Conflict Resolution - basics

- **Defining Conflict**
  - In Social psychology, focus is on interdependence and perception:
    - "the interaction of interdependent people who perceive opposition of goals, aims, and values, and who see the other party as potentially interfering with the realization of these goals" (Putnam & Poole, 1987)
  - In RE, focus typically is on logical inconsistency:
    - E.g. conflict is a divergence between goals - there is a feasible boundary condition that makes the goals inconsistent [van Lamsweerde et al. 1998]
  - **Note:** conflict may occur between individuals, groups, organizations, or different roles played by one person

- **Resolution Method:**
  - The approach used to settle a conflict
    - Methods include negotiation, competition, arbitration, coercion, and education
    - Not all conflicts need a resolution method: not all conflicts need to be resolved.
  - Three broad types of resolution method can be distinguished:
    - Co-operative (or collaborative) methods, which include negotiation and education;
    - Competitive methods, which include combat, coercion and competition;
    - Third Party methods, which include arbitration and appeals to authority.
Basic approaches to conflict resolution

- **Negotiation**
  - is collaborative exploration:
  - participants attempt to find a settlement that satisfies all parties as much as possible.
  - also known as:
  - integrative behaviour
  - constructive negotiation
  - distinct from:
  - distributive/competitive negotiation

- **Third Party Resolution**
  - participants appeal to outside source
  - the rule-book, a figure of authority, or the toss of a coin.
  - can occur with the breakdown of either negotiation or competition as resolution methods.
  - types of third party resolution
  - judicial: cases presented by each participant are taken into account
  - extra-judicial: a decision is determined by factors other than the cases presented (e.g. relative status of participants).
  - arbitrary: e.g. toss of a coin

- **Competition**
  - is maximizing your own gain:
  - no regard for the degree of satisfaction of other parties.
  - but not necessarily hostile!
  - Extreme form:
  - when all gains by one party are at the expense of others.
  - i.e. a zero-sum game.

- **Bidding and Bargaining**
  - Bidding:
  - participants state their desired terms
  - Bargaining:
  - participants search for a satisfactory integration of bids.

Conflict in Social Psychology

- **Causes of Conflict**
  - Deutsch (1973):
  - control over resources
  - preferences and nuisances (tastes or activities of one party impinge upon another)
  - values (a claim that a value or set of values should dominate)
  - beliefs (dispute over facts, information, reality, etc.)
  - the nature of the relationship between the parties.
  - Robbins (1989):
  - communicational (insufficient exchange of information, noise, selective perception)
  - structural (goal compatibility, jurisdictional clarity, leadership style)
  - personal factors, (individual value systems, personality characteristics).

- **Interesting Results**
  - deviant behaviour & conflict are normal in small group decision making
  - more aggression and less co-operation when communication is restricted
  - a decrease in communication tends to intensify a conflict (the contact hypothesis)
  - heterogeneous teams experience more conflict;
  - homogeneous groups are more likely to make high risk decisions (groupthink)
  - effect of personality is overshadowed by situational and perceptual factors
Severity of Conflict

For two initial positions, A and B, we can measure the severity of conflict by examining what happens when we combine them.

Classification of Social Conflict

Adapted from Dahrendorf 1958:

<table>
<thead>
<tr>
<th>Social Units</th>
<th>Equal vs. equal</th>
<th>Superordinate vs. subordinate</th>
<th>Whole vs. part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(family role vs. occupational role)</td>
<td>2</td>
<td>(occupational role vs. union role)</td>
</tr>
<tr>
<td>Groups</td>
<td>4</td>
<td>(boys vs. girls in school class)</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>(air force vs. army)</td>
<td>8</td>
<td>(management vs. union)</td>
</tr>
<tr>
<td>Societies</td>
<td>10</td>
<td>(Protestants vs. Catholics)</td>
<td>11</td>
</tr>
<tr>
<td>Suprasocietal relations</td>
<td>13</td>
<td>(soviet bloc vs. western bloc)</td>
<td>14</td>
</tr>
</tbody>
</table>
**Classifying approaches to resolution**

Adapted from McGrath 1984

- **Quadrant I**: Generate
  - Solving Problems w/Correct Answers
  - Executing Performance Tasks

- **Quadrant II**: Choose
  - Deciding Issues w/No right answer
  - Resolving Conflicts of Viewpoint

- **Quadrant III**: Negotiate
  - Resolving Conflicts of Power
  - Resolving Conflicts of Interest

- **Quadrant IV**: Execute
  - Executing Performance Tasks
  - Executing Performance Tasks

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**Game Theory**

- **Game Theory for conflict resolution**
  - **Given**: 2 or more players, known utilities for each outcome for each player
  - **Can Calculate**: what strategy results in the better outcome, how strategies by different players interact
  - **E.g. Prisoner's dilemma**:
    
    |                  | Not Confess | Confess         |
    |------------------|------------|-----------------|
    | **Prisoner A**   |            |                 |
    | Not Confess      | 1 year each| 10 years for A and 3 months for B |
    | Confess          |            | 8 years each    |
    | 3 months for A   |            |                 |
    | and 10 years for B|          |                 |

- **But**: In RE, we often don’t know what the utilities are, often can resolve conflicts by getting participants to change their utilities, often we don’t know even what moves are possible!
Using Argumentation Structuring...

- **gIBIS**
  - Developed by Conklin [1989]
  - Represents argumentation process as a hypertextual graph
  - Basic Process:
    - Identify issues
    - Identify positions that one can adopt with respect to the positions
    - Link arguments that support or refute positions

- **Synoptic**
  - Developed by Easterbrook [1991]
  - Tool support for collaborative task-focused negotiation
  - Basic Process:
    - Get each participant to externalise their conceptual model(s)
    - Find correspondences between the models
    - Classify mismatches
    - Generate options for resolving each mismatch

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gIBIS argumentation structure

```
Issue1 respondsTo Position1
  generalizeTo Issue2
  questionsArgument1
  supports Argument1
  objectsTo Argument2

Issue3 respondsTo Position2
  objectsTo Argument3

Issue4 objectsTo Argument4
  isSuggestedBy Issue4

Argument5 objectsTo Argument3
```

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Using Pre-existing Domain Models…

**Oz**
- developed by Robinson [1992]
- Uses pre-existing domain model to compare conflicting perspectives
  - Basic process:
    - Identify perspectives (collections of beliefs)
    - Record perspectives by annotating a domain model of goals and objectives
    - Domain model links product attributes to goals
    - Choose combinations of product attributes to maximise participants’ satisfaction

**WinWin**
- developed by Boehm & colleagues [mid 1990s]
- explicitly identifies win-conditions for each participant
- Incorporates domain knowledge-base of quality requirements and product attribute links
  - Basic Process:
    - Enter win conditions for each participant
    - identify attribute strategies for win conditions
    - determine negative effects for each strategy on each win condition
    - resolve disagreements manually