Practical computing for biologists

Chapter 18

Working with Vector Art

Creation of vector art with Adobe Illustrator
- Importing graphics and illustration in Illustrator
- Drawing a schema directly in Illustrator
- Converting a photo or a scan in a editable schema

Anatomy of vector Art
- How to use Bézier curves
- Selecting and manipulating objects
- Transparency and layers
- Illustrator tips and shortcuts

InDesign: how to design scientific figures and books
- Why using InDesign for generating your PhD memory
- Creating figures with picture, graphics and photos
General Image Types

- **Vector-based image**: Made of editable lines, curves, and shape which are defined by a few key properties.

- **Pixel-based image = bitmap = raster art**: Made of uniform grid or colored dots, named the pixels. Photos are typical pixel-based images.
**General Image Types**

- **Vector-based image:**
  
  In *vector art* the line is defined by 2 points.

  **Storing info:**
  - X and Y of each point
  - color of line, width

- **Pixel-based image = bitmap = raster art:**
  
  In *pixel art* the line consists of many points of a particular color.

  **Storing info:**
  - color of each point of the grid
  - size of the image 10x10 or 100x100?
  - this value increases with size
**General Image Types**

- **Vector-based image:**
  - In vector art, the file format can be:
    - pdf: portable document format (Adobe)
    - eps: encapsulated postcript format (Adobe)
    - svg: scalable vector graphics (XML)
    - Ai: Adobe Illustrator

- **Pixel-based image = bitmap = raster art:**
  - In pixel art, the file format can be:
    - JPEG: Joint Photographic Expert Group (compressed)
    - PNG: Portable Network Graphic (screen capture)
    - TIFF: Tag Image File Format
    - BMP: Bitmap (Microsoft, IBM)
    - PSD: Adobe Photoshop
General Image Types

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  - PSD: Adobe Photoshop
There are 3 common ways to create vector art:

- Export a graph or a phylogeny tree from another program (Excel, Clustal, ...)
- Draw an image
- Trace an existing piece of pixel art
Exporting graph from excel
Importing graph from excel
Generating vector art (clustal)

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![ClustalX interface](image)
• From basics forms to complex shema:
Illustrator Panels
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Illustrator Panels

- Affichage
  - Tracés
    - Aperçu de la surimpression
    - Aperçu en pixels
    - Format d'épreuve
    - Couleurs d'épreuve
  - Zoom avant
  - Zoom arrière
  - Ajuster le plan de travail à la fenêtre
  - Tout ajuster à la fenêtre
  - Taille réelle
  - Masquer le contour de sélection
  - Masquer les plans de travail
  - Afficher les limites d'impression
  - Afficher les tranches
  - Verrouiller les tranches
  - Masquer le modèle
  - Afficher les règles
  - Afficher les règles du plan de travail
  - Masquer le cadre de sélection
  - Afficher le damier de transparence
  - Masquer le texte lié
  - Masquer l'annotateur de dégradé de couleurs
  - Afficher les espaces de peinture dynamique
- Repères
  - Repères commentés
  - Afficher la grille
  - Magnétisme de la grille
  - Magnétisme du point
- Nouvelle vue...
- Vues...
Illustrator Tools
Bezier curves

FIGURE 18.3 Bezier curves. The three anchor points of these curves are all the same, but their control handles give them very different shapes: (A) smooth anchor; (B) corner point; (C) one handle retracted; (D) both handles retracted; (E) smooth anchor point, but with the control handles rotated 180° relative to (A).
PathFinder
• From basics forms to complex schema:
Drawing in Illustrator

- Tracing over an Illustration:

1. Import
2. Lock the object
3. Trace over the object
4. Adjust point
Generating vector art

There are 3 common ways to create vector art:

- Trace an existing piece of pixel art
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Combining vector & pixels

- Graphical elements and annotations should be kept with vector art (editable, scalable).
- Most vector file format (such as PDF) allow importation of photos, which will be embedded in file.