

## **The Use of The Observer 5.0 and a Psion Handheld Computer in a Remote Fieldwork Setting**

This review builds on Ice's (2004) review in this journal of The Observer 5.0 (Noldus Information Technology), running on a Psion Workabout MX handheld computer. There are now two models of the Workabout: the Workabout MX and the Workabout Pro. I used the Workabout MX (hereafter, simply Workabout), which runs under Psion's EPOC operating system. The Workabout Pro is a newer model with improved power management and a Windows operating system.

I focus here on the unique challenges of using The Observer in a remote fieldwork setting, and the important lessons that come from this experience are largely independent of the particular model of software or hardware that one takes to the field. In particular, researchers working in remote settings need to become familiar with all aspects of the hardware and software before they depart for the field so that they can independently solve unexpected technical problems when they lack the means to communicate with technical support staff. Software manufacturers can help researchers by expanding the troubleshooting guide to include not only solutions to common problems but also a general toolkit of sorts with which researchers in remote settings can identify and solve particularly anomalous problems.

I used The Observer to monitor the behavior of indigenous Nicaraguan hunters in the Bosawas Biosphere Reserve. In terms of theoretical background and methodology, this research is perhaps most similar to that of Hill et al. (1987) and Alvard (1993). From August 2004 to August 2005,

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I observed sixty hunts using focal sampling methods. In addition to the activities of the hunters, I also used The Observer to record data on habitat type (e.g., primary forest, secondary forest, active field), precipitation, and the proximity of companions or hunting dogs.

In all, data collection was interrupted seven times because of technical problems. Ice (2004:16) noted that one of the biggest disadvantages of the Workabout is the ease with which users can inadvertently hit the off key. In approximately 325 hours of observation, I accidentally switched off the power on two occasions. More problematic was the Workabout's tendency to lose functionality when jarred severely. Ice (2004:16) observed that the Workabout resets when dropped, but I found that this reset occurs even when the handheld computer itself does not strike the ground. On four occasions, I fell and was disappointed to see that the Workabout had reset despite my efforts to keep it aloft. Finally, I lost data on one observation when the LCD backlight drained the batteries. As with the off key, it is easy to hit the backlight key inadvertently, and in the bright sunlight, I failed to notice that the backlight was on.

As it turns out, these technical problems need not be devastating. When the observation was interrupted, it generally took me a little longer than a minute to start a new data file that could later be merged with the initial file. The key is to make liberal use of the autosave option. Early in the study, I opted to save data manually, as the Noldus reference manual warned that the autosave function can compromise timing accuracy, presumably by preventing the entry of new codes while data are being saved. Although larger data files might take longer to save, I soon discovered that the Workabout saved my files in less than a second, and I thereafter used the autosave function without any noticeable problems. I opted to autosave every 5 minutes, but in retrospect, I think I could have set the Workabout to autosave every minute without any detrimental effects on the data.

Overall, the Workabout was a durable and effective observational platform. I was worried about the integrity of the waterproofing, but it endured the torrential downpours of the rain forest without problems. Threaded holes on the back of the unit allowed me to screw in a mount for a strap that minimized my concerns about losing the Workabout in the river. Also, Ice (2004:16) noted that the Workabout was comfortable to hold, and I can add that I could enter my most common codes with a single keystroke, leaving my other hand free to collect global positioning system (GPS) waypoints and navigate obstacles in the forest. Although I always began observations with new batteries, the Workabout was not particularly demanding of battery life under normal conditions. My longest observation lasted about 10

hours, and I estimate that I could have continued data collection for another 3 to 4 hours before needing to replace the batteries.

File management was a prominent concern throughout my fieldwork. I was particularly worried about the possibility of losing all my files if I somehow lost the Workabout. As with most computer-based research, the ideal solution is to maintain a backup copy in a separate location. The Noldus manual is not too helpful on this point as it seems to assume that researchers will download files from the Workabout to a desktop computer at the first available opportunity. For most users of the system, this is probably a matter of hours, but this was out of the question at my remote field site. The absence of a personal computer was also troublesome because I had hoped to review the file after each hunt so that I could ask hunters clarifying questions in the interviews following the observation. When I purchased *The Observer*, a sales representative told me that it is not possible to review an observational data file on the Workabout itself, only on a personal computer after transferring the file.

Several months into the project, I noticed a brief section in the Noldus manual that describes how to access and review the data files on the Workabout itself. The ability to see the data instead of relying solely on memory greatly enhanced the quality and detail of the subsequent interviews. If I had taken the time to scrutinize the manual in its entirety before I departed for the field, I probably would have noticed this feature and benefited earlier. At the same time, Noldus and other companies could enhance the use of their products by emphasizing the features that would be especially useful for researchers in remote settings.

In the end, I also figured out a way to make backup copies of the observational data files within the Workabout itself. The Workabout comes with an internal hard drive and space for two solid state disks (SSD). Noldus includes one flash SSD with the Workabout support package, and I opted to purchase a second as well, primarily because I was worried that my data files might fill a single 1-megabyte SSD after several months in the field. Although my concerns about sufficient disk space were not realized, the additional SSD was a good place to store backup files. Because the disks are removable, it was possible to keep identical copies of all files in separate locations.

When a thief stole my Workabout (and other things) near the end of my project, I was especially thankful that I had placed the backup SSD in a separate location. The Workabout was later recovered, but the incident underscores the importance of making backup files when working in a remote setting. While it would be possible to use the Workabout's internal hard drive as a location for backup files, all files on the internal drive can be lost

if both the primary and backup batteries fail. Given the risks of relying on the hard drive and the relatively low cost of an SSD, investing in a second disk is probably the best alternative for most fieldworkers.

I must emphasize, though, that file management was not intuitive, in large part because the model of the Workabout that I took to the field (the MX) does not run on a Windows operating system. Although the Workabout's EPOC operating system is not particularly complicated, it was only after repeated use that I felt comfortable navigating the file directories and executing basic commands such as copying and pasting files. In retrospect, I believe the ease with which files can be transferred from a personal computer to the Workabout convinced me that file management on the Workabout would be similarly straightforward.

The importance of becoming familiar with file management on the Workabout was especially apparent when I was initially unable to remedy a technical problem midway through the project. The problem stemmed from my first use of the online notepad, which allows users to enter multi-line comments in the middle of an observation. Up to that point, I had relied on markers to enter written comments during the hunts. Markers allow only single-line entries and are especially designed for noting errors in coding, but I also used them to record other interesting details, such as comments and questions by the hunters. Although markers were more than adequate for most purposes, I decided to try the online notepad on one observation. Unfortunately, something went awry and the Workabout froze until I exited the program. After I ended the observation, I checked the space available on the disk and realized that the data files had filled up an entire SSD. I was able to salvage the rest of the observation by beginning a new file on the second SSD, which I had not removed from the Workabout at that point.

Back in the community, though, opening and closing a test file likewise consumed all available space on the second SSD. I made copies of all important files on the internal drive, then attempted to delete all content from the second SSD. The results were initially promising, but opening and closing another test file again consumed all available space on the SSD. On rereading the manual, I noticed that notes entered on the online notepad are stored in a separate file. I located that file in the directory and saw that it was much larger than most of my other files. Opening the file, I saw that the single line of text that I had entered was repeated hundreds of times, explaining the large size of the file. For some reason, this file was being appended to all subsequent observational data files, which explains why the second SSD continued to lose all available memory. I was able to delete this problematic file, after which I never again attempted to use the online

notepad. Subsequent inquiries to Noldus tech support staff suggest that the problem was caused by a glitch in the software, and I would discourage readers from using the online notepad on the Workabout MX until this glitch is fixed. The Workabout Pro uses a different version of The Observer software, and Noldus support staff informs me that users of this version have not reported similar problems with the online notepad (Tiffany Mayton, personal communication, May 18, 2006).

Although the Noldus reference manuals contain many useful details and suggestions for use, I agree with Eckhardt and Waterman (2004:805) that they are not particularly “user-friendly.” As I tried to rectify the aforementioned online notepad problem, the manuals provided useful clues, but I had to piece together information from multiple chapters before I was able to find a solution. Reference manuals are especially important for researchers in remote settings where contact with tech support staff is not possible via e-mail or telephone. Accordingly, my suggestion for Noldus and other software designers is to encourage researchers to become familiar with operations that could prove useful when unexpected technical problems are encountered.

Of course, it is not possible to anticipate every possible complication, but software companies could add to the manuals a checklist of important file-management skills to master before departing for fieldwork. At the same time, although The Observer’s troubleshooting guide did not cover my specific problem, I probably could have fixed the problem much sooner if I had experimented with reviewing, copying, and deleting individual Workabout files before going to the field. Noldus offers potential customers a 30-day free trial, and in retrospect, I wish that I had taken full advantage of the offer to familiarize myself with the software and the Workabout operating system. Because I waited for the release of project funds, I had only about three weeks with The Observer before I departed for Nicaragua, which was sufficient time to master the basics but not enough to prepare for unanticipated complications.

Tech support options when in Nicaragua were limited, but the Noldus support in the United States is an excellent resource. In many respects, my need for assistance is probably greater than that of the typical Noldus client, but it is not unexpected for anthropologists. In my case, I chose to make substantial editorial changes to the data files after completing my research in Nicaragua. In addition to correcting simple coding errors, I also redesigned my configuration to facilitate data analysis. For example, I began the project with a single code for time that hunters spend in their boats. However, although most of the time spent in boats is devoted to traveling, a fraction of the time is spent actively pursuing animals.

For analysis purposes, I wanted to distinguish between the two activities, which required me first to add a modifier to the category in the configuration and then to edit each of the data files accordingly. The reference manual devotes little attention to such editing tasks, however, and I inadvertently revised files in a way that corrupted the analysis software. I was lucky in that negative numbers for some activities alerted me almost immediately after I began data analysis that something was amiss, and tech support staff helped me rectify the problem soon thereafter. The ability to edit data files before beginning analysis is an advantage of *The Observer*, but users should contact tech support to learn the process before attempting to edit files independently.

In terms of observer effects, Greene (2001) reported that Nepalese informants were generally curious about his handheld computer. In an attempt to minimize the distracting effects of the *Workabout's* presence, I conducted a demonstration with all the hunters in my study before beginning the research. Nevertheless, some hunters were occasionally curious enough to interrupt their activities and inquire about the *Workabout* or the GPS unit that I carried. (In fact, because they were already familiar with GPS units from other projects, most participants assumed the *Workabout* was also a GPS unit.) I recorded these and other times when my presence clearly disrupted what the hunter otherwise would be doing, such as informal conversations, treating my injuries, or fashioning a seat for me in the boat. In total, this observer-effect time added up to almost 58 minutes during the course of the observations, which amounts to approximately 0.3% of all observation time. Of that time, only 5 and a half minutes, or about 0.03% of all observation time, were devoted to questions about the *Workabout* or the GPS (this total includes requests for GPS assistance from hunters who had lost their way, all of which were denied). I am not aware of similar figures for paper-and-pencil studies, but these results suggest that the use of handheld computers may have a negligible effect on the activities of focal subjects.

In conclusion, *The Observer* allowed me to collect a level of detail that would not have been possible with paper-and-pencil methods, and I would not hesitate to use it again in future research. Now that I am familiar with file management on the *Workabout MX*, I would be willing to use it again for additional fieldwork, although I almost certainly would have opted for the *Workabout Pro* if it had been available when I first acquired *The Observer*. The *Workabout Pro* would be particularly attractive if it proves less susceptible to loss of functionality on being dropped.

In general, the use of handheld computers in remote international settings poses some added challenges, and my hope is that Noldus and other companies will continue to develop products that better meet these challenges. Given the lack of access to personal computers, researchers in

remote settings would be particularly interested in hardware options that allow them to store backup copies of their data in a separate location. Also, reference manuals that encourage users to develop general file-management skills beyond the basics needed to operate the program could minimize the time lost to technical problems that are not explicitly covered in the troubleshooting guide.

In the meantime, researchers can avoid some unnecessary problems by becoming thoroughly familiar with the products before they leave for the field. Although The Observer's manuals can be frustrating at times, they are informative, and a thorough review can reveal helpful features and suggestions for use. For situations in which the manuals do not adequately describe anticipated operations, users can request assistance from technical support staff before leaving for fieldwork. The Observer 5.0 is a versatile software package, and I usually have been able to improvise solutions to problems that are common to research in remote settings.

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