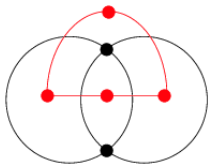
1. Introduction

Motivation

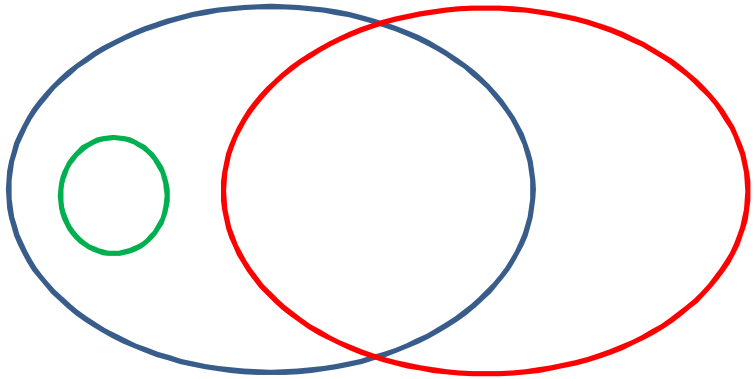
Formal Definition

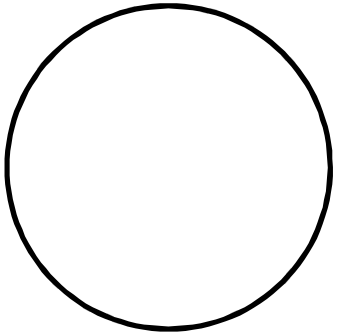
Wellformedness Properties

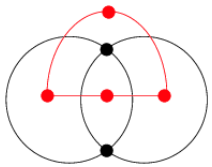


Motivation

Euler diagrams are widely used because they can effectively describe intersection and containment

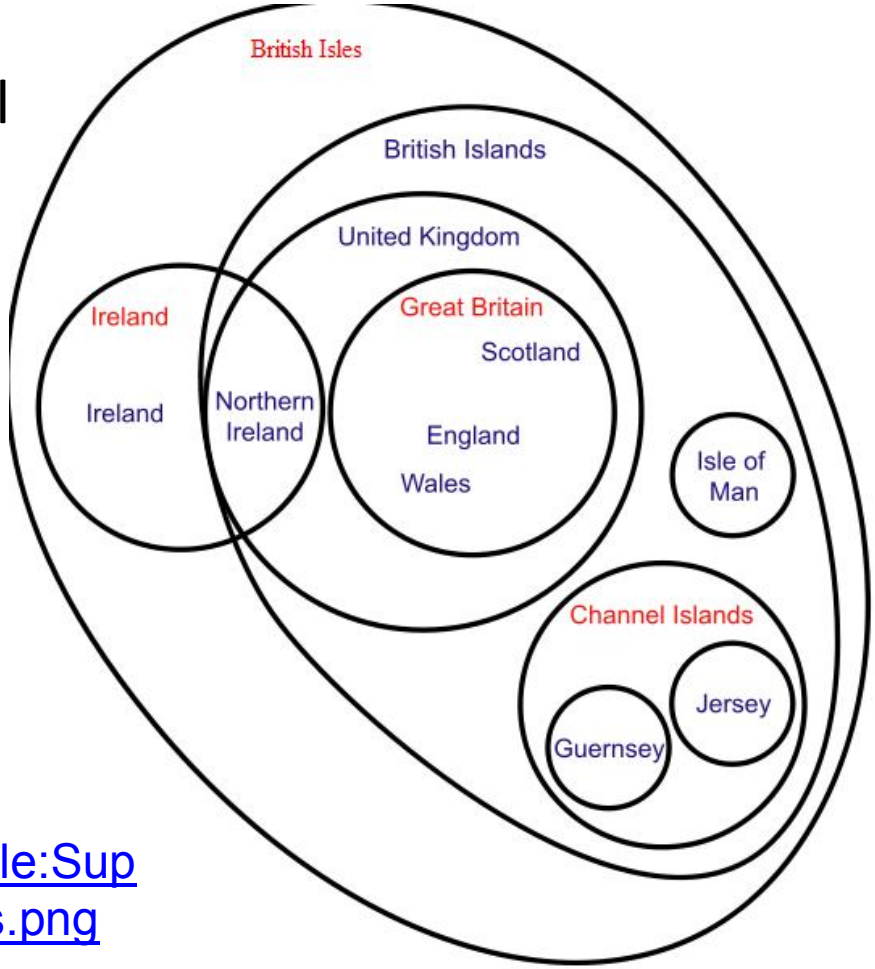




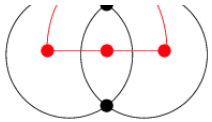


Some Examples

Visualizing International Relationships (Wikipedia)

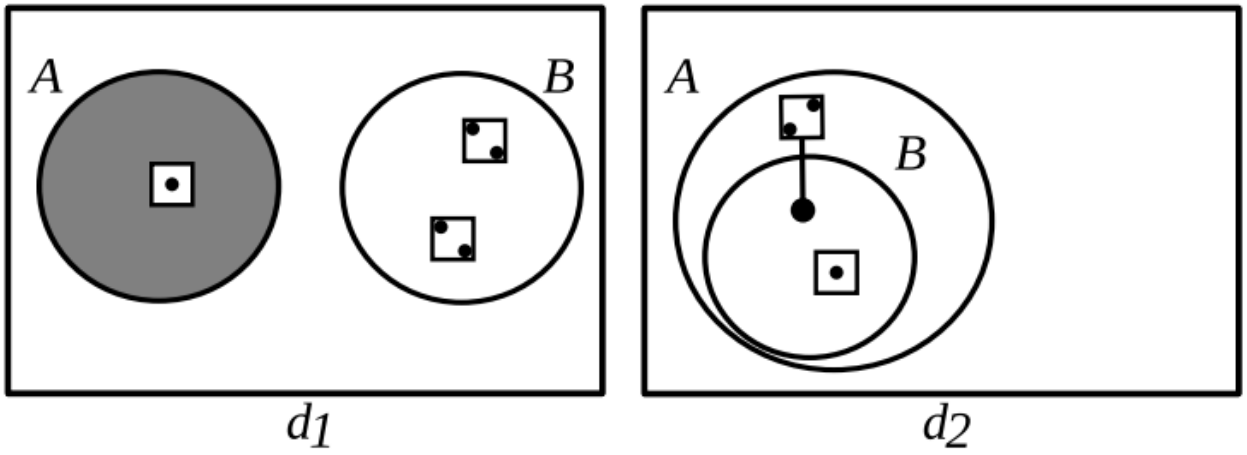


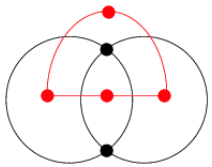
Europe:
http://en.wikipedia.org/wiki/File:Supranational_European_Bodies.png



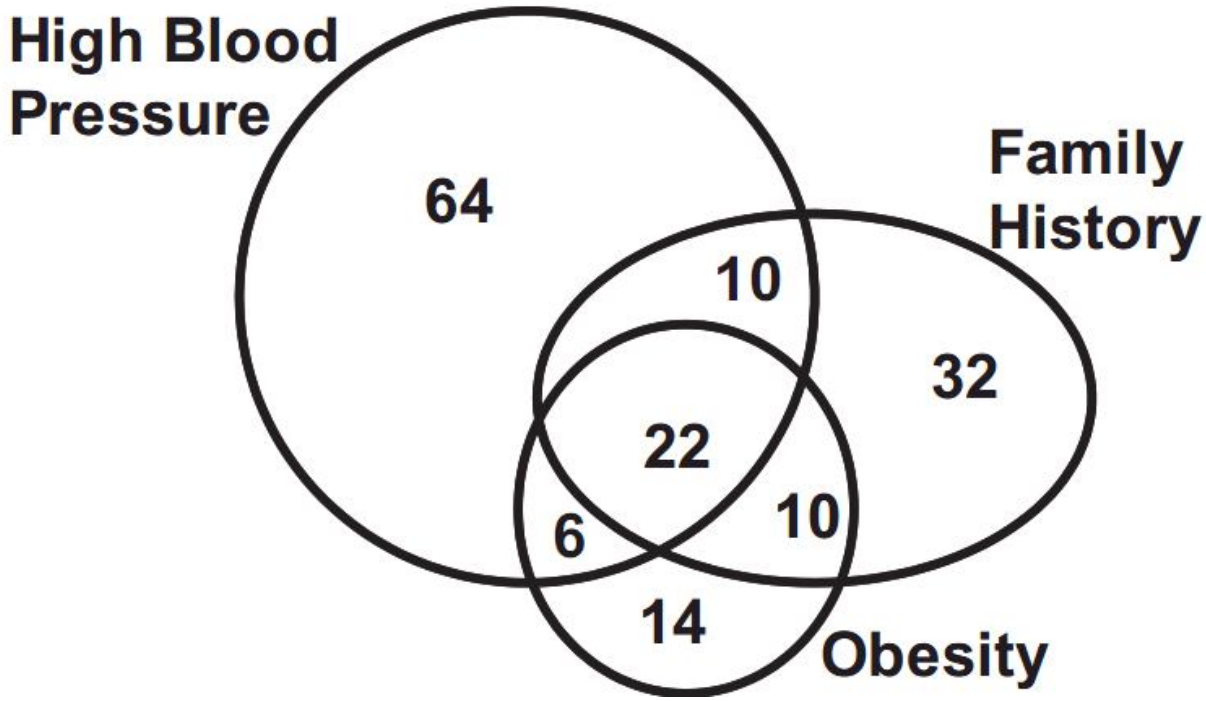
Examples: Logic Diagrams

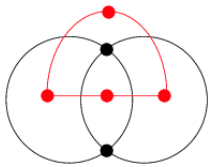
E.g. Spider Diagram





Example: area-proportional diagrams





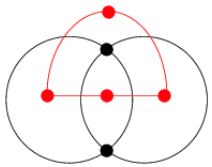
Other examples

Library Queries

Non-tree file hierarchies

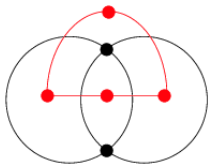
Business presentations

Bioinformatics visualization



Euler diagrams defined

- In the most general definition an Euler diagram is a set of closed curves
- The set of minimal regions that are enclosed by the same curves is known as a **zone**.
- Often has curve labels (via a curve labelling function)
- Often is restricted by wellformedness properties
- May also be area proportional, (via a zone to number population function)

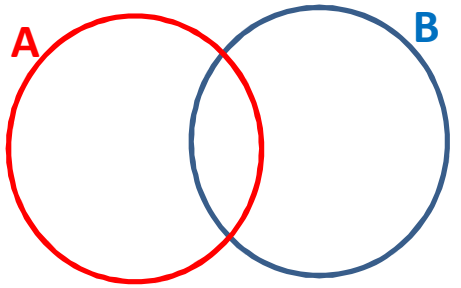


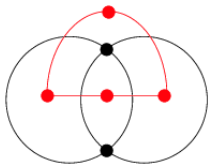
Example Euler diagram

An abstract description can be written as a set of zones, where each zone is a set of curve labels. For example

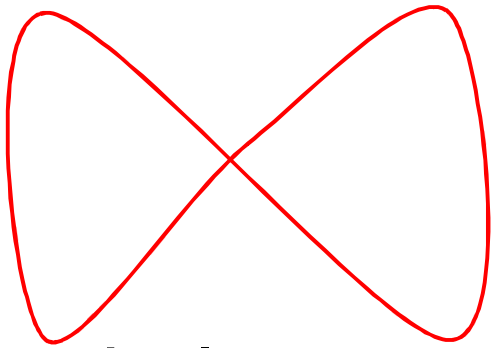
{{},{A},{B},{A,B}}

This is often shortened to
{} A B AB

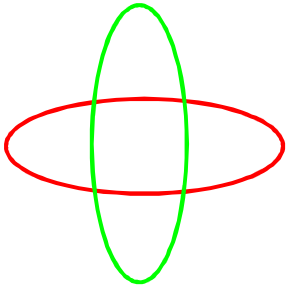




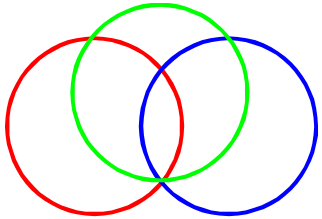
Wellformedness conditions

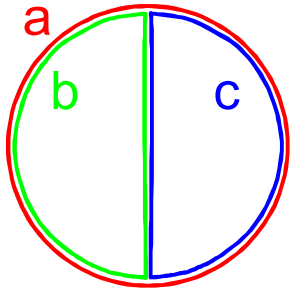


Non-simple curve

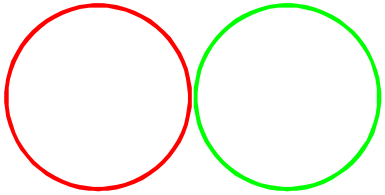


Disconnected Zones

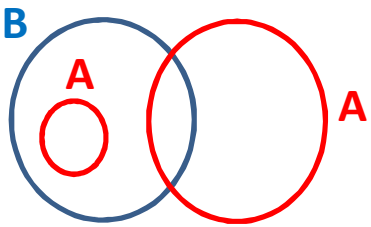




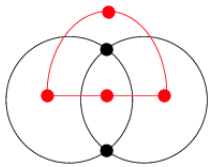
Concurrency



Brushing Point



Duplicate Curve Labels

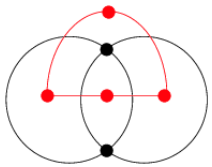


How wellformedness affects drawability

If we restrict all wellformedness properties, we cannot draw many abstract descriptions as a diagram

As we allow more to be broken, more diagrams can be drawn

Breaking duplicate curve labels and concurrency means every diagram can be drawn (just not very nicely)



The rest of the tutorial

We will concentrate on a variety of methods for automatically laying out Euler diagrams

2. General Embedding

BREAK

3. Area-Proportional Diagrams
4. Software Tools
5. Conclusions