It's a vertical world

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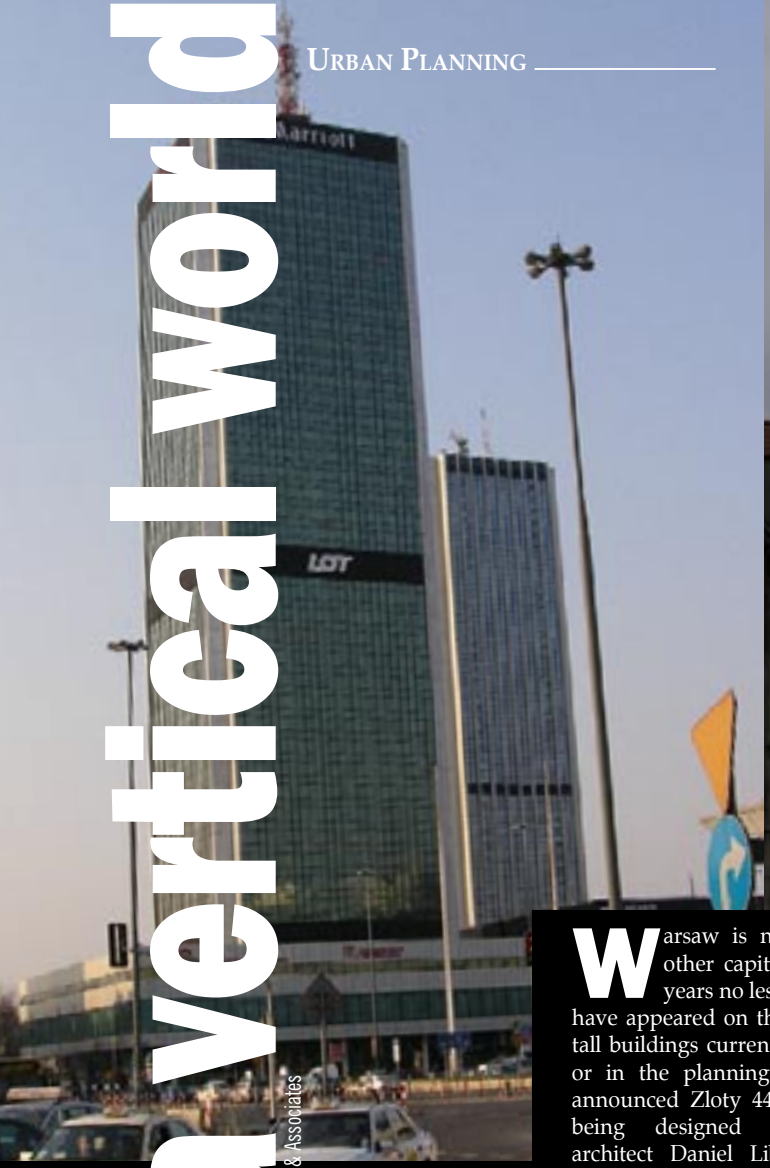
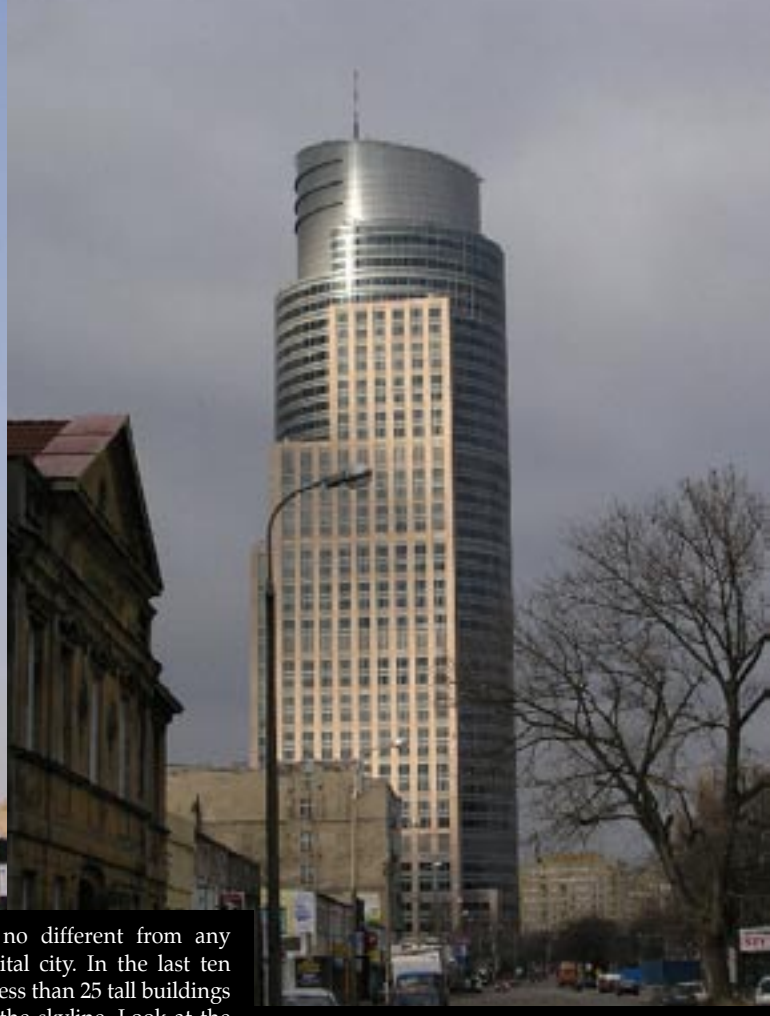




As land becomes scarcer and more expensive in capital cities around the world, buildings are being forced to go vertical. If the land doesn't allow for it, tall buildings reach for the sky. In Warsaw, buildings are reaching heights no one ever dreamed of and, to reach higher, lifts, the lifeblood of any building, are getting faster and smarter.

Warsaw is no different from any other capital city. In the last ten years no less than 25 tall buildings have appeared on the skyline. Look at the tall buildings currently under construction or in the planning stages. The recently announced Zloty 44 Residential Building, being designed by world-renowned architect Daniel Libeskind, will rise to over 50 stories. The new Hilton Hotel and Convention Centre, scheduled for completion this year, will rise to 28 floors. None of this would have been possible without lifts.

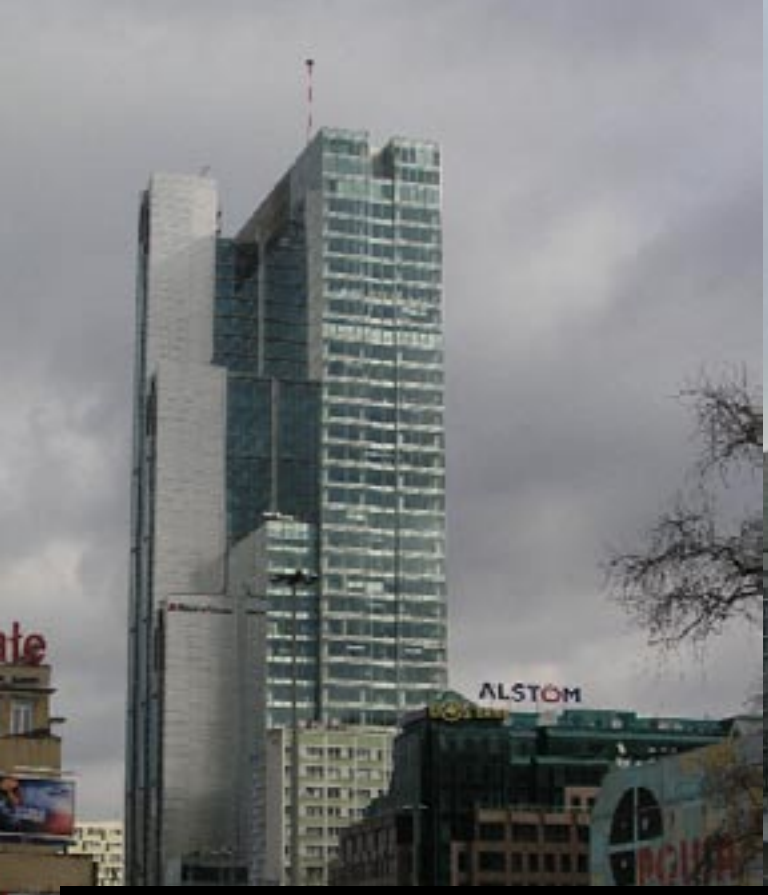
THE EVOLUTION OF LIFTS

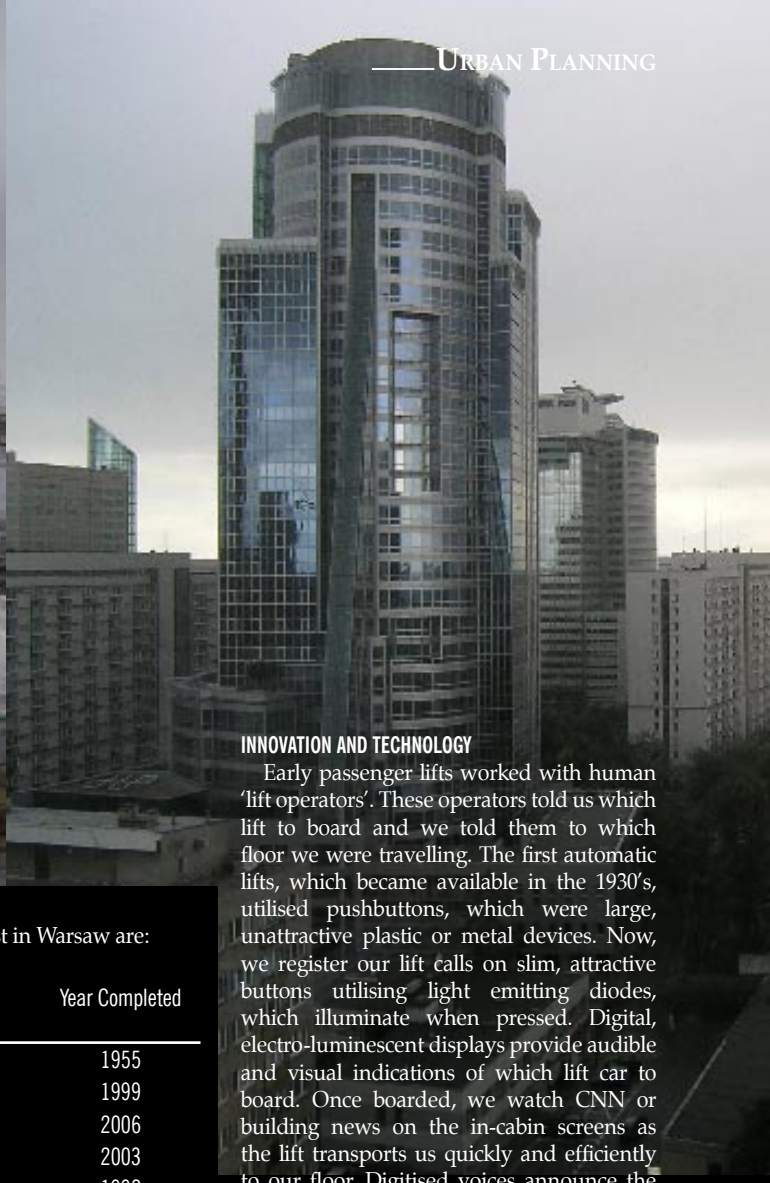
From early times, man has sought ways to raise and lower heavy loads by use of ropes and pulleys. The ancient Greek inventor Archimedes developed a lifting device where the hoisting rope was coiled on a round drum using levers for lifting power. Since that day over 2200 years ago, lifts have been in constant use.

But it wasn't until a man named Elisha Graves Otis invented the lift safety device that the lifts we know today became possible. In 1854 Otis demonstrated his safety device at the Crystal Palace Exhibition in New York City. In front of a large crowd, Otis ascended in an open cage lift to the dizzying height of over two stories, and then dramatically cut the rope with his sabre. The crowd gasped in anticipation of him crashing to his death, but the lift only fell a few inches before the safety device engaged and stopped his descent. The crowd was stunned when Otis announced 'all safe gentlemen, all safe'. In that moment, the modern lift industry was born and tall buildings became possible.

COMPARING WARSAW'S TALL BUILDINGS

Most of the tallest buildings in Poland are located in Warsaw. The newest tall building, Rondo 1, has recently been completed in the city centre. The fastest lifts in Rondo 1 will attain speeds of 5.0 meters per second (MPS). While considered fast by Warsaw standards, they are not the fastest. The Warsaw Trade Tower has faster lifts at 7.0 MPS, and while 7.0 MPS may be the fastest in Warsaw, it is not fast by world standards. The fastest lifts in the world belong to the Taipei Financial Center, located in Taipei Taiwan, which operate at 16.8 MPS in the up direction and 9.0 MPS in the down direction. The limitations of rapid pressure changes in the human inner ear necessitate the slower speed in the down direction. Before completion of the Taipei Financial Center, the world's fastest lifts (now second fastest) belonged to the Landmark Tower in Yokohama Japan, whose lifts travel at 12.5 MPS. Third place is tied between the Sunshine Tower in Japan and the T & C Tower in Taiwan at 10.0 MPS. New York's former World Trade Center's fastest lifts were 9.0 MPS and the Sears Tower in Chicago has lifts that travel at 8.0 MPS.





Warsaw's skyline is graced by a number of tall buildings. The ten tallest in Warsaw are:

Building Name	Height in meters (roof/overall)	Floors	Year Completed
Palace of Culture and Science	188 /231	43	1955
Warsaw Trade Tower	184/208	43	1999
Rondo 1	159/194	40	2006
Hotel Inter-Continental	154/164	45	2003
Warsaw Financial Centre	144/165	32	1998
LOT/Marriott Tower	140/170	42	1989
Oxford Tower (Elektrim)	140/150	42	1979
TP SA Tower	128/128	30	2001
FIM Tower	115/115	26	1996

While Warsaw has a respectable number of tall buildings, they are dwarfed by the ten tallest buildings in the world, which are:

Building Name	Location	Height [m]	Number of floors	Year Completed
Taipei Financial Center	Taipei, Taiwan	509	101	2004
Petronas Tower I	Kuala Lumpur	452	88	1998
Petronas Tower II	Kuala Lumpur	452	88	1998
Sears Tower	Chicago	442	108	1974
Jin Mao Tower	Shanghai	421	88	1998
Two International Finance	Hong Kong	415	88	2003
CITIC Plaza	Guangzhou	391	80	1997
Shun Hing Square	Shenzhen	384	69	1996
Empire State Building	New York	381	102	1931
Central Plaza	Hong Kong	374	78	1992

None of these tall buildings would have been possible without the invention of Elisha Graves Otis.

INNOVATION AND TECHNOLOGY

Early passenger lifts worked with human 'lift operators'. These operators told us which lift to board and we told them to which floor we were travelling. The first automatic lifts, which became available in the 1930's, utilised pushbuttons, which were large, unattractive plastic or metal devices. Now, we register our lift calls on slim, attractive buttons utilising light emitting diodes, which illuminate when pressed. Digital, electro-luminescent displays provide audible and visual indications of which lift car to board. Once boarded, we watch CNN or building news on the in-cabin screens as the lift transports us quickly and efficiently to our floor. Digitised voices announce the travel direction and arrival at our floor, and then tell us to exit the lift carefully. We have 'destination control system' lifts that require us to book our journey floor while still in the building lobby, eliminating all buttons in the cabin. Today's lifts are safer, smarter, faster and more sophisticated than anything Elisha Graves Otis could have imagined.

Tomorrow's lifts will use voice recognition technology to book your journey and retina scans for security. Linear motor drive systems will eliminate the need for steel hoisting ropes. Lifts will have digital 'volume indicators' in the cabin to tell the control system exactly how many people are currently in the lift cabin, eliminating stops when the lift is full of people but has not yet reached it's maximum lifting capacity. We'll also see multiple lifts in one shaft (ThyssenKrupp Lift Co. already offers this option) reducing the number of shafts needed, thereby allowing more rentable space on each building floor. Lifts will not only go vertical but also horizontal, allowing you to go up to your work floor and sideways to your office.

Yes, it truly is a vertical world! ■