the tangent space to V at p. ⌋

" Comment on the line 3 on P 22.

$p \in \overline{V_i} \subset V \Rightarrow \exists$ a local defining function f s.t $\mathcal{U}$ open nbd of p. $\mathcal{U} \cap V = \{f = 0\}$.

Assume that f is Weierstrass polynomial in z_n.

$\Rightarrow \exists$ an open set $\mathcal{U}' \subset \mathcal{U}$ s.t $\pi : V \cap \mathcal{U}' - (g=0) \longrightarrow \pi(V \cap \mathcal{U}' - (g=0))$ is a covering map.

$V^* \subset V$ and V^* is open $\Rightarrow$ V_i is open in V

$\Rightarrow$ Since π is open map, $\pi : V_i \cap \mathcal{U}' - (g=0) \longrightarrow \pi(V_i \cap \mathcal{U}' - (g=0))$ is a covering map. ⌋"

More geometrically, the tangent cone $T_p(V) \subset T_p'(M)$ may be realized as the union of the tangent lines at p to all analytic arcs $\gamma : \Delta \to V \subset M$. 『 See P176 & P220. H. Whitney & Mumford P75. Prop. 』

The multiplicity of a subvariety V of dimension k in M at a point p, denoted $\mathrm{mult}_p(V)$, is taken to be the number of sheets in the projection, in a small coordinate polydisc on M around p, of V onto a generic k-dimensional polydisc; note that p is a smooth point of V if and only if $\mathrm{mult}_p(V) = 1$.