$\ulcorner$ As in case 2, $T_p(G) \supset L, L_2 \Rightarrow T_p(G) \supset \overline{L, L_2} = V_2(r)$
$\Rightarrow$ Similarly, $T_p(F) \supset V_2(r) \Rightarrow T_p(X) \supset V_2(r) \Rightarrow V_2(r)$ is tangent to X at p. Again normal vector may be expressed as $V_2(r)/L$, more precisely, $a + L$, $a \in V_2(r) - L$. But since $\dim V_2(r)/L = 1$, $\overline{a, L} = \overline{b, L}$, $b \in V_2(r) - L$. $\lrcorner$

4. If $L_1 = L_2 \neq L$, then clearly r is the image of the proper transform in $\tilde{X}_L$ of the line $L_1 = L_2 \subset X$. (See Figure 29.)

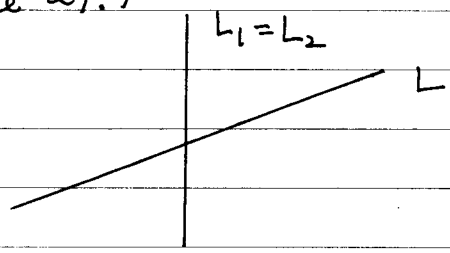

Figure 29

$\ulcorner$ $V_2(r) \cap G = L + L_1$ and $V_2(r) \cap F = L + L_1 \Rightarrow$
$V_2(r) \cap X = L + L_1 \Rightarrow$ Since $\tilde{f}(L_1) = \overline{L, L_1} \cap V_3$
$= V_2(r) \cap V_3 = \overline{L, \eta} \cap V_3 = r$, and $\tilde{L}_1 - L = (x, \eta)$, $\tilde{f}(\tilde{L}_1) = r$. Here η is the normal vector representing L_1. $\lrcorner$