1099-13-229 **William Heinzer** (swiegand@math.unl.edu), 2400 Sheridan Blvd, Lincoln, 68502, **Christel Rotthaus** (swiegand@math.unl.edu), Lincoln, 68502, and **Sylvia M Wiegand*** (swiegand@math.unl.edu), Dept pf Mathematics, University of Nebraska, 203 Avery Hall, Lincoln, NE 685880130. *An iterative meta-example constructed using power series.*

Let x and y be indeterminates over a field k, let $R = k[x, y]_{(x,y)}$ and let R^* be the (x)-adic completion $k[y]_{(y)}[[x]]$ of R. We first apply a simple form of a basic construction that we have developed to adjoin an element σ of $xk[[x]]$ that is transcendental over $k(x)$; for example with $k = \mathbb{Q}$, take $\sigma = e^x - 1$. For this, set $A := k(x, y, \sigma) \cap k[y]_{(y)}[[x]]$. Then $A = C[y]_{(x,y)}$, where $C := k(x, e^x) \cap k[[x]]$, a DVR. Thus the ring A is Noetherian and a regular domain; moreover A is a nested union of localized polynomial rings in three variables that is naturally associated to A.

We iterate the construction using $\tau \in yk[[y]]$ transcendental over $k(y)$. The resulting ring $A' := k(x, y, \sigma, \tau) \cap k[[x, y]]$ is a two-dimensional regular local domain with maximal ideal $(x, y)A'$ and completion $\widehat{A'} = k[[x, y]]$. There is a nested union B' of localized polynomial rings in four variables contained in and naturally associated to A'. Depending upon the choices of σ and τ, sometimes $B' = A'$ and sometimes $B' \subsetneq A'$.

We give some insights, results and examples concerning whether $B' = A'$ and whether B' is Noetherian. (Received February 09, 2014)