Setting $D_i' = (f_i' - w_i')$, the local intersection number $(D_2', \cdots D_n')_{\{0\}} > 0$ by induction hypothesis. This is in contradiction to $df_2' \wedge \cdots \wedge df_n' \equiv 0$.

By induction hypothesis, we assumed that $\partial(f_1, \cdots f_{n-1}) / \partial(z_1, \cdots z_{n-1}) \not\equiv 0$ and $(D_1, \cdots D_{n-1})_{\{0\}} > 0$. But if we set $D_i' = (f_i' - w_i')$, then $\bigcap_{i=1}^{n-1} D_i' = \{z_0\} = \{z_0'\}$, where $z_0 = (0, z_0')$. and $(D_1, D_2, \cdots D_n)_{\{0\}} = (D_2', \cdots D_n')_{\{0\}}$ by (d), since z_0 is a smooth point of D_1. $\wedge$ $(D_2', \cdots D_n')_{\{0\}} > 0$. by the induction hypothesis.

Furthermore

$$\Rightarrow \quad (D_2', \cdots D_n')_{\{0\}} = \left(\frac{1}{2\pi\sqrt{-1}}\right)^{n-1} \int_{|f_i' - w_i'| = \varepsilon} \frac{df_2'}{f_2'} \wedge \cdots \wedge \frac{df_n'}{f_n'} = 0 \quad *$$

since $df_2' \wedge \cdots \wedge df_n' \equiv 0$ by assuming $df_1 \wedge \cdots \wedge df_n \equiv 0$.

Now, assuming that $df_1 \wedge \cdots \wedge df_n \not\equiv 0$, we shall prove that $(D_1, \cdots D_n)_{\{0\}} > 0$. The Dolbeault representative is

$$\eta(f_1, \cdots f_n) = C_n \sum \frac{(-1)^{i-1} \bar{f}_i \, d\bar{f}_1 \wedge \cdots \wedge \widehat{d\bar{f}_i} \wedge \cdots \wedge d\bar{f}_n \wedge df_1 \wedge \cdots \wedge df_n}{\|f\|^{2n}}$$

$$= f^*(\beta),$$

where, according to the Bochner-Martinelli formula in Section 1 of Chapter 3,

$$\beta = C_n \sum \frac{(-1)^{i-1} \bar{w}_i \, d\bar{w}_1 \wedge \cdots \wedge \widehat{d\bar{w}_i} \wedge \cdots \wedge d\bar{w}_n \wedge dw_1 \wedge \cdots \wedge dw_n}{\|w\|^{2n}}$$

is a closed $(n, n-1)$-form in $\mathbb{C}^n - \{0\}$ whose restriction to every sphere $\|w\| = \varepsilon$ is a $(2n-1)$-form with total integral