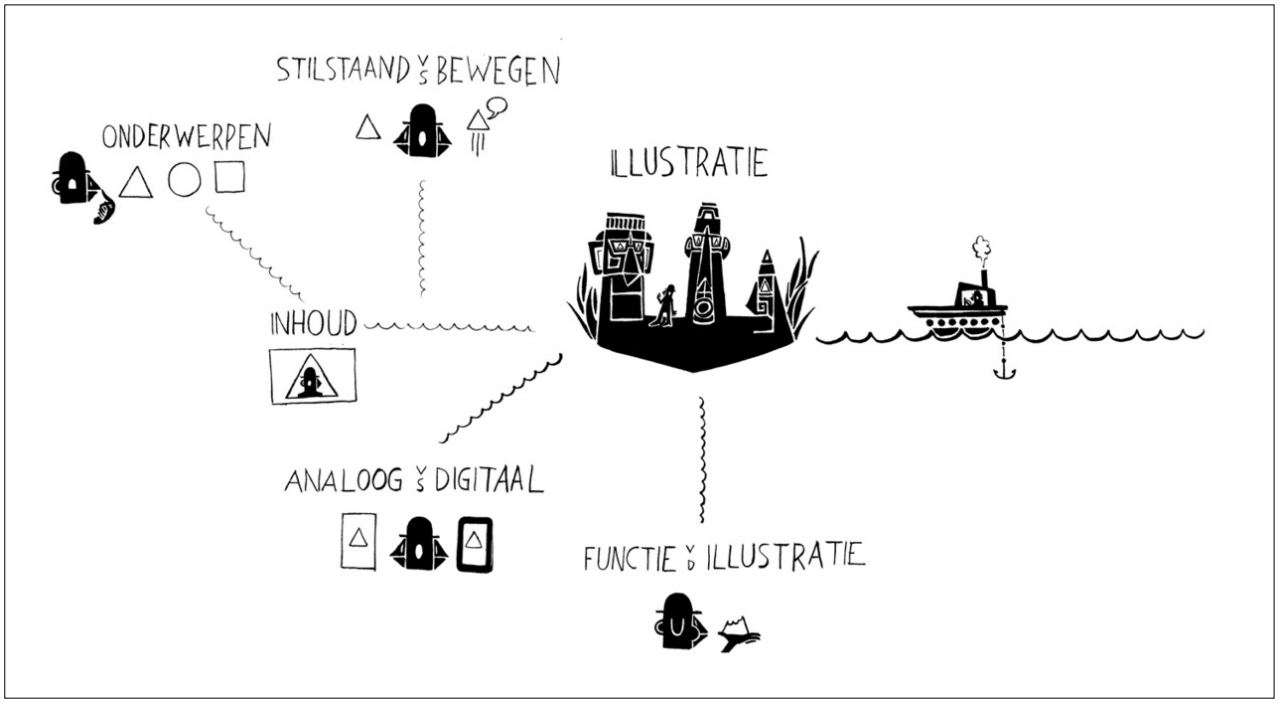


Figure 7: ***Discussion around New Illustration Formats*****, Bits & Pages Student work HKU, 2012.**

Figure 8: ***Presentation Sketch Proposal,*** **Jongerius, T., and E.van den Hazel., Bits & Pages HKU, 2012.**

4.5 Conclusion

In reflection, these works revealed the very structure of what could be considered as online illustration, a logical remediation of traditional printed illustration. It showed new forms of imaging opening up, new tools of expression added to the illustrator's toolbox and questioned the traditional boundaries presumed for the discipline.

The participating students who produced high quality works saw very clearly that these works were the result of an intense interdisciplinary collaboration, and could not have been made or conceptualized in any other way. They also saw the benefit of this kind of visualisation and the exciting potential. Many of the students that participated in this project have gone on to do their final exam work building on the skills and collaboration learnt from the project.

The collaboration between disciplines has proven to be very fruitful for the students, for the HKU as a teaching and art institute, as well as for academic research and can be built upon to strengthen the expertise and development of knowledge.

4.6 Further Points

B&P opened up underdeveloped new territory with a lot of potential and with growing demand in the professional field. (Magazine apps, data visualisation, data illustration, gaming, serious gaming and interactive storytelling etc.)

B&P has given the participating students a lead within this growing field.

B&P gave the HKU an interdisciplinary lab, where academic research meets practical experimentation free from commercial constraints.

B&P is a format that can be further explored as part of the HKU curriculum beyond its status as research project.

B&P profiles the college as a research institute in the disciplines and work fields they represent.

B&P is a unique direct collaboration with high-end academic PhD research aimed towards strengthening the knowledge-base of the college. In this particular case, that of illustration and interaction design is one of the largest departments. The findings and results are aimed at building the curricula of the participating schools.

B&P would gain through a further extension of the project into practical execution. This will need a restructuring of the project to include further collaboration, further resources and an extension to the time allocated.

B&P would benefit from a short introductory workshop into Visual Programming languages, such as Processing or JAVA for the 'non programming students', as well as a similar workshop on the role of illustration for interaction designers.

In a future project it would be interesting to involve programmers from an early stage.

It is important to continue to build on the knowledge and experience gained within B&P. There is enormous scope within the field that was explored. It has the potential to develop into a specialism within the new HKU Media study program. It could begin with the B&P lab as a set a trajectory for selected students and provide a tailored collaborative environment with a dedicated block of time, technical assistance and resources. This would not only teach certain approaches to visualisation, but could result in some showcase works at final exams.

Figure 9: Demo movie, The Future of Illustration', Bits & Pages Student work HKU, 2013. http://vimeo.com/82114265.

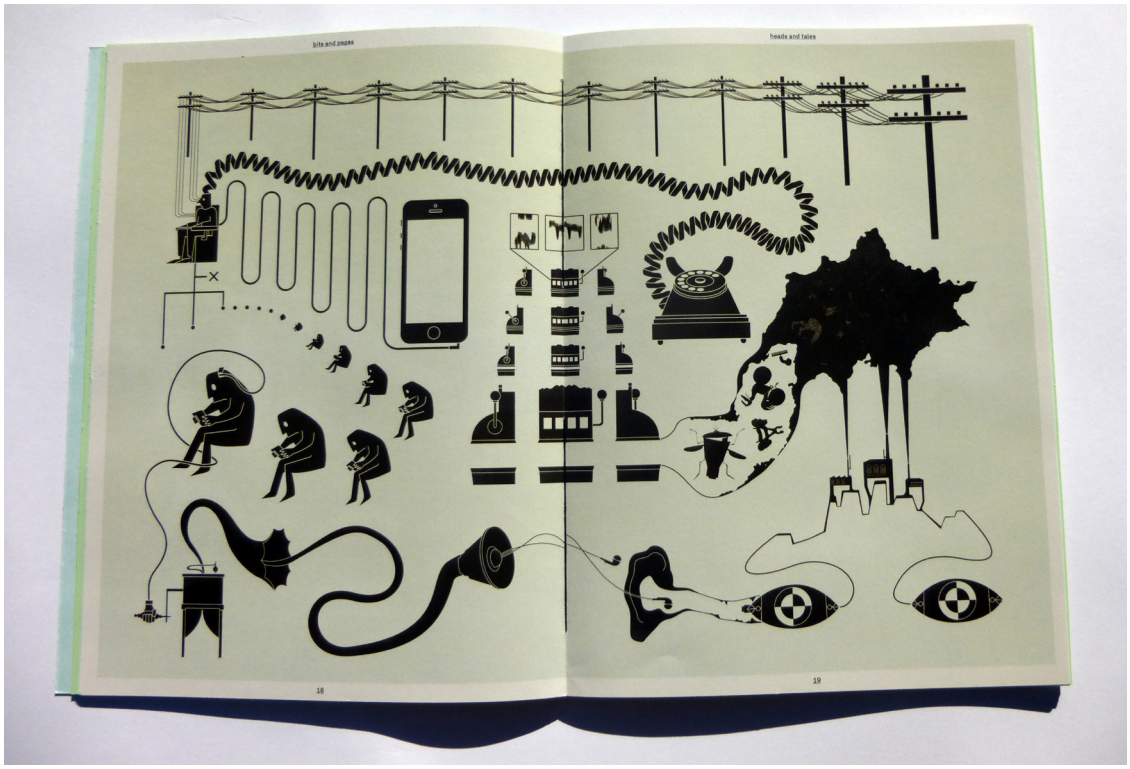


Figure 10: *Presentation Model*, Phillipi, M.,and van Thillo, C.. Bits & Pages 2 Student work HKU, 2012.

5 Interviews

In support of the research twenty-five practitioners in the fields related to online editorial illustration were interviewed. They ranged from art directors, online journalists, illustration agents, web designers and web architects to editorial illustrators. All interviews have been recorded and have been used as valuable practice based support in developing particular ideas.

Three interviews are transcribed here in shortened edited versions,these are the interview with Tobias Sturt and the two interviews with Andrew Diprose. These are of particular significance, as they were asked to reflect on the research project discussed in Chapter 6, in particular the project *100 Working Mice*.

The following practitioners have been interviewed:
Paula van Akkeren, picture editor NRC, 19-12-2012 and 19-12-2014.
Van Akkeren is picture editor at the NRC and commissioned the case study in Chapter 3. The *NRC* (The Netherlands) is a Dutch daily national newspaper and is known for its quality design and well-considered image usage. Over the past fifteen years I have created many illustrations for the NRC in collaboration with van Akkeren.
James Bates, creative director, Clearleft, 14-2-2013.
Bates is the creative director at *Clearleft* (clearleft.com) a web design with expertise in responsive design development, a company that created amongst others the *Channel 4* news website.
James Brocklehurst, lecturer and researcher, 23-12-2012.
Brocklehurst is a lecturer and researcher into the aesthetic experiences of new reading devices. In 2012 he published the article Tap my Drawings (Brocklehurst, 2013) on the position of illustration within new reading devices.
Matt Curtis and Natalie Lees, art director and inhouse illustrator, The Times, 13-2-2013.
Curtis is art director at *the Times* newspaper. He was the designer of the magazine Eureka supplement to the Times, where he applied new ideas around using and creating info graphics. Lees is the in-house illustrator and partners many of the projects of Curtis.
Andrew Coningsby, owner and agent at Debut Art, 13-2 -2013.
Coningsby is agent and owner of the Debut Art illustration agency, who has been representing illustrators worldwide for more than 50 illustrators, for a

wide range of high-end assignments, amongst which many magazines and newspapers in the UK and US. Debut Art has been representing illustrators for more than thirty years. At the same interview I also spoke to three other representatives of *Debut Art*: Jonathan Hedley, Sam, and Rhiannon Lloyd.

Andrew Diprose, art director *WIRED* Magazine and iPad edition, 15-2-2013 and 16-2-2015.

Diprose is the art director of *WIRED* magazine and iPad edition. He has a longstanding art direction career and in many of the magazines he worked for he employed illustration. *WIRED* is known to be on the forefront of magazine design for tablets but is also know for its wide application of illustration.

James Fenton, freelance digital art director, 6-12-2013.

James Fenton is a digital art director, taking the role of art direction into the realm of the digital communication product and working for many educational publications. His article *<img>s are content too* (Creative Bloq, 2013) pointed to importance of illustration within digital publications.

Han Hoogerbrugge, lecturer, artist, freelance illustrator, 21-12-2012.

Han Hoogerbrugge works as an editorial illustrator, video artist and lecturer at the Rotterdam academy of the Arts in the illustration department was one of the first Dutch artists, illustrators known for his online illustrations and also as the illustrator of the online graphic novel *Hotel Neurotica*. He was one of the regular contributor of the online visual commentary page of the *Volkskrant Oog*.

Andy Hume, web architect, Guardian, 31-10-2012.

Andy Hume is one of the web architects working on of the Responsive Design Structure of the website and other platform design at the *Guardian*.

Harm Ikink, freelance science writer, web journalist and blogger, 19-10-2012.

Ikink works for a popular online Dutch language science publication *Kennislink*, where as a contributing journalist he is required to supply the images with the articles and upload article and image to the CMS system of the magazine.

Simon Ings, art director, ARC Magazine, 18-01-2013.

Ings is the editor of ARC Magazine a hybrid bi-monthly magazine, previously online only quarterly. The magazine is about future fiction and fact, made by the same people as New Scientist and the use of high-end illustration is its trade-mark.

Nicola Jennings, in-house illustrator, 21-12-2012.

Jennings is cartoonist and in-house illustrator for the *Guardian*. At the time of interview she was exploring new ways of developing cartoons for digital media context.

Matt Kenyon, freelance illustrator, 02-10-2012.

Kenyon is the illustrator of the illustration on 'Fracking' presented as the case study in Chapter 4. As editorial illustrator with a long-standing career at many known editorial titles, amongst which the Guardian for whom he has worked since 1998.

Max Kisman, freelance illustrator and graphic designer, 21-12-2012.
Max Kisman is graphic designer, illustrator and educator and has a long career which spans the development of digital graphic design and online visualisation. He works for a wide variety of media and explored possibilities of visualisation software, programming, but also *simple* drawing and editorial illustration. He was one of the regular contributors of the online visual commentary page of the *Volkskrant Oog*.

Jeremy Leslie, blogger at Magazine Culture and art director, 14-02-2013.
Leslie is the editor and main contributor to Magculture.com, a blog about editorial design, Jeremy has twenty-five years experience of magazine design, and has written three books about the subject.

Sarah Marshall, freelance digital journalist, 14-12-2012.
Marshall is a journalist with a specialist interest is in online journalism, and a broad media background. She works for an online editorial web magazine and blog on online journalism, as well as leading the *Brighton Meetup* group: *Hacks and Hackers*- on the dialogue between *new media* and old media.

Dominic Minns, creative director Plugin Media, 23-11-2012.
Plugin Media (pluginmedia.net) is a digital entertainment company, which creates such as games or knowledge websites and apps to accompanying children's TV series, amongst others for the *BBC*. The creative director, Minns has an illustration background and the work *Plugin* does is most often based on the use and language of illustration.

Dimitri Nieuwenhuizen, director LUST, 21-12-2012.
Nieuwenhuizen is one of the founders of *LUST* studio and *Lustlab* (lust.nl). *LUST* is a multidisciplinary graphic design practice established in 1996 by Jeroen Barendse, Thomas Castro, and Dimitri Nieuwenhuizen, based in The Hague, Netherlands. *LUST* works in a broad spectrum of media including traditional print work and book design, data-visualisations, and new media. *LUSTlab* researches new pathways for communication design where new media, information technologies, and graphic design overlap. *LUST* was one of the contributor of the online visual commentary page of the Volkskrant *Oog*.

Mariana Santos, visual designer, Guardian, 6-12-2013.
At the time of the interview Santos was the only visual designer in the interactive team at the *Guardian* online. Mariana developed many interactive visuals and projects. She is also teaching students around the possibilities of new media storytelling.

Tobias Sturt, Design Manager of the Guardian Digital Agency, 9-07-2014.

Sturt, together with Adam Frost, is responsible for the majority of the data visualization at the *Guardian*, but also for external clients. He critically follows the developments within data visualization at his blog: ruritania.co.uk as well as leads master classes and workshops around data visualization.

The following transcripts have been edited to the relevant parts of the recorded interview. The text omits expressions, pauses and sounds and where needed, spoken language is structured into written grammar to maintain clarity. Words and Phrases within square brackets are added, or replace non-defined terms for contextual accuracy. The time codes refer to the location on the recorded sound file.

5.1 Interview Matt Kenyon

Date: 02-10-2012
Files: matt kenyon-01/ matt kenyon-04
Duration file matt kenyon 1: 7.50 ; matt kenyon 2: 17.18; matt kenyon 3: 10.06; matt kenyon 4: 4 3.46.

Matt Kenyon is editorial illustrator and the creator of the Fracking illustration presented as the case study in Chapter 4. He is an editorial illustrator with a long standing career at many known editorial titles, amongst which the *Guardian* for whom he has worked since 1998.
His insights and experiences are important to contextualize the case study based on his personal experience, practical knowledge of the work and the (online) *Guardian* as a publishing environment.

01

0.33 MK: I started working more expressive, but to be more consistent to address the briefing week in week out, I started to work more tighter to address wider variety of subject matter, drill down to the essence, and not be restricted by styles specificities or limitations.

0.52 MK: There probably is a future for illustration on the web, though there isn't right now. The editorial websites we have are very strong opinionated content, but might not want the type of illustration that is part of a site with different writers with different ideas, where you are asked to come to it with a fresh outlook every time and accurately try to reflect what they are trying to say. Most websites have a very one-dimensional view, which has almost more like a corporate identity, even though they are very small. They might want something more like corporate illustration, where they have an idea what they want to sell about the company and they find an illustrator that best matches the message they are trying to sell.

02

0.33 N: If I buy the Guardian, I buy into an identity as well, but you are saying I buy into a political colour, but its not as strong or dominant as you would see on websites.
Small or corporate (or political party websites) have an interest to be strong and consistent to find their niche. They need to say something that has not been said somewhere else, because that will get the audience and the advertising. Where newspapers traditionally have a bias, they need to address a wider audience.

4.00 N: So you are saying, on the web, the sites you visit, illustration is

more window dressing and less idea, because the idea is already strongly present.

MK: I see what you are saying, but I don't know. Images are off course be powerful things, they might not be used as window dressing, they might be more like the kind of sledgehammer repeat the message over and over again- corporate kind a way, to reinforce the message. But maybe they wont be used within pieces, but as kind of headlines or banners. That's just the way I see the web going.

5.35 N: How long have you worked for the Guardian?

MK: Since 1998, I pretty much always worked for newspapers and trade magazines. Within a year and a half I got my first Guardian job- starting at the problem page, which was much more expressive. I move where I'm getting the work.

6.14 N: How do you work there?

MK: The first person I worked with was Roger Browning, who was fantastic. Then I covered for someone, then four, five years ago I got the postage stamps on the comment page, three or four a week- tiny jobs, but brilliant to get your mind going.

At that time there were approximately 25 illustrations per edition. Now there is four or five. And that's for a paper with a tradition in illustration, that's a real reflection on what's happened across the board.

7.50 N: How do you see your role there, why do they call an illustrator rather than use a stock image or a photograph?

MK: I'm not sure, but to be brutally honest, I don't know how much it would affect their circulation, if you stopped using illustration. But if I were the editor or the sup [supplement], I would use illustration because you get a much more targeted, thoughtful and relevant bits of art or image for the piece. As an editorial illustrator, always look at what they are trying to say first and illustrate that, that that's what you do.

02

2.21 N: what is the commissioning structure at the Guardian?

MK: When I came out of college in 1998, Hull, I had a different style, expressionist, in the style of George Grosz, pieces in supplement, in society bits. To start with I would always work with Roger Browning or his sub [sub-editor]. The editor would ring me around 12 to have it by 5.30/6. They would give me the dimensions but they were very open-minded, didn't even want a sketch and they trusted you to do it. The finished article would be the first thing they saw.

2.58 Any editorial illustration is boiling down to one or two sentences what they are saying and illustrates the most important aspect. But with the problem page, nice out of ten would be the same problem,

with different circumstances surrounding it. Week in week out, making something different is very difficult, that made that the work had to become more expressive. So I could do something different visually. Even though conceptually it was broadly the same.

3.55 There would always be separate entities within the Guardian, so there would be different people commissioning me. Some people in the main paper figured out I could work to a very tight deadline, so I would get more one-day commissions. Until last year, I had a slot in the society magazine, till they chopped half the pages out, those deadlines where much longer and I could do it over the weekend.

5.09 You do have to be careful on certain subjects, which you figure out as you go along. If you have a very clever idea, sometimes you have to hold back a little bit, not to go with that and do something a little blander.

6.40 N: is the illustrator a bit like the ideal reader?
MK: true, that's what attracted me in the first place, rather that make a piece of fine art that needs to be put on a wall. I'm much more comfortable in a subservient role, reflecting somebody else's ideas, even though there isn't a sort of element of artistry to it I guess

7.49 N: do you feel you are reflecting the author?
MK: I kind-of do, always through your prism. I think five years ago I would have said I reflected the concept. Reflecting what the author is saying is much more important than everything else. That should fall by the wayside and serve this one, what ever you are trying to say. That's still the most important consideration, though doing something that looks nice is quite important as well.

8.48 N: How would you describe the 'looking nice'? How did you apply that to this [the Fracking illustration]

9.23 MK: From the start you get a feeling for what will be the difficulties of the illustration. Will it be accurately representing what you are trying to do visually or are you actually going to make the illustration look any good. And in this case it was definably going to be the latter because I was very happy with the idea and the concept. It was just a case of getting it to work. It wasn't the most comfortable illustration in terms of getting it to fit. Visually it was ok, but concept and visuals did not mash beautifully.

10.14 Sometimes when I have trouble with a piece or if it has two conflicting messages or if the main point or headline is unclear, I might ask the editor for some clarity. And sometimes they don't even know and might be quite flippant: 'just do something about energy'.

11.40 N: A photograph in this situation would have been impossible.
MK: This is the case for a lot of opinion pieces that is difficult to source.

12.16 N: Do you know how it's going to sit on the page?
MK: its pretty much always in the same place now. When they moved over to the Berliner Size, five or six years ago before the content layout would be different week-in, week-out, but now they got a much more formulaic setup to it.

12.53 N: Do they ask you to make one for the website?
MK: yes they do. I know what size it's going to be. That means now I work to a much larger canvas, try and draw the elements as independently from one another, as I possibly can, and then, if I have the time and if it suits, it I can move them around. But within five or six hours that's as far as it gets

13.37 N: How do you work?
MK: It depends, sometimes in Illustrator, sometimes on a Wacom tablet straight on the monitor. I no longer scan stuff in, but really within the time frame, what you make, has a lot to do with the physics of the situation rather than anything more profound. The web version probably adds an hour to the whole process. So that you are thinking about both formats the same time and than maybe another half hour to finish the web one.

14.59 N: Do you start thinking print first?
MK: yes, I frame it for print edition first. About a year ago the sub told me about wanting two versions. I asked which version should I send first; the web one would be first, rather than the print version, because web gets out before print.

15.47 N: There are two different deadlines?
MK: No, but there is an option to send the web out first. But I also got the impression that they were thinking about the web version as well, that what they wanted to concentrate on. She didn't say as much that the web version was more important than the print version, but that was a sort of underlying feeling I got. Although I still frame the print one first.

16.32 N: Do you get commissions for both or print only at the moment?
MK: yes, I never had a commission for only web version.
I only do this slot for the Guardian right now, so it's always both. But I think it depends on your slot.

17.18 N: do you ever consider, shall I make my character jump or move?
MK: No I haven't, though a few years ago there was some talk about that. I did do some really basic animation a long time ago for a website, some animated illustration really. There was talk about it for a special edition, online you could then see them as moving

images. I don't think I've ever seen it.

03
00 N: How do you feel about the look on the website?
MK: I don't think much of it, they have to accommodate a variety of things going into that slot. But with I-pad/ phone more people might be using that stuff that format might better suits illustration.
N: Why?
MK: If you look at the BBC one, it's all one big images with tiny bits of text. As a kind of feed-in to the main story, that could work very well for illustration. Because on the small screen you don't have the resolution, more reading space for a lot of information and a strong editorial image is a good way to get into it, get into the meat of the piece.

1.53 Even outside the website other kinds of illustration seems woefully underused. Someone seems to have decided that a nice big photograph that doesn't really mean anything with a strapline and a logo sort of makes a website. That's what you see when you got o a multinational, or a tiny company that tries to look like a multinational. That's pretty much what they do.

2.33 N: I spoke to Roger Browning and asked why there was a reduction in illustration use? There is a lot of stock photography used, but not stock illustration- if it was a matter of time and money? He said illustration has to always be custom made. Maybe this was his attitude, but I found it an interesting notion that you can 'slap on' a photograph of a smiling woman with a headphone on- almost like an icon, but you cannot do that with an illustration; it has to always be tailor made. Does than illustration signifies the special quality of the piece it accompanies?

4.17 MK: that could be part of it. Photography has become something of a counterpoint to the text or to provide a little visual interest and that's it. But on the paper, having an illustration on the comment page tells you immediately that it's a comment piece you are looking at and that's a big part of it. If it was photo it might be understood as 'just' another news story

5.07 N: All illustration has disappeared form the I-pad edition. Why is EI not happening? Why are screens less happy to present illustration? Why is there a reduced interest in illustration?

6.04 MK: it might be technology. I do build websites as well, so I understand the technology, determining the content and where what goes what: I-pad/ I-phone might not be properly be differentiated. So there is just a duplication of content for both – but I don't know.

7.25 MK: iPad should be considered as an extension of the desktop where

the dimensions and resolutions match best. Now there is a responsive design system that can calculate what goes where or even gets dismissed.

10.06 MK: imagine a Facebook page with article after article and some have stock images that you expect to see everywhere One of them could be an illustration, then what stands out? What would you pick? The illustration signifies that it is something more important –it might have something to say. It is the symbolism of the illustration more than anything else.

04

2.55 MK: Ten years ago the Guardian was much broader in its spectrum and opinions in its voice, but they are now looking at the strength of the Daily Mail and want to be more defined in what they are going to say their stance, their message.

3.46 I think they are taking their cues from the web, which I personally think is a mistake. But being a broader church is better for us readers.

5.2 Interview Tobias Sturt

Date: 9-07-2014
Files: tobias sturt1
Duration 54.27

Tobias Sturt is Design Manager of the *Guardian Digital Agency* and lead data visualisation. Together with Adam Frost, he leads the design agency that is responsible for many of the data visualisation at the *Guardian*. Next to the regular commissions from the *Guardian, Digital Agency* also gets commissioned by other clients. Sturt critically follows the developments within data visualisation at his blog: www.ruritania.co.uk, as well as runs master classes and workshops around data visualisation and related subjects. Sturt's expertise and experience, offers him an informed perspective on data visualisation, the role of illustration within data visualisation and the distinction between the two fields. His position also gives him deep understanding of the relationship with visual storytelling and the influence of new media technology on visual storytelling and data visualisation.

This interview also presents his feedback and valuation on the working model of the data-driven illustration and main case study of the research project: *100 Working Mice* (for details and analysis of the research project see Volume 1, p.127- 135, and Volume 2 p. 54-73).

TS: Tobias Sturt (interviewee)
N: Nanette Hoogslag (interviewer)

3.48 TS: Digital Agency, we exist to make Guardian expertise available to clients, this is around technological innovation, design, visual communication. It is really about the client request- the communication bit in the storytelling, expressing the stories visually. How you take whatever it is, the annual rapport, the study, the sales figures and get that communicated to the right audience. I'm head of creative – I'm in charge of the designers and the front-end developers, those who do HTML and JavaScript- for developers. I don't design myself, I get first contact and define the approach. I work together with Adam Frost head of data visualisation. He is more about the data story part.

6.25 What we are doing is always storytelling. We teach the master class of data visualisation, we stress that it is storytelling. But I'm starting to use the word scenario rather than story; it's a stronger word. Alberto Caro, he devises things into annotation, narration and story,

as an editorial voice on top of data visualisation.

7.23 Data visualisation assumes an active reader. When you set up a scenario that is more open, its inconclusive. You set up a start of a story, but the audience is obliged to finish. I like it because it used to be the word used for silent movies, again description of something acted out, because in this case the audience have to complete, because the movie is silent.

7.49 N: as a reader you are asked to draw the conclusions.
TS: But it's one of those things that make it so engaging, having to do that work you are part of the story and the experience becomes collaborative.

8.33 N: is the agency in the question mark?
TS: yes, what the audience fills in. It's like with comics where the reader fills in the gaps, across time and space, it's the same level of engagement, closer to the editing than to the written word.

9.07 I talk about storytelling as in creating meaningful structure. Story, in its traditional sense, is about cause and effect, it's about characterisation, but essentially about events happening in an order, and that order creates a meaning for the audience. That is also true for the bar chart.

9.47 The moment you chart something you are to some degree telling a story. If you choose to chart data over time as a histogram, instead of a line chart, or an area chart you are varying the meaning of that story. Line charts connect all the dots together and create causality, where a scatter diagram does not that only creates a pattern; these things are never just a chart.

10.47 N: story implies an editorial decision.
TS: Adams definition of story is about selection and emphasis; selecting the thing you wish to emphasise and then create order.

11.25 TS: we tend to get data sets delivered, but even so, you start by investigating the data with a question, why else do you start to ask questions. But when you look you might find something different. The story must always come from the data. Edward Tufte, not sure if it really was him that said that, 'If you torture data long enough it will tell you anything'. ["If you torture the data long enough, it will confess to anything" quote dedicated to Ronald Coase[1]] We force it to tell stories, but really it needs to come from the data itself.

12.25 But if you approach a data set you will already have stories, it starts from the point of view of story.

12.50 N: how do you work with believability, when you start with an editorial interest?
TS: It depends on the job and the audience. A data visualisation

1. Cited in: Gordon Tullock, "A Comment on Daniel Klein's 'A Plea to Economists Who Favor Liberty'", Eastern Economic Journal, Spring 2001.

works as a poster, as a talking piece from which to create stories, but it requires the audience to have particular knowledge. You need to have an invested and interested audience. Otherwise you need to walk the audience to be given a much more walk through narrative that can equally hook you in.

15.42 Challenge the audience but also resolve it with a summary.

15.52 When you talk about info graphic it is much more like assembled panels, again referencing comics, you laying stuff out, establishing a visual language with contrast, directing gaze, and you stay a lot closer to the number in a circle, which I dislike. But you are much more incorporating visual metaphors.

17.00 The comparison of food waste to the pyramids, you do a stack of food next to the pyramid, we then add a comic camel that scratches its head, a comic element.

17.44 But on the data blog you are not doing that kind of storytelling work, you would do a bar chart- favouring purity and legibility.

19.27 The platonic ideal is a visualisation that allows the data to tell its story, in a way that it's both clear and acute, but also visually appealing and interesting. You need to do the job of illustration and the job of statistics, and this is almost always impossible and you have to trade of. Hans Roseland quote: "you need to be tabloid upfront and national academy of science behind", that's the choice.

20.31 Sometimes the story is too important and might need to be boring in its expression; this is an individual decision time and time again.

20.53 There is a lot of debate about storytelling and the statistical end does not like it at all. This is a problem for them because this is a creative decision and there are no rules for it. There a few rules, but they don't work.

21.24 The problem lies that data visualisation is used for two things and illustration is possibly a good comparison. If you think about medical illustration: for a medical textbook or a newspaper, they are two entirely different things. Data visualisation for analysis is vital and important but its completely different form data visualisation for communication.

23.28 N: In big data, who ever writes the algorithm writes the story.
TS: The Boston city government who developed this app for smartphones, which uses the accelerometer as you drive around Boston, it detects potholes and alerts the council- and then they come out to fix the potholes. So the streets in the rich areas of Boston, where people that have smartphones, are well repaired. Where people don't have smartphones, streets are unmonitored and forgotten. This app fixes things for people with smartphones.

24.00 N: The narrative is then not in the data but in the data mining. And coders are the key holders.
TS: They are the unacknowledged legislators of the world.

25.29 As with all communication facts the ethical impact is part of it. Statisticians are so carefully trained they are about the rigor and this is wrapped up with their profession. They understand when they manipulate data; it's the designers I'm more worried about. Designers will do things because it is beautiful, not because it is honest.

27.08 This has two imports, are you trustworthy at all, if you are Glaxo SmithKline doing a factual info graphic about headache remedies, who is going to believe you? Unless you see that the data comes from the world health organisation and you just sponsored this. And there is also that voice, if you are a commercial entity, you have a different voice from a NGO or government body. The public will read it in a different way and expect you to be saying it in a different way. Sometimes they get it wrong like in this Danish YouTube advertisement to get young people to vote for European elections[2].

28.25 N: Do you work with streaming data?
TS: Corporate dashboard kind stuff like twitter, vice etc. And third party sentiment analysis that just doesn't work.

29.05 Streaming data is getting better because people are getting much more open, almost everyone is prepared to open up an API to open up what they have. Because it doesn't diminish your data if you have third parties working with your data. But every data form seems to have their own format, and every format seems to change all the time and Twitter and Facebook change their format every five minutes. So they can be tricky. It's the fire hose, the amount of data is so huge and then the problem of visualising is a problem.

30.40 An example is Bloomberg billionaires visualisation[3]. Its an illustrated ranking of billionaires, it's a traditional dashboard, plain simple charts with the variability of the data and all you are doing is data art, and its less readable but less beautiful is the other approach. But they have done something quite interesting which is they have illustrations of these people and their heads move around, which I've never seen done before because these figures change every day.

31.45 A notion of scenario is interesting even when you produce an info graphic that is locked in time- duration, time, temporality and so, is big in your mind. And the work is only valid for the moment you publish it.

2. theguardian.com/world/video/2014/may/13/danish-parliament-cartoon-sex-violence-european-elections-video
3. bloomberg.com/billionaires/2014-07-11/cya

32.24 It should say this in the title and the sources. Bloomberg billionaire info graphic says this is now all the time.

33.22 Every one is ranked by their net worth but the figure they show is how they lost yesterday. That's the story. That's the brilliant choice because that's when you are hooked and you want to explore more.

In response to the presentation of 100 Working Mice

43.10 If you think about one of those photosets you get with an article, in the *Saturday Guardian* about lifestyle thing, about work life balance. They would take perhaps photographs of people at their desks. Slightly staged but slightly real. Genuine people, you have a little pull out and a side panel with their daily routine. That's the kind of area of editorial where it [100 Working Mice] sits. There is data there that is factual, but its illustrated and its been crafted to become more meaningful and more interesting and entertaining, I'm enjoying seeing the mice coming in and out. It sits in that editorial illustration place, but it sits, in the same way that a political cartoon or a photo essay would sit.

44.44 N: Is the live data aspect important in this?
TS: you could have animated it, even based on all the data and still be factual. The real-timeness, what it does I suspect, in the equivalent of a magazine article, this would sit on a webpage with an article, or on its own. This is kind of an article in itself. The audience reaction would I expect be puzzling out what everything means in the visualisation, reading the tweets than the realisation of real-time is probably the last thing the audience does, but what that means is that they might come back at lunch break to have another look and it becomes a living relationship between the audience and the data through the visualisation. I think.

46.28 All storytelling is interactive, because storytelling is connecting with your audience. All data visualisation is interactive, because you have to guess what your audience is interested in, as you become more interactive and more real-time that collaboration with your audience gets deeper. So if this would be able to start in real-time, and you were able to track back in time, throughout 24 hours, than that engagement gets higher, because the audience themselves are able to tell the story though tracking back. And it becomes a decision about how do you want to tell the story, should they also be experiencing this in real-time, or, if they come to this as an article, or a news story, which might be a single head and allow them to go back 12 hours, and they see what detail are happening. It's about how you take that relationship.

48.37 In these kind of works you need to think about how to maintain the relationship and think where it goes.

49.00 So you can click through to work stress data or articles about work stress and use the *Guardian* API to pull in a stream of information about work life balance. It becomes a gateway to the data and it's about getting people interested, informed and so they are equipped to deal with the dataset themselves. Because the data visualisation is the storytelling and the data has more stories than you can visualise.

49.51 One of my recent catchphrases that I'm trying out is that all data visualisation is cartography, a map is not the territory, but it opens it up. With a map the world becomes open. That simplification, ordering selection and emphasis goes into data-visualisation. It is about creating a portal to a world that the audience goes on to explore.

50.39 N: Are there people that cannot read data visualisation?
TS: Yes, like there are people that cannot get commix, cannot get one visual after another.

51.28 N: Do you see potential for this type of work?
TS: More and more. It has such a unique power. I'm bias, but I'm convinced that visual storytelling has a unique immediacy that pure verbal literature cannot have, and pure visual cannot have in terms of connecting people to information, especially around factual information. It is so good at that. That's why we see the rise of so much data-journalism. It opens up the world to the journalist in finding stories they would not otherwise see. It opens it up to the audience in a way they possibly never seen before. But it means that there are more and more and people will get happier reading it and get more confident and educated in reading it. They gain the visual language to process it.

53.00 So the potential audience grows, the potential subject grows were at the stage now, where data visualisation used to be about sales figures and government data. We're now reaching that stage when commix reached things like maps, that point in the seventies post the underground explosion where you could do commix about anything, were in the same position with data visualisation. We can now use that language to talk bout all kind of trivia. But the fact that it is possible, that it is on bookshelves and people are buying it, that language is there and people are happy with it. So more and more there is an audience, a means and a language. It no longer needs to sit in one place online. You no longer put things on a website and they stay there, it gets passed around. It's out there.

5.3 Interview Andrew Diprose

Date: 15-2-2013
Files: wired
Duration: 54.07

Andrew Diprose has a longstanding career as art director. Ever since the first edition he has been the art director of *WIRED UK*, print and iPad edition. *WIRED UK* is on the forefront of magazine design and is known for its particular vibrent and prolific use of illustration. The illustrations commissioned need to be considered with the dual position within print and tablet (including online) publications. This interview discusses the points of view of Diprose on media transformation, the role of illustration in print and on tablet and the particular use and process of illustration for *WIRED* editions.

AS: Andrew Diprose (interviewee)
N: Nanette Hoogslag (interviewer)

1.48 AS: Since the launch of *WIRED UK* in 2008, I've been at *WIRED* design and art direction. From the start I've been commissioning illustration as I have done in other places. For us *[WIRED*] illustration does stuff that is difficult to visualise or difficult to understand and makes it more palatable. Because a lot of what we do is theory, brand new and highbrow. And a lot of what we do, with photography and illustration in *WIRED*, makes things that are quite, not so much, heavy going, but serious and often complicated, fun and easy to digest for the reader.

2.248 It makes it visually stimulating, fun, it's a magazine full of energy. Also we use it to make things that don't exist in a material sense, a concept, or hard to understand, easy to understand for the reader, and that's our place for illustration.

3.36 N: And it works?
AD: Illustration works. We use especially for written pieces, where people are talking about an idea, that people are not familiar with; it lightens it [the text] up, for columns, like you would do in a newspaper.

3.57 *WIRED* commissions a lot of illustration compared to GQ, Elle, it [illustration] is part of our DNA.

4.25 A couple of years ago we started to do the iPad. What we had to think about is how to use the same illustrations, when we moved to digital publishing for the iPad initially, now the iPad 1 and 2, the iPad retina, iPad mini, Kindle Fire 1 and 2, and Samsung Galaxy, those

are the tablets we are on at the moment. Now [digital publishing] is a big part and readership is going up on these devices.

4.55: There will be a time soon when it will be a quarter of our readership, which is massive, considering that these things have only been around for a few years. It is still early days, what people will be doing with this.

5.10 How we have integrated things has changed already. We have started to ask illustrators, they are expected, to work over time, so it is animated, or we will take it apart to work over time. The animations that we do are doing at the moment are quite simple for tablet editions like a little gesture, or a perpetual motion, a blinking eye, and a wheel going round, is really nice eye candy for the reader. In the beginning there was a lot of throwing in the kitchen sink, everyone wanted to do bells and whistles. But there was also this need for readers to download the magazine quickly, so the more you were putting into it, the bigger the file size was an issue.

6.20 Also it became very tiring as reading experience to have so much going on, animations, video's animated headlines, and other things moving. This rich media was getting in the way of how people were reading it. Over time we pulled back, so it's a little bit lighter, quicker to download, but the files are still 500 MB, still very large. For the retina iPad [the files are] 500 MB, for others it is around 400 MB.

N: I tried to download an edition this morning, but failed in time.

7.00 Yes exactly, People get frustrated, because it takes too long to download. Soon we will do one edition that is flat again, just pdf, no enhanced buttons or animations. There is that school of thought again. But still readers seem to really like to see something moving.

8.02 AD: We do not want frustrations, for instance sound we cut those out. Sound would suddenly go on, on the headphones, or when readers were in the train and they would get embarrassed.

8.26 There might now occasionally be a little Easter eggs[1] hiding, but we don't want anything to happen without the reders being, kind of, aware that it might give sound.

8.57 Animations within the magazine are not films running within the app, because of file-size, they are individual frames. Very old school, like a flipbook.

9.12 N: like an animated GIF[2]?

AD: yes, they would play frame 1,2,3…9 and then stop. Then it

1. An Easter egg is an intentional inside joke, hidden message, or feature in a work such as a computer program, video game, movie, book, or crossword puzzle. (wikipedia.org)
2. A GIF (Graphics Interchange Format) file is a bitmap image format used for Web images, because of wide support and portability. They have the ability to support movement: the moving GIF image is often referred to as animated GIF.

would only play the last 3 or 4 frames on repeat, if it's very small, something like that. That's how the team put it together now, play individual frames and it can be inside the app. They are looped images. Films and stuff like that are taken out to a server, so that people have to be connected to WIFI to play them, everything to get the file size down.

9.47 N: So there is a dual way of reading the *WIRED*, online and off line?

9.57 AD: Yes, I think there are also people that are interested in something flat and unfussy, quick. You might not be in a position to download, skim through it and things flatten out for that. The magazine is still bought but we do put a lot more effort into the enhanced.

10.40 N: There is a lot of reformatting to be done, before you get something out?

10.45 AD: Yes, obviously the pdf is just done by production. [On the iPad] it is squeezed, you have to pinch and zoom and it's not really a great reading experience, when you read something that is designed for a magazine and it is now much smaller. But some people like that kid of thing.

11.08 But designing it and redesigning with the enhanced content it is a lot of work. We have a separate team dedicated for the tablet. Some magazines have a whole integrated dedicated art department, but on *WIRED* at the moment we have a team that works on the print and we have a small team under my responsibility. Another team does the tablet edition, they spent the whole time thinking how to make the [tablet edition] good. They think about how to make the films best and how to do content. They liaise with the print designers, when they're commissioning illustration. The structure is: Me, then two people in the photo department, a deputy designer and I oversee three tablet designers. They liaise with the designers of the magazine and above is the editor.

13.10 N: So for the May edition, how does it work?

13.14 AD: [omitted extended description of editorial process up until the process for illustration at 13.39]… the tablet designer wants to know what will happen with the feature, I [Diprose] say 'I'm thinking about doing that', and they'll say 'can we have the details?'. They will be in touch with the illustrator, or who ever does the infographics. And they will say 'Hey, we're running this flat in the print magazine, but we really would like to have this moving for the [tablet]. Can we have a talk about how we might do that?'. The person might say: 'Oh, I really can't do that, I really struggle with that.' Ok, fine, we might do [the animation] in the

house. ‘Can you supply me a layered file? Like a Photoshop or whatever?’ We would take the individual elements and we would get an animator ourselves, to animate what you’ve done, your artwork’. Or, ‘if that’s not possible at all, it would have to run flat’. Or, ‘Can you do this?’ and quite often, now, we find, since they [the illustrators] are in a world where they view things on tablets, they want their work to look good, they will animate it themselves and send it back as a GIF. And then the iPad team would put it together.

15.20 N; Do you think print first?

AD: we used to think print first, now we think ‘good for both’. But it might not always work well for both. Sometimes something can look good on a spread, but does not work well on the tablet, just because of the format. Or the other way round, where an animation cannot be seen in print, we are really trying to think over both at the same time.

16.15 N; So how do you work over all the digital formats?

AD: One is the ‘hero’ device. The retina iPad is the highest quality rendition of the tablet editions, because it’s fast, we work with the capabilities of the machine. So the retina iPad has beautiful screen. Backlit often looks better than print; RGB colours are more brilliant than CMYK, though [on screen] we have no fluor colours, it looks amazing in screen colours. The iPad is fast, you go down to the Kindle and it is less quick or capable. So quite often we will have to run things flat, because we don’t want to get in the way of a good reading experience.

17.45 AD: say if we had an animated drop cap[3] on the top of the page, for instance: A massive ‘R’ that draws itself, you need it to read on as part of the reading experience. We would do that with confidence in the iPad, we would not do it on the Kindle, because if it didn’t load, somebody is missing part of the reading.

18.35 N: there is no automatic process that adapts the design to each format?

18.17 AD: each design is tailor made. But we try to nail it down to two design formats, the 10 inch and the 7-inch, than we add black bars (The Kindle or the Kindle HD) for sizes that are slightly over. So we design for two devices and then consider the illustration separately for what these are capable of. This is a huge amount of extra work.

20.50 N: *WIRED* has a name to uphold in technology. That’s its feature and its problem?

3. A drop cap is the initial letter of a paragraph that is much bigger than the rest of the following text. The visual effect is that letter “˜drops down’ to cover the few lines following the first one.

21.06 AD: *WIRED* has to 'be there' in terms of technology, that's part of the brand; we are the guinea pigs. We were the first people who were doing development over here. *WIRED* America were the first to be published through Adobe Digital publishing software, we were the first on the Kindle Fire.

21.44 When I look back at the early issues there were lots of mistakes, that kind of thing. We've learned along the way. I think it's a responsibility we have to do. *WIRED* has to be there, trying out new things.

24.16 N: How do you see the design of *WIRED* moving on?
AD: Now it is about being clever in the design, considering the reading experience, more intuitive, easier to navigate. And compositions based on this reading experience, rather than jazzy colours or fonts, simplify.

25.15 Every few months we slightly change and alter, and we've come to this time for a rethink. We got a new member of staff and that's a good time talk about what we do with design, to change and develop a new way of thinking.

26.03 With the tablet we have the size of the screen but there is nothing to say that you can't go five pages to the right or five down in a stack, Why must we put a lot of information in a very small amount of space, when we've got as much space as we want, within reason and the size of the file? Showing pictures big, not crushing down information text, let stuff breath; size is now up for question. In print we had a limitation, we can now do 20/24 pages down. On a Kindle you can go 40 pages down. So than you got to consider, how far the reader wishes to go 'down' into a story?

27.18 N: Do you still think in terms of reading or do you think in terms of users?
AD: The way the people use [the tablet] is important, how they navigate. But *WIRED* is still a lot about words on a page, that's really important. Think of the readability on a phone, how many 1000's of words do you want to read on that device. How does a font look, how big is it, how is the device held in your hand? Readability is a real consideration for me.

28.33 N: Should we select what [device] we design for?

28.25 AD: No, people may want to read their mag from a smart TV, or other platform, that we have to keep in mind. What we will consider in the future that it is less about a papery magazine. It only going to be more and more about different devices. But we tailor *WIRED* as a brand, knowledge base: *WIRED* life, *WIRED* conference or *WIRED* consulting arm. *WIRED* is becoming a brand and needs recognisability, people can use of it whatever

they desire. But *WIRED* stands for a certain look and feel and quality of content.

35.21 N: Do you use interaction with the illustrations?

35.26 AD: We only occasionally have interaction with the illustration, but generally the image moves and that's it.

36.05 N: Is this a decision?

AD: We would like to do more, it would be fun, but we are not making a comic. There are things within illustration, like stylistics and aesthetics, that have loads of unspoken little rules, and we know when they are crossed. So we [stop at] if they get too 'throw away', or too jokey, there might be a place in the 'how to' section, but not in the 'ideas' section. But the other thing is the financial side, we don't have the money for too many complex things, we need to consider size, cost, memory size.

38.00 N: How do you consider image use in web environments?

38.02 Images, photography and illustration, showing them of well is important, they are valued. If I could, I would never run a caption on a photograph or illustration and I don't use cut in run around, I want the image respected. That's part of *WIRED*. How big they show and the relation to the copy, but we are restrained by a column width of the device. You only got a small space to work with. Things like illustration help to break the long column up.

40.41 Technology does force a different layout.

N: Does this influence the commission?

AD: No, only the size is of influence. It's more about the possibility, like animation. There are more and more people looking at the work on screens than in printed magazines.

42.32 N: Is the illustration still about the instance?

42.35 AD: It is still about the instant; this is still the utmost importance. The maximum we create are 4 to 5 seconds, these illustrations are not little films, they're enhanced illustrations. But we're always constrained by the total amount of file space we have.

45.16 AD: For us the screen is king. We like a lot of detail, hyperrealism, and dense blacks. Our print design is not really translated to tablet. For instance we do not put dots or arrows, or double arrows on our screens, this might be confused for buttons, so we need to think about how this translates.

...But my main consideration is to the absolute best, visually, for what we've got.

5.4 Interview Andrew Diprose 2

Date: 19-2-2015
Files: andrew diprose 2
Duration: 31.19

In a second, much later, interview Andrew Diprose art director of *WIRED* was asked to give feedback on the data-driven illustration *100 Working Mice,* the main research project that is central to this thesis. It was discussed alongside an earlier data-driven illustration *Fatcat* (for details and analysis of these research projects see Volume 1, p.120- 135 and Volume 2 p. 54-73).

AS: Andrew Diprose (interviewee)
N: Nanette Hoogslag (interviewer)

Edited interview transcript

0.12 N: This is a picture of a so-called fat cat. This cat is linked to the stock market. So when the stock market goes up, the cat gets fatter, stock market goes down, cat gets thinner. If you put it in a context of a nice 'left-wing rag' that hates 'fat cats' then it immediately becomes an illustration of a story. Otherwise, in itself, is no more than a picture. It's not a fast moving picture, it's not animated as such, but it is live.

0.49 AD: It will move by small pixel increments?

0.57 N: What you look at is an image, a still image. But every time you come to this image it gives an updated illustration. The principles of moving an illustration with data is there. The illustration can say something, for instance, about the stock markets. That's what illustration is good at. The fat cat image was a start. A more subtle, more active and somewhat more complex illustration is *100 Working Mice* [*100 Working Mice*, the real-time edition is demonstrated].

2.05 This is an illustration about work-life balance, based on a report of The *New Economic Foundation*. What you see is a huge office, where these mice are working.

2.22 AD: What do the empty chairs mean?

2.25 N: Those are people that are ill, or absent. What you see is all driven by statistics and data, like the ONS, there is some stock market, daytime, unemployment figures, work pressures and remarks about work, which then colour the cells and have an

emotional load.

3.06 N: These mice, that pace up and down in front of the office, are the unemployed.

3.15 AD: That is a percentage of the national workforce [the mice at their desk], that is the workforce that isn't in work due to illness [the empty cells] and these are the people that are unemployed [the mice pacing up and down].

3.27 N: That's what you see. That's all it is.

3.30 AD: That's fun!

4.08 AD: This is taking real-time data. That's super-cool.

4.18 AD: About the *Fatcat*: I really like the idea of something that is taking data. People feel about data that it is hard and spiky; it is very 'maths'. What you are doing, is taking something that is really feeling uncreative, and a lot of people feel that about data, it's hard, its maths, its hard to get your head around and you are turning it into something almost organic, with a pencil line, which is really lovely.

5.12 I love the idea of something that looks soft representing hard data. The thing that I struggled with, with the cat was that the parameters weren't obvious. Like: How thin is the cat, when the cat is 'thin'? And how fat does the cat go when it is 'fattest'? I guess it changes, but I struggle. I would like to see a ghostly image of a cat in its thinnest form and the cat at a stock market high and when that was.

5.45 Now when you do that, you always have to add a bit of data, because you want to say the date that it happened or whatever, it would be very easy to add a number to it. I loved it for it had an organic feeling, but I didn't like it, because I didn't know the parameters, it had no scale.

6.14 AD: Where as this [100 Working Mice] seems a lot more successful, where as a reader would ask themselves, if I come to this and I know that it represents the whole workforce of the country, and I know that the people walking outside are the unemployed. In my mind I can really easily visualise, how many people are in work, how many are by proportion are out of work and how many aren't working in the office. I think that is really successful.

7.00 N: In the end it is pretty skewed. The *Office of National Statistics* would not be very happy with this, because it is not a pure representation. Which is not it's aim. It is trying to present a mood, through using data. Using data to give a sense of 'liveness', for instance at five o clock, they will all get up and go home. [N presenting a demonstration version, which shows a 24 hour cycle in 5 minutes].

7.37 AD: Will it show people working late and different hours?
N: Yes.

7.50 AD: The big question is, if you are visualizing data, whether it is a graph or whatever, you are making editorial decisions.
N: Exactly.

8.05 N: So as you can see in the background is the stock market revealing itself. The clock shows the time, speeded up. Now it is 8 o'clock in the morning.

8.18 AD: So at that time that percentage of the workforce is working and then at 9, it just rockets up.

8.25 N: There they come [the clock on demo-version is at 9.00], they all come in.
AD: Wow.

8.34 N: This can go on forever.

8.37 AD: And the colours of the light? What does that denote?

8.42 N: That's the measure of happiness

8.44 AD: And so grey I presume is less happy.
N: Yes.

8.51 AD: Does that change throughout the day?
N: Yes, depending on the Twitter-feed that's behind it.

8.58 AD: Does it get lighter at lunchtime?
N: This is the kind of thing you can put in.

9.10 AD: If people take their lunches at one o'clock, does the screen gradually get lighter or not?

9.34 N: Then you come into data analysis. Data becomes a collage material, which is what I really like.

9.41 AD: Which is what you can see here. Here you see how the stock market is building itself.

10.12 AD: I like this a great deal. I think it's pretty illustrative. It is really a long way from what I would say is regular data visualisation.

10.24 N: If you say it's illustrative, what do you mean?

10.26 AD: By illustrative, I mean that the form is much looser and you've had to build yourself a grid. This is in a way a data visualisation. But the way the characters move and the looseness of the line and the way you have drawn it, it is a lot more like a regular illustration that we would run in *WIRED* magazine. There is as much for its aesthetic properties as its intellectual properties. In *WIRED* we commission a lot of illustration that is not to visualise data, but to visualise an idea or concept, or something like that. Like sugar-coating a pill. Something that is hard to visualise or something that needs fun to engage the reader, we illustrate. For data visualisation, it's sugar-coating the pill even further, because it's harder information for the reader to digest. But the way we

normally approach this, is in a semi-scientific looking thing. The way we treat, what I would call, regular illustration, is for its aesthetic properties. Be easy on the eye and draw in and engage the reader.

12.02 I feel like this is much further over in that camp than traditional data- visualisation.

12.08 N: It tells a story and it visualises a layer of believability of the story, but it's definably skewed. It's saying here are some poor working mice; life is not very nice in this office.

12.32 AD: They are all just sitting there and the colours that you used as well. Yes, I can see you've skewed it.

12.43 N: In all its aspects it's saying life is not 'right', deliberately. It is illustrating a report of the left-wing New Economic Foundation, so I felt right in using this treatment.

13.14 If this is an illustration and an editorial illustration, it needs to have an editorial context. How would that work?

13.21 AD: I would imagine that that would be running to illustrate a piece that would talk about the working conditions and attitudes towards the workers in the UK. And that would be embedded in a scroll for a newspaper website, or something to do with it.

13.52 AD: Somebody would commission you to do that kind of style, like they would commission a regular info graphic or even a regular illustration that would show downtrodden workers in a humorous way, but making a point. This would be another level to it.

14.24 N: I don't know any works that are live at he moment.

14.41 AD: I have not seen any live works.

14.51 N: What live works do is that they update themselves. What editorial content does is give a view.

14.55 AD: It's hard to know where exactly this work would fit, unless it sits more in the background to another form of storytelling. Say I was going to the Yahoo weather report, you can have updating 'clouds and suns' and so on. That updates in realtime, is an illustration and info graphic.

15.38 N: It is not really different from this [100 Working Mice].

15.39 AD: No. That's basically what this is, but this can be used for different things. People have used this kind of skimming of data for tweets for language that shows how happy people are on that day, or how many people are working on that day, or how many people have died, in a certain war, on a particular day.
I imagine you can see [*100 Working Mice*] as a bonus aside to what is going on. Just so you know the state of the world in an easy to digest graphic, to supplement the news, rather than being the news.

16.29 N: Or take the NHS story, which is a 'rolling story', continually changing and updating, to re-engage to the story.

16.38 AD: The tough thing would be, where you put it. You would have to be pretty interested in the NHS, to go back and check something like that.

17.06 You can do that with the *Fatcat* for the *Financial Times* readers, who are interested in business all the time, they would like to see things continually updated. But when it gets more specialists like the NHS, I find it a bit tougher to figure out where this would sit.

17.41 In a newspaper you have sections where people regularly look at. Say for instance health, you can have [such illustration] in the 'Health' [section] with spending budgets and so on. And then you can go to 'Lifestyle'; there you can see 'happiness', house prices or amounts of children being born, [it could be like] a little ambient graph.

18.25 N: So the long and the short of it, there could be a place for it. You can bring all the little graphs together and create relationships between them.

18.40 AD: That could be a fun thing, if you bring them all together, there is a place that presented 'What's the world doing now'. For instance, it would be fun to see when people are getting up.

19.28 N: That would be an ideal subject for something like this.

19.47 You can have some kind of commentary about what awake means.

21.17 AD: People want info graphics to be true, because you are using data. Facts, though they are selected, they have this feeling of truth about it. However, there are so many holes in it.

21.39 N: I tried to put my finger on this, the holes are fine if you 'illustrate', if you use the data visualisation as illustration.

21.50 AD: That is what you trying to do here, that if you give it a looser form, than people's expectation are more illustrative.

21.59 N: But is that so? Or is this type of illustration always trapped in needing to be data visualisation, being 'true'?

22.03 AD: Part of me likes to see it looser, and part of me really looked to see, if those people really came into the rooms. I still need to see if it was real, truthful. If you say this is a data-visualisation, or a data-driven illustration and it's not credible, it's not really worth doing. Otherwise it's just an illustration, and you could have quite easily done something about people wandering in and out of the office. You could have amused me for a couple of minutes. It would be fun and it would be light. But I would give this a lot more time and a lot more of my attention, if I knew this was backed up by facts.

22.59 If people feel like you are not really adhering to the facts, than it's not credible, is it? However you set your parameters, or how hard-core you are, with trying to be truthful or trying to get all the data.

23.23 N: That's one of the things I look at, that's one of the issues.

24.33 This might be a ground rule for this type of image. No matter how far you push it, it needs to be credible.

24.51 AD: Yes, the lines could be loose and the form can be loose and friendly and illustrative, a long way away from data visualisation, with its squares and circles, but if there is not a relationship to something truthful, than the reader won't be engaged.

25.09 N: So what is an interesting editorial decision, when these things are made, is where do we put the 'truth'. Truth could be based on a selection of criteria.

25.48 AD: Even though that would not be the 'whole truth'. You have to set a few stakes in the ground.