Date . .

variety. Suppose $p' \in V \cap \mathbb{P}^{n-k}$.
$\Rightarrow$ $\exists$ an open set $U \ni p'$ in $\mathbb{P}^n$ s.t

$$T_{p'}U = T_{p'}(V \cap U) + T_{p'}(U \cap \mathbb{P}^{n-k}).$$

For the proper mapping theorem, see p34.

$$\overline{\mathbb{P}^{n-k-2}, p} = \bigcup_{\substack{l \text{ line s.t } l \cap \mathbb{P}^{n-k-2} \neq \phi \\ \text{and } l \ni p}} l$$

$$\Rightarrow \overline{\mathbb{P}^{n-k-2}, p} \subset \mathbb{P}^{n-k-1}.$$

Since $p \notin \mathbb{P}^{n-k-2}$, if $p = [p_0 \cdots p_n]$,
$\{(p_0, \cdots p_n), (0, \cdots 0, \overset{k+1}{1}, \overset{k+2}{0} \cdots 0), \cdots (0 0 \cdots 0 \overset{n}{1})\} = S$
is linearly independent.

$\Rightarrow$ S generates a $(n-k-1)$ plane.

$$\Rightarrow \overline{\mathbb{P}^{n-k-2}, p} = \mathbb{P}^{n-k-1}$$

$$\begin{array}{ccc} \pi : \mathbb{P}^n & \longrightarrow & \mathbb{P}^{k+1} \\ \cup & & \cup \\ p \notin V & \longrightarrow & \pi(V) \end{array}$$

$\Rightarrow$ $\pi(p) \notin \pi(V)$. for, if $\pi(p) \in \pi(V)$
$p = [p_0, p_1 \cdots p_n]$ $\Rightarrow \exists\ x \in V$ s.t
$\pi(x) = \pi(p)$ $\Rightarrow$ $[x_0 \cdots x_{k+1}] = [p_0 \cdots p_{k+1}]$.