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| Circle Language Spec: Interfaces |

## Reliability of Interfaces

An interface is a contract. A welcome fact about a contract is that once agreed upon, it does not change. So an interface should be reliable.

However, the concept of *relations* can make interfaces unreliable.

Relations are bidirectional. When something points to something else, the other thing points back. This causes extra members to be dynamically added to the interface of another object. The interface of one object changes when other objects start pointing to it.

The benefits from bidirectional relations are too important to rid of. They solve a difficult fundamental problem in computer technology. A lot of times you want to know whether an object is still used and what specifically still uses this object. In computer systems today this is often difficult to find out. Knowing all backward connections all the time would solve this problem.

Bidirectional relations also see to it that when a command has a parameter, the command is immediately available from any object that the command could be executed on.

To keep interfaces reliable, somehow the backward relations should not become part of the interface. The solution is to make the backward relations Private. This excludes the members from the interface, but keeps them available as part of the implementation.

Other options have been proposed to responsibly get rid of the automatically created members. The options will be explained now.

Backward relation options:

- Private

- Public

- Manual

- Conditional

- Preliminary

#### Private Backward Relation

Allowing backward relations but making them Private means the backward relations are maintained, but they do not become part of the interface.

#### Public Backward Relation

Allowing Public backward relations means the interface will not be stable, because extra members are created when things start pointing to an object. However, this does not necessarily have to be a problem.

#### Manual Backward Relations

In this case backward relations are not created automatically at all. Logically this keeps the interface stable. You can program the backward relation later, but only if you know where the foreward relation is. To find all foreward relations you may need to scan the entire earth, so it is not easy.

When you are able to program the relation back, you also need permission from the foreward relation, because this could have great implications on the way the other object functions.

Maintaining a backward relation should be strongly stimulated because it solves such a difficult fundamental problem in computer technology. To equally honor the values of both the interface concept and the relations concept, the default solution should be to make backward relations Private. Keeping backward relations Private keeps interfaces stable.

Now follow some other solutions, that are sort of arbitrary and miscellaneous, but possibly handy in practice.

#### Conditional Backward Relations

Perhaps you should automatically accept backward relations based on a condition, for instance that the relation counterpart is within the same module. This may be a neat editing feature. That way you can program a module and let backward relations build up, but outside sources can not influence this process. This limits control to interface extensions to the module itself. In a broader sense you are defining a condition for automatically accepting a backward relation: namely that the relation counterpart must be inside the same module.

#### Preliminary Backward Relation

Preliminary backward relation means that the foreward end of the relation will maintain the backward relation until the relation counterpart either accepts or refuses it. This politely keeps the other related object’s interface and storage in tact while still offering the ability to adopt the index. You may also solve a quota overrun security problem this way.

This sounds good in theory, but in practice it may turn out that the registration of the request takes the same amount of storage as storing the backwards relation itself.