### Project Details

#### Project Title

**Machine design: The Locus of Contesting Philosophical Frameworks**

#### Project Summary

Over the past two decades we have conducted systematic studies of several examples of pre-modern (traditional) engineering systems in India (e.g. the Anangpur dam; the Grand anicut (*Kallanai*); the tank-anicut systems of South India and the Kuin-Par system of Rajasthan). The work on traditional engineering systems began as a response to the problem of harmful side effects that accompany all advances in modern science and technology. The fact that unwanted, and often disastrous, side-effects accompany all engineering solutions indicates that the problem is systemic rather than peculiar to any specific design or technology.

While our work (and that of others) on traditional engineering systems shows that they appear to be inherently environmentally sound and sustainable, we are still a long way from understanding the foundations of a sustainable design method and science/engineering. The present project attempts to address this with specific reference to machinery.

The key elements of the industrial revolution are the modern machine and the factory mode of production. The ethos of industrial revolution is based on these two elements. This ethos is hegemonic and it constitutes the modern approach to nature, which produces the problem of sustainability and alienation. In contrast, traditional engineering systems were based on an alternative philosophy of nature and unlike the ‘conquering the nature’ aspect of industrial revolution ethos, it aimed at ‘nature-human harmony’. The specific objective of this project is to study the philosophical underpinnings/presuppositions of the machine and the factory and compare them with those of traditional modes of production. This is a necessary step towards understanding the engineering and scientific foundations that inform the principles of a sustainable design method.

### PhD Supervisors

<table>
<thead>
<tr>
<th>Role</th>
<th>Faculty</th>
<th>Academic Unit in IITD</th>
<th>Email ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor 1</td>
<td>Srinivas V Veeravalli</td>
<td>Applied Mechanics Dept.</td>
<td><a href="mailto:srvalli@am.iitd.ac.in">srvalli@am.iitd.ac.in</a></td>
</tr>
<tr>
<td>Supervisor 2</td>
<td>Manindra N Thakur</td>
<td>Centre for Political Studies, Jawaharlal Nehru University</td>
<td><a href="mailto:manindral@mail.jnu.ac.in">manindral@mail.jnu.ac.in</a></td>
</tr>
</tbody>
</table>

### Project requirements (Student qualifications, experience required, etc)

- M.A./M.Phil (Philosophy/Political Sc.) or. M Tech. (AM/CE/EE/ME)
- A combination of Engineering and Social Science background would be recommended. i.e. B Tech./BE in CE/EE/ME followed by M.A./M Phil in Philosophy/Political Sc.
- Candidates with a research fellowship (JRF/SRF) would be preferred.
### Source of funding (IRD/FITT Project details, if any)

This project is not funded at present which is why we would prefer candidates with a JRF/SRF at least for the first year or two. We plan to approach INSA/ICPR/ICSSR for funding in due course.

### Role of Faculty Members involved:

Both supervisors would be involved with the entire project, however, MNT will be primarily concerned with the philosophical/social science aspects while SVV would cater mainly to the engineering aspects of the project.