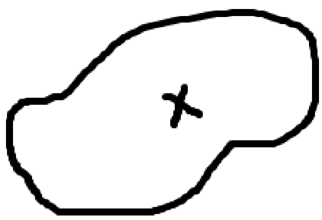
Graphical Representation of Sets.

It is useful to visually represent sets, and to visually represent the membership relation between sets, this greatly simplify matters.

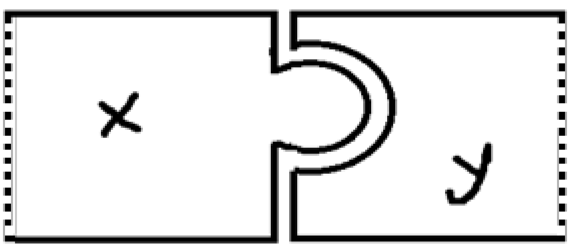
Here I will represent sets as closed figures.

So a set X for example will be represented as:



Membership relation shall be represented as an out-pouching of the closed figure representing the member fitting into an in-pouching of the closed figure representing the set, so

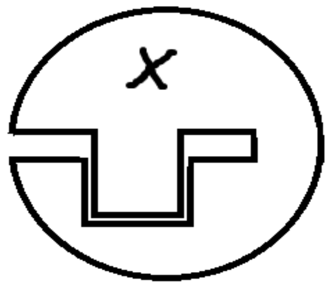
X ϵ Y will be represented as:



So an empty set can be represented by a closed figure not having any in-pouch containing an out-pouching of a closed figure.

An Ur-element can be represented by a closed figure that does not have any in-pouching.

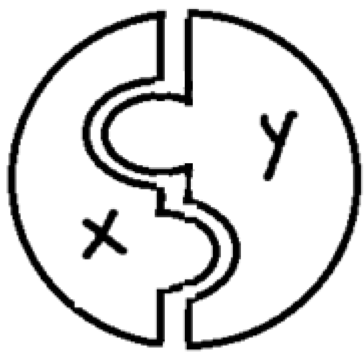
Now X ϵ X will be represented as a close figure having an out-pouching that is fitting into an in-pouching of it, i.e. pouches into itself.



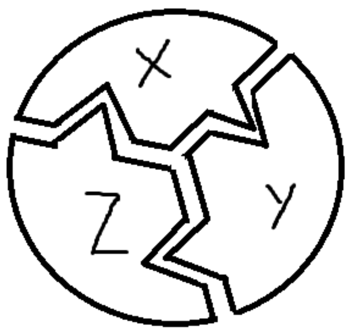
X ϵ X

The set of all sets will be represented by a closed figure that pouches into itself and where there is an in-pouching for every out-pouching of a figure that represents a set.

A case where X ϵ Y and Y ϵ X and not X=Y can be represented as below:



Now X ϵ Y ϵ Z ϵ X, where X, Y, Z are distinct sets can be represented as:



Of course the full manner to represent a set is to draw it and all its members with all out to in pouching between them, the above figures were only depicting individual membership relations. So the third figure for example if it is taken to be a full representation of X, then X is a Quine atom, i.e. a set having itself as the sole member.

Russell's paradox:

Can we have a closed figure where every closed figure that does not pouch into itself can pouch into it, and every closed figure that pouch into itself cannot pouch into it.

The answer is No clearly, since this closed figure cannot pouch into itself and thus it doesn't receive out-pouching from *every* figure that do not pouch into itself.

So no set of all non self membered sets can exist, because it cannot be represented.

Definition:

A *set* is what is represented by a closed figure according to the above method that has at least one in-pouching.

With the above method one can imagine a closed figure into which only all closed figures representing natural numbers are buttoned, so this figure would represent the set of all natural numbers.

Spectrum of possible objects: Here the nomenclature will be different.

1. Isolated objects: represented by closed figures with no in-pouching nor out-pouching.
2. Failed Ur-elements: represented by closed figures with no in-pouching but with out-pouching that do not fit into an in-pouching of any closed figure.
3. Successful Ur-elements: represented by closed figures with no in-pouching but with out-pouching that do fit into an in-pouching of a closed figure.
4. Empty proper classes: represented by closed figures without an out-pouching but with an in-pouching into which no out-pouching of a closed figure fits.

5. Empty failed sets: represented by closed figures with an out-pouching that does not fit into an in-pouching of any closed figure and with an in-pouching into which no out-pouching of a closed figure fits.
6. Successful Empty sets: represented by closed figures with an out-pouching that does fit into an in-pouching of a closed figure and with an in-pouching into which no out-pouching of a closed figure fits.
7. Non empty proper classes: represented by closed figures with in-pouching into which an out-pouching of a closed figure fits, but doesn't not possess any out-pouching.
8. Non empty failed sets: represented by closed figures with in-pouching into which an out-pouching of a closed figure fits, but do possess an out-pouching that doesn't fit into an in-pouching of any closed figure.
9. Non empty successful sets: represented by closed figures with in-pouching into which an out-pouching of a closed figure fits, but do possess an out-pouching that fits into an in-pouching of a closed figure.

Most set\class theories do not possess all kinds of possible objects listed above.

Zuhair, Sept.1.2011