A final remark is that the definition of distributions and currents may be localized. Thus, for U open in $\mathbb{R}^n$ the space $\mathcal{D}(U)$ of distributions on U is the dual of $C_c^\infty(U)$ with the obvious topology. Since a diffeomorphism $f: U \longrightarrow V$ (U, V open in $\mathbb{R}^n$) induces a topological isomorphism $f^*: C_c^\infty(V) \longrightarrow C_c^\infty(U)$, we may define the spaces $\mathcal{D}(M)$ and currents $\mathcal{D}^*(M)$ on a manifold M.

「 Definition of $\mathcal{D}(M)$.

$\Rightarrow \exists$ coordinate charts $\{U_\alpha\}$. s.t $C_c^\infty(U_\alpha) \xrightarrow[\cong]{\varphi^{-1}} C_c^\infty(\mathbb{R}^n)$

and , on $U_\alpha \cap U_\beta$, $C_c^\infty(U_\alpha) = C_c^\infty(U_\beta)$; we can define $\mathcal{D}(U_\alpha)$ as follows: $\Lambda \in \mathcal{D}(U_\alpha)$. $g \in C_c^\infty(U_\alpha)$

$\Lambda(g) = \varphi^{-1*}(\Lambda)(\varphi(g))$, where $\varphi^{-1*}: \mathcal{D}(\mathbb{R}^n) \longrightarrow \mathcal{D}(U_\alpha)$

Similarly, we can do it the same thing on $\mathcal{D}^*(M)$. 」

" Comment on the integration of P373.

$$\int_{\pi'^{-1}(B[r])} \pi'^*(\bar\partial\varphi)\wedge\pi'^*\beta = \int_{B[r]} \bar\partial\varphi\wedge\beta$$

$$= \int_{\pi'^{-1}(B[r])} \pi'^*(\bar\partial\varphi)\wedge C_n\,\theta\wedge(\pi^*\Omega)^{n-1}$$

$$= -\int_{\pi'^{-1}(B[r])} C_n\,\theta\wedge\bar\partial\pi'^*\varphi\wedge(\pi^*\Omega)^{n-1}$$

$$\overset{(*)}{=} -C_n\int_{\psi^{-1}(\tilde\Delta\cap(\mathbb{C}^n\times U_0))} \frac{dz_1}{z_1}\wedge\left(\frac{\partial\varphi}{\partial\bar z_1}d\bar z_1+\frac{\partial\varphi}{\partial\bar w_i}d\bar w_i\right)\wedge\left(\frac{\sum dw_i\wedge d\bar w_i}{1+|w|^2}-\frac{(\sum\bar w_i dw_i)\wedge(\sum w_i d\bar w_i)}{(1+|w|^2)^2}\right),$$

where $\psi: \mathbb{C}^n\times U_0 \longrightarrow \mathbb{C}^n\times\mathbb{C}^{n-1}$

$(z, [(z_1, \cdots z_n)]) \longmapsto (z, (\frac{z_2}{z_1}, \cdots \frac{z_n}{z_1}))$