Ark. Mat., **31** (1993), 173

Correction to "Degenerations of minimal ruled surfaces"

Bruce Crauder

The article appeared in 28:2 (1990), pages 259–271

In proposition 2.3, proof by induction is used to find birational models of degenerations of minimal ruled surfaces having certain properties. In the course of the induction argument exceptional surfaces are blown down and the assertion made that the blow-downs do not essentially affect normal crossings. In point of fact, the blow-downs could introduce self-intersection curves lying over C, in the notation of the proposition, as occurs in the case of non-trivial regular conic bundles. The author wishes to thank Professor T. Fujita, who pointed out this blunder.

Proposition 2.3 was 'Step One' of the proof of Theorem 1.3 which, in essence, says that any degeneration of minimal ruled surfaces has a minimal model which is a $\mathbf{P}^1$-bundle over a surface. Steps Two and Three remain valid as stated and so the conclusion of Theorem 1.3 holds under the additional assumption that all connected components of the degeneracy locus, $D(f)$, are points or generalized exceptional curves (trees of rational curves contractible to smooth points). Counterexamples to Theorem 1.3 as originally stated can be easily found—in fact, the example given in the introduction to the article to illustrate the need for the definitions, assuming Theorem 1.3, can now be seen as a counterexample where $S=\widetilde{Z}$ and $X=\widetilde{Y}$ (!!).

Received August 25, 1992

Bruce Crauder
Department of Mathematics
Oklahoma State University
Stillwater, OK 74078
U.S.A.