Patrick B. Quinn: CODE RED: MOBILE

The challenge is to analyse the extent to which visualizations delivered in a mobile scenario training exercise are more useful than the same visualizations delivered in a desktop scenario. Viewing visualizations produces a remembered cognitive map. The experience of a real event forms a personal cognitive map. Utilising visualizations in scenario training may produce a hybrid of a remembered and a personal cognitive map.

Ten volunteer firefighters in a scenario training exercise about the effects of a wind change on a bushfire take part in a desktop scenario exercise and another ten complete a mobile device based scenario exercise, called CODE RED: MOBILE at the real location of Hanging Rock. Both groups are provided with the same visualizations of the bushfire events. The desktop group have maps which they can annotate and on which they can sketch their proposed movements. The CODE RED: MOBILE group receive and document their information on the mobile device. The challenge is to determine which group has gained a better cognitive map of the event. Participants with a more detailed cognitive map of the event and more accurately remembered causal chains will likely make better time critical decisions in fraught circumstances.

The visualizations were produced in the Crysis Wars editor (crytek.com) and delivered in the free version of the 7Scenes mobile game framework (7scenes.com).

Radvansky, Copeland and Zwaan (2005) compared memories of events or situations that were either personal stories of the experimental subjects or fictional narratives that they remembered. For remembered narratives people remembered events easiest in forward order rather than backward. Where the causal connections were strong and clear the order was remembered more easily and was more important for recalling the context of the situation or story rather than the details. In autobiographic (personal) memory in contrast with narrative memories, event order was not as important and there was easier retrieval of the details that had strong causal connections.

Vrij et al (2007) suggest that truth tellers recall more of place and time and remember conversations verbatim. They also recall more sensory memories and do not so much remember cognitive operations such as "I was thinking that". Truthful recounts are spatial and temporal and the items, entities and events are in a detailed context

Vrij et al (2008) studied subjects lying. Whilst recalling an event in reverse order there was an increase in the cognitive load and the stress of this task revealed cues of deception, such as taking time to invent features by using errs and ums in speech. There was less contextual embedding and less sensory information. There were few conversations repeated verbatim and there were more cognitive operations such as "she seemed clever". Vrij et al recommended using reverse storytelling to detect if people are lying. Thus personal narratives can be remembered more easily in reverse than fictional ones.

Brown et al (2010) in an account of their design of a location based learning mobile learning application for intellectually disabled people, relate that too much support from the device is not as useful for learning independent navigation as the creation of one's own personal cognitive map.

The two firefighter experimental groups complete questionnaires which ask for the sequence of events in reverse order. The mean of the scores of the correctness of the reverse sequence for each group is then compared to determine if the groups are significantly different in accuracy. The hypothesis is that the CODE RED: MOBILE group at Hanging Rock will have a better reverse recall because they have combined fictional cognitive maps (remembered narratives of others) derived from the visualizations, with their real world personal cognitive maps (autobiographical memories) of the events in the scenario exercise.

In addition GPS tracks of the mobile participants will be recorded. The complexity or simplicity of their tracks, as Heat maps, will be correlated with the participants' scores on the reverse sequence. It is hypothesised this should reveal a correlation between the more accurate firefighters' reverse accounts and thus cognitive maps, and simpler more directed tracks.

Assistance would be greatly appreciated on the worth of these approaches as well as ways to analyse or treat maps of gps tracks in location based scenario training that can reveal or classify spatial and problem solving behaviour patterns.