NPR and NRC: privilege completeness over soundness

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The corona-virus crisis may delay the NPR process, but, given the steadfast resolve of the government despite nation-wide protests, it will presumably only be a matter of time before it is started. Notwithstanding the assurances from the home minister to the contrary, it is inevitable that the NPR exercise will lead to the dreaded NRC. Moreover, there are worrisome suggestions from some quarters about also throwing Aadhaar, biometrics and authentication of electoral rolls into the already uncertain mix.

While the decision on the constitutionality of CAA is pending in the Supreme Court, it is undeniable that there are legitimate state aims in NPR, NRC and cleaning voter's lists. Even without questioning the motives of the government, the crucial questions then are whether these can be done correctly, and what are the consequences of errors?

In computer science, it is customary to analyse the correctness of processes through the properties of completeness - which demands that everything that is true can be proved, and soundness - which demands that only true things are provable. For example, for any fixed definition of citizenship, completeness would require that no citizens are excluded, and soundness would require that everyone proclaimed to be a citizen is indeed so. Though not contradictory in general, they are mutually exclusive in several situations. With careless designs, the potential tension between the state's requirement of soundness and the marginalised citizen's need for completeness may raise serious questions about the ethics and constitutionality of the processes.

Can the NPR and NRC processes, with or without Aadhaar, be complete and sound?

Making parents' date and place of birth mandatory for NPR makes the intention of eventually using it for NRC clear. NPR 2020 also proposes to collect data regarding place of last residence and mother tongue; and Aadhaar (voluntary), mobile, passport (for Indian passport holders), voter identity and driving license numbers. Apart from the fact that many of these are without any statutory backing and raise data privacy concerns, the home minister's assurance in the Rajya Sabha that "no document will be sought under the NPR . . . nobody will be marked a doubtful citizen" will make the process unsound, and consequently of little use. In contrast, the registration of citizens rules of 2003, which empowers a local registrar - at the lowest geographical jurisdiction - to mark out people as "doubtful" at the verification stage with no clearly specified tests, can make the process potentially discriminatory and uncertain, and hence incomplete.

Also, to consider the Parliamentary Standing Committee on Home Affairs' suggestion on the possibility of using Aadhaar for NPR, it is crucial to first evaluate the soundness and completeness of the Aadhaar registration process itself. There seems to be considerable uncertainty about both, with reports abound in the media casting doubts on the integrity of Aadhaar registration and exclusion of the marginalised. Even the independent State of Aadhaar Report 2019 found that 30% of homeless and 27% of third-gender residents do not have Aadhaar.

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It is also imperative to establish the correctness of Aadhaar de-duplication before using it to clean other databases. No audit report is publicly available, and some simple back-of-the-envelope combinatorics generate skepticism. Biometric matching is not exact, and de-duplication of a nation of 1.3 billion would require pair-wise matching of the order of 10^{18} biometric sets. Even at an optimistic average rate of a microsecond per pair with highly efficient techniques, the total matching time required would appear to be several orders of magnitude more than the decade of Aadhaar.

And, it is not clear what essential process differences will demarcate NPR from Aadhaar and why?

For NRC there is more at stake, and hence correctness is even more crucial. While there is no government decision as yet on acceptable documents for citizenship, various courts have ruled against PAN, Aadhaar, driving license, bank documents and land tax receipts, presumably because these only indicate residency. School certificates are similarly doubtful, and, surprisingly, there is a recent Gujarat High Court ruling that even voter identity card is not a proof of citizenship.

So, it appears that birth certificates and proofs of parents' date and place of birth must be the main determinants. And parent-child relationships must be established in case the child's name is not on the certificate, which is common in India. Many have no means of establishing any of these. Even in 2016, it appears that only 86% of births in India were registered, and only 60% in UP and Bihar. Incorrect entries, missing data items and spelling errors can only compound the problem.

Moreover, even if one produces 'kaagaz', there is no foolproof way of verifying their authenticity. It is evident that no process based only on 'kaagaz' or 'angutha' can be either sound or complete. Building a network of trust will not only require a detailed protocol design but also an analysis of its precise properties. Correctness or efficacy of process definitions cannot be established by forceful proclamations, but perhaps that is not the primary concern of the government.

Unsound processes will lead to waste of time and resources, but the cost of incompleteness will be graver. Apart from potential persecution and disenfranchisement of marginalised communities, there is real danger that the processes may lead to rampant arbitrariness, corruption, bribes, middlemen and forgery of documents. Unleashing processes that may force the under-privileged and the infirm - labourers, migrant workers, landless farmers, adivasis, dalits, old, sick, children, handicapped and other vulnerable - to go through the hoops will be altogether undesirable.

Considering everything, in the spirit of Vasudhaiva Kutumbakam, privileging completeness over soundness and accepting a few more millions as part of our 1.3 billion strong Indian Kutumb, along with tightening the borders, may on the whole be sensible.