*Real Analysis Exchange Vol.16 (1990–91)*
Ján Borsík, Matematyký ústav SAV, Grešákova 6, 040 01 Košice, Czechoslovakia

Jozef Doboš, Katedra matematiky SjF VŠT, Švermova 9, 040 01 Košice, Czechoslovakia

# ON SIMPLE CONTINUITY POINTS

Throughout this paper we assume that $X$ and $Y$ are topological spaces. The letters $\mathbb{N}$, $\mathbb{Q}$ and $\mathbb{R}$ stand for the set of natural, rational and real numbers, respectively.

N. Biswas in [1] introduced the following concept of simple continuity.

**Definition 1.** *A function $f : X \to Y$ is said to be simply continuous if for every open set $V$ in $Y$ the set $f^{-1}(V)$ is a union of an open set in $X$ and a nowhere dense set in $X$.*

The purpose of the present paper is to introduce a suitable pointwise definition of that notion and to give a characterization of the set of all simple continuity points.

**Definition 2.** *We say that $f : X \to Y$ is simply continuous at a point $x \in X$ if for each open neighborhood $V$ of $f(x)$ and for each neighborhood $U$ of $x$ the set $f^{-1}(V) \setminus \text{int}\, f^{-1}(V)$ is not dense in $U$. Denote by $N_f$ the set of all points at which $f$ is simply continuous.*

REMARK 1. Let $f : X \to Y$. It is easy to verify that

($\alpha$) $f$ is simply continuous in the sense of Biswas if and only if $N_f = X$,

($\beta$) $Q_f \subset N_f$, where $Q_f$ denotes the set of all points at which $f$ is quasicontinuous (see [8]).

**Lemma 1.** *Let $f : X \to Y$. Then for each open set $V$ in $Y$ the set $N_f \cap (f^{-1}(V) \setminus \text{int}\, f^{-1}(V))$ is nowhere dense in $X$.*

PROOF. Let $V$ be an open set in $Y$. Put $W = f^{-1}(V) \setminus \text{int}\, f^{-1}(V)$. It is easy to see that $W \cap \text{int cl}\, W \subset X - N_f$. Hence the set $N_f \cap W \subset (N_f \cap W) \setminus \text{int cl}\, W \subset W \setminus \text{int cl}\, W$ is nowhere dense in $X$.