What is claimed is:

1. A method for operating a user equipment in a wireless communication system, the method comprising:
receiving a downlink message, wherein said downlink message includes a first control channel element;
determining a first index using the location of said first control channel element;
determining a second index;
determining a first orthogonal resource using said first index;
determining a second orthogonal resource using said second index;
spreading an uplink message using said first orthogonal resource to form a first spread signal;
spreading said uplink message using said second orthogonal resource to form a second spread signal;
transmitting said first spread signal using a first antenna; and
transmitting said second spread signal using a second antenna.

2. The method of claim 1, wherein said determining a second index uses the location of a second control channel element of said downlink message.

3. The method of claim 1, wherein said determining a second index further comprises:
obtaining said second index from another downlink message.

4. The method of claim 1, wherein said determining a second index uses the location of said first control channel element.

5. The method of claim 1, wherein said determining a second index uses said first index.

6. A method for operating a user equipment in a wireless communication system, the method comprising:
receiving a downlink message by a wireless device from a base station;

determining a plurality of indices using said downlink message;

determining a plurality of orthogonal resources using said plurality of indices;

generating a plurality of orthogonal signals by applying said plurality of orthogonal resources to an uplink message; and

transmitting said plurality of orthogonal signals from said wireless device to said base station.

7. The method of claim 6, wherein said transmitting said plurality of orthogonal signals from said wireless device to said base station further comprises:

using a plurality of antennas of said wireless device to transmit said plurality of orthogonal signals.

8. The method of claim 6, wherein said determining a plurality of indices using said downlink message further comprises:

determining a first index of said plurality of indices using the location of a first control channel element of a plurality of control channel elements, wherein said downlink message includes said plurality of control channel elements; and

determining the other indices of said plurality of indices using another downlink message.

9. The method of claim 6, wherein said determining a plurality of indices using said downlink message further comprises:

determining a first index of said plurality of indices using the location of a first control channel element of a plurality of control channel elements, wherein said downlink message includes said plurality of control channel elements; and

determining the other indices of said plurality of indices using the location of said first control channel element of said plurality of control channel elements.

10. The method of claim 6, wherein said determining a plurality of indices using said downlink message further comprises:

determining a first index of said plurality of indices using the location of a first control channel element of a plurality of control channel elements, wherein said downlink message includes said plurality of control channel elements; and

determining the other indices of said plurality of indices using said first index of said plurality of indices.

11. A method of configuring a user equipment in a wireless communication system, the method comprising:

sending a first uplink message from a wireless device to a base station using a single antenna transmission mode, wherein said first uplink message includes a request to configure the transmit diversity mode of said wireless device;

receiving a downlink message by said wireless device from said base station, wherein said downlink message includes a transmit diversity mode for said wireless device; and

sending a second uplink message from said wireless device to said base station using said transmit diversity mode.

12. The method of claim 11, further comprising:

sending another uplink message from said wireless device to said base station using said single antenna transmission mode, wherein said other uplink message includes the number of transmit antennas of said wireless device.

13. The method of claim 11, wherein said first uplink message includes the number of transmit antennas of said wireless device.

14. The method of claim 11, further comprising:

receiving another downlink message by said wireless device from said base station, wherein said other downlink message includes an acknowledgement of the receipt of said first uplink message by said base station.

15. A device in a wireless communication system, comprising:

a processor coupled to a memory containing processor-executable instructions;
a receiver and a transmitter coupled to said processor;
wherein said receiver is operable to:
receive a downlink message from a base station;
wherein said processor is operable to:
derive a first index using the location of a first control channel element of said downlink message;
derive a second index;
determine a first orthogonal resource using said first index;
determine a second orthogonal resource using said second index;
generate a first orthogonal signal by applying said first orthogonal resource to an uplink message;
generate a second orthogonal signal by applying said second orthogonal resource to said uplink message; and
wherein said transmitter is operable to:
transmit said first and said second orthogonal signals to said base station.

16. The device of claim 15, wherein said processor is further operable to derive said second index using the location of a second control channel element of said downlink message.

17. The device of claim 15, wherein said processor is further operable to derive said second index by obtaining said second index using another downlink message sent from said base station.

18. The device of claim 15, wherein said processor is further operable to derive said second index using the location of said first control channel element.

19. The device of claim 15, wherein said processor is further operable to derive said second index using said first index.

20. The device of claim 15, wherein said transmitter is further operable to:

transmit said first orthogonal signal using a first antenna; and

transmit said second orthogonal signal using a second antenna.

What is claimed is:

1. A method for operating a user equipment in a wireless communication system, the method comprising:

detecting a downlink control channel, wherein said downlink control channel includes a first control channel element;

determining a first index using the location of said first control channel element;

determining a second index based on said first index;

determining a first indicator of a first orthogonal resource using said first index;

determining a second orthogonal resource using said second index;

spreading an uplink message based on said first orthogonal resource to form a first spread signal;

spreading said uplink message using said second orthogonal resource to form a second spread signal;

transmitting said first spread signal using a first antenna; and

transmitting said second spread signal using a second antenna.

2. The method of claim 1, wherein said determining a second index uses the location of a second control channel element of said downlink control channel.

3. The method of claim 1, wherein said determining a second index further comprises:

obtaining said second index from another downlink message.

4. The method of claim 1, wherein said determining a second index uses the location of said first control channel element.

5. The method of claim 1, wherein said determining a second index uses said first index.

6. A method for operating a user equipment in a wireless communication system, the method comprising:

detecting a downlink control channel by a wireless device from a base station;

determining a plurality of indices using said downlink control channel;

determining a plurality of indicators of a plurality of orthogonal resources using said plurality of indices;

generating a plurality of orthogonal signals by applying said plurality of orthogonal resources to an uplink message; and

transmitting said plurality of orthogonal signals from said wireless device to said base station.

7. The method of claim 6, wherein said transmitting said plurality of orthogonal signals from said wireless device to said base station further comprises:

using a plurality of antennas of said wireless device to transmit said plurality of orthogonal signals.

8. The method of claim 6, wherein said determining a plurality of indices using said downlink control channel further comprises:

determining a first index of said plurality of indices using the location of a first control channel element of a plurality of control channel elements, wherein said downlink control channel includes said plurality of control channel elements; and

determining the other indices of said plurality of indices using another downlink message.

9. The method of claim 6, wherein said determining a plurality of indices using said downlink control channel further comprises:

determining a first index of said plurality of indices using the location of a first control channel element of a plurality of control channel elements, wherein said downlink control channel includes said plurality of control channel elements; and

determining the other indices of said plurality of indices using the location of said first control channel element of said plurality of control channel elements.

10 The method of claim 6, wherein said determining a plurality of indices using said downlink control channel further comprises:

determining a first index of said plurality of indices using the location of a first control channel element of a plurality of control channel elements, wherein said downlink control channel includes said plurality of control channel elements; and

determining the other indices of said plurality of indices using said first index of said plurality of indices.

11. A device in a wireless communication system, comprising:

a processor coupled to a memory containing processor-executable instructions;

a receiver and a transmitter coupled to said processor;

wherein said receiver is operable to:

detect a downlink control channel from a base station;

wherein said processor is operable to:

derive a first index using the location of a first control channel element of said downlink control channel;

derive a second index based on said first index;

determine a first indicator of a first orthogonal resource using said first index;

determine a second indicator of a second orthogonal resource using said second index;

generate a first orthogonal signal by applying said first orthogonal resource to an uplink message;

generate a second orthogonal signal by applying said second orthogonal resource to said uplink message; and

wherein said transmitter is operable to:

transmit said first and said second orthogonal signals to said base station.

12. The device of claim 11, wherein said processor is further operable to derive said second index using the location of a second control channel element of said downlink control channel.

13. The device of claim 11, wherein said processor is further operable to derive said second index by obtaining said second index using another downlink message.

14. The device of claim 11, wherein said processor is further operable to derive said second index using the location of said first control channel element.

15. The device of claim 11, wherein said processor is further operable to derive said second index using said first index.

16. The device of claim 11, wherein said transmitter is further operable to:
transmit said first orthogonal signal using a first antenna; and
transmit said second orthogonal signal using a second antenna.

17. A system of wireless communication, comprising:
a base station;
a wireless device communicatively linked to said base station, wherein said wireless device a downlink control channel from said base station; derives a first index using a first control channel element of said downlink message;
derives a second index from at least one of said first index;
determines a first indicator of a first orthogonal resource based on said first index;
determines a second indicator of a second orthogonal resource using said second index;
generates a first orthogonal signal by applying said first orthogonal resource to an uplink message;
generates a second orthogonal signal by applying said second orthogonal resource to said uplink message;

transmits said first orthogonal signal from a first antenna to said base station; and

transmits said second orthogonal signal from a second antenna to said base station.

18. The system of claim 17, wherein the number of control channel elements of said downlink control channel is greater than or equal to the number of orthogonal resources assigned to said wireless device.

19. The system of claim 17, wherein said base station changes the number of control channel elements of said downlink control channel to match the number of orthogonal resources assigned to said wireless device.

20. The system of claim 17, wherein said base station allocates a reserved control channel element of said downlink control channel to match the number of orthogonal resources assigned to said wireless device.

21. The system of claim 17, wherein said wireless device derives said second index using a second control channel element of said downlink control channel.

22. The system of claim 17, wherein said wireless device derives said second index using another downlink message.

23. The system of claim 17, wherein said wireless device changes the number of orthogonal resources to match the number of control channel elements of said downlink control channel assigned by said base station.

24. The system of claim 17, wherein said wireless device changes the transmit diversity mode of said wireless device to match the number of control channel elements of said downlink control channel assigned by said base station.

25. The system of claim 17, wherein said base station assigns to said wireless device an offset from said first control channel element to a second control channel element both of said downlink control channel, wherein said downlink control channel is a physical downlink control channel, and the selection of said second control channel element is limited to those control channel elements of said downlink message corresponding to a physical uplink control channel resource transmitted in the same physical uplink control channel resource block.

26. The system of claim 17, wherein said wireless device derives said second index using said first index.