Documentation for Less Work:
Will This Have to be Done Again?[1]

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The Green Logbook

When I joined Hewlett-Packard (Canada) Ltd. in 1980, I arrived on the job armed with a green, hard covered logbook. From my first day as a member of the systems engineering organization, I wrote down what I learned; in a small Day-Timer® book,[2] I logged how I spent my time. When I met clients, I took notes. When I installed new versions of the HP3000 MPE operating system, I kept a chronological record of everything I did, including mistakes. While I taught courses, I kept a list of questions I couldn't answer right away.

Pretty soon, people began asking me what I thought I was doing – writing a novel?

My colleagues may have been puzzled by what they perceived as a mania for record keeping, but I was equally astonished that record keeping was not a normal part of their way of doing work. The immediate reason I automatically kept records was my years in scientific research, where logbooks with hard covers, numbered pages and even waterproof paper were just usual parts of doing serious work. The idea of doing anything of importance without keeping a concurrent record simply didn't occur to anyone. One could not reproduce an experiment without knowing exactly what sequence one had used in accomplishing the steps. Even adding salts to solutions had to be done in a particular order.

So I just kept on keeping my green logbooks.

By the time I left Hewlett-Packard in 1984, I had trained a few of the younger support personnel to keep careful records, especially while solving problems. They were walking around with green logbooks, too.

They had learned the advantages of documentation.

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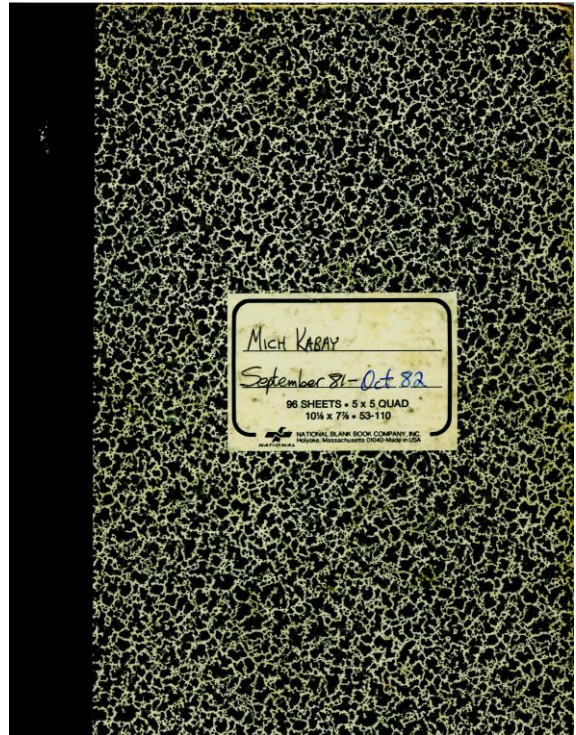
[1] The original version of this paper was originally published in *Supergroup Magazine* 6(12):40 (December 1987). It is also part of the compilation *Computer Envy: Essays on Office Automation.* < http://www.mekabay.com/opsmgmt/envy.pdf > The paper has been updated over the years.

[2] Day-Timer, a subsidiary of ACCO Brands Corporation < http://www.daytimer.com/ >

Why Document?

Documentation, far from being a sterile exercise done to conform to arbitrary requirements of nameless, faceless superiors, should be a vital part of any intellectual exercise. Documentation is simply writing down what we learn: the crucial step in human history that changed traditional cultures into civilizations. By keeping a record independent of any specific individual, we liberate our colleagues and our successors from dependence on our physical availability. Documentation is our assurance that work will continue without us: a kind of immortality, if you will.

We document what we do as a part of systematic problem solving. Writing forces us to identify the problem in words, instead of being content to define it in vague, unclear ideas. Writing down each idea we are in the process of testing helps us notice the ideas we missed the first time we tackled the problem. Keeping notes helps us pay attention to what we're doing.

Documenting what we do also helps us during training–both our own and that of the people we are helping to learn technical skills. Trainees can review their own notes on how to do something instead of relying entirely on someone else's description. If taking notes is viewed as a chance to engage one's mind more thoroughly in what we're learning, it can be fun. When I studied math as a child, I followed my father's rule of using a set of symbols entirely different from those the teacher used; it was harder than mere copying, but I sure learned what was going on.

Finally, accurate records can be a boon in legal wrangles. In one case I experienced, upper management seriously considered legal procedures against a supplier for supposed breach of contract. Careful records of exactly when meetings were held and with whom permitted us to analyze the problem and resolve the issues by collaboration instead of by confrontation. Such records, if kept consistently, in good times and bad, can be accepted in a court of law as evidence– but only if everything points to a steady pattern of record-keeping as events unfold. Records made long after a problem occurs are worthless.

Keep Electronic Records

The best way of keeping records on specific problems is an easy-to-use database. Here is the layout of a simple database file I have used in one form or another for a quarter of a decade since my years as director of technical support in a large corporate data center and ever since then to keep track of projects and technical support issues:

By the time I finished my task of setting up a self-sufficient technical support team in the data center back in Montréal in the mid-1980s, we had two thousand entries archived and instantly available to the entire technical support crew. We had a similar file reserved for system failures and another for summaries of articles from INTEREX (HP3000 User Group) proceedings volumes and various other publications. Every software product we requested information about was logged in the files as well, with a pointer to the folder in which specification sheets and correspondence were stored for the particular entry. These records were in constant use to find experiences which may help in solving new problems as they arise. In my personal database since then, I have stored information that has saved me countless hours time I would have wasted rediscovering something that I recorded in previous problem-solving sessions.

With easily accessible records, it became possible to solve problems without me. Stored, sharable knowledge meant that it was no longer necessary for staff to depend on my physical presence. I was able to take month-long holidays without being called for help. Part of that involved intensive training of the staff, but a good deal was the direct result of proper documentation.

Documentation and the institutional knowledge it creates break the dependency on personality that can make the most competent members of a team slaves to their commitment to service.

Liberate yourselves: share your knowledge.

Indexes

Indexes are immensely useful in locating information. Structured indexes can include keywords and specific pointers; unstructured searches can involve special-purpose indexing or brute-force searches.

One form of index that scientists are familiar with but which many business people have not encountered is the *permuted keyword index*. In this technique, one constructs a list such as the titles of a group of articles, but in addition, one shifts the first word to the end and indexes by the second word as well. The cycle continues for all keywords in the titles. Thus if one starts with the following list of article titles,

- Computer Envy: Essays on Office Automation

- Facilities Management in the Age of Information Warfare

- Facilities Security

then the permuted keyword index might look like this

- Age of Information Warfare, Facilities Management in the

- Automation, Computer Envy: Essays on Office

- Computer Envy: Essays on Office Automation

- Envy: Essays on Office Automation, Computer

- Essays on Office Automation, Computer Envy:

- Facilities Management in the Age of Information Warfare

- Facilities Security

- Information Warfare, Facilities Management in the Age of

- Management in the Age of Information Warfare, Facilities

- Office Automation, Computer Envy: Essays on

- Security, Facilities

- Warfare, Facilities Management in the Age of Information

with a pointer (e.g., a hyperlink) for each entry.

As for unstructured searches, one can always brute-force one's files with the search function of the operating system; however, it is much more efficient to allow the system to create indexes in advance to speed the process of locating files that contain search strings. A search that might take many minutes can be accomplished in seconds.

GOOGLE Desktop Search[3] provides near instantaneous searches on pre-indexed materials on one's disk and is available for Windows, Linux and Mac OS.

Keeping Time Sheets

I have kept time-sheets in my Day-Timer® since 1980 and have never regretted the practice. The cost is minor (for example, the two-page per day model I use costs only $33 a year) but the value is high. My practice is to log my activities to the nearest quarter-hour and to mark billable time in red for my consulting clients.

The sheets are immeasurably useful when I am putting together my billings statements; they could also be useful if anyone ever challenged my records and demanded proof that I had actually worked the hours I claimed. Granted, writing the hours down in a paper record does not prove that I am telling the truth, but the consistent pattern, day after day, year after year, would be evidence in my favor. As you can see in the redacted image above, I even write down what I do for breaks! The fact that the material is written in ink supports the claim that it is a real-time record; the times can also be correlated with electronic records such as the timestamps in electronic mail kept in Outlook e-mail PST files. Finally, the records provide me with a sense of how I am spending my time overall and can also prompt my (failing) memory about times I may have gotten hazy about.

I generally keep the records for at least five years; the 7" x 4.5" x 4.5" (18.5cm x 11.5cm x 11.5cm) boxes take hardly any room in my storage cabinet considering their value to me.

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[3]   Google Desktop < http://desktop.google.com/ >
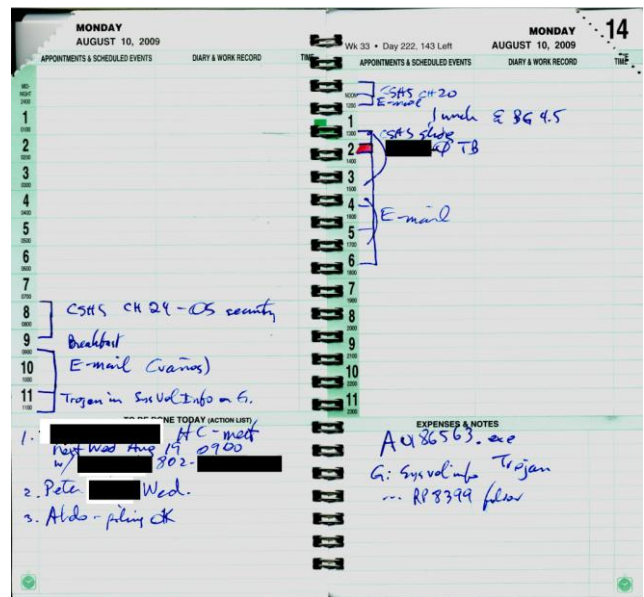
Summary

Documenting what we learn helps us learn better. Documentation of how we solve problems helps us avoid becoming indispensable – and therefore trapped in our current job. Articulating our knowledge by writing it down focuses our minds on what we're doing. Generating a database of problems and their solutions makes pooled knowledge a permanent part of the working environment. Once the information is written down – on paper or online – it can be made more accessible by indexing. Permuted indexes are easy to construct and ensure than key information can be found quickly. Desktop indexing tools make it possible to locate records by keyword search almost instantly as long as they are filed on disk. Time records are useful in establishing accurate billing and evaluating how one spends ones time.

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