C. Ehresmann concepts in Differential Geometry

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We first give a survey of C. Ehressmann career, pointing out the great influence of his Seminars on the Mathematical Community.

Then we outline some of the tools that C. Ehresmann has introduced in Differential Geometry (which are often used in Mechanics and Physics).

1. Pseudogroups of transformations. Use of an atlas compatible with a pseudogroup to define manifolds, fiber bundles, foliations and more generally local structures.

2. Reduction of the structure group of a principal bundle. In particular G-structures (among them almost complex and almost symplectic structures).

3. Connections on a principal bundle; Cartan connections.

4. Groupoids.

5. Jets (holonomic, semi-holonomic, non-holonomic). Prolongations.

6. Lie groupoids and Lie psendogroups.