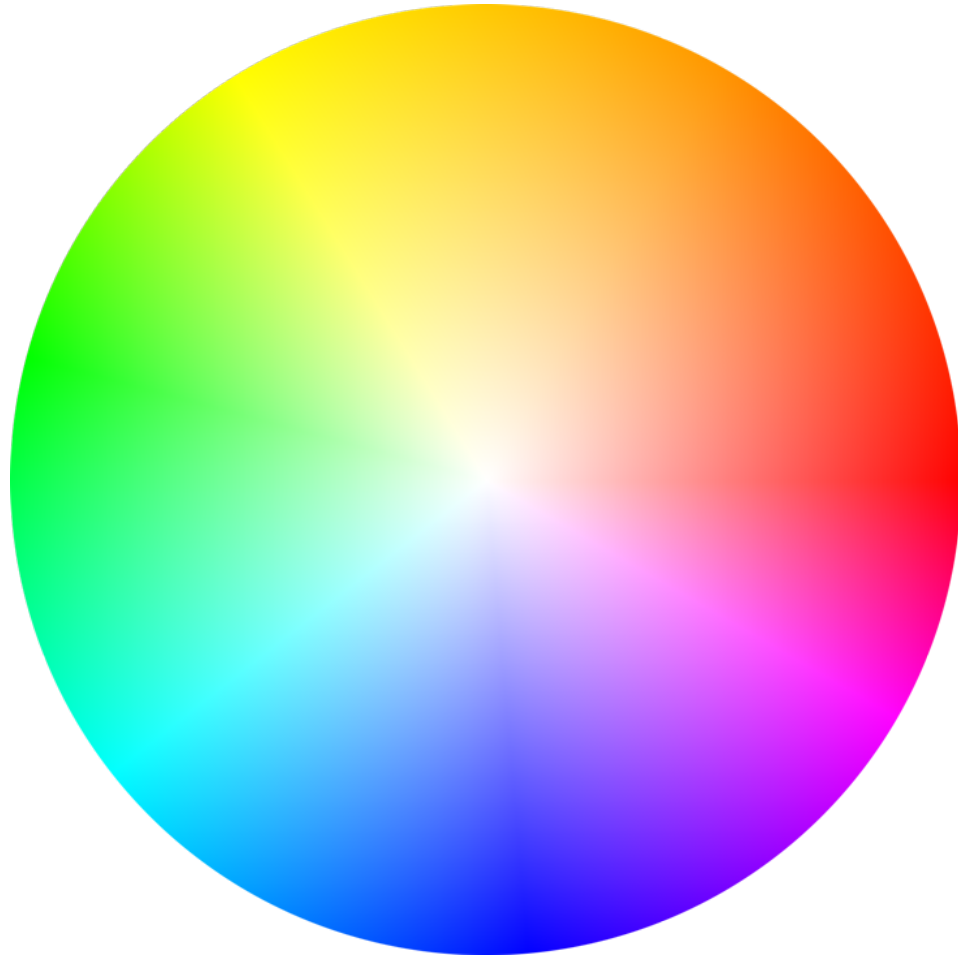


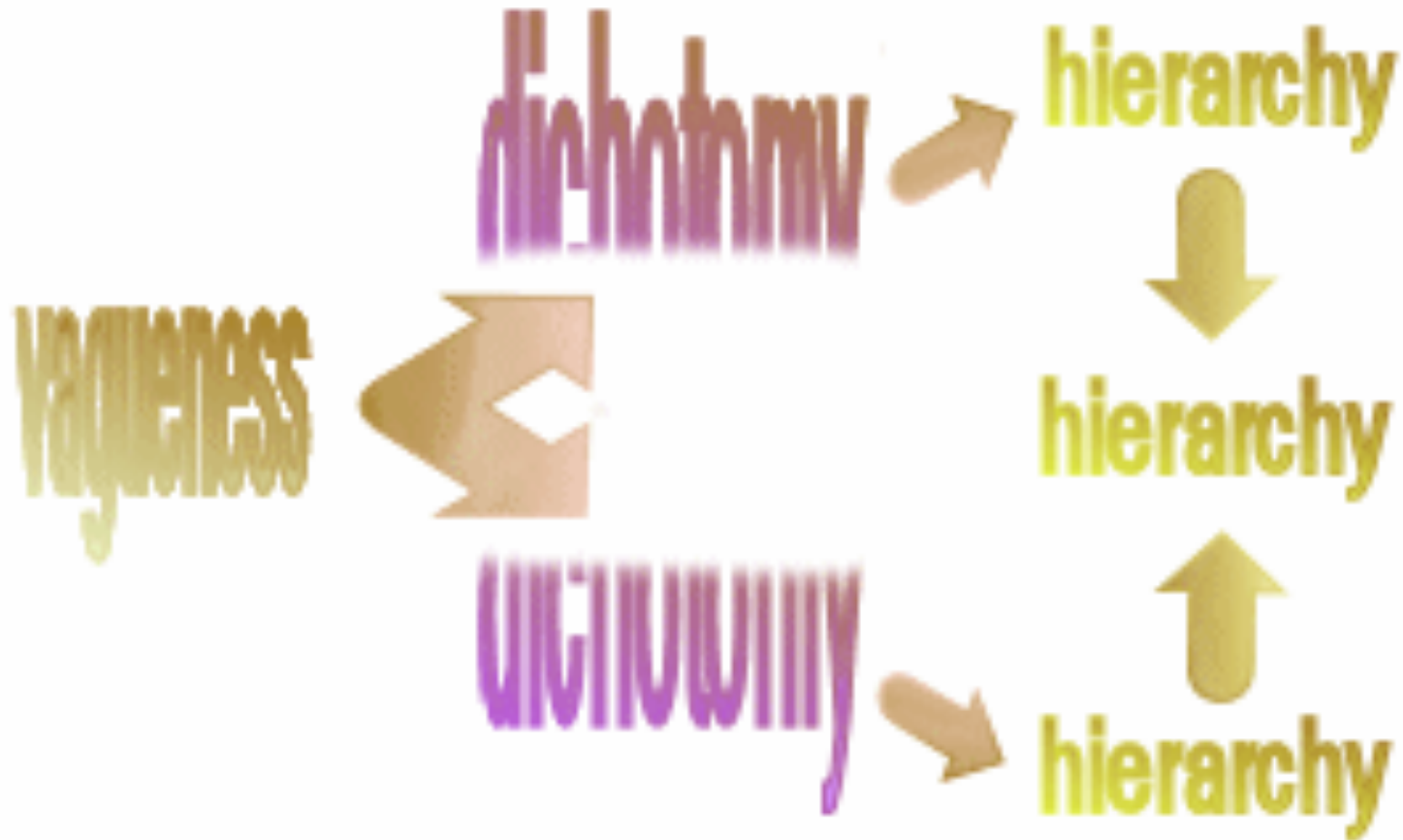
Understanding biomotor abilities

Ontology and simulation in R

Ontology – “What exists?”



Explaining Vagueness



The Root Problem

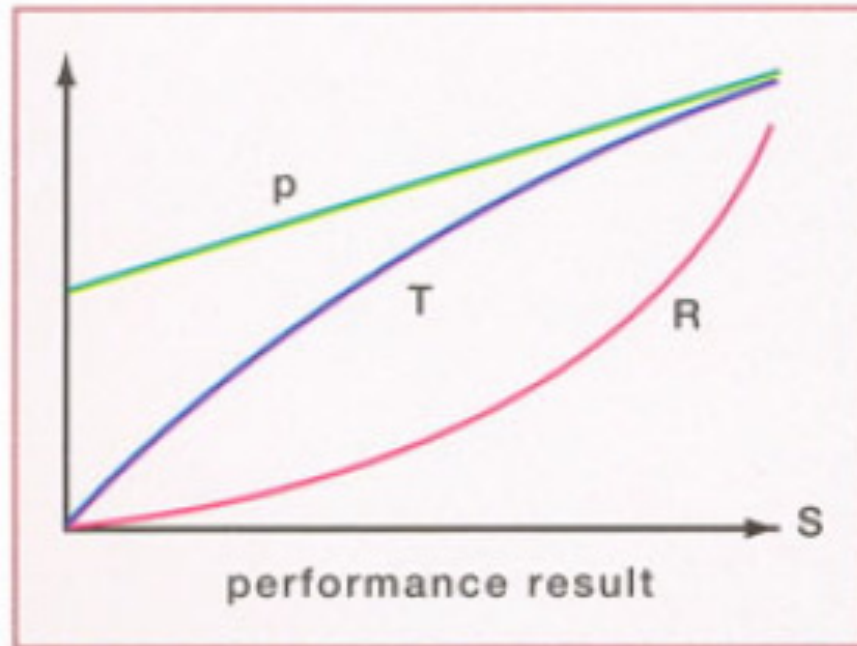
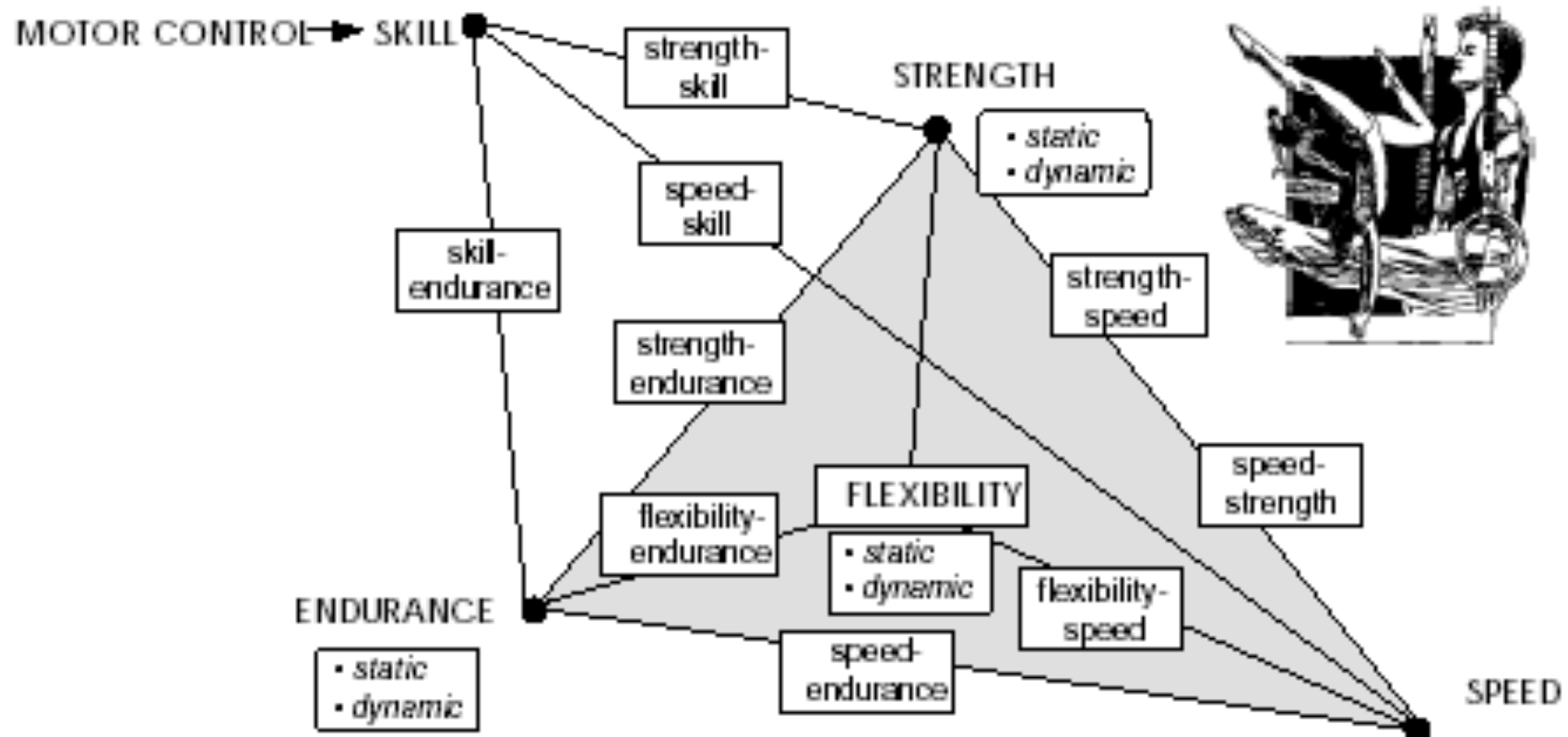


Figure 1: Trend of the increase of the body's motor potential (P) and of the athlete's ability to exploit it (T) as the skill level (S) improves. R is the increase in the intensity of the training stimuli.

Hierarchy - Buckets



Functionality – but not Reality



Generation?

- From “vagueness” to “dichotomies” to “classification/hierarchy”
- Dimension reduction
- Principal Component Analysis
- Factor Analysis

Trying to understand motor space by reducing it's dimensions

200 observations of 13 variables

	row.names	back.squat	front.squat	split.squat	bench.press	military.press	incline.press	pull.ups	v1500m	MAS.5min	VIFT	VJ	BJ	TripleJump
1	Athlete.1	174.7831	142.53730	89.07053	104.76950	59.88961	83.46625	113.85655	14.23392	13.83984	17.57500	38.55804	262.9576	656.0333
2	Athlete.2	151.8965	114.66972	84.72993	96.74214	56.92437	74.80157	113.43805	14.65869	14.52173	17.88072	37.72391	269.3101	636.9514
3	Athlete.3	159.5696	133.29424	70.08865	96.72631	61.22291	77.07429	103.96741	14.50037	14.63272	16.85816	29.80078	197.3730	493.8835
4	Athlete.4	158.4551	127.85318	96.51381	102.42324	63.37042	82.22021	111.54945	13.65041	14.33403	15.09268	38.43513	266.9533	652.2285
5	Athlete.5	148.4370	118.61083	72.64338	92.98273	52.62755	75.44630	102.99003	16.24667	15.57887	19.99958	29.06898	204.9073	493.1300
6	Athlete.6	160.6905	127.09670	84.55601	92.18711	56.26145	75.65427	99.86035	16.96958	17.17134	20.06205	36.02403	231.9263	610.4280
7	Athlete.7	142.1696	117.71189	62.78444	97.43617	62.37635	80.58453	101.02743	15.32209	15.11660	17.96664	25.81891	184.2238	422.7466
8	Athlete.8	151.4340	116.23459	66.59940	97.79336	59.89603	78.22973	100.74323	15.30609	14.78023	18.24757	37.29629	263.6827	616.3119
9	Athlete.9	146.2746	109.01101	75.03239	101.94129	58.73296	79.73159	113.15243	17.08823	16.41769	21.87197	40.73481	298.2078	678.5509
10	Athlete.10	156.0784	128.94582	77.98919	102.40959	61.24847	82.76245	112.78873	15.93146	16.80610	19.94138	36.88479	248.5798	615.9012
11	Athlete.11	142.6312	107.37224	68.83291	103.53978	60.97302	81.42458	116.80092	14.14755	14.33920	16.27359	33.27219	238.9699	586.2296
12	Athlete.12	155.4381	126.14693	80.94887	97.59184	60.19285	77.27956	106.47908	14.53669	14.52071	18.11629	30.30440	200.8034	526.7334
13	Athlete.13	148.2959	110.30497	82.81170	107.46417	63.61183	87.05537	116.53811	15.65522	16.20521	19.22403	32.97553	252.0117	562.2667
14	Athlete.14	136.3799	109.86363	76.29400	101.96886	63.03638	78.82807	114.09435	15.04239	15.27013	18.03197	42.14602	301.8404	729.5541
15	Athlete.15	149.6889	126.73960	80.67329	97.36838	57.02389	79.89423	109.56228	17.36427	17.07926	21.36151	29.29932	209.0352	485.7886
16	Athlete.16	158.5075	121.80674	89.58220	92.80420	55.90111	74.68155	107.34618	14.44298	13.77534	16.97165	26.65569	191.3526	427.6184
17	Athlete.17	144.0125	112.99298	79.95171	87.65897	50.66308	66.91398	99.64079	16.61978	17.22301	20.68214	31.84766	246.5984	537.0716
18	Athlete.18	142.7830	123.93570	80.77625	95.76212	62.91301	77.66902	108.56363	14.39403	14.29540	17.38625	43.14459	294.6473	731.9201
19	Athlete.19	156.2842	121.10001	60.15205	105.45962	61.75279	84.11833	118.64593	13.55049	12.30146	16.14833	32.48831	234.8909	539.8673
20	Athlete.20	135.6762	105.92639	68.85620	97.92710	56.64858	73.27568	112.87739	16.48408	16.58315	20.17506	31.13400	227.1155	535.6042
21	Athlete.21	132.3666	102.77501	68.79149	105.05652	61.67712	86.84270	118.71926	16.82501	16.46332	20.41667	34.55270	254.2472	574.1645
22	Athlete.22	141.9239	109.92805	71.89596	92.43538	57.55995	73.56274	99.22761	13.13188	12.79228	15.81940	37.46201	262.9723	629.9766
23	Athlete.23	128.5910	100.98141	79.21044	102.40693	61.92080	81.57404	117.20575	14.77280	13.93914	18.57432	32.54235	217.7222	562.5707
24	Athlete.24	146.0391	121.40855	73.94147	94.82430	55.49089	76.19180	104.35457	16.39055	15.57406	19.53741	23.53400	155.7788	402.8578
25	Athlete.25	151.3281	121.20242	76.65880	103.64716	63.26459	84.85329	116.37640	14.79175	14.78329	17.92891	34.69593	240.8512	584.3315
26	Athlete.26	155.0751	119.77370	77.50268	96.00969	56.75592	76.31317	111.05956	14.84500	14.66025	17.82323	29.00756	210.7177	479.7395
27	Athlete.27	163.4209	142.63368	89.47407	97.00438	55.49037	75.57406	102.50930	14.53445	14.39203	16.43517	33.78310	265.3966	562.0346
28	Athlete.28	148.0284	114.57868	72.52564	106.87170	63.93193	82.82292	114.52579	15.54101	15.48846	18.07254	45.34843	323.1116	763.2496
29	Athlete.29	180.8363	143.38960	96.82381	103.55966	61.73711	81.58278	116.80325	14.18519	14.08743	17.41441	31.67417	222.7326	540.4399
30	Athlete.30	160.1726	128.11514	71.89175	99.20884	58.10270	80.94256	101.83624	13.57543	13.46800	16.57926	42.17668	302.2080	717.8836
31	Athlete.31	153.6022	123.73351	81.92873	104.76265	60.46353	82.33642	116.08931	14.70207	14.93281	18.11769	36.99776	273.3990	646.0408

Enter R...

