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The plate boundaries vicinity of Japan; the recogition of experts and non-experts.

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This study is to compare the perception of the expert community on the plate boundary locations around Japan with how it has been handled by the media for non-experts, to report cases of the process of the spread of expertise, and to consider the role of semi-experts intermediating in the process of the spread of expertise.

Three theories have been advocated since 1972 about the boundary between the North American Plate and the Eurasian Plate in the vicinity of Japan which have been gaining consensus in the expert community. Sugimura (1972) put forward the theory of the central axial zone of Hokkaido (Theory A). In 1983, Kobayashi and Nakamura presented in succession the theory of the eastern margin of Japan Sea (Theory B)). Since this theory was consistent with the Nihonkai-Chubu earthquake which occurred at nearly the same time as its announcement, it quickly gained attention. Extensive discussion took place since then about the theory of the eastern margin of Japan Sea, and various modifications were proposed. In 2000 Sagiya proposed the tectonic zone theory (Theory C)). which holds that the plate boundary in this vicinity is not a single tectonic line, but that it is in the form of a belt-shaped area with a width on the order of one hundred kilometers in which strain are converged. Since then discussion on this issue has waned, and there have been fewer occasions for the question of where is the plate boundary? to be asked. It is considered that there are the following two reasons for this. One is the decisiveness of GPS data. Another is that there is hesitation on the part of researchers to use the terminology of the plate boundary because the tectonic zone is a quite different concept from the conventional plate boundary.

As to how high school earth science textbooks have handled the boundary between the North American and Eurasian plates, the first thing that draws attention is that the descriptions of all publishers are not consistent with one another. The current situation is that the theory A and the theory B are found intermingled, and Theory C has not been adopted by any textbook. This situation can be summarized in three points.

1. The time when the textbooks adopted PT Theory. The textbooks that adopted it in 1983 or earlier naturally adopted Theory A at that point.
2. Some textbooks responded to the appearance of Theory B, and others did not.
3. No textbook has responded to Theory C even to this day.

Firstly, the first point is associated with the time when the researchers accepted PT Theory who took charge of the solid earth part of each textbook. The second point is that while there are cases of them not adopting it even if they know a new theory as an expert, there are also cases of it being positively adopted by those who are to be called semi-experts that are solid earth scientists but not experts in the regional tectonics around Japan. Now, the third point is that the appearance of Theory C in the media for the general public is considerably restrained in comparison with Theory B. The reason why Theory C does not often appear in the media for the general public can be explained as follows.

1. Discussions on the definition of a plate boundary are taking place within the expert community. Therefore, experts have stopped using the term plate boundary for a tectonic zone.
2. As a result, there appears to be no expert who asserts that a tectonic zone is a plate boundary from the viewpoint of other than experts joining the discussions. Thus, it does not appear to semi-experts that Theory C has gained consensus in the expert community.

It is considered that as a result the current situation has occurred that there are few opportunities for Theory C to appear in the media for the general public, whether written by experts or semi-experts.

Keywords: plate tectonics, plete boundaries, experts, non-experts, earth science textbook