Explorations in Logic, Ill-logic, Truth and Lies

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Have Fun!

Part I: The Island of Knights and Knaves

In this island Godelistan, **Knights** always tell the truth and **Knaves** always lie. Every inhabitant in this is one or the other.

Problem 1. You meet three inhabitants of Godelistan: A, B, and C. You are told at least one is a knight, at least one is a knave, and exactly one has a prize.

- **A:** B doesn't have the prize.
- **B:** I don't have the prize.
- **C:** I have the prize.
- **Task:** Can you guess and justify which one of them has the prize?

Problem 2. Three suspects (A, B, and C from Godelistan) are on trial for a crime. They state:

- **A:** I am guilty.
- **B:** I am the same type* as at least one of the others.
- **C:** We are all of the same type*.
- *Type refers to being a knight or a knave.*

- **Task:** Who is the guilty one?

Problem 3. A logician visiting Godelistan asks Asifa, "Are both of you knights?" Asifa answers (yes or no) and the logician then knows what type Asifa and her companion Benazir are.

- **Task:** What did Aruna answer? What type is each one?

Problem 4. Exactly one of the three natives from Godelistan (A, B, and C) is a magician.

- **A:** B is not both a knave and a magician.
- **B:** Either A is a knave or I am not a magician.
- **C:** The magician is a knave.
- **Task:** Who is the magician?

Part II: Certification and Metalogic

Problem 5. The Certified Knight: You make a brief visit to Tarskipuram, next to Godelistan which has a certification process. There are certified knights, certified knaves, uncertified knights and uncertified knaves here. T

- A native says: "I am not a certified knight." Was he a knight or a knave? Was he certified?
- Another native says: "I am an uncertified knight." Is it possible to tell if he is a knight or if he is certified?
- What statement could a native make that would allow a logician to deduce the speaker is an **uncertified knave**?

Problem 6. The Executioner's Puzzle A logician is captured in a forbidden land. The decree: make a statement. If your statement is true, you are hanged; if your statement is false, you are drowned.

- **Task:** What statement makes it impossible to carry out the decree?

Part III: The Island of MUSICA

Inhabitants are either **Pianists** or **Violinists**.

- **Ladies:** Pianists tell the truth; Violinists lie.
- **Men:** Pianists lie; Violinists tell the truth.

Problem 7. A lady (L) and a man (M) make these statements:

- **L:** We are both pianists.
- **M:** That is true.
- **Task:** Identify if who is what?

Part IV: Advanced Deduction

Problem 8. Evidence suggests a lawyer killed D. Only two of these six statements are correct, and only one suspect is **not** a lawyer:

- **A:** (1) I did not kill D. (2) I am not a lawyer.
- **B:** (1) I am a lawyer. (2) But I did not kill D.
- **C:** (1) I am not a lawyer. (2) Lawyer killed D.
- **Task:** Identify the murderer.

Problem 9. One of three (Archie, Barchie, Corey) is the medicine man; at least two are knaves.

- **Archie:** I am the medicine man.
- **Barchie:** I am not the medicine man.
- **The Question:** The logician asks Corey: "Is Archie really the medicine man?" Corey answers (yes/no) and the logician then knows the truth.
- **Task:** Who is the medicine man?

Problem 10. The Beach Murder Alice, her husband, son, daughter, and brother are involved in a murder.

1. A man and woman were in a bar during the crime.
2. The victim and killer were together on a beach.
3. One of Alice's two children was alone.
4. Alice and her husband were not together.
5. The victim's twin was not the killer.
6. The killer was younger than the victim.
- **Task:** Which one of the five was the victim?

Sources:
1. The Gödelian Puzzle Book: Puzzles, Paradoxes and Proofs
2. *Logical Deduction Puzzles*, George J. Summers'