is a.e. differentiable, $\partial^{d_x} F_{x,y}(x,y)$ and $f_x(x) = \partial^{d_x} F_x(x)$ exist a.e. and $f_x(x) > 0$. When the density f_x is a continuous function the conditional distribution can be represented as a functional on a function space on R^{d_x} that can be derived from the general representation above in $D^*(W)$.

Indeed, any distribution function, $F(x,y)$, where we focus on the argument x, via the copula representation can be considered as a functional on $D(W)$. Let Φ denote the class of such distribution functions, then $\Phi \subset D^*(W)$. Moreover the representation (12) demonstrated that any conditional distribution $F_{|x}(x,y)$ also defines a linear continuous functional on $D(W)$. Denoting by $\Phi_{|x}$ the class of conditional distributions we thus have shown that $\Phi_{|x} \subset D^*(W)$. By the remark, we can relax the differentiability conditions and consider $\Phi_{|x} \subset D_k^*(W)$; when the distribution function is differentiable in x, we set $k = 0$. On the other hand, then a continuous density function, $f_x > 0$ exists and the conditional distribution can be represented by an ordinary function $\frac{\partial^{d_x} F_{x,y}(x,y)}{f_x(x)}$; denote by Φ_c the class of distributions that are continuously differentiable in x with $f_x > 0$ on R^{d_x}, and by $\Phi_{c|x}$ the class of corresponding conditional distributions. Then $\Phi_c \subset D_0^*(R^{d_x})$ and as well $\Phi_{c|x} \subset D_0^*\left(R^{d_x}\right)$, where the space $D_0\left(R^{d_x}\right)$ is the space of continuous functions with bounded support in R^{d_x}. Since $\Phi_{c|x} \subset \Phi_{|x}$, any conditional distribution that exists in the ordinary sense and thus is in $\Phi_{c|x}$, has two representations: one as a functional on $D_0(W)$ defined above and the second