A FORMAL BASIS FOR SPECIFYING OBJECT BEHAVIOUR

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1 Standards for Object Orientation

In an earlier article [BE95] we outlined a project for formalizing some of the key concepts of object orientation (OO) as defined in the OMG’s (Object Management Group) core object model. Since OO is premised on interoperability and compatibility it is important that central aspects of the OO perspective provide a consistent basis for development and augmentation. In effect the OO world needs to have standards not only in the sense that there has to be some basis for effective but constrained development, reducing uncertainty and risk [95B]; but also because the essence of OO is cross-platform compatibility and reuse. The OMG’s core object model is one attempt to present a set of self-sufficient and consistent concepts which can act as a firm basis for the interdependence and further development of OO products and services. There are alternative approaches to the core object model, some of which may prove to be complementary; but given the size and visibility of the OMG it is likely that some version or variant of the core object model will continue to figure in the OO world. OO demands universality and compatibility in some form, and it is more likely that it will be formed and sustained through a standard founded on cross-industry agreement than by monopoly or overwhelming cartel.

The OMG has sought to control change and variety through numer-
ous standards and similar consensus-building activities. This has proved difficult, given the time needed to establish consensus, and the immediate and pressing demands of the market. The idea of a conceptual core model was proposed early on in OO development, and OMG have sought to establish it at the heart of its programme and perspective. In recent years, however, the development of models such as CORBA, and the growth of areas such as OO analysis and design, business object modelling and so on have gone far beyond the scope of the original set of core concepts. This is inevitable in a developing field such as OO; but rather than jettisoning the idea of a core object model, it is better to analyse the key concepts to see which retain central validity and to inter-relate them in a fashion which will provide the basis for constrained development and innovation. The OMG Object Model Subcommittee has itself started to seek a revised and more rigorous statement of its key concepts, in order that future OO innovations and extensions can be inter-related and reconciled through an agreed and unambiguous standard: Although to date this project has failed to gain sufficient resources and impetus from the OMG constituency. Our earlier paper established the background to this project, and explained the rationale and benefits of this form of standardization. We now wish to restate some of our ideas and exemplify and extend the use of formal notation in OO standardization.

A standard, of any form or type, represents a statement by its authors that their work will be understood, accepted and implemented by the market [C89]. The OMG, which claims to be the largest IT consortium in the world, was founded to promote the theory and practice of OO technology in software development. The OMG charter specifies the need for the establishment of industry guidelines and object management specifications to provide a common framework for application development. An important part of the OMG’s work has been the development of a standard model of object technology concepts. This aims to serve as a basis for the standardized implementation of object technology, rather than its currently ad hoc usage. But the OMG itself has no power to sanction standards, and must rely on voluntary adherence to such initiatives. This bears out the argument of authors such as Carl Cargill who sees voluntary standards as appropriate to volatile areas with competing technological and application solutions available; where there are intense user and provider dynamics. As a consequence, any such standard will only survive if it can attract and sustain the support