As social structures emerge from the force-directed layout, the tool provides users to drill down the graph allowing investigation to the level of an individual revert (Figure 5). When a user node is chosen in the graph, the upper right window displays the list of users that have revert relationships with the selected user, sorted by the number of reverts between them (Figure 5 (b)). When a revert relationship is selected in this list, the bottom right panel is updated to show individual revert records between the two users involved in the revert revision, as shown in Figure 5 (c). Also, the nodes representing the users are highlighted in Revert Graph to provide visual feedback. Allowing further drill down, clicking an item in the bottom right window launches a web browser showing the specific individual revert record.

Using these capabilities, we were able to identify a number of interesting user conflict patterns using this tool. In the next section, we will describe these conflict patterns in several case studies.

6 USER CONFLICT PATTERNS AND CASE STUDIES

Based on the revert-based user conflict model, we investigated conflicts and disagreements in Wikipedia using Revert Graph and explored to discover social patterns in them. This section presents interesting conflict patterns we have found in Wikipedia.

6.1 METHODOLOGY

We used Revert Graph to examine conflict patterns in Wikipedia articles. We selected 901 high conflict articles with more than 250 reverts for analysis. These articles contain a large amount of discussion with extensive editing history, which present a challenge for analysts in making sense of conflict dynamics [18].

Based on the user model, Revert Graph generates a node-link diagram to visualize users and their revert relationships. We then analyzed the graph for any interesting pattern that might emerge.

To examine a potential user conflict pattern in an article, the analysis involved detail investigation of the article revision history. However, we often found it hard to determine users’ point of view by browsing only the revisions. To get more clear insight on users’ position on the issues of an article, we browsed through information such as revert comments, article talk pages, user pages, and users’ edits on other pages.

We now describe user conflict patterns we found in this study.

6.2 PATTERN ONE – NODE CLUSTERS AND OPINION GROUPS

Revert Graph rearranges its user nodes based on revert relationships between them. The force-directed layout simulation evolves the graph to gather user nodes together based on underlying social dynamics. We analyzed node clusters to understand cohesiveness in node groups.

The Wikipedia page on Dokdo is one example where we were able to find interesting user groups. Dokdo is a disputed islet in the Sea of Japan (East Sea) currently controlled by South Korea, but also claimed by Japan as “Takeshima” [39]. Figure 4 shows opinion groups discovered on the Dokdo article. We manually labeled users based on their points of view as exhibited by their editing history. To obtain users’ points of view on the topic, we browsed their user pages, user talk pages, revision histories, revision comments, as well as specific reverts. For example, users in group A in Figure 4 exhibit the following patterns: (1) claiming Korean heritage on their user pages, (2) supporting the Korean claims in discussions on the users’ talk pages, (3) preferring the term “East Sea” over “Sea of Japan", (4) preferring “Dokdo” over the alternate “Takeshima” or the more neutral “Liancourt Rocks”.

We observed users in Group C disputing the points of view of Group A. This group includes users who (1) dispute the official U.S. position (which supports the Korean occupation), (2) openly...