

The Wetware Crisis: the Dead Sea effect

By **Bfwebster**, brucefwebster.com

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[Updated (06/16/08): Here's a real-world project review memo, written several years ago, that described (among many other things) the Dead Sea effect.]

[Note: some of you have asked about the Cutter IT Journal article that Ruby Raley and I wrote. It's now online here as well.]

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There are many reasons why large organizations, public and private, struggle with information technology (IT) development. One, which I've already discussed here and here, deals with finding and hiring the best engineers you can. But even if you do find and hire excellent IT engineers, the real question is: can you hold onto them?

There is an anti-pattern that I've seen in large organizations which I have come to call "the Dead Sea effect". The Dead Sea, of course, is a large body of water between Israel and Jordan, located well below sea level. The Jordan River empties into it; water leaves only by evaporation, which means that over the eons, the Dead Sea has become very salty (e.g., 8x saltier than the ocean). As such, it is generally unable to support life, except when spring floods temporarily lower the salinity.

Many large corporate/government IT shops — and not a few small ones — work like the Dead Sea. New hires are brought in as management deems it necessary. Their qualifications (talent, education, professionalism, experience,

skills — TEPES) will tend to vary quite a bit, depending upon current needs, employee departure, the personnel budget, and the general hiring ability of those doing the hiring. All things being equal, the general competency of the IT department should have roughly the same distribution as the incoming hires.

But in my experience, that's not what happens. Instead, what happens is that the more talented and effective IT engineers are the ones most likely to leave — to evaporate, if you will. They are the ones least likely to put up with the frequent stupidities and workplace problems that plague large organizations; they are also the ones most likely to have other opportunities that they can readily move to.

What tends to remain behind is the 'residue' — the least talented and effective IT engineers. They tend to be grateful they have a job and make fewer demands on management; even if they find the workplace unpleasant, they are the least likely to be able to find a job elsewhere. They tend to entrench themselves, becoming maintenance experts on critical systems, assuming responsibilities that no one else wants so that the organization can't afford to let them go.

I'm painting with pretty broad strokes here, yet I've seen this same effect taking place in different companies and different IT shops. Large companies tend to lose the really talented IT engineers and hold onto the less talented ones, when they should be actively seeking to do just the opposite. And the effect tends to be self-reinforcing: the worse an IT shop becomes, the harder it is to get really talented and effective IT engineers to join it and the harder it is to retain them if they do. It can reach a point that the really good talent only comes in as entry-level personnel who don't know any better — but once they do wise up, they're gone.

===== SOME RESPONSES TO COMMENTS =====

The discussion over at Slashdot, as well as the comments below, have raised excellent issues, though some misunderstand or mischaracterize what I'm talking about above. Here's a response to the main themes that I see coming up there.

The Dead Sea effect isn't unique to IT. True enough, though I could say the same thing about just about any project management issue regarding IT. What is unusual about IT (shared with other engineering disciplines) is the degree to which individual talent and other factors affect productivity and quality. And what is unique about IT (as opposed to, say, civil / mechanical / chemical engineers, architects, etc.) is that there is no standard (state-run) professional certification, so there is no assurance of minimum education and competency.

This is obvious/common sense/trivial. So are most of the problems in IT. Fred Brooks and Jerry Weinberg pretty much nailed down all the essential issues in IT project and personnel management more than 30 years ago; yet, amazingly, the problems haven't all gone away! There is a profound lack of professional and institutional memory in IT; almost everyone who writes about IT project/personnel management (myself included) is looking for new ways to cast or explain the core issues in a touching hope that maybe *this time* someone will actually listen and fix them.

The Dead Sea effect is just the Peter Principle (or a corollary thereof). No, it isn't. The Peter Principle is that a given person rises (is promoted) to her/his level of incompetence (I'm actually old enough to remember when 'the Peter Principle' first came out). This has nothing to do with promotion within the IT organization; it has to do with self-selected removal from that IT organization, not due to a lack of promotion or opportunity, but just because there are greener pastures elsewhere.

Not all IT shops are like this. I would certainly hope so. In fact, there are IT organizations where just the opposite occurs; the quality of the IT engineers is quite high, and engineers who are mediocre or disruptive either don't get hired or don't last long if they are. I worked in one such IT group (Pages Software) for five years. During that time, we had only one voluntary departure (the network admin); we had two others who were dismissed due to problems, and a few others who were (painfully) cut in downsizing. (On the other hand, here are some thoughts on why people would leave an outstanding (and lucrative) IT organization like Google.)

Not everyone 'left behind' is incompetent. Again, this syndrome doesn't apply to all IT groups, and it doesn't apply to the same extent to all IT groups. Turnover in IT personnel is common (though it can be reduced by intelligent management), and just because good engineers have left a given IT group doesn't mean that the rest are, in fact, residue. What I'm talking about here is a very real syndrome, typically found in large corporations and government organizations, but it's certainly not universal.

The IT hiring process is broken. Amen. Not only is the IT hiring process broken in many organizations, the entire approach to IT is often broken. It is rife with empire-building, 'heroic' project management, and an 'interchangeable code monkeys' mindset. As mentioned in the comments section below, Ruby Raley and I wrote an article for Cutter IT Journal that stated that an approach modeled after professional sport teams could well be far more effective, but no one has yet hired me to try it out. On the other hand, I would argue that this is to a large extent the approach we took as Pages, which is why we had such a great and effective IT group with so little turnover.

The problem is a failure of leadership. Again, amen. I wrote an entire book about that over a decade ago (**The Art of 'Ware**, M&T Books, 1995), which I'm currently revising.

This doesn't describe/encompass all the problems in professional IT shops. If it did, life would be much easier. Again, note that I've written a bit on the subject. I'm currently working on revised versions of two of my books (**The Art of 'Ware [Version 2.0]** and **Pitfalls of Modern Software Engineering**) while writing a new one (**Surviving Complexity**), from which this posting on the "Dead Sea effect" is a *very, very tiny* extract.

Thanks for the great comments and the feedback; I wish I could get you folks to do this for all sections of all of my books.

For real-world examples of this phenomenon, just spend some time reading The Daily WTF (a site I highly recommend for all IT managers). In particular, their "Tales from the Interview" category gives some interesting insights from both sides of the hiring process.

Also, Alex Papadimoulis, who runs The Daily WTF, has put forth his own proposal for dealing with IT turnover. I especially like his concept of the Value Apex. Be sure to read his article; here's my response to it ..bruce..