GENERALIZATION OF THE BIG PICARD THEOREM

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S. Kobayashi defined a pseudodistance $d$ on a complex manifold in such a manner that it depends only on the complex structure of the complex manifold in question [7]. The definition of the pseudodistance can be extended word for word to a complex space (see [3] for definition of a complex space). Let $D$ be the open unit disk in the complex plane $C$ and $\rho$ the Poincaré-Bergman metric of $D$. Given two points $p$ and $q$ of a complex space $X$, choose the following objects:

1. Points $p = p_0, p_1, \ldots, p_k = q$ of $X$.
2. Points $a_1, \ldots, a_k, b_1, \ldots, b_k$ of $D$ and holomorphic mappings $f_1, \ldots, f_k$ from $D$ into $X$ such that $f_i(a_i) = p_{i-1}$ and $f_i(b_i) = p_i$ for $i = 1, \ldots, k$. For each choice of points and mappings satisfying (1) and (2), consider the number $\rho(a_1, b_1) + \cdots + \rho(a_k, b_k)$. Let $d(p, q)$ be the infimum of the numbers obtained in this manner for all possible choices.

It is easy to verify that $d$ is a pseudodistance on $X$. We shall call a complex space hyperbolic if the pseudodistance $d_X$ is a distance. The concept of a hyperbolic space is a generalization of a Riemann surface of hyperbolic type in the sense that a Riemann surface of hyperbolic type is a hyperbolic space. A hyperbolic space $(X, d_X)$ is said to be complete if for any point $p$ of $X$ and any positive number $r$, the closed ball of radius $r$ around $p$ is compact.

The purpose of this paper is to generalize the big Picard theorem which states that a holomorphic mapping from the punctured disk into the Riemann sphere $\mathbb{P}^1(C)$ minus three points can be extended to a holomorphic mapping from the whole disk into $\mathbb{P}^1(C)$. H. Huber extended this theorem to the case where the image space is a domain $G$ of hyperbolic type in a Riemann surface $R$ such that the closure of $G$ in $R$ is compact [4].

**Theorem 1.** Let $f$ be a holomorphic mapping from the punctured disk $D^*$ into a hyperbolic space $X$. Moreover, assume that the complex space $X$ is compact. Then $f$ can be extended to a holomorphic mapping from the whole disk into $X$.

\[1\] This note is an abstract of the author's Ph.D dissertation written under the guidance of Professor S. Kobayashi.