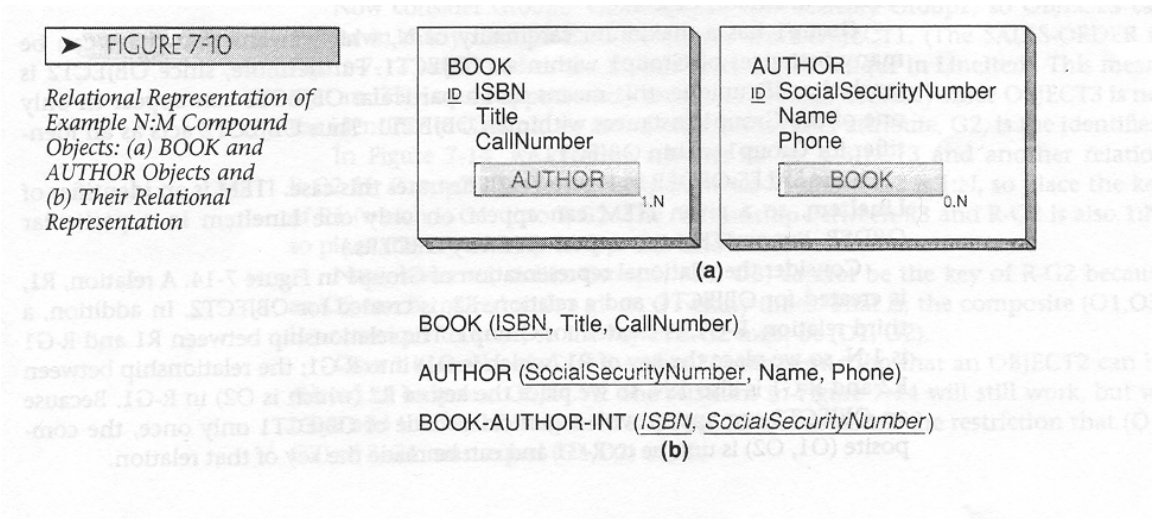
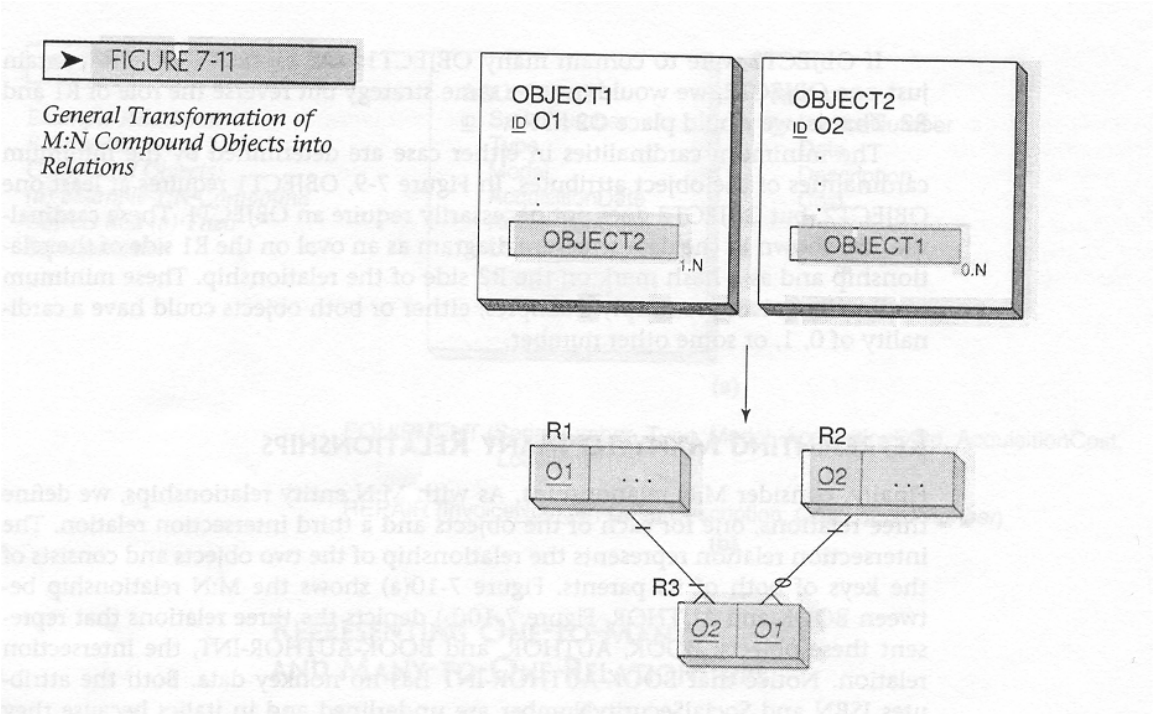


Consider M:N relationships. As with M:N entity relationships, we define three relations, one for each of the objects and a third intersection relation. The intersection relation represents the relationship of two objects and consists of the keys of both of its parents. **Figure 7-10(a)** shows the M:N relationship between BOOK and AUTHOR. Figure 7-10(b) depicts the three relations that represent these objects: BOOK, AUTHOR, and BOOK-AUTHOR-INT, the intersection relation. Notice that BOOK-AUTHOR-INT has no nonkey data. Both the attributes ISBN and SocialSecurityNumber are underlined and in italics because they both are local and foreign keys.



In general, for two objects that have an M:N relationship, we define a relationR1 for object OBJECT1, a relation R2 for object OBJECT2, and a relation R3 for the intersection relation. The general scheme is shown in **Figure 7-11**. Note that the attributes of R3 are only O1 and O2. For M:N compound objects R3 never contains nonkey data. The importance of this statement will become clear when we contrast M:N compound relationships with association relationships.

Considering minimum cardinality, the parents of the intersection relation are alays required. The minimum cardinalities of the relationships into the intersection relation are determined by the minimum cardinalities of the object links. In figure 7-11, for example, a row in R1 requires a row in R3 because the minimum cardinality of OBJECT2 in OBJECT1 is 1. Similarly, a row in R2 does not require a row in R3 because the minimum cardinality of OBJECT1 in OBJECT2 is 0.