We claim:

1. A downhole tool, conveyable downhole along the axis of a well casing, the downhole tool comprising:

a setting tool comprising an axial actuator

an expansion element having a first diameter in an uncompressed position for conveyance along the well casing, the expansion element being compressible axially by the axial actuator for expanding radially to a second diameter in a compressed position for plastic deformation of the well casing;

a tubular body defining a bore axially therethrough and comprising a plurality of cylinders, the bore extending through the cylinders, wherein the axial actuator comprises a plurality of axially stacked piston modules, each comprising: a respective one of the cylinders and a respective piston axially drivable within the bore relative to the respective cylinder;

a mandrel, wherein the expansion element is mounted on the mandrel, and the mandrel is axially drivable by the pistons for axially compressing the expansion element.

2. The tool of claim 1, wherein the tubular body includes, an outer sleeve, the outer sleeve comprising the cylinders of the stacked piston modules and wherein the outer sleeve forms a first stop and the mandrel supports a second stop, the expansion element being mounted over the mandrel intermediate the first and second stops, the axial actuator operable to drive the mandrel and the second stop relative to the first stop to compress the expansion element therebetween.

3. The tool of claim 2, wherein the outer sleeve has an uphole end adapted for conveyance and a downhole end forming the first stop, the mandrel extending telescopically from the downhole end.

4. The tool of claim 1, 2 or 3, wherein the expansion element comprises a stack of pleated rings.

5. The tool of claim 4, wherein in the uncompressed position, the stack of pleated rings has a first diameter less than that of the well casing and when in the compressed position, the stack of pleated rings has a second diameter adapted to engage the well casing.

6. The tool of claim 1, 2 or 3, wherein the expansion element comprises an elastomeric bushing.

7. The tool of claim 1, wherein the tubular body is conveyed by electrical wireline, the axial actuator further comprising:

an electric motor within the tubular body and connected through the wireline with a source of electric power at surface; and

a hydraulic pump within said tubular body and having a source of hydraulic fluid and a fluid output, the pump being drivable coupled to the motor, the fluid output being fluidly connected to the pistons.

8. The tool of claim 2, wherein,

the expansion element comprises a stack of pleated rings,

in the uncompressed position, the stack of pleated rings has a first diameter less than that of the well casing and when in the compressed position, the stack of pleated rings has a second diameter adapted to engage the well casing, and

the stack of pleated rings comprises a plurality of wave spring rings separated and spaced apart by annular washers and slidably mounted about the mandrel between the first and second stops, each pleated ring having axially undulating peaks and valleys and, when compressed between the first and second stops, the peaks of each pleated ring flatten against the washers and the second diameter increases to engage and plastically expand the well casing.

9. The tool of claim 8, wherein the stack of pleated rings further comprises a viscous fluid in interstices between peaks of the pleated rings, and when the stack of pleated rings is actuated to the compressed position, the viscous fluid seals between adjacent washers, the mandrel, the adjacent pleated rings and the well casing when for further applying fluid pressure to the well casing.

10. A method for remediation of a well including a wellbore, a well casing positioned in the wellbore, and an annular space between the well casing and the wellbore, and having a cemented sheath in the annular space about the well casing, the method comprising:

conveying an expansion element downhole on a conveyance string to a first location along the well casing, the expansion element being mounted over and extending circumferentially about a mandrel of the conveyance string, and wherein the expansion element is axially compressible for radial expansion;

actuating the expansion element radially outwards, by axial compression of the expansion element, to plastically expand the well casing circumferentially at the first location, thereby compressing the cement sheath within the annular space at the first location to remediate the cement sheath at the first location.

11. The method of claim 10, further comprising releasing the expansion element, thus radially expanded, from the conveyance string for abandonment in the well casing.

12. The method of claim 10, further comprising contracting the expansion element radially inwards from the well casing, thus expanded, to allow axial movement of the expansion element within the well casing.

13. The method of claim 12, further comprising:

conveying the expansion element to a second location along the well casing; and

actuating the expansion element radially outwards to plastically expand the well casing at the second location.

14. The method of claim 10, wherein the expanding of the expansion element radially is irreversible.

15. The method of claim 10, wherein the expanding of the expansion element radially is reversible.

16. The method of claim 10,further comprising:

radially contracting the expansion element inwards from the well casing at the second location;

conveying the expansion element to at least one further location along the well casing; and

for each at least one further location, actuating the expansion element radially outwards to plastically expand the well casing at the respective further location and then radially contracting the expansion element.

17. The method of claim 10, wherein, prior to the step of actuating the expansion element radially outwards to plastically expand the well casing, the well exhibits surface casing vent flow.

18. A method for remediation of a well including a wellbore, a well casing positioned in the wellbore, and an annular space between the well casing and the wellbore, and having a cemented sheath in the annular space about the well casing, the method comprising:

conveying an expansion element downhole on a conveyance string to a location along the well casing, the expansion element comprising an elastomeric cylindrical ring mounted over and extending circumferentially about a mandrel of the conveyance string, and wherein the elastomeric cylindrical ring is axially compressible for radial expansion;

axially compressing the elastomeric cylindrical ring, the axial compression causing radial expansion of the elastomeric cylindrical ring to plastically expand the well casing circumferentially at the first location, thereby compressing the cement sheath within the annular space at the first location to remediate the cement sheath at the first location.

19. The method of claim 18, wherein the outer diameter of the well casing is expanded by 3/16 of an inch to 1.6 inches at the location for compressing the cement sheath at the location.

20. The method of claim 18 or 19, further comprising axially decompressing the elastomeric cylindrical ring, thereby radially contracting the elastomeric cylindrical ring inwards from the well casing, thus expanded, to allow axial movement of the elastomeric cylindrical ring within the well casing.

21. The method of claim 20, further comprising:

conveying the expansion element to a second location along the well casing; and

actuating the expansion element radially outwards to plastically expand the well casing at the second location.