$\pi^{k-3}(V) = \{ f_1 = \cdots = f_\ell = 0 \}$.

$\Rightarrow \{ f_1(z_1 \cdots z_{n-k}, h(\ ), h'(\ )) \overset{z_{n-k+3}}{=} \cdots = f_\ell = 0 \}$

$\Rightarrow$ As before, $f_1(z_1 \cdots z_{n-k}, h(z_1 \cdots z_{n-k}), h'(z_1 \cdots z_{n-k}), \overset{z_{n-k+3}}{Y}) \cdots f_\ell(\ )$ have a common divisor.

$\Rightarrow$ On open subset $U' \subset U$, $\{ (z_1 \cdots z_{n-k}, h(z_1 \cdots z_{n-k}), h'(\ ), h''(z_1 \cdots z_{n-k}) \}$ is open in $\pi^{k-3}(V)$.

$\Rightarrow \pi^{k-3}(V) \longrightarrow \pi^k(V)$ is a finite sheeted branched covering. $\Rightarrow$ Continue this process, then we get $\pi : V \longrightarrow \pi^k(V)$ a finite sheeted branched covering.

Note: If $V$ is irreducible at $0$, and $V$ does not contain the $z_1 = \cdots = z_{n-1} = 0$, $\pi(V)$ is irreducible subvariety.

for, if not, by the assertion 1,

$\pi(V) = V_1' \cup \cdots \cup V_\ell'$.

$\Rightarrow$ Since $\pi^{-1}(V_1') \cdots \pi^{-1}(V_\ell')$ are subvarieties in $V$ and $V = \cup \pi^{-1}(V_i')$, this contradicts to the fact that $V$ is irreducible.

$\Rightarrow$ As in p279, we may assume that $\pi^\ell(V)$ is irreducible at $0$.

Thus we proved the assertion 2, granted assertions 3 & 1. ⫫

All of these facts will follow from the proper mapping theorem, which we shall state in the next section and prove in Chapter 3.