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[Using the information space formed by networks]

We exchange all kinds of information in our everyday lives. Information helps us in various situations and gives us various advantages. But for maximum usefulness, information has to be easy to use. Databases are designed with this in mind. In databases, the information collected is neatly organized for specific purposes. The advent of the Internet has brought dramatic changes to databases. Now we can build huge databases capable of providing the necessary information, unconstrained by time or distance, merely by connecting a number of databases in different locations around the world.

Various ways to organize information

But sharing databases isn't easy. That's because databases can have different ways of organizing information. Have you ever gone looking for a book in a bookstore thinking books were arranged in alphabetical order based on author name, and then discovering the books were actually shelved in alphabetical title order? People shelve books in ways convenient for them, and creators of databases arrange information in ways they believe is the easiest to use. Sharing the information in databases requires a way for efficiently extracting information from databases in which information is organized in different ways. In earlier days, we had the notion that information should be arranged in the same format in all databases. OPACs (Online Public Access Catalogs), catalog data services used by libraries for searching books, reflect that idea. But the databases in actual use are pretty diverse. It's not practical or realistic to expect all databases to use the same format. The solution to this problem is a language called XQuery. It's one of my research interests.

Connectivity enhances convenience

In my research, I examine information processing using XQuery, which is essential for sharing multiple databases. Think of a database as a drawer full of clothes. In this analogy,

clothes are information, and the drawer is the database structure. Technically, database structures are expressed in a language called XML, and information is arranged in a certain way. XQuery was developed as a query language for extracting information from databases expressed in XML. For example, if you have an XQuery formula that can extract information for a database connected to your database, you can search and retrieve information from that database in the same way you would search your own database. You can also access databases located far away through a database that searches for connectable databases. In other words, it becomes possible to use all of the world's databases across the Internet if you have a way to search for directly connected databases. Widespread use of the Internet has created a vast information space on the Web. In my research on XQuery applications, I'm hoping to create a system that can take advantage of this immense database space.

(Summarized and written by Masumi Nasukawa)