The Theory of Computation

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Solution Manual
Chapter 7, Additional Problem 32

If we have PH = PSPACE, then PH has complete problems. But then, as we have noted, PH must collapse down to some level. Thus, somewhat paradoxically, making PH as big as possible by equating it to PSPACE actually collapses it!

Of course, collapsing PH has other consequences; among other things, it means that nondeterminism stops being useful at that level, so that we will have equality of deterministic, nondeterministic, and co-nondeterministic time classes above that level. The collapse also has additional consequences, which we shall not discuss, in terms of other related classes either not mentioned in this text or not yet introduced (such as classes of randomized complexity).