In some sence, we may consider $a=0$ and $L_{bc}=\infty$. $\Rightarrow$ $\varphi_{abc}(a)=\infty$ and $\varphi''_{abc}(L_{bc}) = e$ $= 0$

$\varphi_{edf}(e)=\infty$ and $\varphi_{edf}(L_{de})=0$ $\Rightarrow$ $\varphi_{edf}\circ\varphi_{abc}(\infty)=\infty$ $\varphi_{edf}\circ\varphi_{abc}(\overset{\circ}{d})=0$

$\Rightarrow$ "Some sort of reciprocation" DATE 95 . 8 . 23 PAGE

$\Rightarrow$ $\varphi_{edf}\circ\varphi_{abc}$ is holomorphic 1995. 12. 27

「 $[a'(1,0,0)+b'(X_0',X_1',X_2')]=L_a$

$\Rightarrow$ For any $X_0'\neq 0$, $a'+b'X_0'=0$ has nontrivial solutions (a', b'), in case $X_1'\neq 0$ or $X_2'\neq 0$.

$\varphi[(a'+b'X_0', \ b'X_1', \ b'X_2')]$

$=[(b'^2X_1'X_2', \ (a'+b'X_0')b'X_2', \ (a'+b'X_0')b'X_1')]$

$\Rightarrow$ Consider the line $X_1'X_1-X_2'X_2=0$, $X_1'\neq 0$ or $X_2'\neq 0$.

$\Rightarrow$ Clearly $\varphi(L_a)\subset\{X_1'X_1-X_2'X_2=0\}$.

Suppose $L=\{a_0X_0+a_1X_1+a_2X_2=0\}\not\ni a, b, c$.

$\Rightarrow$ $a_0\neq 0$, $a_1\neq 0$, $a_2\neq 0$.

$Z_0=X_1X_2$, $Z_1=X_0X_2$, $Z_2=X_0X_1$

$\Rightarrow$ $a_0+a_1\dfrac{X_1}{X_0}+a_2\dfrac{X_2}{X_0}=0$ $\Rightarrow$ $\dfrac{X_1}{X_0}=\dfrac{Z_0}{Z_1}$ $\dfrac{X_2}{X_0}=\dfrac{Z_0}{Z_2}$

$\Rightarrow$ $a_0+a_1\dfrac{Z_0}{Z_1}+a_2\dfrac{Z_0}{Z_2}=0$ $\Rightarrow$ $a_0Z_1Z_2+a_1Z_0Z_2+a_2Z_0Z_1=0$

Clearly, $\{a_0Z_1Z_2+a_1Z_0Z_2+a_2Z_0Z_1\}\ni d, e, f$.

$d=c$, $e=a$, $f=b$.

Note that φ_{abc} is described locally as

$$(x,y)\longmapsto\left(\frac{1}{x},\frac{1}{y}\right).$$

$\varphi_{edf}\,\varphi_{abc}$ ($a\overset{\shortparallel}{=}e$, $c\overset{\shortparallel}{=}d$, $b\overset{\shortparallel}{=}f$) $:[X_0,X_1,X_2]\longmapsto[X_1X_2, \ X_0X_2, \ X_1X_0]\longmapsto$

$[X_0X_2X_1X_0, \ X_1X_2X_1X^2, \ X_1X_2X_0X]$

$=[X_0, \ X_2, \ X_1]$ is holomorphic 」

Another Cremona transformation has been implicitly mentioned in the last section. Let $a_1, a_2\cdots a_6$ be six points in $\mathbb{P}^2$ in general position with respect to lines and conics. 「 See P480 」

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