

[9] Mathematical logic proof that the current University standard for “probable cause” is unfalsifiable.

Proof that the standard “sufficient information to believe that a policy violation may have occurred and that the accused may have committed the alleged act(s)” [current Duke University standard for proceeding with a judicial investigation] **is equivalent to** “not all information indicates the innocence of the accused” (“not demonstrably innocent”).

For series **Dude, where are my rights?**, by Elliott Wolf

Symbol Clarifications:

\exists - “There exists”

\forall - “For all”

\neg - “Not”

\vee - “Or”

\wedge - “And”

\Leftrightarrow - “If and only if” or “is equivalent to”

\Rightarrow - “if, then”

DEF: $C(x, y) \Leftrightarrow$ y is a body (one or more pieces) of information establishing the commission of an act and person x committed that act.

$V(y) \Leftrightarrow$ y is a body of information establishing the commission of an act and that act was a violation of University policy.

Standard 1 [$R(x) \Leftrightarrow$ person x meets the current University standard] can be written as:

$\exists y [V(y) \wedge C(x, y)] \Leftrightarrow$ there exists some body of information y establishing the commission of an act; that act was a violation of University Policy and person x committed that act.

The negation of standard 2 [$\neg S(x) \Leftrightarrow$ person x is “demonstrably innocent”] can be written as:

$\forall y [\neg V(y) \vee \neg C(x, y)] \Leftrightarrow$ for all bodies of information y establishing the commission of an act, that act was not a violation of University policy or that act was not committed by person x.

This means that standard 2 [$S(x) \Leftrightarrow$ person x is “not demonstrably innocent”] can be written as:

$\neg \forall y [\neg V(y) \vee \neg C(x, y)] \Leftrightarrow$ it’s not the case that for all bodies of information y establishing the commission of an act, that act was not a violation of University policy or that act was not committed by person x.

Proof of $[R(x) \Leftrightarrow S(x)]$

1) $R(x) \Rightarrow S(x)$

$\exists y [V(y) \wedge C(x, y)]$	HYP	Hypothesis; statement of $R(x)$
$\neg \forall y \neg [V(y) \wedge C(x, y)]$	DEF \exists	Definition of \exists ; there exists a y s.uch that A holds is equivalent to saying that it's not the case that for all y the negation of A holds
$\neg \forall y [\neg V(y) \vee \neg C(x, y)]$	DEM	Demorgan's law; if A and B doesn't hold, then either the negation of A or the negation of B holds
$S(x)$	DEF $S(x)$	The previous line is the exact statement of $S(x)$

2) $S(x) \Rightarrow R(x)$

$\neg \forall y [\neg V(y) \vee \neg C(x, y)]$	HYP	Hypothesis; statement of $S(x)$
$\exists y \neg [\neg V(y) \vee \neg C(x, y)]$	DEF \exists	Definition of \exists ; there exists a y s.uch that A holds is equivalent to saying that it's not the case that for all y the negation of A holds
$\exists y [\neg \neg V(y) \wedge \neg \neg C(x, y)]$	DEM	Demorgan's law; if A or B doesn't hold, then A and B must both be false .
$\exists y [V(y) \wedge C(x, y)]$	$\neg \neg$ RULE	The double negative of a statement is that statement.
$R(x)$	DEF $R(x)$	The previous line is the exact statement of $R(x)$

Thus, $R(x) \Leftrightarrow S(x)$

and

“sufficient information to believe that a policy violation may have occurred and that the accused may have committed the alleged act(s)”

\Leftrightarrow

“not all information indicates the innocence of the accused”



Note on why this is significant:

This equivalence is important because it establishes that anyone for whom “not all information indicates [his/her] innocence” meets the current standard set by the University for proceeding with a judicial investigation, and vice-versa. This is extremely problematic because:

- 1) The standard that “not all information indicates [his/her] innocence” applies to almost anyone.
- 2) If someone who is the target of a judicial investigation wishes to convince the Judicial Officer not to proceed with charges (i.e. that they don’t meet the current University standard for proceeding with an investigation), s/he must show all that all information available demonstrates his/her innocence. This is (a) impossible, because not all information is available to the target of a judicial investigation, and (b) problematic, because it requires someone supposedly “assumed innocent until proven responsible by a clear and convincing burden of proof” to prove his/her innocence beyond **any** doubt.

While this probably isn’t the way things really work in the Undergraduate Judicial System, it is how it’s spelled out in the bulletin.